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Original Research Article

Assessment of anxiety, depression and stress among post-hysterectomy women / postmenopausal women

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Abstract

Background: Hysterectomy and menopause can significantly impact women's mental health, often leading to anxiety, depression, and stress due to hormonal changes and psychosocial factors.

Aim & Objectives: This study aimed to assess the prevalence and severity of anxiety, depression, and stress among postmenopausal and post-hysterectomy women. Examine the relationship of psychological distress with demographic, socioeconomic factors, and time since hysterectomy or menopause on anxiety, depression, and stress levels.

Materials and Methods: A cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology at ACS Medical College and Hospital, Chennai, over 12 months. The study included 100 women aged 40–65 years who were either postmenopausal or post-hysterectomy. Women with psychiatric disorders or chronic diseases were excluded. A structured, validated Depression Anxiety Stress Scale-21 (DASS-21) questionnaire was used to assess psychological distress. Data were analyzed using SPSS, with descriptive and inferential statistical methods including ANOVA, Pearson correlation, and logistic regression.

Results: The mean age of participants was 53.51 years. Anxiety was most commonly moderate (55%), with 30% experiencing mild anxiety. Depression was predominantly mild (81%), and stress was moderate (76%). Younger age, shorter time since menopause or hysterectomy, and lower socioeconomic status were identified as significant predictors of higher anxiety, depression, and stress levels. Anxiety, depression, and stress were most pronounced in women less than one-year post-event.

Conclusion: This study highlights a significant psychological burden on postmenopausal and post-hysterectomy women, particularly in the first few years after these life events. Anxiety, depression, and stress are prevalent in these populations, and factors such as age, time since the event, and socioeconomic status are important predictors. Targeted mental health interventions are needed, especially for women in the early stages of menopause or post-hysterectomy.

Keywords: Anxiety, Depression, Stress, Postmenopausal, Posthysterectomy, Psychological well-being, DASS-21, Menopause, Hysterectomy, Mental health.

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1. Introduction

Menopause is a natural developmental stage in a woman's life that occurs with aging, characterized by hormonal and physical changes. These changes significantly impact women's socio-mental well-being, with a notable increase in depressive symptoms during this phase.[1,2] Studies indicate that 26% to 33% of women experience depressive symptoms for the first time during menopause, manifesting as chronic fatigue, restlessness, concentration difficulties, and sleep disorders.[3] Similarly, anxiety disorders, characterized by excessive worry and irrational thoughts, affect 7.3% of menopausal women, with prevalence estimates ranging between 5.3% and 10.4%.[4]

Stress levels are also markedly elevated in postmenopausal women, with as many as 88.8% reporting significant stress.[5] Stress, defined as the body's response to internal and external challenges, can exacerbate menopausal symptoms. While limited studies suggest that perceived stress decreases with age, the relationship remains inadequately explored.[6,7]

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Hysterectomy, the surgical removal of the uterus and menopause, the cessation of ovarian function. It is one of the most commonly performed gynecological procedures worldwide, with most surgeries addressing benign conditions such as fibroids, abnormal uterine bleeding, and endometriosis.[8] These are significant events in a woman's life, each associated with profound physical, emotional, and psychological changes.[9,10] While hysterectomy offers significant physical relief such as eliminating pain, heavy bleeding, and fears of malignancy, it also has psychological implications. Many women report positive outcomes, including improved quality of life, relief from anxiety about pregnancy, and increased sexual satisfaction.[11]

However, hysterectomy can also lead to negative psychological effects, including anxiety, depression, and stress, particularly for women who struggle with the loss of fertility or the perceived impact on femininity and body image.[12] These emotional responses may be influenced by preoperative mood, family dynamics, and resilience, which can predict postoperative psychological outcomes.[13] Similarly, postmenopausal women face the natural transition marked by hormonal decline, which may lead to mood disturbances, including anxiety, depression, and stress.

The hormonal shifts associated with both hysterectomy and menopause are key contributors to psychological challenges. Estrogen and progesterone are known to play a role in mood regulation, and their decline may exacerbate vulnerability to mental health conditions. This study aims to assess the prevalence and severity of anxiety, depression, and stress among post-hysterectomy or postmenopausal women.

2. Materials and Methods

A cross-sectional observational study was carried out in the Department of Obstetrics and Gynecology at ACS Medical College and Hospital, Chennai, to evaluate the anxiety, depression and stress levels among post-hysterectomy and postmenopausal women. The study was conducted over a period of 12 months from December 2020 to December 2021. The study population includes women aged 40–65 years. The ethical committee approval was obtained with ethical approval number (No.109/2020/IEC/ACSMCH) from the institutional Human Ethics Committee of ACS Medical College and Hospital, Chennai. The Inclusion Criteria of this study population were women aged 40–65 years who were either postmenopausal or underwent hysterectomy. Patients who gave informed written consent were selected for this study. The Exclusion Criteria were women with a history of diagnosed psychiatric disorders or those undergoing psychiatric treatment.

Additionally, women with severe medical conditions, such as malignancies or chronic systemic diseases. A sample size of 100 participants was taken using the convenience sampling method. This size was determined based on the study conducted by Nobahar et al in the year 2019 for prevalence rates of anxiety, depression, and stress in these populations, based on a predetermined significance level (alpha = 0.05) and statistical power (80%) to detect statistically significant differences between the data collection includes age, marital status, education, employment, socioeconomic status, time since hysterectomy or menopause, and medical history.[14] A structured validated questionnaire was evaluated using the Depression Anxiety Stress Scale-21 (DASS-21), which was employed to assess levels of anxiety, depression, and stress. Scores were categorized into normal, mild, moderate, severe, or extremely severe based on established cut-offs. The tool was translated into the local language for participants requiring it to ensure comprehension and cultural relevance. All responses were recorded anonymously, and participants were encouraged to provide honest answers.

2.1. Statistical analysis

To analyse the data, SPSS (IBM SPSS Statistics for Windows, Version 26.0, Armonk, NY: IBM Corp. Released 2019) and Excel Sheet were used to enter the data. The results of the Normality tests, Kolmogorov-Smirnov and Shapiro-Wilks revealed that the data follows normal distribution. Therefore, to analyze the data, a parametric test was applied. Descriptive statistics determined the variable's frequency, percentage, mean, and standard deviation. Pearson Correlation analysis was used to find the relationships between demographic factors, such as age and socioeconomic status, and DASS-21 scores. Analysis of variance (ANOVA) was used to compare DASS-21 scores across different time intervals since menopause or hysterectomy, with post-hoc tests identifying specific group differences. Logistic regression analysis was performed to identify predictors of high anxiety, depression, and stress levels, considering factors like age, socioeconomic status, and time since menopause or hysterectomy. The significance level is fixed at 5% ($\alpha = 0.05$). P-value <0.05 is considered to be statistically significant.

3. Results

The present study provides both demographic and psychological factors among postmenopausal and post-hysterectomy women. The average age of the participants was 53.51 years, (**Table 1**) with a range of 40 to 65 years, reflecting the focus on midlife women. Regarding marital status, 79% of participants were married, while 21% were widowed. Most participants were literate (73%) at the education level, and 37% were illiterate. (**Table 2**) The socioeconomic status distribution revealed a diverse economic background among participants, with 32% in the lower class, 21% in the lower middle class, 20% in the upper lower class, 15% in the upper middle class, and 12% in the upper class. The largest proportion (32%) came from the lower socioeconomic category, which may indicate a higher susceptibility to stress. (**Table 3**)

In terms of time since menopause or hysterectomy, 52% of the women were between 1 to 5 years post-event, 31% were less than 1 year post-event, and 17% had been more than 5 years post-event. This suggests that a significant proportion of the women were in the early stages of adjusting to menopause or post-hysterectomy life changes. This timing is crucial, as psychological distress, including anxiety, depression, and stress, maybe more pronounced shortly after these significant life events. (**Table 4**)

Psychologically, the distribution of DASS-21 scores revealed that a majority of women experienced moderate anxiety (55%), while 30% reported mild anxiety. Severe anxiety was reported by 12%, and 3% experienced extremely severe anxiety. Depression was predominantly mild, affecting 81% of participants, with moderate depression observed in 12%, severe in 5%, and extremely severe in 2%. Regarding stress, 76% of women reported moderate stress, 19% experienced mild stress, and smaller proportions reported severe (4%) or extremely severe stress (1%). These findings suggest that although most participants exhibited mild to moderate psychological distress, severe anxiety, depression, and stress were less common. (**Table 5**)

Pearson correlation analysis revealed significant relationships between demographic variables and DASS-21 scores. (**Table 6**) Age was inversely associated with anxiety, depression, and stress, indicating that younger women tended to experience higher psychological distress. Time since the event showed a positive correlation with all three psychological outcomes, suggesting that women closer to the menopause or hysterectomy event were more likely to report higher levels of psychological distress. Socioeconomic status was negatively correlated with anxiety and depression, implying that women from lower socioeconomic backgrounds experienced greater distress. However, no significant correlation was found between socioeconomic status and stress (P=0.82).

The comparison of psychological scores across different time intervals indicated that participants less than 1-year post-event had significantly higher anxiety, depression, and stress scores, with a decrease in scores over a time period. (**Table 7**) Finally, multivariate analysis identified older age, shorter time since the event, and lower socioeconomic status as significant predictors of higher DASS-21 scores, highlighting the compounded impact of these factors on psychological well-being in postmenopausal and post-hysterectomy women. (**Table 8**)

Table 1: Mean and Standard Deviation of age among the study participants[14,15]

Variables	Mean	SD	Minimum	Maximum
Age in years	53.51	5.723	40	65

Table 2: Marital status and education distribution among the study participants[14,16]

Marital status	Frequency	Percentage
Married	79	79.0
Widow	21	21.0
Education	**Frequency**	**Percentage**
Literate	63	63.0
Illiterate	37	37.0

Table 3: Socioeconomic status distribution among the study participants[19]

Socioeconomic status	Frequency	Percentage
Upper	12	12.0
Upper middle	15	15.0
Lower middle	21	21.0
Upper Lower	20	20.0
Lower	32	32.0

Table 4: Time since event among post-menopausal / post-hysterectomy patients[20]

Time interval	Frequency	Percentage
<1 year	31	31.0
1-5 years	52	52.0
>5 years	17	17.0

Table 5: Distribution of anxiety, depression, and stress scores (DASS-21)[14,17,18]

Variables	Mild (%)	Moderate (%)	Severe (%)	Extremely severe (%)
Anxiety	30.0	55.0	12.0	3.0
Depression	81.0	12.0	5.0	2.0
Stress	19.0	76.0	4.0	1.0

Table 6: Correlation between demographic variables and DASS-21 scores[19,20]

Variables	Anxiety R (p-value)	Depression R (p-value)	Stress R (p-value)
Age	-0.203** (0.04*)	-0.476** (0.000*)	-0.277** (0.03*)
Time since event	0.694** (0.000*)	0.274 ** (0.006*)	0.370 ** (0.000*)
Socioeconomic status	-0.213** (0.03*)	-0.247** (0.01*)	-0.023 (0.82)

**- Statistically significant

Table 7: Comparison of anxiety, depression, and stress scores based on time interval[14,19,20]

Time interval	Anxiety	Depression	Stress	p-value
<1 year	12.4 ± 4.9	11.2 ± 4.2	13.1 ± 5.0	0.01*
1-5 years	10.3 ± 4.3	9.4 ± 3.9	11.3 ± 4.6	0.03*
>5 years	9.1 ± 3.8	8.6 ± 3.6	10.2 ± 4.2	0.02*

Table 8: Multivariate analysis of factors predicting high DASS-21 scores[19,20]

Variable	Adjusted OR (95% CI)	p-value
Age	1.15 (1.02–1.29)	0.02*
Time since event	0.80 (0.68–0.96)	0.03*
Socioeconomic status	1.20 (1.08–1.34)	0.01*

*- Statistically significant

4. Discussion

This present study highlights the psychological impact of menopause and hysterectomy on women aged 40–65 years, focusing on anxiety, depression, and stress.

The study participant's mean age was 53.51, indicating a relatively homogeneous midlife demographic group. The minimum age was 40, and the maximum was 65, reflecting the inclusion criteria targeting women in the postmenopausal or post-hysterectomy phase. The data highlight that the study primarily focused on middle-aged to older women, an age group particularly vulnerable to the psychological and physiological changes associated with menopause and hysterectomy. This age distribution ensures that the findings are relevant to the population most affected by these transitions. The study conducted by Nobahar et al. in the year 2019 has a similar study finding results of mean age ranging in 50s postmenopausal women are affected by anxiety, depression, and stress.[14] Another study conducted by Bahri et al. in the year 2016 has contrasting results of mean age ranging in 40s post-hysterectomy women are affected by depression.[15]

In the present study, the marital status distribution of the study participants revealed that the majority (79%) were married, while 21% were widowed. The study conducted by Nobahar et al in the year 2019 and Wilson et al in the year 2018 had similar research, finding results of many participants who are married in postmenopausal women are affected by anxiety, depression, and stress.[14,16] This distribution reflects the life circumstances of middle-aged to older women, where a significant proportion may experience widowhood due to aging. The higher proportion of married participants suggests that most women had spousal support, which could influence their psychological well-being. Conversely, widowed participants may face additional emotional and social challenges, potentially contributing to higher levels of stress, anxiety, or depression. This marital status variation underscores the importance of considering social support systems in the assessment and management of psychological health in this population.

In the present study, most participants were literate (63.0%) than illiterate (37.0%). This shows a significant portion of the population had basic literacy skills, which may influence their ability to access health information and cope with psychological challenges. Literacy can be critical in understanding health conditions, adhering to medical advice, and utilizing support systems effectively. The presence of 37% illiterate participants highlights a potential barrier to accessing mental health resources and education about menopause or hysterectomy-related changes, emphasizing the need for culturally appropriate and accessible interventions to address the psychological well-being of less-educated women. The study conducted by Nobahar et al. in the year 2019 had similar study finding results in that more participants are literate than illiterate in postmenopausal women are affected by anxiety, depression, and stress.[14]

The distribution of time since menopause or hysterectomy among the study participants shows that 52% of women were between 1 to 5 years post-event, followed by 31% who were less than 1 year post-event, and 17% who were more than 5 years post-event. Most participants (52%) were in the 1-5 years range, indicating that many women were in the earlier stages of adjustment to menopause or post-hysterectomy changes. This timing is particularly important because psychological distress such as anxiety, depression, and stress may be more pronounced in the immediate post-event period. Women who are closer to the event may experience more intense psychological challenges, while those more than 5 years post-event might show more adaptation and psychological stability. The distribution highlights the need for targeted psychological support, particularly for those in the earlier phases after menopause or hysterectomy.

The distribution of Anxiety, Depression, and Stress scores, as measured by the DASS-21, reveals notable psychological distress among the participants. A majority of women experienced moderate anxiety (55%), with 30% reporting mild anxiety and a smaller proportion experiencing severe (12%) or extremely severe anxiety (3%). Depression was most commonly mild, affecting 81% of participants, while moderate depression was seen in 12%, severe in 5%,

and extremely severe in 2%. Regarding stress, 76% of women reported moderate stress, 19% experienced mild stress, and smaller proportions reported severe (4%) or extremely severe stress (1%). These findings indicate that while most participants experienced mild to moderate psychological distress, the prevalence of severe anxiety, depression, and stress remained relatively low. The high rates of mild and moderate anxiety and stress suggest that these conditions may be more prominent in this population, likely due to the psychological impact of menopause or hysterectomy, and may require targeted mental health interventions to alleviate these symptoms. The study conducted by Nobahar et al in the year 2019 has similar study finding results that there is mild depression found in postmenopausal women.[14] The study conducted by Lokuge et al. in the year 2011 and Resnick et al. in the year 2006 contrast studies finding results that there is an increased level of depression in postmenopausal women.[17,18]

The socioeconomic status distribution of the study participants reveals a diverse range of economic backgrounds, with 32% of participants in the lower socioeconomic class, 21% in the lower middle, 20% in the upper lower, 15% in the upper middle, and 12% in the upper class. The largest group (32%) was in the lower socioeconomic category, which may indicate a higher vulnerability to stressors related to limited resources, lower access to healthcare, and potentially greater difficulty in coping with the psychological challenges associated with menopause or hysterectomy. These findings suggest that socioeconomic status may be a critical factor influencing the mental health outcomes of participants, with those in lower economic strata possibly experiencing heightened levels of anxiety, depression, and stress. Targeted interventions may be needed to address the needs of women from lower socioeconomic backgrounds in this population. The study conducted by Khatak et al. in the year 2022 has contrasting results that lower middle socio economic status was most commonly affected by post-menopausal women, but in the present study the low socio economic status is affected.[19]

The correlation analysis between demographic variables and DASS-21 scores revealed several significant relationships. Age showed a negative correlation with all three psychological measures (anxiety, depression, and stress), with older age associated with lower levels of anxiety ($r = -0.203$, $p = 0.04$), depression ($r = -0.476$, $p = 0.000$), and stress ($r = -0.277$, $p = 0.03$). This suggests that younger participants experienced higher psychological distress, possibly due to the transition or challenges related to menopause or hysterectomy. The study conducted by Nobahar et al. in the year 2019 has similar study finding results in that there is no significant difference found between anxiety, depression, and stress in postmenopausal women.[14] Time since the event demonstrated a positive correlation with all three psychological outcomes, indicating that those closer to the menopause or hysterectomy event experienced higher anxiety ($r = 0.694$, $p = 0.000$), depression ($r = 0.274$, $p = 0.006$), and stress ($r = 0.370$, $p = 0.000$). This highlights the heightened emotional impact of recent life changes. Socioeconomic status was inversely correlated with anxiety ($r = -0.213$, $p = 0.03$) and depression ($r = -0.247$, $p = 0.01$), suggesting that women from lower socioeconomic backgrounds experienced more psychological distress. However, there was no significant correlation between socioeconomic status and stress ($r = -0.023$, $p = 0.82$), indicating that stress levels were not significantly affected by socioeconomic status in this sample. These findings underscore the complex interplay between age, time since menopause or hysterectomy, and socioeconomic status in shaping the psychological health of women in this demographic. No literature was found to compare with the present study.

The comparison of anxiety, depression, and stress scores based on the time since menopause or hysterectomy shows significant differences across the three-time intervals. Participants who were less than 1-year post-event had the highest mean scores for anxiety (12.4 ± 4.9), depression (11.2 ± 4.2), and stress (13.1 ± 5.0), indicating more pronounced psychological distress in the immediate aftermath of menopause or hysterectomy. These scores decreased progressively as time since the event increased. Women in the 1-5 years post-event group had lower mean scores for anxiety (10.3 ± 4.3), depression (9.4 ± 3.9), and stress (11.3 ± 4.6), while those more than 5 years post-event had the lowest scores for all three variables: anxiety (9.1 ± 3.8), depression (8.6 ± 3.6), and stress (10.2 ± 4.2). The statistical significance of these differences, with p-values of 0.01 for anxiety, 0.03 for depression, and 0.02 for stress, suggests that psychological distress diminishes over time, with those closer to the event experiencing higher levels of anxiety, depression, and stress. This highlights the temporal nature of psychological adjustment following menopause or hysterectomy, reinforcing the need for early psychological support in the first year post-event. No literature was found to compare with the present study.

The multivariate analysis of factors predicting high DASS-21 scores highlights the influence of age, time since the event, and socioeconomic status on psychological distress among postmenopausal and post-hysterectomy women. Age was a significant predictor, with an adjusted odds ratio (OR) of 1.15 (95% CI: 1.02–1.29, $p = 0.02$), indicating that older women were more likely to experience higher levels of psychological distress. Conversely, time since the event was negatively associated with distress, with an adjusted OR of 0.80 (95% CI: 0.68–0.96, $p = 0.03$), suggesting that those further from the event had lower levels of anxiety, depression, and stress. Socioeconomic status also emerged as a significant predictor, with an adjusted OR of 1.20 (95% CI: 1.08–1.34, $p = 0.01$), indicating that women from lower socioeconomic backgrounds were more likely to report higher distress levels. These findings emphasize the

compounded impact of demographic and temporal factors on the psychological well-being of women post-menopause or post-hysterectomy, underscoring the need for targeted mental health interventions for younger women, those recently post-event, and those from lower socioeconomic backgrounds. No literature was found to compare with the present study.

5. Conclusion

This study highlights the prevalence and determinants of psychological distress of anxiety, depression, and stress among postmenopausal and post-hysterectomy women, emphasizing the influence of demographic, socioeconomic, and temporal factors. Younger participants, those within the first year of menopause or hysterectomy, and women from lower socioeconomic backgrounds were identified as the most vulnerable, with significantly higher levels of psychological distress. This study concludes that the prevalence of moderate anxiety was reported by 55% of participants, while mild depression affected 81%, and moderate stress was experienced by 76%. Severe distress, although less common, was present in a small proportion of participants, with 12% reporting severe anxiety, 5% severe depression, and 4% severe stress. These findings suggest that mild to moderate psychological distress is widespread in this population, reflecting the emotional and physiological challenges associated with post-menopause or post-hysterectomy. The results highlight the need for focused mental health interventions to alleviate distress and improve psychological well-being among these women. Special attention should be given to those at higher risk, including younger women, those in the early post-event phase, and those from lower socioeconomic backgrounds.

6. Source of Funding

None.

7. Conflict of Interest

None.

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