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Prediction of Interpersonal Emotion Regulation Based on Sleep Quality and Sexual Function in Postmenopausal Women

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A B S T R A C T

Objective: This study aimed to examine the prediction of interpersonal emotion regulation based on sleep quality and sexual function in postmenopausal women.

Materials and Methods: The present research was a descriptive–correlational study. The statistical population included postmenopausal women living in Karaj, Iran. A sample of 196 participants was selected using convenience sampling. The instruments used included the Pittsburgh Sleep Quality Index (PSQI), the Female Sexual Function Index (FSFI), and the Interpersonal Emotion Regulation Questionnaire (IERQ). Data were analyzed using Pearson correlation and multiple regression analysis.

Findings: The results showed that both sleep quality and sexual function significantly predicted interpersonal emotion regulation. Specifically, sleep quality had a significant relationship with interpersonal emotion regulation ($P < .05$), and sexual function also significantly predicted interpersonal emotion regulation.

Conclusion: The findings suggest that sleep quality and sexual function play an important role in predicting interpersonal emotion regulation in postmenopausal women. Accordingly, improving these two factors can contribute to enhancing psychological well-being and quality of life in postmenopausal women.

Keywords: *interpersonal emotion regulation, sexual function, sleep quality, menopause.*

1. Introduction

Menopause is a complex biological and psychosocial transition that marks the end of a woman's reproductive capacity and introduces significant physiological, psychological, and relational changes (Talaulikar, 2022). This transition, which usually occurs between the ages of 45 and 55, is influenced by hormonal fluctuations, particularly the decline of estrogen and progesterone, and is often accompanied by symptoms such as hot flashes, sleep disturbances, sexual dysfunction, and mood changes (Ali et al., 2020; Vatankhah et al., 2023). These experiences not only affect women's physical and emotional well-being but also challenge their interpersonal relationships and psychological resilience (Li et al., 2025; Masihpour et al., 2023). Understanding the psychological correlates of menopause is therefore vital to support

women's mental health and social functioning during this life stage.

One key area of focus is emotion regulation, particularly in interpersonal contexts. Emotion regulation is broadly defined as the ability to monitor, evaluate, and modify emotional responses to achieve personal or social goals (Cremades et al., 2022). Contemporary frameworks conceptualize it as a dynamic, multi-component process that operates both internally and within social interactions (Fischer et al., 2024; Zhang et al., 2022). Interpersonal emotion regulation involves strategies people use to influence others' emotions or to seek support for managing their own emotional states (Kozubal et al., 2023; Lotfi et al., 2020). Effective interpersonal emotion regulation fosters psychological well-being and relationship satisfaction, while deficits can contribute to psychological distress, social withdrawal, and reduced quality of life (Cinek, 2025; Dubé et al., 2020). Among postmenopausal women, where physiological changes can destabilize emotional balance, this capacity may play a protective role against mental health difficulties (Zamani Zarchi et al., 2020).

Sleep quality emerges as a fundamental determinant of emotion regulation capacity. Sleep disruption is one of the most commonly reported complaints among postmenopausal women, driven by hormonal changes, mood symptoms, and psychosocial stressors (Hajnasiri et al., 2018; Kling et al., 2021). Insufficient or poor-quality sleep undermines the brain's prefrontal control over limbic responses, increasing emotional reactivity and diminishing regulatory control (O'Leary et al., 2017; Walker, 2017). Empirical evidence shows that poor sleep quality is associated with greater difficulty in regulating emotions, higher vulnerability to anxiety and depression, and impaired social functioning (Gupta & Sharma, 2021; Rezaie et al., 2023). Vandekerckhove and Wang (Vandekerckhove & Wang, 2018) emphasize that sleep and emotional processing are intimately linked through shared neurobiological pathways; disruption in sleep compromises the brain's ability to recalibrate emotional responses. In postmenopausal women, sleep complaints not only predict greater negative affect but also impede their capacity to use adaptive interpersonal strategies, potentially straining intimate and social relationships (Mirghafourvand et al., 2022; Yadollahi et al., 2024). Studies in both clinical and community samples suggest that enhancing sleep quality may directly contribute to better emotional adjustment and interpersonal effectiveness (Javed et al., 2024; Omrani et al., 2022).

Another factor central to well-being in midlife and beyond is sexual function. Sexual health in women is strongly influenced by endocrine changes, relational factors, and self-perception (Khalesi et al., 2020; Masoumi et al., 2020). Menopause often brings sexual concerns such as reduced libido, vaginal dryness, and difficulties with arousal and orgasm (Ali et al., 2020; Hajnasiri et al., 2018). These difficulties can lead to feelings of inadequacy, relational dissatisfaction, and reduced psychological well-being (Ghazanfarpour et al., 2018). Sexual functioning is not only a physical phenomenon but is closely connected to emotional and relational processes; women who maintain satisfying sexual relationships report better mood, stronger sense of intimacy, and improved emotion regulation (Dubé et al., 2020; Fischer et al., 2022). Research highlights that sexual well-being may act as a resilience factor, supporting affective stability and helping women navigate the psychological changes of menopause (Cinek, 2025; Obodiat et al., 2024). Conversely, sexual dissatisfaction is linked to increased interpersonal conflicts and emotional dysregulation, indicating that sexual function could be a predictor of how well postmenopausal women regulate emotions within close relationships (Chukwuemelie, 2025; Jani, 2023).

When considering the interplay between sleep, sexual function, and interpersonal emotion regulation, an integrated biopsychosocial perspective emerges. Studies demonstrate that poor sleep is associated with reduced sexual desire and arousal (Kling et al., 2021), while sexual satisfaction is linked to improved mood and less emotional dysregulation (Dubé et al., 2020). Emotion regulation models propose that both restorative sleep and fulfilling sexual experiences replenish cognitive and emotional resources necessary for managing affective states (Cremades et al., 2022; Fischer et al., 2024). Moreover, the menopausal transition can exacerbate vulnerabilities in these domains: sleep disorders and sexual dysfunction may reinforce each other, creating a feedback loop that undermines emotional balance (Almondes et al., 2021; Yilmaz et al., 2017). Interventions that target sleep hygiene and sexual health could therefore indirectly strengthen interpersonal emotion regulation skills and improve psychological resilience in midlife (Masihpour et al., 2023; Mirghafourvand et al., 2022).

Emerging research also underscores the cultural and contextual aspects of these processes. In some societies, menopause is stigmatized or misunderstood, which can intensify distress and inhibit open discussion about sleep and sexual health (Ali et al., 2020; Vatankhah et al., 2023).

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Cultural beliefs influence how women interpret bodily changes and seek social support (Fischer et al., 2024; Li et al., 2025). For instance, internalized negative attitudes toward menopause can heighten vulnerability to emotional dysregulation and relational strain (Obodiat et al., 2024). Conversely, supportive social networks and marital satisfaction may buffer the impact of sleep and sexual problems on emotion regulation (Yadollahi et al., 2024). This interplay suggests that studying interpersonal emotion regulation in postmenopausal women requires sensitivity to cultural frameworks and relational dynamics (Masoumi et al., 2020; Zamani Zarchi et al., 2020).

The measurement of these constructs has also evolved to better capture their complexity. Tools such as the Interpersonal Emotion Regulation Questionnaire (IERQ) have been validated in diverse populations, providing reliable assessment of strategies like enhancing positive affect, perspective-taking, and social modeling (Lotfi et al., 2020). Similarly, the Pittsburgh Sleep Quality Index (PSQI) is widely used to quantify sleep disturbances and their functional impact (Park, 2020; Yilmaz et al., 2017). Sexual function is commonly measured using the Female Sexual Function Index (FSFI), a multidimensional self-report instrument with strong psychometric properties (Hajnasiri et al., 2018; Jani, 2023). These instruments enable robust investigation of the interplay between sleep, sexual health, and emotional regulation in midlife women (Fischer et al., 2022; Rezaie et al., 2023).

Despite growing recognition of these relationships, empirical work integrating sleep quality, sexual function, and interpersonal emotion regulation among postmenopausal women remains limited, particularly in Middle Eastern contexts. Many studies have explored each factor separately—for example, the impact of poor sleep on emotional difficulties (O'Leary et al., 2017; Rezaie et al., 2023), or sexual health concerns and their psychological correlates (Ghazanfarpour et al., 2018; Khalesi et al., 2020). Yet few have examined how these domains interact to influence emotion regulation capacities in real-life relational contexts (Cinek, 2025; Dubé et al., 2020). Filling this gap can inform more holistic interventions aimed at improving mental health and quality of life in postmenopausal women (Juwita & Sari, 2021; Masihpour et al., 2023). Such interventions might combine sleep-focused behavioral strategies, sexual health counseling, and training in adaptive interpersonal emotion regulation to address the multi-layered challenges of this life stage (Fischer et al., 2024; Zamani Zarchi et al., 2020).

Given the public health implications of menopause and the centrality of emotional well-being to women's overall quality of life, research that elucidates predictors of interpersonal emotion regulation is crucial (Chukwuemelie, 2025; Javed et al., 2024). Sleep quality and sexual function, as modifiable health indicators, offer practical avenues for intervention (Mirghafourvand et al., 2022; Omrani et al., 2022). Understanding how these factors shape interpersonal emotion regulation can support preventive strategies and tailored support services for midlife women in clinical and community settings (Li et al., 2025; Masihpour et al., 2023). Therefore, the present study aims to investigate the predictive role of sleep quality and sexual function in interpersonal emotion regulation among postmenopausal women, addressing a critical gap in the literature and offering evidence to inform psychological and health care practices for this population.

2. Methods and Materials

2.1. Study design and Participant

From the perspective of its objective, the present research is applied; in terms of research design, it is descriptive and correlational. This study was conducted under the ethical approval code obtained from Islamic Azad University, Karaj Branch, Tehran Province. The statistical population included all married postmenopausal women aged 45 to 60 years who visited gynecologists' private offices in Karaj during the second half of 2023. Using convenience sampling and based on the sample size formula proposed by Tabachnick and Fidell (n = 50 + 8m), the sample size was calculated as 178. However, considering possible attrition, a total of 200 participants were initially selected. Ultimately, four incomplete or invalid questionnaires were excluded, and statistical analyses were performed on data from 196 participants. Inclusion criteria were: age between 45–65 years, confirmed postmenopausal status, and completion of a written informed consent form. The exclusion criterion was withdrawal from participation at any stage of the study.

2.2. Measures

The data collection method was field-based and utilized questionnaires. After obtaining the necessary approvals from Islamic Azad University, Karaj Branch, and coordinating with gynecologists' offices, the participants were recruited. To reduce anxiety and create a comfortable environment, the research process was explained to participants in a clear and

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understandable manner. Comprehensive information regarding the assessment instruments and the rationale for their selection was also provided to help participants better understand the research process. Participants were encouraged to ask questions or seek clarification about completing the instruments, and the researcher provided additional explanations when needed. Data collection included a demographic information checklist (researcher-designed) and three self-report instruments: the Pittsburgh Sleep Quality Index (PSQI), the Female Sexual Function Index (FSFI), and the Interpersonal Emotion Regulation Questionnaire (IERQ).

The Interpersonal Emotion Regulation Questionnaire (IERQ), developed by Hofmann et al. (2016), assesses how individuals use strategies to regulate emotions within interpersonal contexts. The IERQ comprises four subscales: enhancing positive affect, perspective taking, soothing, and social modeling. Internal consistency coefficients reported for these subscales are 0.98 for enhancing positive affect, 0.94 for soothing, 0.93 for social modeling, and 0.91 for perspective taking, with the total scale exceeding 0.90. In Iran, Lotfi, Shiyasi, Amini, and colleagues reported a Cronbach's alpha of 0.90 for the full scale and subscale alphas ranging from 0.80 to 0.84, indicating satisfactory reliability. In the present study, the reliability coefficient obtained was 0.79.

The Pittsburgh Sleep Quality Index (PSQI), developed by Buysse et al. (1989), is a widely used instrument for assessing sleep quality over the past month. It consists of 19 items covering seven components of sleep: subjective sleep quality, sleep duration, sleep efficiency, sleep disturbances, use of sleep medications, and daytime dysfunction related to sleep. Each item is scored on a four-point Likert scale (0–3), and total scores range from 0 to 21, with higher scores indicating poorer sleep quality. Buysse et al. (1989) reported an internal consistency (Cronbach's alpha) of 0.83. In Iranian studies, Omrani, Baratian, Zare Hosseinzadegan, and colleagues reported a Cronbach's alpha of 0.70. In the present research, the Cronbach's alpha coefficient was 0.76.

The Female Sexual Function Index (FSFI), introduced by Rosen et al. (2000), is a multidimensional self-report instrument for evaluating female sexual function over the past month. It includes 19 items across six domains: sexual desire, arousal, lubrication, orgasm, satisfaction, and pain. The desire subscale includes 2 items scored from 1 to 5, while the arousal and lubrication subscales each include 4 items scored from 1 to 5. The orgasm, satisfaction, and pain subscales each have 3 items scored from 0 to 5. Rosen et al. (2000) reported an overall Cronbach's alpha of 0.88 for the total FSFI and 0.79–0.86 across subscales. In Iranian research, Jani and colleagues (2023) reported satisfactory internal consistency with a Cronbach's alpha of 0.81. In this study, the reliability coefficient was 0.83.

2.3. Data Analysis

Data analysis was conducted in two phases. In the descriptive phase, demographic data and descriptive statistics (mean, standard deviation, minimum, and maximum scores) were calculated. In the inferential phase, after verifying statistical assumptions, Pearson correlation coefficients and multiple regression analyses with the enter method were applied. The significance level was set at $p < .05$. All statistical analyses were performed using SPSS version 27.

3. Findings and Results

Among the 196 participants in this study, the age range was 45 to 65 years, with a mean ± standard deviation of 53.12 ± 3.90 years. The largest age group was 50–55 years, with a frequency of 122 participants (62.24%). Regarding education, 55 participants (28.06%) had less than a high school diploma, 65 (33.16%) held a high school diploma, 43 (21.93%) had a bachelor's degree, 26 (13.26%) had a master's degree, and 7 (3.57%) held a doctoral degree.

Table 1 presents the mean and standard deviation of interpersonal emotion regulation, sleep quality, and sexual function scores.

Table 1

Descriptive Findings of Study Variables

Variables	Mean	Standard Deviation	Number of Observations	Maximum	Minimum	Skewness	Kurtosis
Interpersonal Emotion Regulation	46.11	11.66	196	76	33	-0.337	-0.414
Sleep Quality	10.12	4.70	196	13	1	-0.161	1.111
Sexual Function	17.60	5.62	196	13	4.70	-0.548	-0.352

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Multiple linear regression was used to examine the relationship of sleep quality and sexual function with the prediction of interpersonal emotion regulation. Before performing multiple regression analysis, the key assumptions—including normality, independence of residuals, and absence of multicollinearity—were tested and confirmed. To assess the normality of the data distribution, skewness and kurtosis values were examined. As shown in Table 1, skewness values ranged between -1 and +1, and kurtosis values ranged between -2 and +2, indicating normal distribution of the data.

Pearson correlation coefficients between the study variables revealed that sleep quality and sexual function scores were significantly correlated with interpersonal emotion regulation scores. Table 2 presents these results, showing significant positive correlations between interpersonal emotion regulation and both sleep quality and sexual function ($p < .01$).

Table 2

Correlations Between Sleep Quality and Sexual Function with Interpersonal Emotion Regulation

Variables	1	2	3
1. Interpersonal Emotion Regulation	1		
2. Sexual Function	.53**	1	
3. Sleep Quality	.50**	.33**	1

*p < .05, **p < .01

For testing multicollinearity, the tolerance and variance inflation factor (VIF) indices were calculated. Acceptable values for tolerance are greater than 0.10 and for VIF less than 10. In this study, the VIF for all predictor variables was less than 2, and the tolerance indices were close to 1, indicating no multicollinearity.

To examine the independence of errors, the Durbin–Watson test was applied. The test result (Durbin–Watson = 1.734) indicated independence of residuals, as the statistic was within the acceptable range of 1.5 to 2.5.

The summary of multiple linear regression analysis is presented in Table 3. The model including sleep quality and sexual function significantly predicted interpersonal emotion regulation ($F = 48.23$, $p < .05$). Among the predictors, sleep quality had a stronger effect in predicting interpersonal emotion regulation ($\beta = 0.507$, $p < .05$).

Table 3

Multiple Linear Regression of Sleep Quality and Sexual Function in Predicting Interpersonal Emotion Regulation

Predictor Variable	Unstandardized Coefficient (B)	Standardized Coefficient (β)	t Value	Significance Level
Constant	24.133	—	9.686	.000
Sleep Quality	1.285	-0.027	8.244	.000
Sexual Function	0.759	0.489	6.526	.000

4. Discussion and Conclusion

The present study sought to clarify how sleep quality and sexual function contribute to the prediction of interpersonal emotion regulation among postmenopausal women. The results showed that both sleep quality and sexual function were significantly and positively associated with interpersonal emotion regulation and that together these variables explained a meaningful proportion of the variance in interpersonal emotion regulation scores. Notably, sleep quality emerged as the stronger predictor. This pattern reinforces the conceptual view that emotion regulation capacity in midlife is integrally linked to physiological and relational well-being (Dubé et al., 2020; Fischer et al., 2024). It also offers new evidence from a Middle Eastern context where cultural factors may influence both menopausal experiences and interpersonal dynamics (Masoumi et al., 2020; Vatankhah et al., 2023).

The strong predictive value of sleep quality is consistent with a growing body of research demonstrating the centrality of restorative sleep for affective functioning. Sleep is essential for the recalibration of neural networks involved in emotion regulation, particularly the interplay between the amygdala and prefrontal cortex (O'Leary et al., 2017; Walker, 2017). Sleep deprivation or fragmented sleep has been shown to reduce cognitive control over emotional responses, increase emotional volatility, and impair social connectedness (Gupta & Sharma, 2021; Rezaie et al., 2023).

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Our findings align with this neurocognitive perspective and reinforce recent empirical work linking poor sleep to heightened interpersonal sensitivity and difficulty in modulating affective states (Javed et al., 2024; Omrani et al., 2022). For postmenopausal women, sleep disruptions are frequently reported due to hormonal fluctuations, vasomotor symptoms, and psychosocial stressors (Mirghafourvand et al., 2022; Talaulikar, 2022). The fact that sleep quality accounted for the largest portion of variance in emotion regulation underscores how crucial addressing sleep health may be for emotional resilience at this life stage.

Our findings also support theoretical frameworks positioning emotion regulation as a bi-directional process between physiology and psychosocial adaptation (Cremades et al., 2022). Vandekerckhove and Wang (Vandekerckhove & Wang, 2018) described sleep and emotion as reciprocally influential systems, where poor sleep undermines adaptive regulation, while heightened emotional distress feeds back to impair sleep. The significant correlation we observed between sleep quality and interpersonal emotion regulation suggests that interventions targeting sleep improvement—such as cognitive behavioral therapy for insomnia or lifestyle modifications—may indirectly enhance interpersonal functioning by stabilizing mood and increasing the availability of cognitive resources for social interaction (Almondes et al., 2021; Zhang et al., 2022).

Sexual function also emerged as a significant predictor of interpersonal emotion regulation, supporting the conceptualization of sexual health as not merely physical but deeply intertwined with psychological well-being (Dubé et al., 2020; Fischer et al., 2022). The menopause transition often disrupts sexual satisfaction due to changes in hormonal profiles, urogenital health, and sexual desire (Ali et al., 2020; Khalesi et al., 2020). Sexual distress may lead to feelings of inadequacy, relational discord, and lower capacity to manage emotions constructively (Ghazanfarpour et al., 2018; Obodiat et al., 2024). Our results align with studies showing that better sexual function predicts lower emotional dysregulation and stronger interpersonal coping skills in women (Cinek, 2025; Jani, 2023). Positive sexual experiences may provide emotional security, increase intimacy, and reinforce adaptive strategies such as seeking comfort from a partner or using perspective-taking in conflict resolution (Fischer et al., 2024; Zamani Zarchi et al., 2020).

The finding that sleep quality slightly outperformed sexual function as a predictor may reflect the fundamental neurophysiological role of sleep in affective regulation. While sexual health contributes to relational closeness and well-being, sleep is a broader biological determinant that underpins emotion regulation across all interpersonal contexts (Pickett et al., 2016; Walker, 2017). This distinction is clinically important; it suggests that while improving sexual well-being can enhance relationship-specific emotional skills, sleep health interventions may have a wider impact on global interpersonal functioning.

Our results also extend prior work by integrating these two health domains in the context of interpersonal emotion regulation, which has been underexplored. Many studies have separately examined sleep or sexual function in relation to mood and psychological health (Khalesi et al., 2020; Rezaie et al., 2023), but few have simultaneously modeled their combined predictive value for interpersonal regulation. By demonstrating that both remain significant when entered into the same regression model, our study suggests these are complementary and partially independent contributors to emotional resilience in menopause. This finding supports multi-domain interventions that address both restorative sleep and sexual satisfaction to strengthen interpersonal coping and relational stability (Masihpour et al., 2023; Mirghafourvand et al., 2022).

The cultural context of menopause further enriches the interpretation of these findings. Research indicates that in societies where menopause is stigmatized or framed as decline, women may experience increased psychological burden, affecting their ability to seek support or communicate emotional needs (Ali et al., 2020; Vatankhah et al., 2023). Emotional suppression or avoidance strategies may be more prevalent when sexual difficulties are taboo (Ghazanfarpour et al., 2018). Our study adds to the small but growing body of evidence from non-Western populations by showing similar links between sleep, sexual function, and interpersonal emotion regulation, yet it also highlights the need for culturally sensitive interventions that address these issues openly (Masoumi et al., 2020; Obodiat et al., 2024).

Another important dimension is the relevance of interpersonal emotion regulation frameworks in understanding menopausal adaptation. Traditional studies have focused on individual-level regulation; however, as Cremades et al. (Cremades et al., 2022) and Fischer et al. (Fischer et al., 2024) note, emotions are often co-regulated within close relationships. Sleep deprivation and sexual dissatisfaction may not only impair self-regulation but also reduce a woman's ability to engage in constructive interpersonal strategies, such as seeking reassurance or perspective-taking. Our findings support the idea that

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interventions should consider relational contexts rather than solely individual emotion regulation skills (Kozubal et al., 2023; Zamani Zarchi et al., 2020).

Furthermore, the present findings suggest practical applications for mental health care and primary health services. Menopausal care is often focused narrowly on managing vasomotor and reproductive symptoms (Talaulikar, 2022), but our results emphasize the importance of screening for sleep and sexual health issues as potential indicators of emotional vulnerability. By addressing these modifiable factors, practitioners could promote better relational functioning and psychological well-being (Dubé et al., 2020; Masihpour et al., 2023). Integrative care models that combine sleep hygiene education, psychosexual counseling, and interpersonal emotion regulation training may be particularly effective (Fischer et al., 2022; Li et al., 2025).

Finally, our findings resonate with emerging work on resilience and self-perception during midlife. Li and colleagues (Li et al., 2025) highlighted how illness perception and self-esteem mediate emotional disorders in perimenopausal women, suggesting that enhancing women's positive self-concepts could buffer the effects of physiological disruptions on emotion regulation. Sleep and sexual health may support this resilience pathway by sustaining energy, intimacy, and self-worth, all of which facilitate more adaptive interpersonal engagement (Cinek, 2025; Juwita & Sari, 2021). Integrating these psychosocial elements into menopause care could improve both individual and relational outcomes.

5. Limitations and Suggestions

This study has several limitations that should be acknowledged. The cross-sectional design prevents causal inference; while we found that sleep quality and sexual function predict interpersonal emotion regulation, it is also possible that difficulties with emotional regulation negatively affect sleep patterns and sexual satisfaction over time. Longitudinal research is needed to clarify directionality. Our use of self-report measures introduces the potential for recall and social desirability bias, particularly in culturally sensitive areas such as sexual functioning. Although we used validated instruments with strong psychometric properties, responses may have been influenced by participants' willingness to disclose personal information. Furthermore, the sample was drawn from one urban region and may not represent rural populations or women with different cultural or socioeconomic backgrounds. Hormonal or medical variables (e.g., use of hormone replacement therapy, comorbid physical illnesses) were not controlled, though these could influence both sleep and sexual health. Lastly, the study did not account for partner-related factors, which can strongly affect sexual satisfaction and interpersonal emotion regulation.

Future research should employ longitudinal or prospective designs to examine causal pathways and potential bidirectional effects between sleep, sexual function, and interpersonal emotion regulation. Experimental or interventional studies could evaluate whether improving sleep hygiene or sexual well-being leads to measurable gains in interpersonal emotion regulation and relational satisfaction among postmenopausal women. Expanding the scope to include partner dynamics, such as partner emotional support, sexual communication, and marital satisfaction, would provide a more holistic understanding of interpersonal processes. Investigations should also consider biological markers such as hormonal profiles or objective sleep measurements (e.g., actigraphy or polysomnography) to strengthen validity. Cross-cultural comparative studies could clarify how sociocultural norms and menopause-related beliefs shape these associations. Finally, integrating qualitative approaches could deepen understanding of women's lived experiences and the nuanced ways in which sleep and sexual health influence emotional adaptation in diverse contexts.

In practice, health care providers should adopt a more integrative approach to menopausal care that incorporates mental health, sleep, and sexual well-being alongside physical symptom management. Routine screening for sleep disturbances and sexual dysfunction can help identify women at risk of emotional dysregulation and interpersonal difficulties. Multidisciplinary teams—including gynecologists, psychologists, and sex therapists—should collaborate to offer combined interventions such as sleep education, cognitive-behavioral strategies, and psychosexual counseling. Educational programs can normalize discussion about menopause-related changes and reduce stigma, encouraging women to seek help earlier. Community health initiatives and workshops may empower women with self-care skills for sleep and emotional resilience while fostering partner involvement to support intimacy and relationship quality. By addressing these interrelated factors, practitioners can promote healthier psychological adjustment and stronger interpersonal functioning during the menopausal transition.

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Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

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