Effect of Cognitive Behavioral Therapy on Insomnia and Depressive Symptoms among Menopausal Women

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Abstract
Background: Menopause, a unique period in a woman's existence, characterized by physical and psychological symptoms, often leads to insomnia and depression, negatively impacting health, daily activities, and quality of life. Implementing cognitive behavioral therapy during such a period can improve these symptoms and enhance the wellbeing of menopausal women. **Aim of the study:** Investigate the effect of cognitive behavioral therapy on insomnia and depressive symptoms among menopausal women. **Design:** This study used a quasi-experimental research design. **Setting:** This study was carried out at the gynecologic outpatient clinic of Damanhour Medical Institute, Egypt. **Subjects:** 60 menopausal women; the women were attributed to the study (n = 30) and control groups (n = 30). **Tools:** The researchers used three tools to obtain the data that was needed; tool I: structured interview schedule, and tool II: Center for Epidemiological Studies Depression Scale (CES-D), tool III: Insomnia Severity Index (ISI). **Results:** The variation in the control and study groups' levels of depression and insomnia after the cognitive behavioral therapy intervention was statistically significant. **Conclusion:** Cognitive behavioral therapy can effectively improve insomnia and depressive symptoms among menopausal women. **Recommendation:** Nurses should receive cognitive behaviour therapy as part of their nursing care plan, since it is advised as an effective intervention.
Keywords: Cognitive behavioral therapy, insomnia, depressive symptoms, menopausal women.

Introduction
The process of going through menopause is accompanied by a decrease in the number of ovarian follicles, variations in the menstrual pattern, and variations in reproductive hormones. Menopausal symptoms often start with irregular menstruation and terminate with the last menstrual cycle **(Santoro, 2021; Ryan, 2023)**. Every year, more than 500 million women globally between the ages of 45 and 55 go through this transitional phase. By 2030, that number is anticipated to rise to 1200 million women **(Smail *&* Jassim, 2020).**

Many of the symptoms associated with menopause can be uncomfortable and inconvenient. Menopause symptoms that are associated with vasomotor symptoms include hot flashes, sweats at night, insomnia, low energy, and anxiety, depression, and fluctuations in mood are only a few examples of psychological symptoms **(Palacios , 2021; Talaulikar , 2022).**Vasomotor Symptoms (VMS) and mood have reciprocal links, and both can contribute to sleep disturbances **(Maki et al., 2019).**Women who experience trouble sleeping and persistent or unpleasant VMS may become more anxious and agitated, which may worsen menopausal symptoms. Nine to ten percent of women are thought to be experiencing more psychological symptoms, such as anxiety and depression **(Arnot, Emmott, & Mace, 2021; Willi et al., 2021).**

Despair, loss of interest and pleasure, and a myriad of other emotional and physical symptoms are characteristic of depression. Menopausal women experience depression as a result of their bodies' variable and decreasing estrogen levels **(Muhamad Nasharudin, Idris, Loh, & Tuckey, 2020).** Research revealed that women who have never experienced depression before are very susceptible to developing depression following menopause, with 16% of new cases of anxiety and depression occurring during this time. In addition, the menopause impairs the quality of sleep, leading to insomnia **(Appiah, Nwabuo, Ebong, Wellons & Winters, 2021; Alam et al., 2020).** A sleep disorder called insomnia is typified by trouble getting to sleep or remaining asleep. In a global study on women's health (SWAN), a survey of over 12,000 women revealed that approximately 40% of women experience sleep difficulties during the menopausal transition **(Lialy et al., 2023).**

Menopause symptoms can be treated with hormone treatment (HT) and non-hormonal medicines. Although HT can be useful in reducing menopausal symptoms, using it carries a number of hazards, such as a higher chance of blood clots, stroke, and breast cancer **(Atema et al.,2019)**. Only women under 60 years old and those without a history of breast cancer or underlying coronary heart disease can safely and effectively use HT **(Arya et al.,2021).** Cognitive behaviour therapy (CBT) is the opposite. This quick, non-medical method can help with a variety of health issues, such as stress and anxiety, depression, hot flashes and night sweats, exhaustion, and sleep issues. CBT offers new coping skills and helpful ideas, and it assists individuals in developing effective problem-solving techniques. Because the abilities can be used to solve a variety of problems and improve health generally, it can be useful to try **(John& Sons,2021).** It has been observed that behaviorally based psychological therapies, like regulated breathing and relaxation, lessen depression and sleeplessness symptoms. Cognitive behavioural therapy (CBT) consists of four to six sessions that include stress-reduction techniques suchas timed breathing, psychoeducation, and relaxation. The research on CBT's efficacious management of menopausal symptoms has certain gaps; therefore, the current study was intended to find out the effectiveness

of CBT for treating menopausal women's symptoms of insomnia and depression.

Significant of the study

Menopause is about experiencing a full year without a monthly menstrual cycle. During this stage, a lot of menopausal symptoms appear **(Espí-López et al., 2020).**Menopause symptoms, including depression and insomnia, can be treated with hormonal or non-hormonal therapies, such as cognitive behavioural therapy (CBT), a psychotherapy approach that helps patients identify the mental patterns that underlie their self-destructive behaviour. Patients will be taught how to question and alter these cognitive processes in order to improve their decision-making. The present study is important to analyze the results of a cognitive-behavioral intervention applied to reduce depression and insomnia during menopause.

Aim of the study

Investigate the effect of cognitive behavior therapy on insomnia and depressive symptoms, among menopausal Women

Research hypotheses

-Cognitive behavior therapy reduces the intensity of depression symptoms in menopausal women compared to those who do not receive it.

-Cognitive behavior therapy reduces the severity of insomnia in menopausal women compared to those who do not receive it.

Subjects and method

Subjects

The study subjects were divided equally into two groups (study and a control group; 30 for each). Participants of the study group have received cognitive behaviour therapy, while those in the control group were undergoing routine care.

Study Subjects: Based on the following criteria, a convenient sample of sixty women who were available at the time of data collection was selected from the previously indicated setting:

-Menopausal Women

-Age from 50-65 years

-Scored higher than 16 on the Centersfor Epidemiological Studies Depression Scale.

-With an overall Insomnia Severity Index (ISI) score of greater than 7, which denote insomnia.

-Capable to read and write.

-Do not take psychotropic medicines, have not had a hysterectomywith oophorectomy, are not undergoing hormonal replacement treatment, or are not receiving complementary therapy for menopausal symptoms.

-Being prepared to give written informed permission in order to take part in the research.

Research design

This study employed a quasi-experimental research approach.

Setting

Setting: The Damanhour Medical Institute's gynecologic outpatient clinic in Egypt served as the study's location. The study sample is kept homogeneous since the women who visit this Medical Institute's have a similar sociodemographic profile and the hospital has an appropriate turnover rate.

Sample size

The sample size was estimated using the EPi Info program using a population size of 70 menopausal women (those who had

not had menstruation for 12 consecutive months), a 5% tolerable error, a 95% confidence coefficient, and a 50% predicted frequency. A minimal sample size of 60 menopausal women was identified by the program.

Data collection tools

Three following tools were utilized: -

Tool (I): A structured interview schedule this tool was developed by the researcher to collect the necessary data about the study subjects. It entailed three parts:

Part (1): Basic demographic data: It was designed to collect data about the demographic characteristics of the study subjects such as age, level of education, occupation before retirement, residence, family income, source of income, marital status, crowding index, type, and family number

Part (2): Medical history: as any Medication, Hypertension, Cardiovascular, Pulmonary disease, Diabetes mellitus, Thyroid dysfunction and others. Health problems such as: vision, hearing, mobility and others. Assistive devices such as: Earphone, Classes, stick.

Part (3): **Reproductive history**: It comprised:

(a) Parity, gravidity, the number of live births, abortions, and stillbirths.
(a) Menstrual history included the amount, duration, regularity, interval, and age at menarche.
(c) Age at menopause is included in menopausal history.

Tool(II):CenterforEpidemiologicalStudies Depression Scale (CES-D)

The scale was developed by Laurie Radloff (1977). It consists of a 20-item, self-reported inventory measuring the severity of depression. Each item is rated on a 4-point scale from 0 (not at all) to 3 (a lot), with items 4, 8, 12, and 16 having reversed scores. Total scale scores range from 0 to 60 with higher scores indicating severe level of depression.With a cut-off score of 16 or higher, depression symptoms were posited with high internal consistency, good sensitivity, and specificity

(Tool III): Insomnia Severity Index (ISI) This scale was developed by Morin et al.(2011). The ISI is a self-report scale comprising of 7 items measure of insomnia symptom severity. A cutoff of ISI $\geq$ 11 signifies clinically significant insomnia severity in RCTs, whereas a cutoff of ISI $\leq$ 7 denotes remission.Total score categories:

0–7 = No clinically significant insomnia
8–14 = Subthreshold insomnia
15–21 = Clinical insomnia (moderate severity)
22–28 = Clinical insomnia (severe)

Method

Approvals

-The Faculty of Nursing, Damanhour University's Research Ethics Committee gave its approval. Research code was (92-d)

-Following an explanation of the study's goal, an official letter from Damanhour University's Faculty of Nursing was written to the appropriate authorities in the study setting requesting their agreement for data collection.

Ethical consideration

After explaining the purpose of the study, the researchers received written informed consent from the study participants. The

researchers underlined the women's free choice to willingly engage in the study and the freedom to refuse or withdraw from the study at any time. Privacy and anonymity were protected, and confidentiality of the received data was ensured.

Tools development

-The researcher created Tool I following a thorough examination of recent and relevant literature.

-To adapt to Egyptian culture, Tools II and III were altered and translated into Arabic

-A panel of five experts in the fields of gerontological nursing and obstetric and gynecologic nursing evaluated the tools' content validity and the suggested changes were made.

-The reliability of the study tools II& III was performed by using Cronbach's alpha coefficient to test their internal consistency. They proved to be reliable and had acceptable internal consistency (Chronbach's alpha = 0.84, 0.76 respectively).

Pilot study

-A pilot study was carried out on 6 women to ascertain the clarity and applicability of the study tools, and to identify obstacles that might be faced for data collection. The result revealed that the tools were clear, understood, and applicable. Those participants were excluded from the actual study.

Collection of data

The data were collected over a period of eight months, starting from January until August 2024

Assessment phase

-At the beginning, the researchers interviewed the women of both groups in gynecologic outpatient clinic to collect data using tool one and choose the eligible subjects. Then, depression scale and insomnia severity were evaluated before intervention using tool II& III to conduct baseline assessments.

-Explanation of the study's objectives, the researchers' roles, and the therapy's delivery techniques in order to gain participants' cooperation and understanding. During the visit, written and verbal instructions were given. These sessions took place at an outpatient gynecologic clinic. Following the completion of all baseline tests, participants were randomized to either the control group or the cognitive behavioral intervention group. Module completion instructions are also covered. After completing the pre-assessment, participants received the program's instructional materials and practical skills through Whats App (tool 1).

Implementation phase :

The intervention group attended face-to-face cognitive behavioral therapy sessions that lasted 50-60 minutes weekly for seven weeks. Following a review of the literature and expert consultation, the research team created the Cognitive Behavioral Therapy program. Cognitive Behavioral Therapy was yield in a lecture hall.Brief description of the Cognitive Behavioral Therapy program is given below:

- **Session 1:** Mutual understandingandrapprochement
- **Session 2:** Sleep hygiene education
- **Session3:** Psychoeducation about stimulus control strategies; monitoring sleep environments, and identification of behavioral habits at bedtime, dysfunctional beliefs, and attitudes about sleep.

- **Session 4:** Training on relaxation techniques
- **Session5:**Psycho education about depression
- **Session6:**Cognitiverestructuring
- **Session 7:** The terminating session

Each session involved a power point presentation outlining the topics, instructions from the researchers, homework assignments, videos demonstrating the use of the suggested practical skills, and reflections and feedback from the previous session were all part of each session. The homework assignments were explained both orally and in writing. Weekly feedback was sent to the participants through WhatsApp.

-Each session's content was delivered once a week at the same structured time. Additionally, participants and researchers were given a set time to communicate by email, phone calls, or text messages. Participants contacted the researchers via phone calls and WhatsApp messages if they had any questions.

Evaluation phase

Immediately after termination of the cognitive behavior therapy program, all women in both groups were interviewed using tool II and tool III to assess its effectiveness on insomnia and depressive symptoms.

Statistical analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 23.0. Using Chi-square test for categorical variables, Student t-test for normally distributed quantitative variables, Marginal Homogeneity Test for ordinal data, and paired t-test for normally distributed quantitative variables, with significance at the 5 level.

Results

Table (1): According to menopausal women's socio-demographic data showed that, the mean age was 59.37±4.66&59.20±3.75 years for the study and control groups respectively. **Level of education** revealed that 60% & 73.3% of the study and control groups respectively had secondary or its equivalent level and only 6.7% & 13.3% of them respectively had university level. Concerning the **occupation,** it was found that majority of study group (93.3%) were house wife compered to three quarter (76.7%) of control group. As regards the **marital status**, it was found that more than half (56.7%) of study group were widowed compared to less than half (46.7%) of control group. In relation to **current residence** more than half (53.3% & 63.3%) of the study and control groups respectively were rural residents. Regarding **source of income**, it was observed that nearly two third (66.7% & 60.0%) of study and control groups respectively reported source of income was pension and 43.3% &26.7% of study and control groups respectively were reported that not enough income. Moe over 66.7% & 60% of them respectively were extended family and consist of more than five person for study and control groups(60%&33.3%)respectively.

Regarding **crowding index**, it was stated that majority of study group (80%) compared to more than three fifth (63.3%) of control group less than two person per room. However, the two groups were homogeneous, and there were no

statistically significant disparities between their demographic statistics.

Table (2): Regarding menopausal women's medical health history. As regard medical conditions it revealed that nearly more than two third (70%) of study group compared to half of control group (50%) suffered from chronic diseases. More than one quarter of them (26.7%&30%) respectively complain from hypertension. Diabetes mellitus was next, with 16.7% and 6.7% in the study and control groups, respectively. Cardiovascular diseases occurred in 13.3% and 10.0% of the study and control groups, respectively. Finally, thyroid dysfunction revealed the same percentage (3.3%) in both the study and control groups. Concerning medication used, it was observed that more than one third (35%) of study group compared to more than half (53.8%) of control group consumed antihypertensive drugs, followed by 20%& 30.8% of study and control groups respectively take anti diabetic and cardiovascular drugs. Only (5 % &7.7%) of the study and control groups respectively receive anti thyroid medications. Regarding presence of other health problems, it was noted that 26.7% & 20 % of study and control groups respectively suffer from vision problem. In respect to using assistive device, it was revealed that 36.7% &26.7% of the study and control groups' respectively using assistive device and 72.7%&50% of them respectively wearied eye glasses.

Table(3):Concerning menopausal women's reproductive history Concerning gravidity, the majority of women (86.7%&70%) respectively among study and control groups were pregnant for Three times or more. In terms of parity, the study and control groups each had three or more deliveries (73.3% and 60%, respectively). In terms of the number of abortions and stillbirths, it was discovered that the majority of the study group (86.7%) did not have any abortions or stillbirths, as opposed to the control group (70%). In respect to living children, it was found that more than three quarter (79.3%) of study group had more than three living children compared to (57.1%) for control group.

Table (4): Regarding menopausal women's menstrual history. It was found that about two thirds of women (63.3% &73.3%) respectively among study and control groups had age of menarche at 12 to less than 16 years old. Considering rhythm of menstruation (63.3%&73.3%) respectively among study and control groups had regular menstruation. Concerning amount of menstrual flow, it was observed that (50.0%&66.7%) of them respectively had moderate amount of menstruation. When cycle duration is evaluated, it was found that (43.3%) of the study group lasts five to seven days, compared to more than half (56.7%) of the control group. In terms of menstrual interval, approximately three-quarters (73.3%) of the study group and 80% of the control group had intervals ranging from 22 to 35 days. In terms of menopausal age, two-thirds of the study and control groups (66.7%) stopped menstruating between the ages of 45 and 55. Therefore, there was no statistically significant difference in the reproductive.

Table (5): This text presents a comparison of the total scores on the Center for

Epidemiological Studies Depression Scale (CES-D) for both the study and control groups, measured before and after cognitive behavioral therapy. Following the therapy, the difference between the study and control groups was statistically significant ($p < 0.001$), with over half (56.7%) of the study group still experiencing depression, in contrast to (96.7%) of the control group .It was observed statistically significant relation (<0.001*) between depression scale total score before and after the therapy within study group, whereas the mean of menopausal woman in study group was (40.50±8.81) before program compared to the mean of them after program (23.70±12.75).

Table (6): The following illustrates a comparison of the study and control groups based on their total scores on the Insomnia Severity Index (ISI) before and after undergoing cognitive behavioral therapy. Post-therapy, the differences observed between the study and control groups were found to be statistically significant (<0.001). where more than three quarter (76.7%) of study group were no clinically significant insomnia compared to (6.7%) of control group. It was observed statistically significant relation (<0.001*) between insomnia severity total score before and after the program.

Table 1: Distribution of the study and control groups based on socio-demographic factors

Socio-demographic characteristics	Study group (n=30)		Control group (n=30)		χ^2	p
	No.	%	No.	%		
Age (years)						
50 - <55	10	33.3%	7	23.3%		
55 - <60	6	20.0%	8	26.7%	0.850	0.654
>60	14	46.7%	15	50.0%		
Mean ± SD	58.37±4.66		58.20±3.75		t = 0.153	0.879
Level of education						
Read & Write	18	60.0%	22	73.3%		
Basic education	7	23.3%	1	3.3%	5.537	^{MC}p = 0.129
Secondary	3	10.0%	3	10.0%		
University education	2	6.7%	4	13.3%		
Occupation before retirement						
House wife	28	93.3%	23	76.7%		
Employee	2	6.7%	4	13.3%	3.704	^{MC}p = 0.239
Worker	0	0.0%	1	3.3%		
Free work	0	0.0%	2	6.7%		
Current residence						
Rural	16	53.3%	19	63.3%	0.617	0.432
Urban	14	46.7%	11	36.7%		
Source of income						
Pension	20	66.7%	18	60.0%		
Sons	10	33.3%	10	33.3%	1.760	^{MC}p = 0.572
Financial aids	0	0.0%	2	6.7%		
Sufficiency of income						
Not enough	13	43.3%	8	26.7%		
Enough	12	40.0%	14	46.7%	2.037	0.361
Enough and saving	5	16.7%	8	26.7%		
Marital status						
Married	13	43.3%	13	43.3%		
Divorced	0	0.0%	3	10.0%	2.917	^{MC}p = 0.272
Widowed	17	56.7%	14	46.7%		
Crowding index						
>2	24	80.0%	19	63.3%	2.052	0.152
<2	6	20.0%	11	36.7%		
Family type						
Nucellar	10	33.3%	12	40.0%	0.287	0.592
Extended	20	66.7%	18	60.0%		

χ^2: Chi square test MC: Monte Carlo t: Student t-te

Table (2): Distribution of the study and control groups according to their medical history

Medical history	Study group (n=30)		Control group (n=30)		χ^2	p
	No.	%	No.	%		
Presence of chronic disease						
No	9	30.0%	15	50.0%		
Hypertension	8	26.7%	9	30.0%		
Cardiovascular diseases	4	13.3%	3	10.0%		$^{MC}p=$
Pulmonary diseases	2	6.7%	0	0.0%	6.885	0.416
Diabetes Meletus	5	16.7%	2	6.7%		
Thyroid dysfunction	1	3.3%	1	3.3%		
Musculoskeletal diseases	1	3.3%	0	0.0%		
Medication Taken						
No	10	33.3%	17	56.7%	3.300	0.069
Yes	20	66.7%	13	43.3%		
If yes what the medication takes	**N=20**		**N=13**			
Hypertension	7	35.0%	7	53.8%		
Cardiovascular	4	20.0%	4	30.8%		
Pulmonary diseases	2	10.0%	0	0.0%	4.011	$^{MC}p=$
Diabetes Miletus	4	20.0%	1	7.7%		0.658
Thyroid dysfunction	1	5.0%	1	7.7%		
Musculoskeletal diseases	2	10.0%	0	0.0%		
Presence of other health problem						
No	18	60.0%	19	63.3%		
Vision	8	26.7%	6	20.0%		$^{MC}p=$
Hearing	2	6.7%	4	13.3%	2.169	0.836
Mobility	1	3.3%	0	0.0%		
Neurology	1	3.3%	1	3.3%		
Using assistive devices						
No	19	63.3%	22	73.3%	0.693	0.405
Yes	11	36.7%	8	26.7%		
If yes what the assistive device use	**N=11**		**N=8**			
Earphone	2	18.2%	3	37.5%		
Glasses	8	72.7%	4	50.0%	1.370	$^{MC}p=$ 0.792
Stick	1	9.1%	1	12.5%		

χ^2: Chi square test MC: Monte Carlo

Table (3): Distribution of the study and control groups according to their reproductive history

Reproductive history	Study group (n=30)		Control group (n=30)		χ^2	^{MC}p
	No.	%	No.	%		
Gravidity						
No	1	3.3%	2	6.7%	4.531	0.197
1	1	3.3%	0	0.0%		
2	2	6.7%	7	23.3%		
≥3	26	86.7%	21	70.0%		
Parity						
No	1	3.3%	2	6.7%	2.332	0.589
1	2	6.7%	1	3.3%		
2	5	16.7%	9	30.0%		
≥3	22	73.3%	18	60.0%		
Abortion						
No	26	86.7%	21	70.0%	4.022	0.140
1	1	3.3 %	6	20.0%		
≥2	3	10.0%	3	10.0%		
Stillbirth						
No	20	86.7%	21	70.0%	3.309	0.238
1	2	6.7 %	7	23.3%		
≥2	2	6.7 %	2	6.7%		
Living children	N=29		NO= 28			
1	1	3.4%	1	3.3%	3.652	0.134
2	5	17.2%	11	39.3%		
≥3	23	79.3%	16	57.1%		

χ^2: Chi square test MC: Monte Carlo

Table (4): Distribution of the study and control groups according to their menopausal history

Menopausal history	Study group (n=30)		Control group (n=30)		χ^2	^{MC}p
	No.	%	No.	%		
Age of menarche						
12 years	8	26.7%	6	20.0%		
12 – 16 years	19	63.3%	22	73.3%	0.786	0.707
>16 years	3	10.0%	2	6.7%		
Regularity						
Regular	19	63.3%	22	73.3%	0.693	0.405
Irregular	11	36.7%	8	26.7%		
Amount						
Mild	7	23.3%	4	13.3%		
Moderate	15	50.0%	20	66.7%	1.818	0.403
Heavy	8	26.7%	6	20.0%		
Duration						
1-4 days	11	36.7%	11	36.7%		
5 – 7 days	13	43.3%	17	56.7%	2.443	0.330
>7 days	6	20.0%	2	6.7%		
Interval						
<22 days	2	6.7%	4	13.3%		
22 – 35 days	22	73.3%	24	80.0%	2.641	0.333
>35 days	6	20.0%	2	6.7%		
Age of Menopause						
35 - <40	4	13.3%	5	16.7%		
40 - <45	6	20.0%	5	16.7%	0.288	1.000
45 – 55	20	66.7%	20	66.7%		

χ^2: Chi square test MC: Monte Carlo

Table (5): Comparison of the study and control groups based on the Center for Epidemiological Studies Depression Scale (CES-D)

Center for Epidemiological Studies Depression Scale (CES-D)	Study group (n=30)				Control group (n=30)				Test of sig. study vs control	
	Before		After		Before		After			
	No.	%	No.	%	No.	%	No.	%	Before	After
<16 no depression	0	0.0%	13	43.3%	0	0.0%	1	3.3%		**13.416* , ^{MC}p<0.001***
≥16 depression	30	100.%	17	56.7%	30	100.%	29	96.7%		
MH	**<0.001***				**0.317**					
Mean ± SD	40.50±8.81		23.70±12.75		38.57±11.89		30.57±10.01		**t =0.716, p =0.447**	**t =2.320*, p =0.024***
p_0	**<0.001***				**0.072**					

χ^2: Chi square testfor comparing the two groups **MC: Monte Carlo**
t: Student t-test for comparing the two groups
MH: Marginal Homogeneity Test for comparing between before and after in each group
P_0: p value for Paired t test for comparing between before and after in each group
* Statistically significant p-value at ≤0.05

Table (6): Comparison between the study group and the control group based on the Insomnia Severity Index (ISI).

Insomnia Severity Index (ISI)	Study group (n=30)				Control group (n=30)				Test of sig. study vs control	
	Before		After		Before		After			
	No.	%	No.	%	No.	%	No.	%	Before	After
No noteworthy insomnia	0	0.0%	23	76.7%	0	0.0%	0	0.0%		
Insomnia below the clinical threshold	6	20.0%	2	6.7%	9	30.0%	10	33.3%	**= 1.074 , MC**	**40.476* , MC**
Moderate severity clinical insomnia	13	43.3%	5	16.7%	13	43.3%	9	30%	**p= 0.536**	**p<0.001***
Severe clinical insomnia	11	36.7%	0	0.0%	8	26.7%	11	36.7%		
MH	**<0.001***				**0.876**					
Mean ± SD	20.10±5.88		5.33±6.55		17.83±6.87		16.06±7.79		**t =1.373, p =0.175**	**t =5.780*, p <0.001***
p_0	**<0.001***				**0.389**					

χ^2: **Chi square test**for comparing the two groups **MC: Monte Carlo**
t: Student t-test for comparing the two groups
MH: Marginal Homogeneity Test for comparing between before and after in each group
P_0: p value for Paired t test for comparing between before and after in each group
* Statistically significant p-value at ≤0.05

Discussion

Menopausal women often complain of a range of physical and psychological symptoms known as menopausal syndrome. Insomnia and depression are among the most frequently reported symptoms during such a period, and it negatively impacts their quality of life, daily activities, and health. **(Baker et al., 2018)**. A lack of sleep may also contribute to the maintenance and recurrence of major depressive disorders during menopause **(Bromberger et al., 2016)**. Additionally, sleeplessness in menopausal women has been linked to deterioration in emotional status as well as anxiety and depression symptoms **(Caruso et al., 2019; Baker et al., 2018; Bruyneel, 2015;)**.

Accordingly, it is vital to find effective and safe treatments for menopausal insomnia that reduce accompanying depression symptoms. Cognitive behavioral therapy (CBT), for example has been shown to be a short-term, effective, and first-choice non-pharmacological treatment for insomnia symptoms when co-occurring with depression for menopausal women who experience sleeplessness as well as depression , as noted by **(Asarnow& Manber, 2019; Cunningham &**

Shapiro, 2018; Therefore, the present study was carried out to determine the effect of cognitive behavioral therapy on insomnia and depression among menopausal women.

The present study reveals that cognitive behavioral therapy (CBT) intervention was effective in reducing levels of depressive symptoms among menopausal women. The current results highlighted that there was no statistically significant difference between the two groups' baseline levels of depression symptoms, but following the application of the CBT intervention, scores among the experimental group fell relative to the control group.The explanation of these findings and improvement of depression could be related to the employed intervention, which included explanation of the nature of problems, methods for controlling somatic reactions through relaxation techniques, cognitive restructuring by recognizing and testing automatic thoughts; utilizing problem solving for overcome expected obstacles, and adjusting to hormonal fluctuations. It enables menopausal women's ability to identifying stressful situations, manage emotional stress, and acquire coping skills.

During the sessions, participants learn how to use relaxation methods that can help menopausal women manage and improve their symptoms, such as progressive muscle relaxation, deep breathing exercises, and guided imagery **(John et al., 2022)**. Psycho-education might have improved the participants' positive sense of self, inspired them to learn more about the nature of the problem, and expanded their understanding of the connection between affect and thought. They also taught how to recognize and control their negative cognitive symptoms through cognitive restructuring training. Participants acquire insight about adaptive coping and how to think more positively. This also improved the ability to tolerate, accept, and change the negative effects of menopausal stereotypes. Cognitive reconstruction allows individuals to compare their anxious thoughts with the realistic and appropriate interpretations of their experiences in life **(Rahmani et al., 2023)**. Thus, individual's cognitive assessment affects how they react to events, such as menopause, and also creates the conditions for changed cognitive activity.

On the other hand, the group-based CBT intervention in the present study can reduce self-absorbedness, loneliness, blame, and shyness by helping individuals understand they are not alone and share similar issues. During the sessions, women go through a process of opening up and sharing their emotions with others, getting in touch with their own feelings, becoming aware of the feelings of others, and improving interpersonal communication through their interaction with each other.

Findings of the present study coincide with previous studies which demonstrate the effectiveness of cognitive behavioral therapy (CBT) interventions that integrated behavioral, cognitive, and educational strategies in reducing depressive symptoms among menopausal women **(Qiu et al., 2018; Reddy**

&Omkarappa, 2019). An Egyptian study by El-**Monshed et al. (2024)** showed that group cognitive behavioral therapy was effective in reducing depression in menopausal women. In Michigan, **Cheng et al. (2017)** discovered that women who received cognitive behavioral therapy reported feeling less depressed than those who did not.Another study in India found significant reductions in depression scores among menopausal women who received six weekly group CBT sessions paralleled to those in the control group over a course of 6 months. **(Reddy &Omkarappa, 2019)**.

The current study results showed a significant decreasing of insomnia severity after implementing the Cognitive Behavioral Therapy in the study group compared to control group. These results could be related to the combination of psycho-education, sleep restriction, stimulus control and regulation, sleep hygiene, relaxation techniques, and cognitive restructuring during the application of the CBT program **(Cunningham & Shapiro, 2018; Hertenstein et al., 2022)**. Thus, CBT displays integrated techniques that would be utilized by menopausal women to enhance their sleep and reduce depression symptoms **(Hamdani et al., 2022)**.

Obviously, it can be concluded that CBT is a technique that can assist in getting the body and mind ready for a good night's sleep. One can sleep deeper, longer, and fall asleep more quickly with its assistance. Women can achieve mental peace by practicing deep breathing techniques that help them relax, unwind, and let go of thoughts or worries. Moreover, there are numerous calming effects on the body from practicing relaxation techniques. It lowers heart rates and promotes slower breathing, both of which can aid in falling asleep.

Consistent with present study, an Iranian study by **Farsani et al. (2021)** has recommended cognitive behavioral therapy (CBT-I) for menopausal women with insomnia, as it significantly improves insomnia severity and sleep quality in postmenopausal women. A scope review of randomized controlled trials found that CBT is highly effective in improving sleep quality and reducing insomnia severity in menopausal women, with improvements persisting for up to six months post-treatment **(Ntikoudi et al. 2024)**. In the United States, **Nowakowski et al. (2017)** claimed that a four-session CBT intervention significantly improved sleep in midlife women with nocturnal hot flashes and insomnia.

In a similar vein, **Drake et al. (2019)** compared the efficacy of sleep restriction therapy (SRT), cognitive-behavioral therapy for insomnia (CBTI), and sleep hygiene education (SHE) in treating chronic insomnia in postmenopausal women through a randomized clinical trial in a significant 6-hospital health system in the state of Michigan. Menopause-related insomnia disorder is better treated by CBTI and SRT than by SHE. Furthermore, an earlier study found that Internet-based cognitive behavioral therapy (CBT) is useful in lowering sleep issues, specifically insomnia and poor

sleep quality, in Saudi women going through menopause. Additionally, the program significantly altered sleep parameters, including increased total sleep hours, increased sleep efficiency ≥85%, and decreased sleep latency compared to the control group **(Abdelaziz et al., 2021)**.

In summary, this study revealed that menopausal women who participated in the present study reported decreased depressive symptoms and insomnia after implementing a CBT intervention. CBT intervention can be utilized as one of the feasible and efficient ways of improving depression and insomnia in menopausal women and is a promising intervention in rehabilitation services for enhancing women's resilience, optimism, and self-fulfillment during menopause, which can be debilitating.

Conclusion

In the light of the present study findings, the research hypothesis is accepted, and it can be concluded that cognitive behavioural therapy is a simple, safe and non-pharmacological intervention and significantly effective in improving insomnia and decrease depression.

Recommendations

-Continuing educational program to teach and train nurses about using cognitive behaviour therapy to the women during menopause to decrease insomnia and depression

-Nurses should receive cognitive behaviour therapy as part of their nursing care plan, since it is advised as an effective intervention.

-Developing health policies in Egypt to ensure the inclusion of menopause related services to routine health care delivery for women. Therefore, it is recommended that each hospital establish special clinics for cognitive behaviour therapy during menopausal care.

Future research:

-A larger sample size from a wider geographic area should be used in areplication of the study to enable more generalization of the findings.

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