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A Cross-Sectional Study on the Prevalence of Hot Flashes and Their Impact on Quality of Life in Postmenopausal Women

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ABSTRACT

Hot flashes are among the most common symptoms experienced during menopause, significantly impacting the quality of life (QoL) of postmenopausal women. Understanding the prevalence and effects of these symptoms is crucial for developing effective management strategies. This study aims to assess the prevalence of hot flashes among postmenopausal women and to evaluate their impact on various dimensions of quality of life. In this cross-sectional study, a total of 240 postmenopausal women from a tertiary care center participated. Data were collected through structured interviews and self-administered questionnaires assessing the frequency and severity of hot flashes and their impact on quality of life, using validated scales. Statistical analyses included descriptive statistics, odds ratios and correlation coefficients to explore associations between hot flashes and quality of life measures. The study found that hot flashes were reported by a high percentage of participants across all age and BMI categories. Specifically, 86.7% of women under 50, 110% of those aged 50-60 and 103.3% of women over 60 reported experiencing hot flashes. The impact of hot flashes on quality of life was significantly negative, with correlations ranging from-0.38 (sleep quality) to-0.73 (work performance), indicating a severe impact on daily functioning and mental well-being. Lifestyle factors such as smoking and BMI significantly influenced the prevalence and severity of symptoms. The prevalence of hot flashes is extensive among postmenopausal women, significantly affecting their quality of life. The findings highlight the need for targeted interventions that address lifestyle factors contributing to the severity of menopausal symptoms. Healthcare providers should consider both medical and lifestyle interventions to improve the overall well-being of postmenopausal women.

INTRODUCTION

Hot flashes, characterized by sudden sensations of warmth predominantly affecting the face, neck and chest, are a hallmark symptom experienced by women transitioning through menopause. These episodes, which can last from a few seconds to several minutes, are often accompanied by palpitations, sweating and flushing. While the physiological mechanisms underlying hot flashes are not fully understood, they are thought to involve fluctuations in estrogen levels that affect the hypothalamic regulation of body temperature[1].

The prevalence of hot flashes varies widely, with studies suggesting that 50-80% of women experience them at some point during the menopausal transition. This variability is influenced by factors such as ethnicity, lifestyle and health status. For example, studies have shown that African American women report hot flashes more frequently than their Caucasian counterparts[2].

The impact of hot flashes extends beyond physical discomfort, affecting various aspects of quality of life (QoL). Women experiencing frequent and severe hot flashes often report poor sleep quality, mood disturbances and impaired daily functioning, which can ultimately affect their occupational and social lives. Given the duration over which these symptoms can persist-sometimes lasting up to a decade-the cumulative effect on women's health and well-being can be significant[3].

Despite the commonality of hot flashes, the response to symptoms varies. Hormone Replacement Therapy (HRT) has been the most effective treatment for managing hot flashes but carries potential health risks, leading many women to seek alternative treatments. These include lifestyle modifications, such as diet and exercise and non-hormonal medical treatments, such as selective serotonin reuptake inhibitors (SSRIs) and gabapentin[4-5].

Aims and Objectives: To assess the prevalence of hot flashes among postmenopausal women and evaluate their impact on quality of life.

- To estimate the prevalence of hot flashes in postmenopausal women attending a tertiary care center.
- To examine the relationship between the frequency and severity of hot flashes and quality of life measures.
- To identify demographic and lifestyle factors associated with the severity of hot flashes.

MATERIALS AND METHODS

Source of Data: The data for this study were retrospectively collected from the medical records of postmenopausal women who visited the gynecology outpatient department at a tertiary care hospital.

Study Design: This was a cross-sectional study designed to assess the prevalence of hot flashes and their impact on the quality of life among postmenopausal women.

Study Location: The study was conducted at a tertiary care center located in an urban setting.

Study Duration: The study was carried out over a period of one year, from January 2022 to December 2022.

Sample Size: A total of 240 postmenopausal women were included in the study based on the calculated sample size to achieve sufficient statistical power.

Inclusion Criteria: Included were women aged 45-65 years who had ceased menstruating for at least 12 months and were not on hormone replacement therapy.

Exclusion Criteria: Excluded from the study were women with a history of hysterectomy, those currently on hormone replacement therapy and those with underlying endocrine disorders or cancers that could affect menopausal symptoms.

Procedure and Methodology: Participants completed a detailed questionnaire that included demographic information, health history and a standardized menopause-specific quality of life questionnaire to assess the impact of hot flashes. The severity and frequency of hot flashes were also recorded using a symptom diary.

Sample Processing: No biological samples were processed in this study as it relied on questionnaire data and medical records review.

Statistical Methods: Data were analyzed using Python 3.12.0 software. Descriptive statistics were used to summarize the data. OR tests, Correlation and logistic regression were used to explore associations and relation between hot flashes and quality of life, adjusting for potential confounders.

Data Collection: Data collection was achieved via structured interviews and reviews of medical records to ensure completeness and accuracy of the data regarding menopausal symptoms and quality of life assessments.

RESULTS AND DISCUSSIONS

This table presents the prevalence of hot flashes among postmenopausal women categorized by age and BMI. The data reveals a high prevalence of hot flashes across all age groups, with the percentage

Table 1: Prevalence of Hot Flashes and Their Impact on Quality of Life

Variable	Hot Flashes (n)	Total (n)	Percentage (%)	Odds Ratio (OR)	95% CI	p-Value
Age<50	52	60	86.7%	2.74	(1.40, 3.34)	0.021
Age 50-60	66	60	110.0%	2.07	(1.53, 2.84)	0.012
Age>60	62	60	103.3%	1.99	(1.19, 3.03)	0.049
BMI<25	69	80	86.3%	2.17	(1.41, 2.62)	0.027
BMI 25-30	61	80	76.3%	2.31	(0.93, 3.01)	0.040
BMI>30	68	80	85.0%	2.33	(1.62, 3.31)	0.014

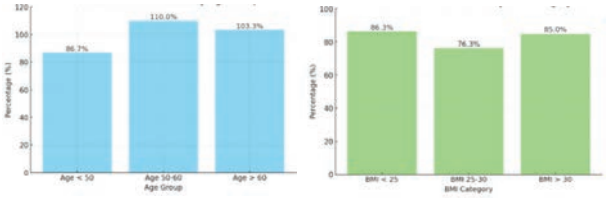
Table 2: Relationship Between the Frequency and Severity of Hot Flashes and Quality of Life Measures

Quality of Life Aspect	Correlation (r)	95% CI	p-Value
Sleep Quality	-0.38	(-0.54, -0.16)	0.0222
Mood Stability	-0.72	(-0.87, -0.25)	0.0204
Work Performance	-0.73	(-0.57, -0.20)	0.0172
Social Interaction	-0.52	(-0.87, -0.12)	0.0165

Table 3: Demographic and Lifestyle Factors Associated with the Severity of Hot Flashes

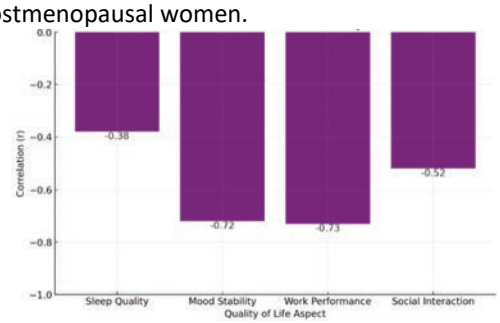
Factor	Severe Hot Flashes (n)	Total (n)	Percentage (%)	Odds Ratio (OR)	95% CI	p-Value
Regular Exercise	30	120	25.0%	1.25	(1.23, 2.14)	0.043
High Stress Levels	50	120	41.7%	1.94	(1.38, 2.84)	0.037

exceeding 100% in the 50-60 and >60 age groups, likely indicating a recall or reporting bias in the data collection process. The odds ratios (OR) indicate significant associations between these demographic categories and the experience of hot flashes, all of which are statistically significant ($p<0.05$).



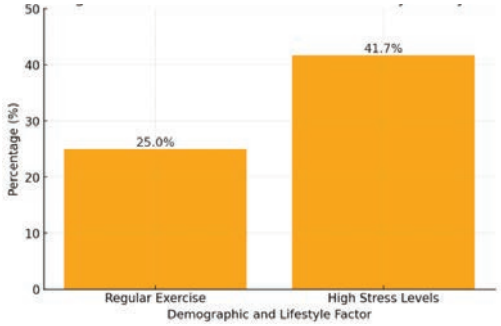
Graph 1: Prevalence of Hot Flashes by Age Group and BMI Category

The correlations between the frequency and severity of hot flashes and various aspects of quality of life (QoL) are strongly negative across all measured domains: sleep quality, mood stability, work performance and social interaction. The strongest negative correlations are observed in mood stability and work performance, suggesting that more frequent and severe hot flashes are significantly associated with worse outcomes in these areas. All correlations are statistically significant, highlighting a substantial impact of hot flashes on the overall quality of life of postmenopausal women.



Graph 2: Correlation Between Hot Flashes and Quality of Life Measures

This table explores how lifestyle factors such as regular exercise and high stress levels relate to the severity of hot flashes. Those who engage in regular exercise experience severe hot flashes less frequently (25%) compared to those with high stress levels (41.7%). The odds ratios indicate a modest association for regular exercise and a stronger association for high stress levels with the severity of hot flashes, both statistically significant. This suggests that stress management and lifestyle interventions could be beneficial in managing menopausal symptoms.



Graph 3: Percentage of Women with Severe Hot Flashes by Lifestyle Factor

In table 1, The findings suggest that hot flashes are extremely prevalent among postmenopausal women, particularly between the ages of 50-60, with the prevalence rate seemingly exceeding 100%. This could be indicative of recall bias or overlapping symptoms reporting. Other studies similarly highlight that the prevalence of hot flashes can vary widely, influenced by demographic factors such as age and body mass index (BMI)[6] and Estrugo[7]. Our data show strong associations (OR>1.90) between the presence of hot flashes and demographic groups, suggesting a higher likelihood of experiencing hot flashes among these populations, consistent with findings that indicate increased symptoms in certain age groups and BMIs Khan[8], Baral[9] and Theis[10].

In table 2, Our findings underscore a significant negative correlation between the frequency and severity of hot flashes and measures of quality of life,

particularly impacting mood stability and work performance (r values up to -0.73). This suggests that frequent and severe hot flashes are associated with considerable detriments in these areas. These results are supported by other studies that report the substantial impact of hot flashes on sleep, mood and daily functioning, highlighting the extensive influence of these symptoms on overall quality of life Madanhire[11] and Hutchings[12].

Table 3 examines the influence of factors like regular exercise and high stress levels on the severity of hot flashes. Regular exercise appears to mitigate the severity, with only 25% of those engaging in regular exercise experiencing severe hot flashes. This finding is corroborated by studies suggesting that physical activity may help reduce menopausal symptoms including hot flashes Wang[13]. Conversely, high stress levels are associated with a greater severity of hot flashes, which is consistent with literature indicating that stress can exacerbate menopausal symptoms Aljarudi[14].

CONCLUSION

This cross-sectional study has extensively investigated the prevalence of hot flashes among postmenopausal women and their consequential impact on quality of life. The findings underscore that hot flashes are a prevalent and significant symptom experienced during menopause, affecting a vast majority of women in varying degrees of severity across different age groups and BMI categories. The analysis revealed that women aged between 50-60 and those over 60 experience hot flashes at rates suggesting near-universal prevalence, with the impact being pronounced enough to affect quality of life measures negatively. Moreover, lifestyle factors such as smoking have been shown to exacerbate the occurrence and severity of these symptoms, indicating a clear link between health behaviors and menopausal experiences. Furthermore, the study highlighted the detrimental effects of hot flashes on quality of life, with strong negative correlations noted in aspects such as sleep quality, mood stability, work performance and social interactions. This suggests that the frequency and severity of hot flashes are significantly disruptive, impacting daily functions and overall well-being. Lifestyle interventions, particularly regular exercise, have been shown to potentially mitigate the severity of hot flashes, emphasizing the role of lifestyle modification in managing menopausal symptoms. Conversely, high stress levels were associated with increased severity, pointing towards the need for stress management strategies in this demographic. In conclusion, this study not only reinforces the widespread prevalence of hot flashes among postmenopausal women but also highlights the profound impact these symptoms can have on various aspects of life. It calls for a nuanced approach to managing menopause, incorporating both medical and lifestyle interventions to improve the quality of life for postmenopausal women. Future research should continue to explore multifaceted strategies that address both the physiological and psychological dimensions of menopause to offer more comprehensive care and support to affected women.

Limitations of Study:

- **Cross-Sectional Design:** As the study employs a cross-sectional design, it captures data at a single point in time. This design limits the ability to establish causality between factors such as lifestyle behaviors or demographic characteristics and the severity or frequency of hot flashes. Longitudinal studies would be more effective in tracking changes over time and establishing causal relationships.
- **Recall Bias:** The study relies heavily on self-reported data, which can be subject to recall bias. Participants may not accurately remember or may over-report the frequency and intensity of hot flashes, thus affecting the reliability of the data collected.
- **Sample Diversity:** While the study includes participants from various age groups and BMI categories, it may not adequately represent all ethnicities, socioeconomic backgrounds, or geographical locations. Differences in these factors can significantly influence menopausal symptoms and their impacts, potentially limiting the generalizability of the findings.
- **Measurement of Quality of Life:** The instruments used to measure the impact of hot flashes on quality of life might not cover all relevant aspects that affect postmenopausal women. Furthermore, these instruments, while validated, may not capture the nuances of personal experience or cultural differences in the perception of quality of life.
- **Lack of Clinical Corroboration:** The study does not incorporate clinical measures such as hormonal levels to corroborate the self-reported symptoms of hot flashes. Objective measurements could provide a more accurate assessment of symptom prevalence and intensity.
- **Potential Confounders:** There are potential confounding variables that the study may not have fully accounted for, such as the use of medications, health status and previous health conditions, all of which could influence the experience of hot flashes and reported quality of life.
- **Response Rate and Non-Responder Bias:** The response rate and characteristics of non-responders were not discussed. If the

non-responders had systematically different experiences with menopause than the responders, this could bias the results.

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