

**Does the Emotional Support of Children, Husbands, and Friends Help Against  
Menopause-Associated Depressive Symptoms or Anxiety Symptoms?**

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### Abstract

**Purpose:** This study investigates the relationship between menopausal transition stages and their effects on women's mental health by comparing the severity of depressive symptoms and anxiety symptoms of women in premenopause to women in perimenopause, menopause, or postmenopause. Additionally, it tests whether emotional support by different support networks, such as husbands, friends, or children, can moderate this association.

**Methods:** A sample of 750 participants was utilized, based on the MIDUS II dataset from the U.S.A. Variables included, age, gender, number of children, menopausal status, depressive symptoms, anxiety symptoms, and emotional support from husbands, friends, and children. To test the hypotheses, two linear regression analyses were conducted in a cross-sectional design, with menopausal status as the independent variable and depressive and anxiety symptoms as dependent variables, while testing for significant interaction terms of emotional support by different social support networks ( $\alpha = 0.05$ ).

**Results:** The results demonstrated that being in menopausal transition stages is positively associated with depressive symptoms and anxiety symptoms. Additionally, emotional support from children showed a significant negative moderation effect on the relationship between menopausal transition stages and anxiety symptoms. No additional moderation effects were detected for the emotional support by children, husbands, or friends.

**Conclusion:** This study argues the emotional support by different support networks, such as husbands, friends, or children, only has a counteracting effect on menopause-associated depressive symptoms or anxiety symptoms, if the correct interactional factors facilitate the influence. These interactional factors might be pubertal stages in children, knowledge about menopause for husbands, or simply having a similar experience with menopause as a friend. Further studies should concentrate on determining those interactional factors and tests for the effect of emotional support or additional support types in longitudinal or qualitative approaches.

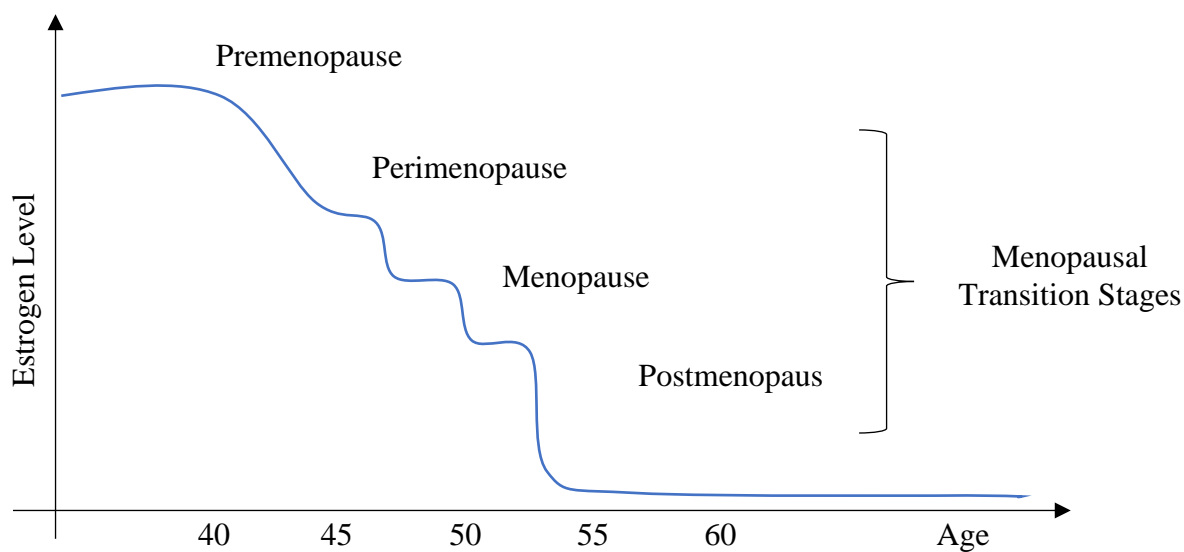
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## 1. Introduction

Menopause is known as a difficult transitional phase in women's midlife, mostly occurring during the ages of 45 to 55, and is marked by successive but gradual increases of hormonal changes in the body. It is defined as one in many life stages that marks the end of their reproductive years, which is accompanied by negative physical symptoms like weight gain, hot flashes, or night sweats but also psychological influences like mood changes or sleep problems (WHO, 2022). Moreover, research has shown repeatedly significant correlations between menopausal symptoms and stress, while indicating a higher risk for the development of psychological disorders like depression or anxiety disorders after the onset of menopause (Terauchi et al., 2018). In fact, medical practitioners and psychobiologists argue that it is the hormonal fluctuation during menopause, that can evoke psychopathological risks for depression and anxiety disorders (Sagsöz et al., 2001), making menopause and its psychological impact a key issue for women in midlife to address (Payne, 2023).

The relationship between menopause and depression or anxiety disorders has been verified multiple times (Perlstein et al., 1997; Yadav et al., 2021). By way of example, a study by Epperson et al. (2012) confirmed an association between menopause and depression or anxiety disorder, by measuring the drop in estrogen in perimenopause, while detecting reduced activities in the prefrontal cortex. A process found to be involved in the development of depression and anxieties (George et al., 1994; Pokorny et al., 2024). Consequentially, it should be the onset of menopause that causes the risk of developing depression or anxiety disorders during menopause. Meanwhile, another study has shown that menopause-caused depression and anxiety disorders can prolong for years, arguably because menopause causes lasting bodily changes or health issues affecting women's mental health (Nappi & Cucinella, 2020). Thus, menopause-caused depression and anxiety disorders are not only temporary conditions during perimenopause but might be chronic menopausal and postmenopausal symptoms, which need to be assessed and treated over many years (see Figure 1).

**Figure 1***The Four Stages of Menopause*

*Note.* Adapted from “Understanding the Menopause” by J. Vale (2021); Copyright 2024 by EVEXIAS Health Solutions.

Taking the lasting psychological impact of menopause into account the question arises, what can be done against menopause-caused depression or anxiety disorders? Former research investigated multiple types of support and their effects on menopause-associated depression or anxiety disorder in search of solutions (İkişik et. al., 2020). For example, a meta-review by Hunter and Rendall (2007), found that informational support, like providing education about menopause, practical support, like assistance on household tasks, or medical support, like hormonal replacement therapy, can have a reducing effect on menopause-associated depression or anxiety disorders. Moreover, other research by Steward (2013) confirmed the effects of those three support types. Nevertheless, other studies also indicate that women specifically seek emotional support during menopause (Huang et. al., 2023), like others communicating care and concern for them. However, studies that investigated the beneficial effects of emotional support on menopause-caused depression or anxiety disorder could not draw clear conclusions yet (Hunter & Rendall, 2007; Steward, 2013). Instead, results remain ambiguous, making it essential to investigate the effects of emotional support on menopausal symptoms even further.

So far, most studies that investigated this matter, have focused on the role of emotional support by different support networks, such of husbands or friends, in reducing either menopause-caused depression and anxiety disorder directly or assessed the support network's influence on depression or anxiety disorder-related symptoms (Hables & Moussa, 2022; Kotijah et al., 2021). Both sources of information should be considered. For example, Susilawangi et al. (2023) demonstrated that emotional support by husbands could reduce menopause-related anxiety symptoms, while other research confirmed the same effect for menopause-caused depressive disorder (Cowell et. al., 2024; Jamil & Khalid, 2016). In addition, emotional support by friends has also been shown to reduce menopause-caused depressive disorder and anxiety disorders (Koch & Mansfield, 2004). However, meta-reviews by the North American Menopause Society (NAMS, 2024) suggest that while emotional support from husbands or friends might be beneficial, it may not be substantial enough to counteract menopause-caused depression or anxiety disorders. Hence, emotional support might play a significant role in reducing menopause-caused depression and anxiety disorders, but more research is needed to verify this.

A potential explanation for the effects of emotional support found so far might be that the emotional support by husbands and friends seems to counteract feelings of loneliness or isolation during menopause (Kim & Bake, 2002; Pinguart & Sorensen, 2010). That is, feelings of loneliness or isolation were proven to cause the development of depressive disorder and anxiety disorders in the first place (Cacioppo et al., 2006). Meanwhile, these feelings are highly associated with menopausal stages, eventually causing the development of menopause-related depression and anxiety disorder too (Bingol et. al., 2019). However, as the emotional support of husbands and friends counteracts these feelings, they also might counteract the development of menopause-caused depression or anxiety disorders. Nevertheless, research focusing on the effects of emotional support by other support networks, such of children, on women's negative feelings during menopause has led to

ambiguous results (Gunter, 2021), and there has not been any research about its effects on menopause-caused depression or anxiety disorder either.

A theory that might offer a prediction for the potential influence of emotional support by children on menopause-caused depression or anxiety disorders is the social support theory, which states that emotional support given through affectionate relationships, like with husbands, close friends, or children helps to cope with difficult life stages like menopause (Sarason, 2013). Thus, emotionally supportive children might counteract menopause-caused depression or anxiety disorder too. Aligning this theory is a study by Pate et al. (2023), showing that support by children can counteract the negative psychological impact of menopause during midlife, while similar decremental effects on depressive or anxiety symptoms were found if children were living at home during menopause (Deeks, 1998). Nevertheless, a contradicting study by Dennerstein and Soares (2008) also found that children moving back home during menopause can decrease moods, thereby, facilitating the risk for depression or anxiety disorders. Hence, results about the potential influence of emotional support by children on menopausal symptoms like depression or anxiety disorders remain unclear and need further investigation.

Considering the limited research about the effect of emotional support by different support networks, like of husbands, friends, or children, it is essential to investigate the effect of emotional support on menopause-associated depressive disorder or anxiety disorders further. However, for simplification purposes, this research will only assess depressive or anxiety disorder-related symptoms but does not assess depression or anxiety disorder directly. In this context, the current study aims to examine whether women in a menopausal transitional stage such as perimenopause, menopause, or postmenopause show significantly higher depressive symptoms or anxiety symptoms compared to women in premenopause. In addition, it tests whether receiving emotional support from different social support networks, including such of husbands, friends, and children can help to counteract depressive symptoms

or anxiety symptoms during menopausal transition stages. We expect women in menopausal transition stages to show higher depressive or anxiety symptoms compared to women in premenopause, while we expect women who receive more emotional support from one of the three support networks to show less depressive or anxiety symptoms.

### 1.1 Hypotheses

H1: *Being in menopausal transition stages is significantly positively associated with depressive symptoms compared to being in premenopause.*

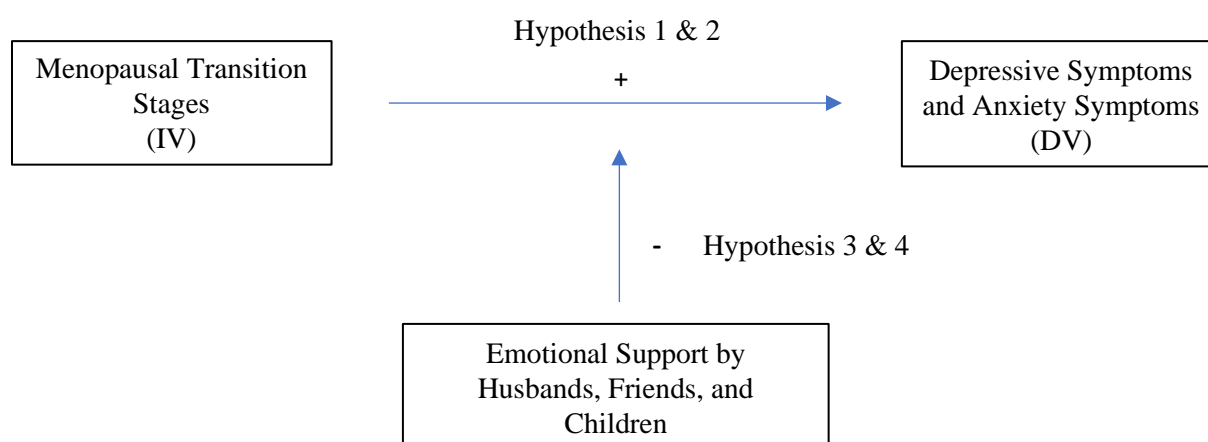
H2: *Being in menopausal transition stages is significantly positively associated with anxiety symptoms compared to being in premenopause.*

H3: *The emotional support from (a) husbands, (b) friends, and (c) children significantly negatively moderates the positive association between being in menopausal transition stages and depressive symptoms.*

H4: *The emotional support from (a) husbands, (b) friends, and (c) children significantly negatively moderates the positive association between being in menopausal transition stages and anxiety symptoms.*

### Figure 2

*Visualization of Hypothesis 1-4*



*Note.* + = positive association, - = negative moderation effect; IV = Independent Variable; DV = Dependent Variable, M = Moderator Variable.



## 2. Methods

### 2.1 Dataset Information

The dataset used for this study consists of the information gathered by a multidisciplinary team of researchers for the Midlife in the United States (MIDUS) study II, which was a follow-up study of MIDUS study I that initially took place from 1995 until 1997 in the U.S.A. (MacArthur Foundation, 2024). The data of MIDUS II, which were analyzed in this study, were collected from 2004 until 2006 to obtain a broad overview of health and well-being-related variables in a bio-physiological, cognitive, or psychosocial context and was funded by the National Institute of Aging (NIA). Data storage and accessibility of data are given by the Respiratory of the University of Michigan (ICPSR) (<http://www.icpsr.umich.edu/>). Usage-related terms and conditions must be accepted before its download (see Appendix 1). In its longitudinal approach, MIDUS II aimed to gain insights into how health-related variables change throughout midlife to explore the dynamics of aging, collecting over 20,000 different variables, while applying data documentation initiative (DDI) standards. Secondary use is highly encouraged and codebooks for easy accessibility and usage are provided, too. For the purpose of this study, the University of Twente gave ethical approval to use the dataset of MIDUS II, as well.

### 2.2 Participants

In total 7108 Participants between the ages of 24 and 74 volunteered for MIDUS I, of which 5555 also participated in the follow-up assessment of MIDUS II. For this study, participants of the MIDUS II dataset were excluded if they were holding missing values, were male, or had an age below 35 or above 65. In total 750 female participants remained for this study's sample. No additional inclusion or exclusion criteria were applied. The average age of this study's sample was 54 ( $M = 54.3$ ,  $SD = 6.4$ ). In sum 83 participants had no children, while 111 women had one child, 247 women had two children, and 309 women had three or

more children. Additionally, 484 women indicated they reached menopause, while 266 women in the sample stated they were in premenopause.

### **2.3 Procedure**

To find participants for MIDUS II, the sample of MIDUS I was utilized, which is based on national probability sampling by random-digital-dialing (RDD), ensuring a random representation of the U.S.A. population (ICPSR, 2024). The inclusion of participants was conducted by telephone screening to identify individuals of the MIDUS I sample, who were willing to participate in MIDUS II as well. In this context, MIDUS II also checked the final sample for adequate minority and ethnicity inclusions and corrected their representations with a refresher sample, but also tested and corrected with the same refresher sample for adequate socioeconomic and age distributions to ensure the external validity of the dataset. If participants of the old sample or the refresher sample showed willingness to take part in MIDUS II, they were invited to participate in five projects (see ICPSR, 2024, “Project Description”). Ethical approval for those projects of MIDUS II was requested and granted by the independent institutional review board of the University of Wisconsin Madison. Solely for the purpose of the current study, the data gathered in the first project is discussed and used.

Within the first project, participants were required to indicate their demographic data, like age, marital status, number of children, or gender, via a 30-minute phone interview. Meanwhile, self-administered questionnaires (SAQ), containing a variety of scales to assess subjective health and well-being, were sent to the participants via postal services to fill in. After completion, participants were invited to give open feedback in the last section of the survey and to write down on a prepared paper whatever came to mind. Lastly, it was kindly requested to send the SAQs including feedback back in the envelope it came in. To motivate participants, compensation for taking part in the survey of sixty dollars was paid if all questionnaires were completed. The related measurements of the SAQs of MIDUS II are used cross-sectional to answer the four hypotheses of this study.

## 2.4 Measurement

### 2.4.1 Depressive Symptoms

To assess the severity of depression in women in midlife, a non-negative continuous variable from the MIDUS II dataset was utilized (in the MIDUS II dataset called "B1PDEPRE"). The variable is based on a combination of two scales from the SAQs of MIDUS II, one assessing depressed affect, while the other measures anhedonia. Both scales are based on screening versions of the WHO to assess depression but also include diagnostic criteria of the DSM-3 (WHO, 1990). The former one is a scale of seven items which could be answered with "yes" or "no". An example question would be "During two weeks in the past 12 months when you felt sad, blue, or depressed, did you lose interest in most things?" (ICPSR, 2024). The latter one is a scale of six items which could be answered with "yes" and "no", as well. An example question would be "During two weeks in the past 12 months, when you lost interest in most things, did you feel more tired out or low on energy than is usual?" (ICPSR, 2024).

For both scales, the total number of "yes" was added together. That number provides the scale score. The validity and reliability of the scales are ensured by methodological testing of Blazer et al. (1994). The combining variable of the MIDUS II dataset provides a score for each participant ranging from 0 to 7, indicating the severity of depressive symptoms. A value higher than 7 is not possible because some of the items of the two scales used for this variable were found mutually exclusive to each other, reducing the highest score for participants to a 7 (ICPSR, 2024). A score of 0 suggests the individual is not experiencing any depressive symptoms, while a score of 7 indicates the individual experiences severe depressive symptoms. To improve coherence and readability, the variable will be called "depressive symptoms".

### ***2.4.2 Anxiety Symptoms***

To measure the experience of anxieties in women in midlife, another non-negative continuous variable from the MIDUS II dataset was utilized (in the MIDUS II dataset called "B1PANXIE"). The variable tries to determine the severity of general anxiety disorder symptoms and is based on a scale of MIDUS II, consisting of 10 items which could be answered by indicating a score on a Likert scale ranging from 1 to 4. Again, the scale originates from the WHO screening trials for psychological disorders, while containing diagnostical criteria of the DSM-3 (WHO, 1990). An example question would be "How often over the past 12 months were you restless because of your worry?" (ICPSR, 2024). An answer of 1 indicates the individual worries about the item's content almost every day, while an answer of 4 suggests the item's content is not worried about by the participant. The scale score for a participant was calculated by taking the total number the participants indicated to worry about an item most days or almost every day. Hence, scores between 0 and 10 were possible, 0 meaning the participant suffers from no anxiety disorder symptoms, and 10 indicating the participant suffers severely from anxiety disorder symptoms. Similar to depression, validity and reliability were methodologically tested, showing sufficient results (Blazer et al., 1994). To improve coherence and readability, the variable will be called "anxiety symptoms".

### ***2.4.3 Emotional Support by Husbands, Friends, and Children***

To measure the degree of emotional support by husbands, friends, and children three non-negative count variables from the MIDUS II dataset were utilized as well (in the MIDUS II dataset called "B1SH10A, B1SH10E, B1SH10D"). These three variables consist of one question of the MIDUS II dataset each, belonging to SAQ's section H which assesses the participant's community involvement in different life domains. An example question is "On average, about how many hours per month do you receive informal emotional support (such as getting comfort, having someone listen to you, or getting advice) from your husband or

partner?” (ICPSR, 2024). Participants could rate the received emotional support for each group in hours per month. Those women who were single, or without children or friends could indicate a 0 for receiving no support, while those who received support could indicate any number they wanted, although statistically unrealistic estimations were excluded from the data (ICPSR, 2024). Consequentially, a high number indicates the participant experiences a lot of emotional support from a particular group, while a low number suggests the participant experiences only a small amount of emotional support from a specific group. To improve coherence and readability, the variables will be called “emotional support by husbands”, “emotional support by friends”, and “emotional support by children”.

#### ***2.4.4 Being in Menopause***

To determine whether Menopause had set in or not, a dichotomous variable from the MIDUS II dataset was utilized at last (in the MIDUS II dataset called “B1SB2D”). It consists of one question from the SAQ’s section B, which assessed Health Questions for Women. The question was “Do you know if your menstrual period[s] stopped for any of the following reasons – menopause?” (ICPSR, 2024). Women could indicate “yes” or “no”, thereby, separating women in menopausal transition stages from those who are in premenopause. Hence, yes implies the participant is in a menopausal stage, while no indicates the participant has not reached a menopausal stage yet. To work with the variable mathematically, the answer “yes” was coded with a 1, while the answer “no” was coded with a 0. To improve coherence and readability, the variable will be called “menopause”.

#### **2.5 Data Analysis**

To test the four predetermined hypotheses and answer the research question the statistical analysis program RStudio was utilized, in which the dataset of MIDUS II was implemented. Additional variables selected for the analysis were demographic data, including age, number of children, and gender.

Before testing the hypothesis, an overview of the data was provided by calculating the descriptive statistics for the continuous scale's depressive symptoms, anxiety symptoms, and emotional support by children, husbands, and friends, including means and standard deviations. Additionally, 95% confidence intervals were created for these scales, to emphasize the ranges of the participant's answers. Afterward, a Shapiro-Wilk test was conducted for these subscales to assess the normality of the data's distribution. The significance level ( $\alpha$ ) of the test was set at 0.05, indicating that results below this level were considered as significant. Lastly, frequency distributions for menopause were assessed, providing the number of women being or not being in menopausal transition stages.

To gain an indication and an overview of the potential relationships between the variables, bivariate Pearson correlation coefficients were calculated. In this context, correlations above 0.6 were considered strong and correlations of 0.4 were considered moderate, while correlations below 0.4 were considered weak and correlations below 0.2 were considered negligible (Akoglu, 2018). To test the first two hypotheses, two linear regression analyses were conducted with menopause (yes/no) as IV and depressive symptoms and anxiety symptoms each as DV. For testing hypotheses four and five, emotional support by husbands, emotional support by friends, and emotional support by children were each included in the two linear regression analyses as interaction terms. In both linear regression analyses, a significance of  $\alpha = 0.05$  (5% level) was used.

### **3. Results**

#### **3.1 Descriptive Results**

To test for a normal distribution of the utilized dataset and the chosen variables, the Shapiro-Wilk test was applied. The test confirmed significant deviations from normality for all five variables ( $p < .001$ ). Nevertheless, it should be considered that the distributions of scores for anxiety symptoms and depressive symptoms were expected to show nonnormality,

as the related disorders affect only a minority of the population. To gain a first overview of the utilized variables in this study, means and standard deviations were calculated. Results show the most emotional support for women was given by their husbands, while children supported women substantially less and friends approximately half as much as husbands (see Table 1). Nevertheless, there are relatively large standard deviations and confidence intervals for the scales of emotional support by children and husbands, indicating large differences in levels of felt support between participants (see Table 1).

**Table 1**

*Means, Standard Deviations, and Confidence Intervals for all Continuous Variables.*

Scale	M	SD	95% CI Lower	95% CI Upper
Depressive Symptoms (0 – 7)	0.8	2.1	0.71	1.04
Anxiety Symptoms (0 – 10)	0.2	0.9	0.01	0.25
Support by Children (0 ~ 200 h/mo)	13.5	46.1	10.21	16.8
Support by Husband (0 ~ 120 h/mo)	21.1	56.7	17.02	25.16
Support by Friends (0 ~ 200 h/mo)	9.0	16.1	7.87	10.18

*Note.* N = 750; M = Mean; SD = standard deviation; CI = confidence interval; h/mo = hours per month; Approximate ranges for support are based on MIDUS II dataset analysis.

### 3.2 Correlational Analysis

To gain insight and create a first overview of the potential relationships between the variables, Pearson Correlation Coefficients were calculated. Firstly, menopause shows negligible but significant correlations with depressive symptoms ( $r = .12, p < .001$ ) and anxiety symptoms ( $r = .08, p = .027$ ). Although these correlations can be considered negligible or at least very weak, they might indicate a first potential relationship between menopausal transition stages and depressive or anxiety symptoms, as hypothesized in this study. Additionally, results show a strong positive correlation between emotional support by children and emotional support by husbands ( $r = .71, p < .001$ ). This indicates the emotional

support of both social support networks is eventually interconnected, arguably due to being part of the same social structure within a family and related dynamics. Similarly, a weak positive correlation was found between emotional support by children and emotional support by friends ( $r = .26, p < .001$ ), emphasizing a similar but less strong connection between the two related support networks. Furthermore, a positive weak but significant correlation was found between depressive symptoms and anxiety symptoms ( $r = .32, p < .001$ ), potentially due to the comorbidity between the two disorders and related symptoms. Lastly, no significant correlations could be detected between the emotional support of any network and anxiety symptoms or depressive symptoms (see Table 2). This could be the first indication that the emotional support of related networks might not have any moderation effect on the eventual association between menopause and depressive or anxiety symptoms.

**Table 2**

*Pearson Correlations Between Depressive Symptoms, Anxiety Symptoms, Social Support, and Menopausal Status*

Scale	Depressive symptoms	Anxiety Symptoms	Support Children	Support Husbands	Support Friends	Menopause
Depressive symptoms						
Anxiety Symptoms	.32*					
Support by Children	.07	.05				
Support by Husbands	.02	-.01	.71*			
Support by Friends	.09	.08	.26*	.31*		
Menopause	.12*	.08*	-.04	.03	.07	

*Note.* (N = 750);  $p < .05$ ; \* = significant correlation; Menopause variable is coded with 0 for premenopause, and 1 for being in a menopausal transition stage.



### 3.3 Association Between Menopause and Mental Health

The results of the linear regression analyses showed significant positive associations between being in menopause and depressive symptoms ( $b = 0.567, p < .001$ ) and anxiety symptoms ( $b = 0.184, p = .027$ ). Hence, women in menopausal transition stages show higher levels of depressive symptoms and anxiety symptoms compared to women in premenopause. This confirms hypotheses one and two (see Table 3 and 4).

Moreover, emotional support by children significantly negatively moderates the positive association between being in menopause and anxiety symptoms ( $b = -0.009, p = .001$ ). Hence, women in a menopausal transition stages like perimenopause, menopause, or postmenopause show significantly fewer anxiety symptoms the more they feel emotionally supported by their children. This confirms hypothesis four (c) (see Table 4).

However, the emotional support of children showed no significant moderation effect on the positive association between being in menopause and depressive symptoms, which leads to the rejection of hypothesis three (c) (see Table 3). Moreover, no significant moderation effects could be found for the emotional support of husbands or friends on the positive association between menopause and depressive symptoms or anxiety symptoms (see Table 3 and 4). Thus, hypothesis three (a) and (b), and four (a) and (b) need to be rejected as well.

**Table 3**

*Linear Regression Results for Menopause on Depressive Symptoms with Moderation Effects by Different Social Support Networks*

Scale	Estimate	SE	t(750)	p-value	95% CI
Depressive symptoms	0.567	0.162	3.48	<.001	[0.201, 0.887]
Moderation by Support Networks					
Menopause * Support Children	0.004	0.005	0.706	.480	[-0.006, 0.014]

**Table 3 (continued)**

Scale	Estimate	SE	t(750)	p-value	95% CI
Menopause * Support Husbands	-0.002	0.003	-1.807	.071	[-0.011, 0.004]
Menopause * Support Friends	-0.005	0.010	-0.472	.637	[-0.023, 0.014]

*Note.* N = 750; SE = standard error; CI = confidence interval;  $F(4, 745) = 2.34, p = .05$ .

**Table 4**

*Linear Regression Results for Menopause on Anxiety Symptoms with Moderation Effects by Different Social Support Networks*

Scale	Estimate	SE	t(750)	p-value	95% CI
Anxiety symptoms	0.184	0.083	2.214	.027	[0.201, 0.348]
Moderation by Support Networks					
Menopause * Support Children	-0.009	0.003	-3.296	.001	[-0.018, -0.0001]
Menopause * Support Husbands	-0.002	0.002	-0.970	.332	[0.004, 0.015]
Menopause * Support Friends	0.004	0.005	0.748	.457	[-0.061, 0.014]

*Note.* N = 750; SE = standard error; CI = confidence interval;  $F(4, 745) = 4.52, p = .002$ .

## 4. Discussion

### 4.1 Main Findings

This study aimed to investigate the potential relationship between menopause and its effects on women's mental health by comparing the severity of depressive symptoms or anxiety symptoms of women in premenopause to women in menopausal transition stages, such as perimenopause, menopause, or postmenopause. Meanwhile, it investigated whether emotional support by different support networks, such of husbands, friends, or children might affect the symptoms' severity, by testing for its negative moderation effects on the positive association between menopausal transition stages and depressive or anxiety disorder-related

symptoms. Considering this study's results and the literature findings mentioned above, the following interpretations and conclusions need to be drawn.

A first interpretation that can be made is that being in menopausal transition stages seems to facilitate the risk of developing depressive symptoms and anxiety symptoms. These findings fit Terauchi et al.'s (2018) conclusions, stating women in menopause show a higher risk of developing depression and anxiety disorder. In fact, this study's results fit a large quantity of research that has determined the positive association between menopausal transition stages and the development of depressive disorder and anxiety disorders multiple times, such as Yadav (2021) or Weber et al. (2014). Thus, it can be concluded that being in menopausal transition stages is associated with a higher risk of developing depressive symptoms and anxiety symptoms.

Moreover, these study results align with the interpretation this study drew when considering Epperson et al.'s (2012), and Nappi's and Cucinella's (2020) results. Based on their findings, this study assumed that it does not matter in which menopausal transition stage women are, since depressive symptoms or anxiety symptoms should be associated with all stages. Considering that this study took women of all menopausal stages into account, it is likely that this interpretation is true. However, this study did not test for the individual associations of different menopausal transition stages, such as perimenopause, menopause, or postmenopause, and the two disorder's symptoms. Hence, this study cannot verify whether all menopausal transition stages individually are indeed associated with higher depressive symptoms or anxiety symptoms or not.

A second interpretation is that the emotional support from husbands or friends does not help to counteract menopause-associated depressive symptoms or anxiety symptoms. This contradicts multiple findings like Cowell et al. (2024), or Koch and Mansfield (2004), who argued that menopause-associated depressive symptoms or anxiety symptoms can be reduced by the emotional support of related networks. Still, considering their findings a reasonable

explanation might be that mere emotional support does not have an effect on the severity of menopause-associated depression or anxiety disorder, but that it is its combination with other interactional factors that is essential. For example, Cowel et al. (2024) or Jamil and Khalid (2016) argue that multiple factors, such as knowledge about menopause, or having the same gender with similar experiences, might facilitate more empathy and sympathy of husbands and friends, hence, allowing for targeting emotional support more accurately. Meanwhile, this study selected only mere emotional support as a potential moderator, leaving other interactional factors aside. Consequentially, this study cannot find any moderation effect for the mere emotional support of husbands or friends, although it might play a role in reducing depressive or anxiety symptoms in the right combination with other factors.

However, considering these findings, the involvement of feelings of loneliness and isolation in causing depressive disorder or anxiety disorder should be discussed too. A first conclusion would be that feelings of loneliness or isolation might not be involved in causing menopause-associated depression or anxiety disorders after all. That is, these feelings might be associated with menopausal stages, as argued by Bingol et. al. (2019), and can be seen as menopausal symptoms but they might not be causal factors for menopause-associated depression or anxiety disorders like given for depression and anxiety disorders generally (Cacioppo et al., 2006). Hence, the emotional support of husbands and friends also does not show any effect on menopause-associated depressive symptoms or anxiety symptoms either, as given in this study. Still, it is likely that there might be a decremental effect on those feelings during menopause in general, as found by Kim and Bake (2002). Nevertheless, this study did not test for the direct counteracting effect of the support's influence on those feelings. Consequentially, conclusions about their involvement in causing menopause-associated depression or anxiety disorders should be drawn cautiously.

A last interpretation is that the emotional support of children does not help to counteract menopause-associated depressive symptoms. This contrasts Sarason's (2013)

claims, who argues via the social support theory that affectionate relationships can help to cope with difficult life stages like menopause. An explanation might be that children of women during menopause go through significant physical and mental challenges, due to puberty, themselves (Deeks, 2004). Hence, children might not have the capacity or wish to emotionally support their mothers sufficiently, as they are involved in their own physical and hormonal challenges (Steinberg, 1987). Nevertheless, these pubertal challenges for children might explain why this study could find an alleviating effect on anxiety symptoms. That is, puberty and menopause have significant similarities, because the hormonal influences cause in both cases mood swings, physical changes, or hot flashes, provoking in turn similar anxieties (Hoyt & Falconi, 2015). Similar, anxieties might create a better emotional understanding for children of the specific menopause-related anxieties, explaining why there is a significant negative moderation effect for the emotional support on menopause-associated anxiety symptoms but not for depressive symptoms.

Finally, it should also be discussed why there are so many contradicting results for the effect of supportive children on menopausal-caused depression or anxieties, such as Dennerstein and Soares (2008) in comparison to Pate et. al. (2023). Similar to husbands and friends, a potential reason for this inconsistency might rely on interactional factors, such as puberty or overall life challenges of children, once women reach menopausal transition stages. For example, most children of women in menopausal transition stages are not only in pubertal stages themselves as Deeks (2004) argues, but also have to deal with general life-related challenges, such as moving out, finishing school, or finding their first job (Kurnick, 2024). These challenges in turn can have a substantial influence on the relationship between mothers and their children (Deeks, 2003; Steinberg, 1987). Considering these dynamic influences, it is logical that there are varying effects on menopause-related anxieties or depressive symptoms, depending on the age and life-related factors of children in the study's sample. Even the menopausal stage, such as perimenopause or postmenopause, can make a

difference as the related age and life situation of women's children differs between such stages as well, explaining the ambiguous results from Gunter (2021) mentioned above.

#### **4.2 Strength and Limitations**

Moving on, this study shows significant strengths but also some limitations which should be discussed in the following. The first strength to mention concerns the sample size and the related dataset utilized in this study. That is, the large sample size of 750 participants provides robust statistical power and ensures the detection of even small effects in a cross-sectional design (Mendoza et al., 2000). Additionally, the sample was tested and corrected for adequate minority or ethnicity representation, and it was tested and corrected for adequate socioeconomic distributions during the data collection process of MIDUS II (ICPSR, 2024). The large sample size, and these adjustments and corrections contribute to a high reliability and a high validity and generalizability of the study results, accounting for the U.S.A.

A second strength is that this study took a broader approach when taking women of all menopausal stages into account. Although this does not allow for a detailed comparison between different menopausal stages, it shows the overarching effects of menopause on women's mental health during midlife. In addition, this broader perspective also provides a comprehensive understanding of the dynamic influences of different social support networks on those overarching effects. Combined, this allows for more efficient policies and reliable intervention programs in the future to counteract the lasting influences of menopausal transition stages on women's mental health.

However, a first limitation regards the selection of appropriate variables for this study. As mentioned, this research only concentrated on depressive or anxiety disorder-related symptoms. Although this allows for a detailed comparison of depressive symptoms or anxiety symptoms between the participants, this study can only make claims relating to those symptoms but not regarding the disorders per se. Still, it is possible that the negative moderation effect of the emotional support of children on the positive association between

being in menopause and anxiety symptoms is not substantial enough to counteract an anxiety disorder itself. In addition, this study focused only on emotional support as a measurement of support, while leaving other support types or eventual interactional factors aside.

Nevertheless, as stated above it is likely that there are other support types or interactional factors, which might have an effect on menopause-associated depression or anxieties, as well.

Moving on, a second limitation this study has regards the utilized scales. As stated, these scales for depressive symptoms or anxiety symptoms are based on screening versions of the WHO (ICPSR, 2024). However, those versions are based on the DSM-3 conceptualization of related disorders, which is outdated, since the DSM-5 is mainly used today (Blashfield et.al., 2014). Although there are big similarities between the DSM-3 and the DSM-5, this might have influenced the results, as updated scales could have led to different results in the analysis. In addition, the measurement of emotional support by the three different social support networks is based on single-item assessments, which were answered subjectively by each participant. This reduces the data's validity and reliability, as the measurements might be influenced by monetary states, contextual factors, or memory biases (Fisher et. al., 2016).

A third limitation of this study concerns the significance level of 5% utilized in the linear regression analysis and the cross-sectional design. While it is acceptable to set a significance level of 5% in a cross-sectional design, there are multiple factors involved in determining an appropriate significance level, such as sample size, expected losses from type I and type II errors, or former research designs (Kim, 2015). Considering that this study has a very large sample size of 750 participants, the significance level of 5% might have led to false positives. Instead, a more stringent significance level of 1% could have been applied, which would have led to a more robust regression analysis (Kim, 2015). Meanwhile, the cross-sectional design does not allow to make causational interpretations (Rindfleisch et. al., 2008). Hence, we cannot exclude bidirectional influences such as depression facilitating hormonal changes, thereof, menopausal transition stages in the first place (Gordon et. al., 2015)

### 4.3 Suggestions for Future Research

Based on the interpretations and limitations of this study, multiple research proposals should be discussed. First of all, a longitudinal study should be conducted that uses updated versions of depression and anxiety disorders based on the DSM-5, thereof, determine the directionality of the relationships between menopause and depressive or anxiety symptoms. In this context it should also be tested for the moderation effects of emotional support or other support types from children, husbands, and friends, to determine whether there are in fact lasting influences of them or not. Simultaneously, qualitative studies could investigate which interactional factors facilitate the negative influence of these support types on menopause-associated depression or anxiety disorder, which can then be tested in the longitudinal research design as well. Using this mixed methods design these proposals should create a detailed investigation of which type of support for women in menopausal stages works best and what should be advised to families and friends to help women accordingly.

Secondly, another longitudinal research design is proposed that takes into account stage-specific effects, meaning whether different menopausal stages differ first of all in their risks of facilitating depression or anxiety disorders and secondly, whether the predetermined support types, such as emotional support, have differing alleviating effects depending on the stage the support is given in. Meanwhile, this research could also investigate whether feelings of loneliness or isolation are indeed involved in causing menopause-associated depression or anxiety disorder in specific menopausal stages. It is possible that these feelings are more involved in some stages than others, which would also clarify in which menopausal stage, emotional support is most suitable or not. In combination, both studies would specify which type of support type should be advised in which menopausal transition stage, allowing for even more concrete advice for family and friends.

However, it's crucial to understand that future research should also investigate other types of support. As mentioned above, multiple types of support, such as informational,



practical, or medical support have been proven to counteract menopause-caused depression or anxiety disorder too (Hunter & Rendal, 2007; Steward, 2013). Nevertheless, this research and its further suggestions focus solely on emotional support as a potential alleviating factor for menopause-caused depression or anxiety disorders. Hence, it's essential to mention that other support types should also be tested in longitudinal or qualitative designs, in order to develop multiple interventions against the psychological impact of menopause, which also go beyond facilitating emotional support from different social networks.

#### **4.4 Conclusion**

In conclusion, this study summarizes that menopausal transition stages are positively associated with depressive symptoms and anxiety symptoms. In addition, the emotional support of children seems to have a negative moderation effect on the positive association between menopausal transition stages and anxiety symptoms, while the emotional support of husband or friends does not have any moderation effect on these associations. However, it is possible that feelings of loneliness or isolation play a role in the association between menopausal transition stages and depressive symptoms or anxiety symptoms as well, although this study cannot draw any concrete conclusions about it. Meanwhile, multiple interactional factors, such as knowledge about menopause, having similar experiences with menopause, or even similar anxieties due to puberty, might influence in the negative moderation effects of emotional support found in this or previous studies. Further longitudinal or qualitative studies should investigate the involvement of feelings of loneliness or isolation and determine which interactional factors facilitate the influence of emotional by different social support networks. Beyond these suggestions, other support types should be investigated as well to develop sustainable and lasting intervention programs against the negative psychological effects of menopause and to establish concrete advice for family and friends.

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## Appendix

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