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Application of Roy Adaptation Model on Coping with Peri-Menopausal Symptoms among Employed Women

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Abstract: Background: Peri-menopause constitutes a major transition point in women's reproductive and psychological life. **Purpose**: examine the effect of application of Roy adaptation model on coping with peri- menopausal symptoms among employed women. **Design**: Quasi experimental design was used. **Setting**: Study was conducted at Menoufia university administrative building, Menoufia governorate Egypt. **Subjects**: A purposive sample of 100 administrative employed women at menopausal age (45-55 years) who working in administrative building. **Instruments**: Socio-demographic & Reproductive Characteristics Questionnaire, Menopausal Rating Scale, Roy Adaptation Model Scale. **Results:** statistically significant difference regarding to grand total levels of menopause rating scale between pre & post-intervention, high significant negative correlation between post intervention total score of Roy Adaptation behavior and total score of menopausal symptoms (r = -0. 44, p<0. 0001) among peri- menopausal employees' women. Finally, post-intervention program revealed a highly significant improvement (p<0. 000) in the percentages of "Effective Adaptation behavior" responses, in each of the four subunits: Physiological mode, self-concept mode, Role function mode and Interdependence mode. **Conclusion:** Application of Roy adaptation model has positive consequences on improving women's coping ability regarding peri-menopausal period and its related risk factors. **Recommendation:** raising awareness about menopause symptoms through ensuring that appropriate health information and services are available to women to promote healthy aging and good quality of life before, during and after menopause.

Key words: *Employed women, Peri-Menopausal Symptoms, Roy adaptation model.*

Introduction

The term "perimenopause", which literally means "around the menopause", refers to the menopause transition years before the date of the final episode of flow, it is the period that links a woman's reproductive (childbearing) years and menopause (Ali et al., 2020). This phase usually begins several years before menopause, when ovaries slowly make less estrogen lasts until menopause (Wardani et al., 2019). According to The Centre for Menstrual Cycle and Ovulation Research describes it as a six- to ten-year phase ending 12 months after the last menstrual period. Perimenopause typically begins between 40 and 50 years of age (average 47. 5) (Annah et al., 2020).

Perimenopausal symptoms can be highly distressing, significantly impacting various aspects of women's lives, including personal, social, and professional domains. Perimenopause is marked by a range of major symptoms, encompassing central nervous system (CNS) related issues such as vasomotor symptoms, sleep disturbances, anxiety, depression, migraine, and changes in cognitive performance (Zhao, 2019). Additionally, changes in weight and metabolism, cardiovascular functions and urogenital symptoms, and musculoskeletal symptoms, including bone health decline and changes in body composition. (Forney, 2019 & Magraith et al., 2022).

Menopausal symptoms have been reported to adversely affect employees impacting work performance and reducing work satisfaction (Rees et al., 2021). In addition to the effects of menopausal symptoms on individual occupational well-being. As the life expectancy and working age of women increase, many can expect to spend more than one-third of their lives in menopause, with a significant proportion of this in employment according to Organization for Economic Co-operation and Development (OECD, 2022).

Psycho-social manifestations may include a diminished sense of confidence, challenges with self-identity and body image, inattention, memory loss, heightened stress levels, and an increased susceptibility to anxiety and depression. Self-Body image is a lifelong battle throughout women's lives, peri-menopause is great physical, hormonal, and psycho-social changes which have been identified as windows of vulnerability for increased body dissatisfaction (McLean et al., 2019). women's self-image may be affected by perimenopausal period as a result of skin aging and changes in hair density and distribution (Hosseini & Padhy, 2023). Also, significant changes in body composition and body fat distribution which exacerbate body image concerns (Bienenfeld et al., 2019).

In the workplace, these symptoms can hinder a woman's ability to perform optimally (Hvas & Gannik, 2019). Despite these challenges, many women refrain from seeking help, driven by factors such as embarrassment, fear of adverse reactions from others, or cultural taboos associated with the condition (Soares, 2019). For instance,

many women shoulder household responsibilities while holding jobs, handle financial commitments to grown children, and provide caregiving duties for elderly parents. Employees women describe themselves as "sandwiched" between these roles, leading to possible conflicts in their public and private lives (Faculty or Sexual and Reproductive Healthcare, 2019).

Roy's model of adaptation is one of the best conceptual frameworks and coping mechanisms for nursing practice, research, and teaching is Roy's Adaptation Model (RAM) (Callis, 2020). It improves the nurses' capacity to increase person -environment interaction and deliver an efficient adaption (Alidoost et al., 2021). Roy's model of adaptation aims to increase women physiological and cognitive adaptability to perimenopause symptoms. RAM healthcare initiatives can reduce unhealthy behaviors and increase compatibility (Maki et al., 2019). This model may serve as a helpful guide for nurses while providing patient care as well as a template for a variety of patients' adjustment and compliance programs (Hatami and Hojjati, 2019).

Nurses as a part of health care providers have responsibilities to help women in dealing with perimenopause symptoms (Callis, 2020) & (Royal College of Nursing, 2020). Nurses can provide nursing care by using Roy adaptation model at peri-menopause period aim to promote symptoms management & improve quality of life and evaluate women in physiologic mode, self-concept mode, role function mode and interdependence mode aiming to provide holistic care (Russo, 2019). This includes providing education and support on managing menopausal symptoms, while also focusing on preventive measures for long-term health, including bone health and cardiovascular health (Maryati et al., 2018).

SIGNIFICANCE OF THE STUDY

In Egypt, menopausal women constitute a considerable sector of the whole population. Percentage of women at menopausal age to all women age group is 20. 5%, their percentage to the whole population is 10. 7%. Recent statistics in Egypt proved that about 4. 7 million of women at age of 45 years or more have more consequences as osteoporosis. This number is expected to increase to 13 million by the year 2030 (Abd El Rahman et al., 2019). The mean age of the menopause in Egypt is 46. 7 years, which is low compared to many countries, but this age has been rising recently. The incidence of menopause in Egyptian women is higher than in the West, probably because of the different sociocultural attitudes towards the menopause in different communities (Women and Equalities Committee, 2022).

Purpose of the study:

to examine the effect of application of Roy adaptation model on coping with peri- menopausal symptoms among employee women.

Research Hypothesis:

The following research questions are formulated to achieve the purpose of the study: -

- Women who apply Roy adaptation model will experience lower intensity in menopausal symptoms post intervention than pre intervention.
- Women who apply Roy adaptation model will have better coping abilities of menopause symptoms post intervention than pre intervention.

METHODS

Design:

a quasi-experimental design (pre –post intervention) was used to achieve this study.

Study Setting:

This study was conducted at Menoufia university administrative building, Menoufia governorate, Egypt.

Study Subject:

A convenient sample of 100 administrative employed women at menopausal age (45-55 years) who working in administrative building at Menoufia university were recruited in the study according to the following inclusion criteria:

- Women who have 45–55-year-old.
- Free from chronic disease which affects menopausal changes as diabetes, hypertension, cardiac disease and thyroid disorder.

Exclusion Criteria:

- Women with previous history of cancer.
- Women with previous hysterectomy
- Women who use hormonal replacement therapy.
- Have previous psychological diseases.

Sample size calculation:

In order to calculate the sample size required to examine the effect of application of Roy adaptation model on coping with peri- menopausal symptoms among employee's women, the sample size was calculated according to the following equation:

Sample size

$$n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$$

n= Sample size

N: population size = 280 Women employee	
p: hypothesized % frequency of outcome factor in the population from pilot study) =	13% +/-5
d: confidence limits as % of 100(absolute +/- %) =	5%
DEFF: design effect =	1
Z: probability when P is less than 0. 05 =	1. 96
α : alpha error	0. 05

Confidence interval of 95% was used, with a sample size of 101 employee women, which approximated to 100 women as current study sample size. Out of all employee's women at menopausal age (45-55 years) who are working in administrative building at Menoufia University

Instrument:

Instrument One: Self-Administered Questionnaire for Socio-demographic & Reproductive Characteristics Questionnaire:

- It is designed by the researcher which include the following: name, age, marital status, educational level and body mass index (BMI). It also includes menstrual history & reproductive characteristics such as date of last menarche and number of births.

Instrument Two: Menopausal Rating Scale (MRS):

- Designed by Heinemann et al., (2003) according to international versions of the Menopause Rating Scale (MRS). Menopause Rating Scale (MRS) is a health-related quality of life scale (HRQoL). It is a self-administered scale directed to women. Has three categories i. e., physical, psychological, urogenital. Subcategories included: 1) physical symptoms (hot flushes/sweating, heart discomfort, sleeping problem, muscle and joint problem); 2) psychological symptoms (depressive mood, irritabilities, anxiety, tiredness); 3) urogenital symptoms (sexual problem, bladder problem and dryness of vagina).

Scoring system:

- **Menopause Symptoms Rating Scale** consists of 11 items. It has three categories:
  Each item was evaluated with five-point Likert scale 0-4: (0= None. 1 = Mild, 2 =Moderate, 3= Sever, and 4 = V. sever). The perimenopausal employee women 'response to each subscale was evaluated by summing all its items to have the subscale' total score. The total subscale score of each perimenopausal employee women was categorized into "No physical symptoms level" when she achieved less than <27% of its total score, "Mild to Moderate physical symptoms level" when she achieved 27% to <80% of its total score, "Sever to Very sever physical symptoms level" was considered when he/she achieved ≥ to 80% of its total score.
- **Grand total symptoms of Menopause** Symptoms Rating Scale were evaluated giving a range of 0 - 44. Each woman was categorized into "No symptoms level" when she achieved 0- 11, those who had 12 - 35 points were considered as "Mild to Moderate symptoms level", and those who had 36 - 44 points were considered "Sever to Very sever symptoms".

Reliability of Instrument One:

Reliability was estimated among 10 participants by using test-retest method with two weeks apart between them. Then Cronbach alpha was calculated between the two scores using SPSS computer package. It was 0. 85 which indicates that the instrument is reliable to detect the objectives of the study.

Instrument Three: Roy Adaptation Model Scale (RAMS):

- The instrument was developed by Russo (2019) based on the original assessment of Roy adaptation model

assessment (Roy, 2005). The instrument is psychometrically scale with four subscales; each subscale represents one of the four adaptive modes of the RAM (physiologic 9 item, self-concept 9 item, role function 7 items and interdependence 9 items) in 34 items A totally. This scale will be used in this study to measure the four adaptive modes for menopausal symptoms among employed women. The reliability test of cronbach's alpha for the four subscales of the RAMS ranged from. 61 to. 81 which is above the acceptable minimum of. 60 for an instrument.

Scoring system:

Roy Adaptation Modes Scale" (RAMS):

- It consists of 34 items to measures several components of adaptation as the ability to adapt to change, the ability to deal with what comes along, the ability to cope with stress, and the ability to handle unpleasant feelings such as anger, pain or sadness. Each item was rated on a five - point Likert scale from one to five (, 1=disagree, 2=Neither disagree or agree, 3 =agree). The grand total score can range from 34-170; "No Adaptation behavior" ranges from 34-68, "Ineffective adaptation behavior" ranges from 69-102 and "Effective adaptation behavior" ranges from 103-170.

Reliability of Instrument Three:

- Reliability was estimated among 10 participants by using test-retest method with two weeks apart between them. Then Cronbach alpha was calculated between the two scores. It was 0. 79 which indicates that the instrument is reliable to detect the objectives of the study.

Validity of Instruments

Validity of the instruments was assessed using content validity by a 3 Experts in the field of Community health Nursing and one expert has doctorate degree in maternal and newborn nursing). The relevancy, clarity, fluency, and simplicity of each component in the tool was examined by the Experts, their suggestions were incorporated into the instruments, and they found the tool was useful and helpful.

Pilot Study:

A pilot study was conducted on 10 women to assess the feasibility of the study as well as clarity and objectivity of the tools. The needed modifications were incorporated to add or omit questions if needed, the time required for tool fulfillment were calculated. Also, to assess the availability of environment which facilitate the data collection. Pilot study was excluded from the total study sample size.

Administrative & Ethical consideration:

Approval of the research was obtained from the Ethics Committee of Scientific Research in the faculty of Nursing, Menoufia University before the start of the study. An official letter to conduct the study obtained from the administrator of the faculty of nursing& performed to the administrator of chosen setting to permit collecting of research data. Ethical considerations to

look at this study included: Apply the subjects rights to freely choice to participate in the study, the rights of privacy and safety for the subjects were secured and they were allowed to withdraw from the study whenever they wanted.

Field work:

Pre-intervention phase:

- It included the review of the past and current national and international related literature on the various aspects of the phenomena using articles, periodicals, magazines and books to be acquainted with the actual dimension and magnitude of the study phenomena and to guide in developing the study instruments.
- Submitting official letters from the dean of the faculty of nursing, Menoufia University about the purpose of study to obtain an official permission from the general secretary & the director of human resources in the Menoufia University administration of the Menoufia University, including the purpose of the study.
- The duration of intervention phase lasted three months. From January 2022 to April 2022.
- Applying of surveying diagnostic questions related to perimenopausal symptoms among 280 employee women in the Menoufia University administration for selection of women with inclusion criteria.
- The researcher introduced herself to the studied women and took their oral consent to participate in the study after explaining the aim of the study.
- The duration for collecting pretest took 1 month.
- The researcher started to collect the data from participant women by the pre-test questionnaire on the first visit to assess study variables.
- The instrument of data collection required 25-30 minutes to be filled by each participant.
- The researcher planned for the number of educational sessions that will intervene in addition to illustrated educational-booklet.
- There were five educational sessions for two months to participant women about how to manage menopausal symptoms.
- The plan for interview was one session per week for three months.
- The instrument was administered to the participants to fill it and were assured for the confidentiality of their information.
- The researcher designed the educational intervention based on the information obtained from initial assessment, in addition to literature review, and the concepts of Roy Adaptation model under guidance of the supervisors.
- A structured interview was conducted to the studied women were divided into groups; each group consisted of 5-10 studied women & one hour per session to avoid overcrowding for employee women in groups to avoid wasting time of their work.

Implementation phase:

- The implementation was planned on 12 sessions for throughout a week, each session took one hour. But the

sessions were carried on only 6 sessions due to workload and no enough time for the studied women.

- At the beginning, the researcher introduced an orientation to the program, & used lecture, videos and group discussion and a copy of booklet illustrating about perimenopause, causes, risk factors, and perimenopausal symptoms and its preventive behaviors and the concepts of Roy adaptation model.
- Next sessions were arranged about coping behaviors based on Roy adaptation models respectively.
- **First session**: (relieving intensity in menopausal symptoms): Aimed to enhance the studied women's knowledge about types of symptoms of menopause, its adverse effects on their health & lives & how to relieve these symptoms by focusing on management for menopause physical, psychological, urogenital symptoms (hot flashes, Heart discomfort, sleep problems, joint and muscular discomfort about balanced diet) through modifying unhealthy nutritional behaviors, avoidance of noisy, wearing comfortable cotton clothes, using moist ointments, control of urine incontinence and caffeine intake, kegel exercise, memory refreshment as reading, weight management. Breathing exercise and personal hygiene. Group discussion was allowed to ensure their complete understanding and feedback was taken at the end of each session.
- **Second session** : (Physiologic mode coping behavior session) : Aimed to enhance the studied women's knowledge about types of symptoms of menopause, its adverse effects on their health & lives & how to relieve these symptoms by focusing on having enough hours of sleep, joint and muscular exercises, balanced diet, modifying unhealthy nutritional behaviors,, increasing intake of fresh vegetables, fruits & carbohydrates, increasing dairy intake, breathing exercise, relation technique and personal hygiene. Group discussion was allowed to ensure their complete understanding and feedback was taken at the end of each session. The researcher used different methods throughout this session as group discussion and demonstration & redemonstration techniques
- **Third session**: (Self-Concept Mode session); At the beginning of this sessions, the researcher started by giving a summary about the previous session and explaining the objectives of the new one and their background was taken. The researcher aimed to improve studied women self-concept by focusing on coping with stress, ways to remaining positive, caring of self, the importance of looking healthy and maintain personal neatness. The researcher used different methods throughout this session as group discussion. Also, role play in problem solving situation were used.
- **Fourth session:** (Role Function Mode); At the beginning of this sessions, the researcher started by giving a summary about the previous session and explaining the objectives of the new one. The researcher aimed to enhance studied women

role function by focusing on managing social isolation, taking time for self, relaxation, communication with others and modifying daily routine. The researcher used different methods throughout this session as group discussion & role play.

- **Fifth session** (Interdependence role mode); At the beginning of this sessions, the researcher started by giving a summary about the previous sessions and explaining the objectives of the new one. The researcher aimed to enhance interdependence role of studied women by focusing on the way of developing relationships with others, getting support from family and coworkers, managing difficult time of menopause. The researcher used different methods throughout this session as group discussion
- **Sixth session**: (Self body image improvement session): At the beginning of this sessions, the researcher started by giving a summary about the previous session and explaining the objectives of the new one. The researcher aimed to increase the satisfaction of studied women self-image related to their body changes as a result of menopause by focusing on adornment of Overall Appearance, betterment of body fitness, attention to grooming and well dressing. The researcher used different methods throughout this session as group discussion & role play.

The duration for this phase took 3 months

- There were one month to let participant women apply the information they gain and manage their menopausal symptoms. During this period the researcher will follow the participated women by telephone call to ensure the continuity.

Evaluation phase:

- The researcher recollected data after 1 month of implementation of the educational intervention.
- At the end of the course of educational session, the effect of the education intervention was evaluated by using the same format of pretest.
- The post-test questionnaire evaluates the coping with the menopausal symptoms and self-body image after the educational sessions. And comparing it with pre-intervention data in order to know differences, similarities and gap of practices.

Statistical Analysis: -

Data was entered and analyzed by using SPSS (Statistical Package for Social Science), version 22. Graphics were done using Excel program. Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using student paired t- test for comparison between two means, and ANOVA (F) test for comparison between more than two means. Qualitative data were presented in the form of frequency distribution tables, number and percentage. It was analyzed by chi-square ($\chi 2$) test.

However, if an expected value of any cell in the table was less than 5, Fisher Exact test was used (if the table was 4 cells), or Likelihood Ratio (LR) test (if the table was more than 4 cells). Level of significance was set as P value <0. 05 for all significant tests.

RESULTS

Table (1): Regarding to surveying diagnostic questions for peri menopausal symptoms among 380 employed women, the table shows that there is high statistical significance in the majority (95 %) of women aged 45-55 years suffering from common menopausal symptoms as presence of irregular menstruation, sexual & bladder problems and impaired memory.

Table (2): Demonstrates that familial history for studied women regarding to onset age of menopause in their mothers is more than half (50%) began in 40-46 years old while nearly three quarters of women reported that the common family history diseases are hypertension, osteoporosis, diabetes mellitus

Table (3) highlights the efficacy of application of Roy adaptation model on coping with peri- menopausal symptoms among employee's women. Post -intervention program revealed a highly significant improvement (p<0. 000) in the percentages "none" or "mild" responses. In the three types of menopausal symptoms, the post program' "none" response was increased from pre intervention to post intervention and the difference was highly significant (P<0. 0001) for each item. In addition, moderate, sever, and v. sever responses showed decreased highly significant percentages in post-intervention (p<0. 0001). Moreover, the mean total score of symptoms scale decreased from 21. 7 ± 10. 4 pre intervention to 9. 2± 2. 9 post intervention and the difference were highly significant (P<0. 0001).

Table (4): Highlights physiologic mode as a first part of Roy adaptation model application on coping behaviors with peri-menopausal symptoms among studied women. Pre-intervention, the studied women couldn't manage their breath, eat balanced diet, rest or sleep adequate hours& unable to dizziness, tiredness & pain. While post-intervention program revealed a highly significant improvement (p<0. 000), Nearly 90% of the studied women were able to manage their physiologic symptoms as breathing, dizziness, pain. As well as they drank enough liquids, eat balanced diet and take sleep and rest.

Table (5): Shows significant improvement in self-concept mode among studied women. In per-intervention nearly 97 % women the women didn't think about getting better, looking in mirror, didn't take care of themselves or maintain neatness neither manage their stress spiritually, nor think of getting better. While in post intervention more than 87% of studied women got better, maintained their personal neatness, managed their stress spiritually and took care of themselves.

Table (6): Highlighted the statistical significant difference regarding to role function mode improvement between the pre-post intervention of Roy

adaptation model application, in per-intervention, 80% the studied women weren't capable of taking care of themselves, making changes in their daily routine, meeting work and family demands and didn't have the strength to work, while in post intervention nearly 80% of studied women experienced gradual improvement in their abilities to care of themselves, make changes in daily routine as exercise, relaxation technique and time organizing, in addition they felt that they have strength to meet family and work demands.

Table (7): verifies high statistical improvement regarding to interdependence role in post-intervention than pre-intervention among studied women who 80% of them were suffering that their families don't give them support during perimenopausal time, they also didn't recognize any security or help in family or work, while in post intervention nearly 90 % of women feel change in their relationship with their family, friends a co-worker & got security and support during the perimenopausal time.

Table (8) represented the efficacy of application of Roy adaptation model on coping behaviors with peri-menopausal symptoms among employee's women. Post -intervention program revealed a highly significant improvement ($p<0.000$) in the percentages of "Effective Adaptation behavior" responses, in each of the four subunits: Physiological mode, self-concept mode, Role function mode, Interdependence mode, as well as Grand total Adaptation behavior. In addition, the percentages of "No Adaptation behavior" responses, in each of the four subunits: Physiological mode, self-concept mode, Role function mode, Interdependence mode, as well as Grand total Adaptation behavior showed decreased highly significant percentages (to 3 %) in post-intervention ($p<0.0001$).

Table (1): Number & percent distribution of surveying diagnostic questions related to peri menopausal symptoms (N=280)

Suffering Menopausal symptoms	studied peri- menopausal employees' women	
	No	**%**
Feeling Menopausal symptoms:		
No	1	1
Yes	279	279
Presence of irregular menstruation at present:		
No	3	3
Yes	273	273
Presence of flushes and sweeting:		
No	4	4
Yes	276	276
Presence of sexual &Bladder problems:		
No	4	4
Yes	276	276
Impaired memory:		
No	9	9
Yes	271	271
Dryness of vagina		
No	6	6
Yes	274	274
Depression mode:		
No	5	5
Yes	275	275
Total	280	100 %

Table (2): Family medical history of studied employed women (N=100)

Family medical history	studied peri- menopausal employees' women	
	No	%
Age of mother's menopause:		
40 -46 years	60	60
47 -52 years	40	40
Age of onset mother's menopause symptoms:		
40 – 45 years	88	88
46 – 52 Y	12	12
Presence of chronic illness: **High Blood Pressure**		
Yes	50	50
No	50	50
Cardiac disease		
Yes	38	38
No	62	62
Osteoporosis		
Yes	44	44
No	56	56
Diabetes Mellitus		
Yes	68	68
No	32	32
Breast cancer		
Yes	5	5
No	95	95
Ovarian cancer		
Yes	3	3
No	97	97
Total	100	100 %

Hypothesis 1: Women who apply Roy adaptation model will experience lower intensity in menopausal symptoms post intervention than pre intervention

Table (3): Percentage distribution of Menopause Symptoms Rating Scale among studied employed women from their' perspective pre & post intervention (N=100)

Menopause Symptoms Rating Scale	Pre-intervention					Post intervention					χ^2	P value
	None	Mild	Moderate	Sever	V. sever	None	Mild	Moderate	Sever	V. sever		
	%	%	%	%	%	%	%	%	%	%		
A-Physical symptoms												
1. Hot flushes, sweating (episodes of sweating)	17	20	32	20	11	6	89	3	2	0	116. 3	<0. 0001 HS
2-Heart discomfort (unusual awareness of heart beat, heart skipping, heart racing, tightness).	2	18	29	40	11	31	60	3	3	3	137. 9	<0. 0001 HS
3-Sleep problems (difficulty in falling asleep, difficulty in sleeping through, waking up early	20	17	20	32	11	43	50	1	3	2	93. 1	<0. 0001 HS
4- joint and muscular discomfort (pain in the joints, rheumatoid complain	2	15	20	20	43	92	3	3	1	1	131. 7	<0. 0001 HS
Psychological symptoms:												
5-Irritability (feeling nervous, inner tension, feeling aggressive).	0	29	40	31	0	12	70	10	5	3	77. 1	<0. 0001 HS
6-Anxiety (inner restlessness, feeling panicky)	0	49	20	31	0	52	42	2	3	1	107. 3	<0. 0001 HS
7-Physical and mental exhaustion (general decrease in performance, impaired memory, decrease in concentration, forgetfulness)	0	32	17	51	0	35	57	6	1	1	100. 3	<0. 0001 HS
8-Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swing)	20	0	17	51	12	46	41	11	1	1	114. 8	<0. 0001 HS
B-urogenital symptoms												
9-Sexual problems (change in sexual desire, in sexual activity and satisfaction)	40	17	11	20	12	3	84	13	0	0	108. 5	<0. 0001 HS
10-Bladder problems (difficulty in urinating, increased need to urinate, bladder incontinence)	37	20	11	20	12	4	90	1	3	2	113. 4	<0. 0001 HS
11-Dryness of vagina (sensation of dryness or burning in the vagina, difficulty with sexual intercourse)	37	32	11	17	3	6	75	14	3	2	61. 8	<0. 0001 HS
Mean total score of Menopause symptoms	21. 7± 10. 4					9. 2 ±2. 9					t=11. 5	<0. 0001 HS

Hypothesis 2: Women who apply Roy adaptation model will have better coping abilities of menopause symptoms post intervention than pre intervention.

Table (4): Percentage distribution of Roy Adaptation Modes Scale" (RAMS) of Physiologic mode, among peri- menopausal employee's women pre and post intervention (N=100).

Roy Adaptation Modes Scale" (RAMS): Physiologic Mode	Pre-intervention			Post intervention			χ2	P value
	Disagree	Neutral*	Agree	Disagree	Neutral*	Agree		
	%	%	%	%	%	%		
1-observing my breathing, noting whether it is fast or slow	96	4	0	12	2	86	200. 0	<0. 0001 HS
2-Noting the color of my lips	83	16	1	10	3	87	170. 5	<0. 0001 HS
3- Drink enough liquids per day	96	3	3	2	13	85	200. 0	<0. 0001 HS
4-Eating a well-balanced diet	97	2	1	3	10	87	200. 0	<0. 0001 HS
5-Sleeping an adequate number of hours at night	89	4	11	4	12	84	145	<0. 0002 HS
6- Resting during the day	96	2	2	0	13	87	200	<0. 0001 HS
7-Checking for dizziness or tiredness during and following normal activity	57	0	43	12	1	87	116. 7	<0. 0003 HS
8- Managing any pain	89	1	10	0	26	84	180. 2	<0. 0001 HS
9- Checking for changes in hearing, vision, and the ability to feel or touch.	99	1	0	5	1	84	200	<0. 0001 HS
Mean total score of Physiologic mode	14. 6± 2. 9			37. 4 ± 4. 5			t=42. 2	<0. 0001 HS

Neutral* = Neither disagree or agree HS= High Significant

Table (5): Percentage distribution of Roy Adaptation Modes Scale" (RAMS of Self-Concept Mode among peri- menopausal employee's women pre and post intervention (N=100)

Roy Adaptation Modes Scale" (RAMS): Self-Concept Mode:	Pre-intervention			Post intervention			χ2	P value
	Disagree	Neutral*	Agree	Dis agree	Neutral*	Agree		
	%	%	%	%	%	%		
1-Think about getting better	63	20	17	1	13	86	120. 8	<0. 0001 HS
2-don't look on the mirror	60	20	20	3	13	84	110. 4	<0. 0001 HS
3-Take care of myself	97	0	3	2	12	86	200	<0. 0001 HS
4-Maintain personal neatness	87	1	2	0	13	87	200	<0. 0001 HS
5-Rely on spiritual strength	77	0	23	1	13	86	141. 6	<0. 0001 HS
6-Recognize the importance of looking healthy	88	0	12	2	11	85	163. 1	<0. 0001 HS
7-Remain positive	96	2	2	5	10	85	200	<0. 0001 HS
8-Dream of getting healthy	97	0	3	2	13	82	200	<0. 0001 HS
9- Manage stress through spirituality	80	0	20	4	12	84	140. 3	<0. 0001 HS
Mean total score of Self-Concept Mode	15. 6± 1. 6			39. 4 ± 5. 9			t=38. 3	<0. 0001 HS

Neutral* = Neither disagree or agree HS= High Significant

Table (6): Percentage distribution of Roy Adaptation Modes Scale" (RAMS) of Role Function Mode among peri- menopausal employee's women pre and post intervention (N= 100)

Roy Adaptation Modes Scale" (RAMS): Role Function Mode	Pre-intervention			Post intervention			$\chi 2$	P value
	Dis agree	Neutral*	Agree	Disagree	Neutral*	Agree		
	%	%	%	%	%	%		
1-Am capable of taking care of myself	82	1	17	0	13	87	147. 8	<0. 0001 HS
2-Face changes bravely	82	4	15	1	12	87	153. 4	<0. 0001 HS
3-Am capable of making changes in my normal daily routine.	80	3	17	3	10	87	149. 3	<0. 0001 HS
4-Can't physically act or behave as expected when working in groups	16	4	80	2	13	85	48. 7	<0. 0001 HS
5-I'm able to help others.	79	4	17	2	10	88	146. 4	<0. 0001 HS
6-Think my physical skills do not meet the expectations of my job/boss/coworkers| family demands.	37	0	63	2	11	87	147. 8	<0. 0001 HS
7- No longer have the strength to carry on the work of my job	60	0	40	0	16	84	130. 1	<0. 0001 HS
Mean total score of Role-Function Mode	15. ± 1. 6			16 ±1. 4				

Table (7): Percentage distribution of Roy Adaptation Modes Scale (RAMS) of Interdependence role among studied employed women pre and post intervention. (N=100)

Roy Adaptation Modes Scale" (RAMS): Interdependence role	Pre-intervention			Post intervention			$\chi 2$	P value
	Disagree	Neutral*	Agree	Disagree	Neutral*	Agree		
	%	%	%	%	%	%		
1-Know that my family loves me, even with my menopause symptoms	60	0	40	0	13	87	97. 1	<0. 0001 HS
2-Have support systems to help me	83	0	17	3	10	87	144. 9	<0. 0001 HS
3-Have developed relationships with people to help me	80	0	20	9	12	80	135. 4	<0. 0001 HS
4-Feel secure and safe	33	20	37	4	9	87	68. 1	<0. 0001 HS
5-My friends and coworkers understand and support me	83	0	17	4	13	83	153. 4	<0. 0001 HS
6-My friends are close to me in difficult times	83	0	17	2	11	87	156. 1	<0. 0001 HS
7-I feel I can count on God	63	0	37	0	13	87	119. 6	<0. 0001 HS
8-Recognize the security provided by family	83	0	17	5	8	87	149. 3	<0. 0001 HS
9-Recognize the security provided by work	83	0	17	7	6	87	167	<0. 0001 HS
Mean total score of Interdependence role	20. 3± 8. 1			37. 2 ± 4. 4			t=18. 3	<0. 0001 HS

Neutral* = Neither disagree or agree HS= High Significant

Table (8): Levels of Roy Adaptation Modes Scale' among studied women pre and post intervention (N=100)

The Roy Adaptation Modes Scale'	The Roy Adaptation Modes Scale' levels						χ2	P value
	Adaptation behavior (AB)							
	Pre intervention			Post intervention				
	No AB	Ineffective AB	Effective AB	No AB	Ineffective AB	Effective AB		
	%	%	%	%	%	%		
Physiologic Mode	89	11	0	0	13	87	176. 2	<0. 0001 HS
Self-Concept Mode	100	0	0	0	13	87	200	<0. 0001 HS
Role function Mode	12	71	17	0	13	87	99. 2	<0. 0001 HS
Interdependence Mode	63	20	17	0	13	87	111. 6	<0. 0001 HS
Grand total levels of Roy Adaptation Modes Scale	72	62	4	3	01	87	164. 5	<0. 0001 HS

AB= Adaptation Behavior HS=High Significant

Discussion

Hypothesis 1: Women who apply Roy adaptation model will experience lower intensity in menopausal symptoms post intervention than pre intervention

As regards Menopausal scale symptoms total score of among employed women pre application of Roy model as regarding to psychological, vasomotor, urogenital symptoms scale in relation to workability revealed that the mean total score of symptoms scale decreased from 21.7 ± 10.4 pre intervention to 9.2± 2.9. compared to post application of Roy adaptation model in relation to menopausal rating scale; highlighted the efficacy of application of Roy adaptation model on coping with peri- menopausal symptoms among employee's women which revealed a highly significant improvement ($p<0.000$) in the percentages "none" or "mild" responses. In the three types of menopausal symptoms. In addition, moderate, sever, and very sever responses showed decreased highly significant percentages in post-intervention ($p<0.0001$).

In agreement with Sharma et al., (2021) who studied peri-menopausal women with a total of 203 participants and found majority reported milder symptoms, 143 (70.4%). The most prevalent moderate and mild symptoms were vaginal dryness 94 (46.3%) and depressive mood 71 (35%). Overall, in all forms, physical and mental exhaustion (86.2%), dryness of the vagina (85.7%), followed by muscle and joint discomfort (77.8%), were commonly reported symptoms. The psychological subscale (67.87%) was more prevalent, followed by urogenital and somatic subscales in their study

Physiologic mode as a first part of Roy adaptation model application on coping behaviors with peri-menopausal symptoms among studied women. According to Roy and Andrews (1999), the physiologic mode deals with the system's need for physiologic integrity. Five needs relative to physiologic integrity include oxygenation, nutrition, elimination, activity and rest, and protection.

Pre-intervention of Roy model, the studied women reported that they couldn't manage their breath either fast or slow, don't eat balanced diet, don't have rest or sleep adequate hours&

unable check for to dizziness, tiredness & pain as a result of their responsibility in home and work and they don't care of themselves. In the same line with WHO, 2021in technical report series, research on menopause which stated that women usually perceive themselves to be healthy even if they are not healthy. They are usually involved in taking care of family and given second priority to them. In the same line Gonzalo, 2019 with women feel tired when performing home activity and can't manage any pain due to natural age-related declines in total bone mineral density in postmenopausal women.

Post physiologic mode adaptation program, the current study revealed that nearly 90% of the studied women were able to manage their physiologic symptoms as breathing, dizziness, pain.as well as they drank enough liquids, eat balanced diet, take sleep and rest, decreasing urine incontinence. This may be due to that increasing awareness, creating positive attitude and having improved coping ability are the effective steps to promote healthy adaptive behaviors and maintain the physiological wellbeing in perimenopausal women.

Roy is the most directive results which revealed that combating the urinary symptoms of menopause, group members were taught how to perform daily pelvic floor exercises called Kegel exercises when done correctly, Kegel exercises may reduce the incidence of stress incontinence in 50% to 90% of women within a few months (Cunningham, 2010). In agreement with Asrami et al., (2016) conducted a study on "Health Promoting Lifestyle Behaviors in Menopausal Women" and pointed out that the results showed significantly higher scores of health promoting lifestyle behaviors between the two groups shows significant improvement in self-concept mode among studied women.

Self-concept mode which a cognitive component of the self for perimenopausal women as regarded the current study; in pre-intervention of Roy model nearly 97 % women described a predominantly negative self-concept during this phase like" didn't think about getting better, looking in mirror, didn't take care of themselves or maintain neatness, neither manage their stress spiritually, nor think of getting better". This is due to transition to menopause, changes to self-image and identity, the impacts of loss of fertility and loss of womanhood, a sense of remorse upon ageing compared to post intervention; more than 87% of studied women got better, maintained their personal neatness, managed their stress spiritually and took care of themselves.

Consistently with Arnot, et al., (2021) revealed that perimenopausal women can't manage their stress spiritually, can't think of getting better feelings of low self-esteem and low mood. This is because oestrogen, which controls your menstrual cycle, also influences serotonin a chemical that promotes feelings of wellbeing and happiness.

Regarding to role function, in pre-intervention, the majority of the studied women (80%) weren't capable of taking care of themselves, making changes in their daily routine, meeting work and family demands and didn't have the strength to work. While in post intervention the studied women

experienced gradual improvement in their abilities to care of themselves, make changes in daily routine as exercise, relaxation technique and time organizing, in addition they felt that they have strength to meet family and work demands.

Our model interventions are consistent with Nirmala et al 2019 who concluded that HPLEI helped menopaused women to establish good living habits, relieve from troublesome menopausal symptoms, and enhance significant improvements in the general health and QOL.

Regarding to role of independence ; our current study referred to most of studied women were suffering that their families don't give them support during perimenopausal time, they also didn't recognize any security or help in family or work this may be related to responsibility women shoulder in Egypt, traditions around Egyptian women & partner's absence of information about menopause compared to post intervention for Roy adaptation model of independence role ;.our current study revealed that mostly of women feel change in their relationship with their family, friends an co-worker & got security and support during the perimenopausal time as studied women began to share their daily events and expressed their feelings toward menopause in family and work even they got support.

Currie & Moger, (2019) reported that women consistently reported a lack of support from employers, and 26% of the women in a UK survey reported that their relationships with colleagues/employers were negatively impacted by menopausal symptoms. This deficiency in support is attributed to the prevailing taboo around menopause in organizational settings, resulting in its under-recognition and neglect.

Efficacy of application of Roy adaptation model on coping behaviors with peri- menopausal symptoms among employee's women. Post -intervention program revealed a highly significant improvement ($p<0.000$) in the percentages of "Effective Adaptation behavior" responses, in each of the four subunits: Physiological mode, self-concept mode, Role function mode, Interdependence mode, as well as Grand total Adaptation behavior. Our current study revealed that there was a high significant positive correlation between total score of Roy Adaptation behavior and post intervention total score of body self-image. due there is no more paper intervene Roy adaptation model on menopause this result agree with Roy and Andrews, (1999) & Cunningham, (2010) who concluded that Roy adaptation model guided the assessment, diagnosis, planning, implementation, and evaluation of care for group of menopaused women and encourage adaptive coping behaviors by promoting spiritual and physical well-being.

CONCLUSION

The present study concluded that, application of application of Roy adaptation model has positive consequences on improving women's awareness and knowledge regarding peri-menopausal period and its related risk factors. In addition, the implementation of Roy adaptation model concepts including perceived benefits of physiological mode as exercise and

healthy diet, enhancement of self-concept mode, improvement of role function & interdependence role. Finally increasing satisfaction of self-image measures has great effect on coping abilities peri-menopausal symptoms.

RECOMMENDATIONS

Focused on the results of the current study, it can be recommended that: -

- Applying of educational intervention based on Roy adaptation model can result in better clients' outcomes.
- Re-applicability of the study at different settings including women across their life span.
- Raising awareness about menopause and its impact on women at the individual and societal levels and on health, social and economic development in countries.
- Using Roy adaptation model as a base for nursing research can be good guide in research process.
- Generalizability of study findings to a wide community

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