

# IMPACT OF SELF-CARE GUIDELINES ON FUNCTIONING AND WELL-BEING OF POSTMENOPAUSAL WOMEN WITH AGING VAGINAL SYMPTOMS

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## ABSTRACT

**Background:** Vaginal aging is a thinning, drying inflammation of the vagina which happens due to the decrease of estrogen in the body. Most of the menopausal women experience vaginal aging symptom.

**Aim of the study:** To evaluate the impact of self-care guidelines on functioning and well-being of postmenopausal women with aging vaginal symptoms.

**Methods:** A quasi-experimental study design was used. This study was conducted at the Outpatient clinics in Mit Ghamr Hospital, Ministry of Health in Egypt. A purposive sampling of 50 menopausal women was used. Data were collected by using a structured interview questionnaire and Day to Day Impact of Vaginal Aging questionnaire (DIVA).

**Results:** Results showed that the vaginal symptoms had a high disparaging impact on studied postmenopausal women on their daily activities pre=71.6%, post=22.8%, the emotional being before intervention had 57.5%, but it declined 20.5 after the intervention. Further, there is a positive impact to sexual function of the postmenopausal women pre=61.25, post=21% and self-concept pre=50%, post=(14.8%). Moreover, the total impact of the day to day life domains were high among women of age group > 50 years, and who were the resident in rural areas with statistically significant difference  $p = 0.0001$ .

**Conclusion:** The study findings suggest that the functioning and well-being of postmenopausal women with aging vaginal symptoms can be addressed utilizing a substitute treatment such employing the self-care guidelines.

**Recommendations:** Self-care concept should be empowered as an essential part of all levels and strategies of women health care. Further researches are needed regarding factors and barriers associated with the utilization of self-care practices through reproductive years for women as well as for management of various perimenopausal and gynecological problems.

**Keywords:** *Self-Care guidelines, Functioning, Wellbeing, Postmenopausal women, Vaginal symptoms*

## INTRODUCTION

The menopause as a phenomenon in women can be considered as a sort of situational crisis (Mancheri *et al.*, 2013). This entails an end of a fertile life and has remarkable physical, ardent and social effects (Daley *et al.*, 2014). The postmenopausal years are described by significant atrophic and fiery changes in the vaginal

tissues, incorporating changes in vaginal epithelial cytology, pH and microbial flora (SOGC, 2005; Gorodeski, 2005; Pabich *et al.*, 2003). Studies led essentially in Europe proposed that these indications may add to issues with sexual function, self-perception, and mental prosperity (McKenna *et al.*, 1999; Barlow *et al.*, 1997; Woods & Mitchell, 2005; van Geelen, van de Weijer & Arnolds, 2000). As such,

it resulted in a lot of changes that can magnify the quality of life of women in the menopausal stage. It is in this context that it is important for women to involve in the management of menopause symptoms, as a partnership with their healthcare professionals that can maximize health advantages, improve compliance with self-care guidelines.

Currently, the researches have involved in addressing the negative impact of menopause towards functioning and well-being of post-menopausal women. Mishra, Brown & Dobson (2003) found that certain domains of quality of life display a weakening in aging and that the menopausal transition affects physical aspects of general health and well-being. Further, it has been exhibited that physical exercise has been proposed as a contrasting option to hormone treatment diminishing indications for enhancing symptomatic women's well-being. On the other hand, Smith-DiJulio, Woods & Mitchell (2008) have reported that negative life events might predict decreased well-being in the menopausal transition, but factors associated with that transition are not well known. They also found that a woman's have satisfaction with her life and ability to use social support predicted increased well-being. The advantages of activity can likewise be more found in general health and well-being (De Azevedo Guimaraes & Baptista, 2011; Elavsky *et al.*, 2012; Luoto *et al.*, 2012; Stojanovska *et al.*, 2014; Huang *et al.*, 2010), and this is associated with several changes in hormonal parameters like estradiol, progesterone, prolactin, LH, and FSH, both during and after intense physical activity (Cummings, 1985). The effect of these hormones may persist after physical activity. On the other hand, the urogenital symptoms can have a marked impact on sexual functioning, everyday activities, emotional wellbeing, body image and interpersonal relations after menopause (Huang *et al.*, 2015). This research is designed to facilitate evaluation of the impact of vaginal symptoms on postmenopausal women of diverse backgrounds.

### Significance of the study

This research is significant as it aims to help the postmenopausal women with aging vaginal symptoms to return to better quality of life. Its purpose is to investigate the impact of postmenopausal on aging vaginal symptoms to their functioning and well-being. Hypothetically, postmenopausal women were exhibiting

an improvement in their aging vaginal symptoms through their daily living performance of healthy and productive self-care practices after implementation of the intervention guideline.

**Aim of the study:** To evaluate the impact of self-care guidelines on functioning and well-being of postmenopausal women with aging vaginal symptoms.

### MATERIALS AND METHODS

**Design:** A quasi-experimental study design was utilized to evaluate the impact of self-care guidelines on functioning and well-being of postmenopausal women with aging vaginal symptoms.

**Setting:** This study was conducted at the Outpatient clinics in Mit Ghamr Hospital, Ministry of Health in Egypt. The study was conducted in a period between March 2017 to August 2017.

**Sample:** A purposive sampling of 50 menopausal women following the inclusion criteria: (a) from 45 to 55 years old (b) free from operations in the pelvic area (c) women who reported vaginal dryness, itching, irritation and pain with sexual activity.

### Study method

**Tools:** The data of this study was collected using the following tools:

1. The Structured Interview Questionnaire (SIQ): It was designed by the researchers based on literature review, it included two parts: the first part included socio-demographic data; name, age, religion, education level, age at marriage, etc., and the second part included Family history of some diseases such as diabetes, pressure of kidney diseases, liver diseases.
2. The Day-to-Day Impact of Vaginal Aging (DIVA) questionnaire adapted from Huang *et al.*, (2015). This tool was translated into Arabic version and tested for reliability in Huang *et al.*, (2015). The questionnaire is a structured self-reported item designed to address the impact of vaginal symptoms on functioning and wellbeing. It consisted of four multi-item domain scales addressing significant dimensions of functioning and well-being affected by postmenopausal vaginal symptoms which include daily activities, emotional well-being, sexual function and self-concept.

### Field work

### *The study progressed by using the following steps:*

**1<sup>st</sup> step:** Designing the implemented self-care guidelines through the literature review related to menopausal problems. Suggestions from the experts in obstetrics and gynecology in nursing and in medical field were sought to ensure validity of the content.

**2<sup>nd</sup> step:** The researcher met the selected menopausal women. The purpose and nature of the study were explained. The consent was duly obtained. The data was established using Structured Interview Questionnaire (SIQ).

**3<sup>rd</sup> step:** The researchers used the Day-to-Day Impact of Vaginal Aging (DIVA) questionnaire to assess vaginal symptoms through a scoring system (0=not at all, 1=a little bit, 2=moderately, 3=quite a bit, 4=extremely) this questionnaire contains four domains:

#### **1. Daily activity which includes-**

- Walk at your usual speed
- Wear the clothing or underwear you want
- Use toilet or wipe yourself after using toilet
- Sit for more than an hour
- Get a good night's sleep.

#### **2. Emotional wellbeing which includes-**

- Depressed or down
- Embarrassed
- Frustrated or resentful
- Bad about yourself.

#### **3. Sexual function which includes-**

- Your desire or interest in having sexual intercourse or other types of sexual activity
- How frequently you had sexual intercourse
- Your ability to become aroused during sexual activity
- Your ability to be spontaneous about sexual activity
- The amount of pleasure you experienced during sexual activity
- Your desire or interest in being in a sexual

relationship

- Your confidence that you could sexually satisfy a partner
- Your overall satisfaction with your sex life.

#### **4. Self-concept which includes-**

- My vaginal symptoms make me feel like I'm getting old
- I feel undesirable because of my vaginal symptoms
- When I think about my vaginal symptoms, I feel like I have lost something
- My vaginal symptoms make me feel like my body is deteriorating
- I feel less sexy because of my vaginal symptoms.

**4<sup>th</sup> step:** The implemented self-care guidelines were carried out for six months. The participants were divided into small groups. Each group received one session for one hour. The researcher explained the content of the guidelines and answered the questions raised by the prospective participants. The researcher determined the time of each session according to the available free time of the participants. Oral consent was obtained from every participant for ethical issue and the purpose of the study was explained. The investigator met the menopausal women and interviewed them. They were given the opportunity to deal with all the questions and answer them and then they were given the tutorial based on the feedback. Educational guidelines included strategies for lifestyle change that can be applied during the following: Diet, Workout exercises, Reduce stress and psychological stress, Drink plenty of water, Using natural lubricants for vagina. After one month the participants were requested to meet with the researcher and assess the guidelines post-education through calculating scoring system related to DIVA which assessed the degree of vaginal symptoms interfered with specific aspects of women's day-to-day activities, sexual function, emotional well-being, self-concept and body image, or interpersonal relationships (0=not at all, 1=a little bit, 2=moderately, 3=quite a bit, 4=extremely). These scorings were converted into low and moderate (less than 60%) and high (more than 60%).

#### **Administrative Design**

**Ethical consideration**

The necessary official permission and approvals for data collection were obtained by submitting the official letters containing the title and aim of the study to the directors of the previously mentioned settings. Full disclosure and information (through informed consent) were given to the prospective participants. The researcher informed them the risk, benefits and extend of participation for them to decide. As such, after studying all aspects regarding participation, the participants voluntarily confirmed their willingness to participate in the study.

**Pilot study:** A pilot study with 10% of women representing the study sample to test the feasibility and clarity of the tool. The sample included in the pilot study was excluded from the final study sample.

**Field work:**

*The study progressed by using the following steps:*

**1<sup>st</sup> step:** Designing the implemented self-care guidelines through the literature review related to menopausal problems. Suggestions from the experts in obstetrics and gynecology in nursing and in medical field were sought to ensure validity of the content.

**2<sup>nd</sup> step:** The researchers met the participants. The purpose and nature of the study were explained. The consent was duly obtained verbally. The data was established using Structured Interview Questionnaire (SIQ).

**3<sup>rd</sup> step:** The researchers used the Day-to-Day Impact of Vaginal Aging (DIVA) questionnaire to assess vaginal symptoms through a scoring system. Each scale was designed to be scored from 1 to 3 (e.g., low=1, moderately=2, high=3).

**4<sup>th</sup> step:** The implemented self-care guidelines carried out throughout six months. The participants was divided into small groups. Each group received one session for one hour. The researcher explained the content of the guidelines and answered the questions raised by the prospective participants. Educational guidelines included that strategies for lifestyle changes that can be applied during the following; Diet, Workout exercises, Reduce stress and psychological stress, Drink plenty of water, Using natural lubricants for vagina and discussed. The researcher assessed the guidelines post-education

through calculating scoring system related to DIVA which assessed the degree of vaginal symptoms interfered with specific aspects of women's day-to-day activities, sexual function, emotional well-being, self-concept and body image, or interpersonal relationships (0=not at all, 1=a little bit, 2=moderately, 3=quite a bit, 4=extremely). All these items addressing impact on day-to-day activities, emotional well-being, self-concept and body image and interpersonal relationships were designed to be applicable to all symptomatic women: however, a subset of items addressing the impact on sexual function were appropriate only for sexually active women (i.e., women with a history of vaginal sexual intercourse, in the past four weeks). This scoring was converted into low and moderate (less than 60%), and high (more than 60%).

**Statistical Analysis:** The data were coded for entry and analyzed using Statistical Software Package for Social Sciences (SPSS version 18.0). Data collected were organized and categorized. Descriptive measures include (Percentage, Means, Standard Deviation and Correlation coefficient (*r*- test).

**RESULTS**

*Table 1: Percentage Distribution of the Demographic Data of the Studied Postmenopausal Women (N=50)*

	n	%
<b>AGE</b>		
45 – 50 years	14	28
>50 years	36	72
<b>RELIGION</b>		
Muslim	46	92
Christian	4	8
<b>RESIDENCE</b>		
Rural	30	60
Urban	20	40
<b>EDUCATIONAL LEVEL</b>		
Illiterate	16	32
primary education	10	20
Secondary education	15	30
Higher education	9	18
<b>OCCUPATION</b>		
Employee	14	28
Housewife	36	72

HUSBAND EDUCATIONAL LEVEL		
Illiterate	20	40
Read and write	14	28
Secondary education	10	20
Higher education	6	12
HUSBAND OCCUPATION		
Farmer	14	28
Employee	12	24
Private work	24	48
AGE AT MARRIAGE		
16 – 25 years	28	56
26 – 35 years	22	44
DURATION OF MARRIAGE		
20 years or less	12	24
21 – 25 years	30	60
>25 years	8	16

As shown in table 1, there are more than 36 of the studied women who were at age >50 years old (72%) and the majority of them were Muslims living in rural areas (60%). Also, (32%) of them were illiterate and housewives (72%). Most of the participants have been married not less than 21-25 years (60%). In respect of the husband's education, 40% of them were illiterate.

**Table 2: Percentage of Functioning and Wellbeing Before and After Implementation of the Self-Care Guidelines**

DAILY ACTIVITIES		PRE			POST		
		Low	Partial	High	Low	Partial	High
Walk at your usual speed	N	11	6	33	21	15	14
	%	22	12	66	42	30	28
Wear the clothing or underwear you want	N	5	7	38	23	17	10
	%	10	14	76	46	34	20
Use toilet or wipe yourself after using toilet	N	7	8	35	27	15	8
	%	14	16	70	54	30	16
Sit for more than an hour	N	10	6	34	26	17	7
	%	20	12	68	52	34	14
Get a good night's sleep	N	4	7	39	23	9	18
	%	8	14	78	46	18	36
<b>Average</b>		<b>14.8%</b>	<b>13.6%</b>	<b>71.6%</b>	<b>48%</b>	<b>29.2%</b>	<b>22.8%</b>

EMOTIONAL WELL-BEING							
Depressed or down	N	13	8	29	25	16	9
	%	26	16	58	50	32	18
Embarrassed	N	9	11	30	27	13	10
	%	18	22	60	54	26	20
Frustrated or resentful	N	13	12	25	26	17	7
	%	26	24	50	52	34	14
Bad about yourself	N	7	12	31	24	11	15
	%	14	24	62	48	22	30
<b>Average</b>		<b>21%</b>	<b>21.5%</b>	<b>57.5%</b>	<b>51%</b>	<b>28.5</b>	<b>20.5%</b>

SEXUAL FUNCTION							
Your desire or interest in having sexual intercourse or other types of sexual activity	N	8	4	38	28	12	10
	%	16	8	76	56	24	20
How frequently you had sexual intercourse or other types of sexual activity	N	3	15	32	30	6	4
	%	6	30	64	60	12	8
Your ability to become aroused during sexual activity	N	5	9	37	26	15	9
	%	1	18	74	52	30	18
Your ability to be spontaneous about sexual activity	N	6	13	31	23	13	14
	%	12	26	62	46	26	28
The amount of pleasure you experienced during sexual activity	N	11	14	25	24	18	8
	%	22	28	50	48	36	40
Your desire or interest in being in a sexual relationship	N	6	21	23	19	22	9
	%	12	42	46	38	44	18
Your confidence that you could sexually satisfy a partner	N	3	12	35	21	17	12
	%	6	24	70	42	34	24
Your overall satisfaction with your sex life	N	7	19	24	31	13	6
	%	14	38	48	62	26	12
<b>Average</b>		<b>11.13%</b>	<b>26.75%</b>	<b>61.25%</b>	<b>50.5%</b>	<b>29%</b>	<b>21%</b>

SELF-CONCEPT							
My vaginal symptoms make me feel like I'm getting old	N	16	8	26	26	19	5
	%	32	16	52	52	38	10
I feel undesirable because of my vaginal symptoms	N	11	8	31	29	14	7
	%	22	16	62	58	28	14
When I think about my vaginal symptoms, I feel like I have lost something	N	13	14	23	28	16	6
	%	26	28	46	56	32	12
My vaginal symptoms make me feel like my body is deteriorating	N	17	11	22	31	12	7
	%	34	22	44	62	24	14
I feel less sexy because of my vaginal symptoms	N	9	18	23	28	10	12
	%	18	36	46	56	20	24
<b>Average</b>		<b>26.4 %</b>	<b>23.6%</b>	<b>50%</b>	<b>56.8%</b>	<b>28.4</b>	<b>14.8%</b>

Table 2 showed that the vaginal symptoms had a high disparaging impact on studied postmenopausal women on their daily activities (Pre=71.6%; Post=22.8%), the emotional well-being before and after intervention (Pre =57.5%, Post=20.5%). Moreover, there is a positive impact to sexual function of the postmenopausal women (Pre=61.25; Post=21%) and self-concept (Pre=50%; Post=14.8%).

**Table 3: Impact to Functioning and wellbeing before and after implementation of the self-care guidelines (N=50)**

Items	Pre		Post		X <sup>2</sup> test	p-value
	N	%	N	%		
<b>Daily activities</b>						
• Low & Moderate	11	22	38	76	29.1	0.00001
• High	39	78	12	24		
<b>Emotional</b>						
• Low & Moderate	16	32	41	82	25.4	0.00001
• High	34	68	9	18		
<b>Sexual</b>						
• Low & Moderate	8	16	31	62	22.2	0.00001
• High	42	84	19	38		
<b>Self-concept</b>						
• Low & Moderate	17	34	43	86	28.1	0.00001
• High	33	66	7	14		
<b>Total impact</b>						
• Low & Moderate	13	26	35	70	19.1	0.00001
• High	37	74	15	30		

Table 3 showed that there is a significant and positive impact of the guidelines used by the studied postmenopausal women on their day to day life that represented in daily activities, emotional well-being, sexual function and self-concept as evidence by the *p*-value of 0.00001.

**Table 4: Percentage Distribution of Score Regarding Demographic Data of the Studied Postmenopausal Women (N= 50)**

Items	Pre-implementation of guideline				X <sup>2</sup> test	p - value
	Low & Moderate		High			
	N	%	N	%		
<b>Age</b>						
45 – 50 years	9	64.2	5	35.8	14.8	0.0001
>50 years	4	11.1	32	88.9		
<b>Religion</b>						
Muslim	12	33.3	34	66.7	0.0023	0.962
Christian	1	25	3	75		
<b>Residence</b>						
Rural	2	6.6	28	93.4	14.5	0.0001
Urban	11	55.5	9	44.5		

Educational Level						
Illiterate	1	6.2	15	93.8	11.1	0.010
primary education	2	20	8	80		
Secondary education	4	26.6	11	73.4		
Higher education	6	66.6	3	33.4		
Occupation						
Employee	3	21.4	11	78.6	0.21	0.64
Housewife	10	27.7	26	72.3		
Husband Educational Level						
Illiterate	4	20	16	80	1.7	0.634
Read and write	3	21.4	11	78.6		
Secondary education	4	40	6	60		
Higher education	2	33.3	4	66.7		

As revealed in table 4, the total impact of the day today life domains were high among women of age group > 50 years and who were the residents in rural areas with statistically significant difference *p*= 0.0001.

## DISCUSSION

The assessment in the pre-exposure phase of this study reflects somehow the previous studies. Researchers like Nappi & Kokot-Kierepa (2010) who reported that menopausal symptoms like Vulvo-Vaginal Atrophy can affects aspects of women's lives beyond physical health. It was noted that 52% of the participants reported at least some degree of deleterious impact, including negative consequences for their sex life (40%), self-esteem (17%), marriage/relationship (13%), and social life (7%). On the other hand, women participant reported that vaginal discomfort made them 'feel old' (32%) and gave them a lesser quality of life (14%). The research of Huang *et al.*, (2010) showed that menopausal symptoms which include urogenital symptoms can have a marked impact on sexual functioning, everyday activities, emotional wellbeing, body image, and interpersonal relations after menopause. On the other hand, the study of Hunter *et al.*, (2016), reflected relatively low impact of vaginal symptoms on women's functioning and well-being. The study of Cumming *et al.*, (2007) showed that vaginal dryness/discomfort had affected women's confidence (62% of peri and postmenopausal women). The lowest mean scores were assigned to the 'activities of daily

living' and 'emotional well-being' scales ( $0.3 \pm 0.5$ ) and ( $0.3 \pm 0.6$ ) respectively. On the other hand, the highest scores were assigned to the 'self-concept and body image' scale ( $0.9 \pm 1.0$ ) which contradicting the present study that self-concept is mid-percentage (50%).

The problems identified in the aforementioned studies have shown that alternative treatment can possibly alleviate the symptoms. Elavsky (2009) and McAndrew *et al.*, (2009) found out that accomplishing physical exercise is associated with lower estimates of the perceived severity of symptoms and that exercise moderates the psychological symptoms associated with menopause. Moreover, the study of Bize *et al.*, (2007); Elavsky (2009); Martin *et al.*, (2009); Courneya *et al.*, (2011) showed that physical activity has established to improve health-related quality of life among menopausal women. The present results suggested that self-care guidelines for the menopausal women demonstrated a commendable positive impact on their daily activities, emotional well-being, sexual function and self-concept. Although, the direct impact of this functional and well-being of the participants is measured through self-report, however, more and more studies have concluded that an alternative or non-medical treatment like physical activity influences the menopausal symptoms. As such, the need to encourage to increase the level of activity during the course of menopausal transition can be an alternative option for easing symptoms, thus improving quality of life. Moreover, higher physical activity levels have been associated with better or higher scores on various quality of life dimensions (Huang *et al.*, 2015). Further studies demonstrated that a high level of stress, anxiety, and depression can give negative impact to women's sexual self-concept in menopause stage (Sang, Kim & Kim, 2016) and it increases during the transition to the menopausal periods. However, findings from previous studies have demonstrated that doing physical activity is correlated with lesser assessments of the identified rigorous symptoms and that physical activities control the psychological symptoms related with menopause (Kwak, Park & Kang, 2014).

In this study, menopausal women reported a positive impact after utilizing the self-care guidelines which require physical activities. According to Skrzypulec, Dabrowska & Drosdzol (2010), daily activities like exercise has shown to modify many menopausal symptoms, particularly mood, sleep, anxiety, depression, and musculoskeletal complaints. The sexual function of women with aging vaginal symptoms has a positive

impact post utilization of the self-care guidelines. This has been demonstrated in the studies of Chedraui *et al.*, (2011), Chedraui *et al.*, (2012); Bernis & Reher (2007). Furthermore, the present study has shown that there is a probable impact on the self-concept of the respondents. Elavsky *et al.*, (2005) demonstrated that increasing physical activity improves physical self-worth and positive effect and that the improvements in effect lead to improvements in Physical activity enhances long-term quality of life in older adults: efficacy, esteem, and affective influences. Additionally, depression was not only associated with greater impact of vaginal symptoms on women's emotional well-being, but also impact on other domains such as activities of daily living that have less direct ties to emotional status. According to Hunter *et al.*, (2016), comorbid depression can possibly and essentially change women's experience of symptoms like vaginal dryness, so that management of depression may as significant as treatment of vaginal symptoms in refining condition-specific quality of life.

It is of interest to take note that post-menopausal woman with aging vaginal symptoms is more prominent at age more than 50 years old. The present study revealed a significant difference among ages  $>50$ , and a resident in rural areas with a statistical significant difference (0.0001). This implies that menopause goes with age as it affects the endocrine changes. As a matter of fact, the study has reported that age at menopause was positively associated with maternal age. Although, research demonstrated that the median age at menopause among white women from industrialized countries ranges between 50 and 52 years (McKinlay, Brambilla & Posner, 1992), however, this phenomenon is not yet clear in Egypt. Conversely, there is a significant difference as regard resident in rural areas versus in urban areas. This has not been investigated further in this present study but indeed studies from the past had shown that women living in urban areas have a later natural menopause than women in rural areas (MacMahon & Worcester, 1966). According to Sagdeo & Arora (2010), the high proportions and the scores of MRS were observed in both rural and the urban women. The severity of symptoms was found more distressing for rural women. The quality of life in urban society was average and better than rural women.

## CONCLUSION

The study findings suggested that the functioning and well-being of postmenopausal women with aging vaginal symptoms can be addressed utilizing an alternative

treatment such as adhering to the self-care guidelines. This present study adds-up to the present literature as self-care guidelines and it can positively impact on the functioning and well-being of postmenopausal women with aging vaginal symptoms.

This present study can add up to the current literature.

The present study recommended that:

1. Self-care concept should be empowered as an essential part of all levels and strategies of women health care.

2. Further researches are needed regarding factors and barriers associated with the utilization of self-care practices through reproductive years for women as well as for management of various perimenopausal and gynecological problems.

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### REFERENCES

- Barlow, D.H., Cardozo, L.D., Francis, R.M., Griffin, M., Hart, D.M., Stephens, E. & Sturdee, D.W. (1997). Urogenital Ageing and its Effect on Sexual Health in Older British Women. *British Journal of Obstetrics and Gynaecology*, 104(1), pp 87–91.
- Bernis, C. & Reher, D.S. (2007). Environmental contexts of menopause in Spain: comparative results from recent research. *Menopause*, 14(4), pp 777-787.
- Bize, R., Johnson, J.A. & Plotnikoff, R.C. (2007). Physical Activity Level and Health-Related Quality of Life in the General Adult Population: A Systematic Review. *Preventive Medicine*, 45(6), pp 401-415.
- Chedraui, P., Pérez-López, F.R., Mezones-Holguin, E., San Miguel, G. & Avila, C. (2011). Assessing Predictors of Sexual Function in Mid-Aged Sexually Active Women. *Maturitas*, 68(4), pp 387-390.
- Chedraui, P., Pérez-López, F.R., Sánchez, H., Aguirre, W., Martínez, N., Miranda, O., Plaza, M.S., Schwager, G., Narváez, J., Quintero, J.C. & Zambrano, B. (2012). Assessment of sexual function of mid-aged Ecuadorian women with the 6-item Female Sexual Function Index. *Maturitas*, 71(4), pp 407-412.
- Courneya, K.S., Tamburrini, A.L., Woolcott, C.G., McNeely, M.L., Karvinen, K., Campbell, K.L., McTierman, A. & Friedenreich, C.M. (2011). The Alberta Physical Activity and Breast Cancer Prevention Trial: Quality of Life Outcomes. *Preventive Medicine*, 52(1), pp 26-32.
- Cumming, G.P., Herald, J., Moncur, R., Currie, H. & Lee, A.J. (2007). Women's attitudes to hormone replacement therapy, alternative therapy and sexual health: a web-based survey. *Menopause International*, 13(2), pp 79–83.
- Cummings, S.R., Kelsey, J.L., Nevitt, M.C. & O'Dowd, K.J. (1985). Epidemiology of Osteoporosis and Osteoporotic Fractures. *Epidemiologic Reviews*, 7(1), pp 178–208.
- Daley, A., Stokes-Lampard, H., Thomas, A. & MacArthur, C. (2014). Exercise for Vasomotor Menopausal Symptoms. *Cochrane Database of Systematic Reviews*, 11(5).
- de Azevedo Guimaraes, A.C. & Baptista, F. (2011). Influence of habitual physical activity on the symptoms of climacterium/menopause and the quality of life of middle-aged women. *International Journal of Women's Health*, 3, pp 319-328.
- Elavsky, S. (2009). Physical Activity, Menopause, and Quality of Life: The Role of Affect and Selfworth Across Time. *Menopause*, 16(2), pp 265-271.
- Elavsky, S., Gonzales, J.U., Proctor, D.N., Williams, N. & Henderson, V.W. (2012). Effects of Physical Activity on Vasomotor Symptoms: Examination Using Objective and Subjective Measures. *Menopause*, 19(10), pp 1095-1103.



- Elavsky, S., McAuley, E., Motl, R.W., Konopack, J.F., Marquez, D.X., Hu, L., Jerome, G.J. & Diener, E. (2005). Physical activity enhances long-term quality of life in older adults: efficacy, esteem and affective influences. *Annals of Behavioral Medicine*, 30(2), pp 138-145.
- Gorodeski, G.I. (2005). Effects of Estrogen on Proton Secretion via the Apical Membrane in Vaginal-Ectocervical Epithelial Cells of Postmenopausal Women. *Menopause*, 12(6), pp 679–684.
- Huang, A.J., Gregorich, S.E., Kuppermann, M., Nakagawa, S., Van Den Eeden, S.K., Brown, J.S., Richter, H.E., Walter, L.C., Thom, D. & Stewart, A.L. (2015). Day-to-Day Impact of Vaginal Aging questionnaire: a multidimensional measure of the impact of vaginal symptoms on functioning and well-being in postmenopausal women. *Menopause*, 22(2), pp 144-154.
- Huang, A.J., Luft, J., Grady, D. & Kuppermann, M. (2010). The Day-to-Day Impact of Urogenital Aging: Perspectives from Racially/Ethnically Diverse Women. *Journal of General Internal Medicine*, 25(1), pp 45–51.
- Hunter, M.M., Nakagawa, S., Van Den Eeden, S.K., Kuppermann, M. & Huang, A.J. (2016). Predictors of Impact of Vaginal Symptoms in Postmenopausal Women. *Menopause*, 23(1), pp 40–46.
- Kwak, E.K., Park, H.S. & Kang, N.M. (2014). Menopause Knowledge, Attitude, Symptom and Management among Midlife Employed Women. *Journal of Menopausal Medicine*, 20(3), pp 118-125.
- Luoto, R., Moilanen, J., Heinonen, R., Mikkola, T., Raitanen, J., Tomas, E., Ojala, K., Mansikkamäki, K. & Nygård, C.H. (2012). Effect of aerobic training on hot flushes and quality of life - a randomized controlled trial. *Annals of Medicine*, 44(6), pp 616-626.
- MacMahon, B. & Worcester, J. (1966). Age at menopause. United States--1960-1962. Vital and Health Statistics. Series 11, Data from the National Health Survey. 19, pp 1-20. Retrieved From: <https://europepmc.org/abstract/med/5298639>.
- Mancheri, H., Neyestanak, N.D.S., Seyedfatemi, N., Heydari, M. & Ghodoosi, M. (2013). Psychosocial Problems of Families Living with an Addicted Family Member. *Iranian Journal of Nursing and Midwifery Research*, 26(83), pp 48–56.
- Martin, C.K., Church, T.S., Thompson, A.M., Earnest, C.P. & Blair, S.N. (2009). Exercise dose and quality of life: Randomized Controlled Trial. *Archives of Internal Medicine*, 169(3), pp 269-278.
- McAndrew, L.M., Napolitano, M.A., Albrecht, A., Farrell, N.C., Marcus, B.H. & Whiteley, J.A. (2009). When, Why and for Whom there is a Relationship between Physical Activity and Menopause Symptoms. *Maturitas*, 64(2), pp 119–125.
- McKenna, S.P., Whalley, D., Renck-Hooper, U., Carlin, S. & Doward, L.C. (1999). The Development of a Quality of Life Instrument for Use with Post-Menopausal Women with Urogenital Atrophy in the UK and Sweden. *Quality of Life Research*, 8(5), pp 393–398.
- McKinlay, S.M., Brambilla, D.J. & Posner, J.G. (1992). The Normal Menopause Transition. *Maturitas*, 14(2), pp 103-115.
- Mishra, G.D., Brown, W.J. & Dobson, A.J. (2003). Physical and Mental Health: Changes During Menopause Transition. *Quality of Life Research*, 12(4), pp 405–412.
- Nappi, R.E. & Kokot-Kierepa, M. (2010). Women's Voices in the Menopause: Results from an International Survey on Vaginal Atrophy. *Maturitas*, 67(3), pp 233–238.
- Pabich, W.L., Fihn, S.D., Stamm, W.E., Scholes, D., Boyko, E.J. & Gupta, K. (2003). Prevalence and Determinants of Vaginal Flora Alterations in Postmenopausal Women. *The Journal of Infectious Diseases*, 188(7), pp

1054–1058.

- Sagdeo, M.M. & Arora, D. (2010). Menopausal symptoms: A comparative study in rural and urban women, *JK Science*, 13(1), pp 23–26.
- Sang, J., Kim, T.H. & Kim, S.A. (2016). Flibanserin for Treating Hypoactive Sexual Desire Disorder. *Journal of Menopausal Medicine*, 22(1), pp 9-13.
- Skrzypulec, V., Dabrowska, J. & Drosdzol, A. (2010). The Influence of Physical Activity Level on Climacteric Symptoms in Menopausal Women. *Climacteric*, 13(4), pp 355-361.
- Smith-DiJulio, K., Woods, N.F. & Mitchell, E.S. (2008). Well-being During the Menopausal Transition and Early Post Menopause: A Longitudinal Analysis. *Menopause*, 15(6), pp 1095–1102.
- S.O & G.C. The Detection and Management of Vaginal Atrophy: These guidelines have been reviewed by the joint committee of Clinical Practice Gynaecology and Urogynaecology and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada (2005). *Journal of Obstetrics and Gynecology Canada*, 26(5), pp 503-508.
- Stojanovska, L., Apostolopoulos, V., Polman, R. & Borkoles, E. (2014). To exercise, or not to exercise, during menopause and beyond. *Maturitas*, 77(4), pp 318-323.
- van Geelen, J.M., van de Weijer, P.H. & Arnolds, H.T. (2000). Urogenital Symptoms and Resulting Discomfort in Non-Institutionalized Dutch Women Aged 50–75 Years. *International Urogynecology Journal and Pelvic Floor Dysfunction*, 11(1), pp 9–14.
- Woods, N.F. & Mitchell, E.S. (2005). Symptoms During the Perimenopause: Prevalence, Severity, Trajectory and Significance in Women's Lives. *The American Journal of Medicine*, 118 (12B), pp 14–24.