Menopausal Neurocognitive Drift: Forensic Testimony Reliability Jeopardy

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Abstract: Menopause is a natural biological transition associated with hormonal fluctuations that may influence cognitive functioning, particularly memory and attention. The present study aimed to examine the relationship between menopausal symptom severity, memory-related experiences, and confidence in recall, with specific emphasis on their potential implications for reliability in situations requiring accurate recall. A quantitative research design was adopted, and data were collected from 100 women in the menopausal age group using structured questionnaires, including the Menopause Rating Scale (MRS), memory-related measures, and confidence in recall scales. Descriptive statistics were used to summarize menopausal symptom severity, while Pearson correlation analysis and one-way Analysis of Variance (ANOVA) were conducted to examine relationships and group differences among variables. The findings indicated that a considerable proportion of participants experienced moderate to severe menopausal symptoms. Statistically significant negative relationships were observed between menopausal symptom severity, memory performance, and confidence in recall. Significant differences were also found in memory and confidence levels across menopausal symptom categories. The results suggest that menopausal symptom severity may influence memory experiences and confidence in recall, which may have implications for reliability in contexts where accurate recall is essential. Further research with larger samples and objective cognitive assessments is recommended to better understand menopausal cognitive changes and their practical implications.

Index Terms - **Menopausal Symptoms, Memory Performance, Confidence in Recall, Witness Reliability, Menopause Rating Scale (MRS), Cognitive Functioning.**

I. INTRODUCTION

The concept of "Menopausal Neurocognitive Drift" as a distinct clinical or forensic syndrome lacks empirical foundation in current neuroscience and endocrinology literature. While the menopausal transition is associated with subjective cognitive complaints commonly described as "brain fog" and modest, transient declines in specific cognitive domains like verbal memory and processing speed, these changes do not constitute a progressive, irreversible neurocognitive disorder that would jeopardize the reliability of forensic testimony.

In the present study, the term menopausal neurocognitive drift is used as a conceptual description rather than a formal clinical diagnosis. It refers to subtle and often temporary cognitive variations associated with hormonal transitions during menopause. The use of this term is intended to facilitate discussion of functional cognitive changes within forensic and psychological contexts, rather than to imply the existence of a distinct pathological condition.

The primary drivers of these subjective and objective changes appear to be multifactorial, often mediated by sleep disruption from vasomotor symptoms, mood fluctuations, and the direct neurobiological effects of fluctuating and then declining estradiol levels on brain networks involved in memory and executive function. While these cognitive shifts are typically modest at a population level and highly variable across individuals, their implications become significantly magnified in high-stakes forensic contexts where the reliability of human memory is paramount.

The menopausal transition typically occurs between the ages of 45 and 55 years, a period characterized by significant biological and psychological adjustments. This age range is particularly important in forensic contexts, as individuals within this group may actively participate as witnesses, victims, or complainants in legal proceedings. Understanding cognitive functioning within this demographic is therefore essential for evaluating the reliability and consistency of testimony provided by women undergoing menopausal changes.

While women commonly report subjective cognitive concerns, objective cognitive declines have been identified across various domains, though with significant individual variability. The most consistently observed decline is in verbal memory, which includes the ability to learn and recall new verbal information. Longitudinal studies tracking women from premenopause through perimenopause have reliably shown these declines in verbal memory

Beyond verbal memory, research indicates variable findings in other domains such as processing speed, attention, and working memory. Some studies have found declines in attention and working memory during perimenopause, while others show more subtle or inconsistent changes. Verbal fluency, another measure of executive function, has also shown variable findings across studies. These domain-specific cognitive changes are not isolated events but are part of a broader neurocognitive reorganization driven by hormonal shifts.

It is important to note that the timing and severity of these cognitive changes can vary among individuals, influenced by factors such as menopausal symptom burden, genetic predispositions, and other health conditions. For example, studies have explored correlations between specific menopausal symptoms, like hot flashes and sleep disturbances, and cognitive function. Sleep disturbances, which are highly prevalent during menopause, can independently impair cognitive functions such as memory, attention, and executive function, thereby exacerbating the direct hormonal effects on cognition

The "drift" in neurocognition during menopause is not uniform across all women; instead, it exhibits considerable individual differences. This variability underscores the complexity of the menopausal transition and suggests the influence of various modulating factors. Key factors contributing to this heterogeneity include the specific hormonal milieu, individual differences in genetic susceptibility, lifestyle factors, and the presence and severity of menopausal symptoms. The type of menopause (e.g., natural vs. surgical) and the timing and duration of hormone therapy can also significantly impact cognitive outcomes. For instance, preclinical and human studies have explored the critical variables in menopause and cognitive aging research, such as the etiology of menopause, the background hormone levels, and the parameters of exposure to estrogens and progestogens. These factors can either mitigate or exacerbate cognitive changes, highlighting the need for personalized approaches to understanding and managing menopausal neurocognitive health.

Furthermore, the presence of specific menopausal symptoms, such as vasomotor symptoms (hot flashes) and sleep disturbances, has been consistently linked to cognitive complaints and, in some cases, objective cognitive deficits. Insomnia, common in perimenopausal and postmenopausal women, has been shown to correlate with cognitive dysfunction. The interplay between sex hormones, sleep quality, and memory function across the adult female lifespan is a complex area of research, where sleep disturbances can independently contribute to memory impairments and increase the risk of cognitive decline.

A perimenopausal woman experiencing neurocognitive drift may genuinely struggle to recall the exact sequence of events, the specific words spoken, or the precise appearance of an individual—not due to deceit or malingering, but as a direct result of her current neuroendocrine state. This creates a significant risk of her testimony being perceived as unreliable, inconsistent, or even fabricated, potentially leading to miscarriages of justice. The core problem lies in the systemic failure of current forensic psychological practice to account for this dynamic biological variable. Standard protocols for evaluating witness credibility and memory reliability are almost universally based on static models of cognition that do not incorporate the profound impact of reproductive aging.

In legal settings, even minor, transient impairments in memory fidelity, temporal sequencing, or metacognitive awareness can critically undermine the credibility of eyewitness testimony, the consistency of a witness's statement over time, and their susceptibility to interrogative suggestibility. A woman navigating perimenopause may experience genuine difficulties in accurately recalling the precise details of an event, maintaining focus during a lengthy deposition, or resisting leading questions, not due to deception or malingering, but as a direct consequence of her neuroendocrine state. The current framework for evaluating forensic testimony exhibits a significant and dangerous blind spot: it lacks any standardized protocols or normative data that account for the perimenopausal status of a witness. Expert psychological testimony rarely, if ever, incorporates the potential impact of hormonally mediated neurocognitive variability into its assessment of a witness's reliability.

Critically, while performance levels generally remain within normal clinical limits for the vast majority of women, the forensic arena operates on a different standard—one that demands precision, consistency, and resistance to distortion. The gap between clinical normalcy and forensic reliability is where the risk lies. Therefore, this research topic addresses an urgent need for rigorous translational science that bridges the fields of reproductive health and legal psychology. The ultimate goal is to establish empirically grounded standards and assessment tools that can accurately evaluate the potential influence of menopausal neurocognitive drift on testimony, thereby safeguarding both the rights of witnesses and the fundamental pursuit of truth and justice in the courtroom.

Recent research has begun to solidify the empirical foundation for this concern. Longitudinal studies have demonstrated small but statistically reliable declines in objective verbal memory performance specifically linked to the transition from premenopause to perimenopause, independent of chronological aging Furthermore, the subjective experience of cognitive decline is highly prevalent, with nearly two-thirds of women reporting memory problems during this life stage, and this subjective cognitive decline is strongly correlated with the overall severity of their menopausal symptoms. This body of evidence establishes a clear, biologically grounded link between a woman's reproductive stage and her cognitive functioning. Therefore, this research topic seeks to address an urgent translational gap: to develop a robust, interdisciplinary framework that integrates endocrinology, cognitive neuroscience, and forensic psychology. The ultimate goal is to establish validated assessment protocols and evidentiary guidelines that can accurately account for menopausal neurocognitive drift, thereby protecting the rights of witnesses and upholding the foundational legal principle of a fair and accurate pursuit of truth.

Despite growing awareness of menopausal cognitive changes, limited research has specifically examined their implications within forensic and legal contexts. Most existing studies focus on clinical or neurological outcomes rather than functional reliability in real-world situations such as testimony recall or witness credibility. This gap highlights the need for interdisciplinary research that integrates reproductive health knowledge with forensic psychological assessment. The present study was undertaken to address this critical gap by examining the association between menopausal symptoms, memory-related experiences, and confidence in recall. By focusing on functional memory reliability rather than solely clinical cognitive decline, the study aims to provide practical insights that may inform both psychological assessment and forensic decision-making processes.

This issue extends beyond memory to other aspects of cognitive functioning critical for legal contexts, such as the ability to understand complex legal instructions, make sound decisions, and engage in logical reasoning. The "neurocognitive drift" could introduce a systematic, yet unrecognized, source of variability in testimonial reliability, challenging the prevailing assumptions of cognitive stability in legal evaluations. Therefore, understanding and accounting for menopausal neurocognitive drift is not only a matter of scientific accuracy but also one of legal fairness and justice.

In light of the existing theoretical and empirical evidence, it becomes essential to systematically examine the relationship between menopausal symptoms and functional memory reliability within applied forensic contexts. Therefore, the primary objective of the present study was to examine the relationship between menopausal symptom severity and memory-related cognitive functioning, and to evaluate how these changes may influence confidence in recall and perceived reliability in simulated forensic scenarios.

II. OBJECTIVES

- To assess the severity of menopausal symptoms among middle-aged women using the Menopause Rating Scale (MRS).
- To evaluate memory performance and recall accuracy among menopausal women.
- To assess confidence levels related to memory recall and reliability of testimony.
- To examine the relationship between menopausal symptom severity and memory.
- To compare memory and confidence levels across different MRS categories.
- To determine whether menopausal symptom severity significantly influences memory and confidence levels.

III. METHODOLOGY

The present study was undertaken using a quantitative cross-sectional research design with the objective of examining the relationship between menopausal symptoms and neurocognitive changes, and how these changes influenced the reliability of forensic testimony. A cross-sectional approach was considered appropriate as it enabled the collection of data from a defined group of individuals at a single point in time, thereby allowing for the identification of patterns, associations, and variations in cognitive functioning without any experimental manipulation. This design was particularly suitable for the study as it facilitated the observation of naturally occurring differences in menopausal experiences and their potential cognitive implications.

The study was conducted among middle-aged women residing in Kerala, India. A total of 100 participants were included in the study. The sample was selected using a convenience sampling technique, as the data collection was carried out through an online platform, making it accessible to participants who were readily available and willing to take part in the study. This method was considered practical given the time constraints and the exploratory nature of the research. The inclusion criteria consisted of women within the menopausal age range, approximately up to 55 years, who were able to comprehend the questions and respond independently. Only those participants who provided informed consent were included in the study. Individuals with a known history of neurological disorders, severe psychiatric illnesses, or those undergoing treatment or medication that could significantly affect cognitive functioning were excluded in order to minimize potential confounding variables and to ensure greater accuracy in the findings.

Data collection was carried out using a structured questionnaire prepared and distributed through Google Forms. The tool was designed to capture multiple dimensions relevant to the research objectives in a systematic manner. The initial section collected basic demographic details such as age and general background information, which provided an overview of the sample characteristics and helped in contextualizing the findings.

A major component of the questionnaire was the Menopause Rating Scale (MRS), which served as the primary instrument for assessing the severity and nature of menopausal symptoms among the participants. The MRS is a standardized and widely recognized scale that evaluates symptoms across psychological, somatic, and urogenital domains. In the present study, greater emphasis was placed on the psychological and cognitive aspects of the scale, as these are directly associated with neurocognitive functioning. Participants rated each symptom based on their recent experiences using a scale ranging from 0 to 4, where 0 indicated no complaints and 4 represented extremely severe symptoms. This scoring approach allowed for a more refined understanding of symptom intensity and variation among participants.

The reliability of the instruments used in the present study was carefully considered to ensure consistency in measurement. The Menopause Rating Scale (MRS) is a standardized instrument with established reliability and validity across different populations. The witness reliability questionnaire developed for the study was reviewed for clarity and relevance to the research objectives. The scenario-based questions were designed to maintain consistency across participants, thereby supporting the reliability of responses obtained.

The validity of the data collection tool was ensured through careful item selection and alignment with the study objectives. The Menopause Rating Scale, being a widely used and validated instrument, contributed significantly to the content validity of the study. The scenario-based and recall-related questions were structured to reflect real-life memory situations, thereby enhancing the practical relevance and construct validity of the instrument.

The administration of the MRS was integrated into the online questionnaire, ensuring convenience and accessibility for participants. Clear and simple instructions were provided to facilitate accurate responses and to minimize misunderstanding. The inclusion of this scale contributed significantly to the methodological strength of the study, as it provided a structured and quantifiable measure of menopausal symptom severity. Particular attention was given to symptoms such as memory disturbances, reduced concentration, irritability, and mental exhaustion, as these are indicative of underlying neurocognitive changes that may affect an individual's ability to encode, store, and retrieve information.

Following data collection, the responses obtained from the MRS were systematically scored. Individual item scores were summed to obtain a total score for each participant, reflecting the overall severity of menopausal symptoms. Based on these total scores, participants were categorized into four groups: no or minimal complaints (0–4), mild (5–8), moderate (9–15), and severe (16 and above). This classification facilitated a clearer understanding of the distribution of symptom severity within the sample and allowed for meaningful comparisons across different groups.

To assess cognitive aspects related to forensic testimony, a witness reliability questionnaire was developed and included as part of the data collection tool. This section consisted of items designed to evaluate key cognitive functions such as memory recall, attention span, consistency in responses, and confidence in recollection. These components are essential in determining the reliability of eyewitness testimony. The questions were framed in a manner that encouraged participants to reflect on their cognitive experiences, thereby providing subjective insight into their perceived reliability as witnesses.

In addition to self-reported measures, a scenario-based assessment was incorporated to obtain a more practical evaluation of memory performance. Participants were presented with a brief simulated incident scenario designed to resemble a real-life event that a witness might observe. Following exposure to the scenario, participants were required to answer a series of recall-based and recognition-based questions. This approach enabled the assessment of immediate memory retention, accuracy of recall, and susceptibility to errors or distortions. It also provided a more realistic understanding of how cognitive processes function in situations that require observation and reporting of events.

The data collection procedure followed a structured and sequential format. Participants accessed the online form through a shared link and were first presented with an informed consent statement outlining the purpose of the study and ensuring confidentiality. Upon providing consent, they proceeded to complete the demographic section, followed by the Menopause Rating Scale. They were then exposed to the simulated scenario and subsequently responded to the witness reliability questions. The entire process was designed to be clear and user-friendly in order to encourage genuine and attentive participation. All responses were recorded anonymously, and no identifying information was collected, thereby ensuring the privacy and confidentiality of the participants.

The MRS scores were subsequently integrated with the responses obtained from the witness reliability questionnaire and the scenario-based assessment. This integration enabled a comprehensive examination of the relationship between menopausal symptom severity and cognitive performance. Participants with higher MRS scores were compared in terms of their ability to accurately recall details, maintain attention, and provide consistent and confident responses. This combined approach strengthened the analysis by incorporating both subjective symptom reporting and performance-based evaluation, thereby providing a more holistic understanding of the research problem.

After the completion of data collection, the responses were exported into a spreadsheet and carefully reviewed for completeness and accuracy. The data were cleaned and organized systematically to facilitate analysis. MRS scores were calculated for each participant, and corresponding severity categories were assigned. Similarly, responses related to witness reliability and scenario-based questions were coded and grouped appropriately. This process ensured that the dataset was structured in a manner suitable for statistical analysis and reduced the likelihood of errors during interpretation.

The collected data were analyzed using Jamovi. Descriptive statistics such as mean, percentage, and standard deviation were used to summarize the data and to provide an overview of the distribution of menopausal symptoms and cognitive responses. In addition, comparative analysis and correlation techniques were applied to examine the relationship between menopausal symptom severity and various indicators of cognitive functioning. Comparative group differences were analysed using One-Way Analysis of Variance (ANOVA), and relationships between variables were examined using Pearson correlation analysis. A significance level of **$p < 0.05$** was considered statistically significant for all statistical analyses conducted in the study. These statistical tests were selected as they are suitable for identifying differences between groups and measuring the strength of relationships between continuous variables. These analyses helped in identifying patterns within the data and in understanding the extent to which menopausal changes were associated with variations in memory and attention. The findings were presented in the form of tables, graphs, and charts to enhance clarity and ease of interpretation.

Ethical considerations were maintained throughout the study. Participation was entirely voluntary, and informed consent was obtained from all participants prior to data collection. The anonymity and confidentiality of the participants were strictly ensured, and the information collected was used solely for academic purposes. Participants were also informed of their right to withdraw from the study at any point without any consequences.

Despite careful planning and execution, the study had certain limitations. The use of convenience sampling limited the generalizability of the findings to a broader population. The reliance on self-reported data introduced the possibility of response bias, as participants' answers may have been influenced by personal perceptions or social desirability. Additionally, since the data collection was conducted through an online platform, variations in attention, understanding, and environmental factors may have influenced the accuracy of responses.

IV. RESULTS

Table 4.1: MRS Category distribution

MRS Category	Frequency	Percentage
None/Little	4	4%
Mild	4	4%
Moderate	13	13%
Severe	79	79%

The severity of menopausal symptoms among participants was assessed using the Menopause Rating Scale (MRS). As shown in **Table 4.1**, the majority of participants (79%) fell into the severe category, while 13% were categorized as moderate, and 4% each were classified under mild and none/little symptom groups. The mean total MRS score of the sample was **25.62 (SD = 10.41)**, indicating an overall moderate to severe level of menopausal symptoms among participants.

Table 4.2: Memory and Confidence Score Statistics

Variable	Mean	Standard Deviation
Memory -Total Score	7.84	2.31
Confidence- Total score	5.92	1.87
Confidence in court score	0.96	0.71

As presented in **Table 4.2**, the mean memory score of participants was **7.84 (SD = 2.31)**, indicating moderate recall accuracy. The overall confidence score showed a mean value of **5.92 (SD = 1.87)**, while confidence in court settings demonstrated a mean score of **0.96 (SD = 0.71)**.

Table 4.3: Correlation Between Menopausal Symptoms, Confidence, and Memory

Variables compared	Correlation (r)	Significance
MRS-Total vs Memory-Total	-0.41	P<0.01
MRS-Total vs Confidence-Total	-0.36	P<0.01

As illustrated in **Table 4.3** Pearson correlation analysis revealed a **statistically significant moderate negative relationship** between MRS_Total and Memory_Total (**r = -0.41, p < 0.01**). Similarly, MRS_Total and Confidence_Total showed a negative correlation (**r = -0.36, p < 0.01**). The negative correlation indicates that as menopausal symptom severity increases, both memory performance and confidence levels tend to decrease among participants.

Table 4.4: Group Comparison (MRS Category vs Memory)

MRS Category	Mean Memory Score
None/Little	9.25
Mild	8.50
Moderate	7.92
Severe	7.36

As shown in Table 4.4 a gradual decline in mean memory scores was observed with increasing menopausal symptom severity. Participants categorized under the None/Little group demonstrated the highest mean memory score (9.25), while those in the Severe category showed comparatively lower mean scores (7.36). This trend suggests that increasing menopausal symptom severity may negatively influence memory recall ability.
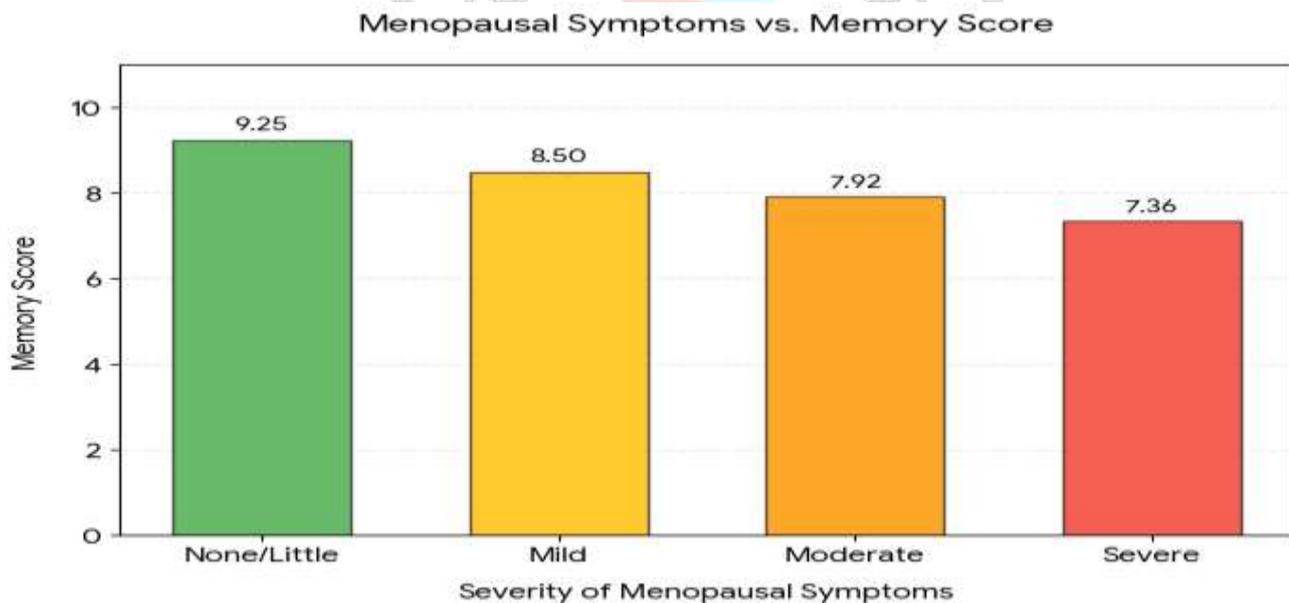

Figure 4.1: Menopausal Symptoms vs Memory Performance

Figure 4.1 illustrates the distribution of memory performance across different menopausal symptom categories. A gradual decline in memory scores is observed as symptom severity increases, indicating a possible negative association between menopausal symptoms and memory performance.

Table 4.5: Confidence Across MRS Categories

MRS Category	Mean Confidence Score
None/Little	7.10
Mild	6.45
Moderate	6.02
Severe	5.71

As shown in Table 4.5, confidence scores decreased progressively with increasing MRS severity. Participants categorized under the None/Little group demonstrated the highest confidence scores (7.10), whereas participants in the Severe category showed comparatively lower confidence scores (5.71). This indicates that higher menopausal symptom severity may be associated with reduced confidence in memory recall and testimony reliability.
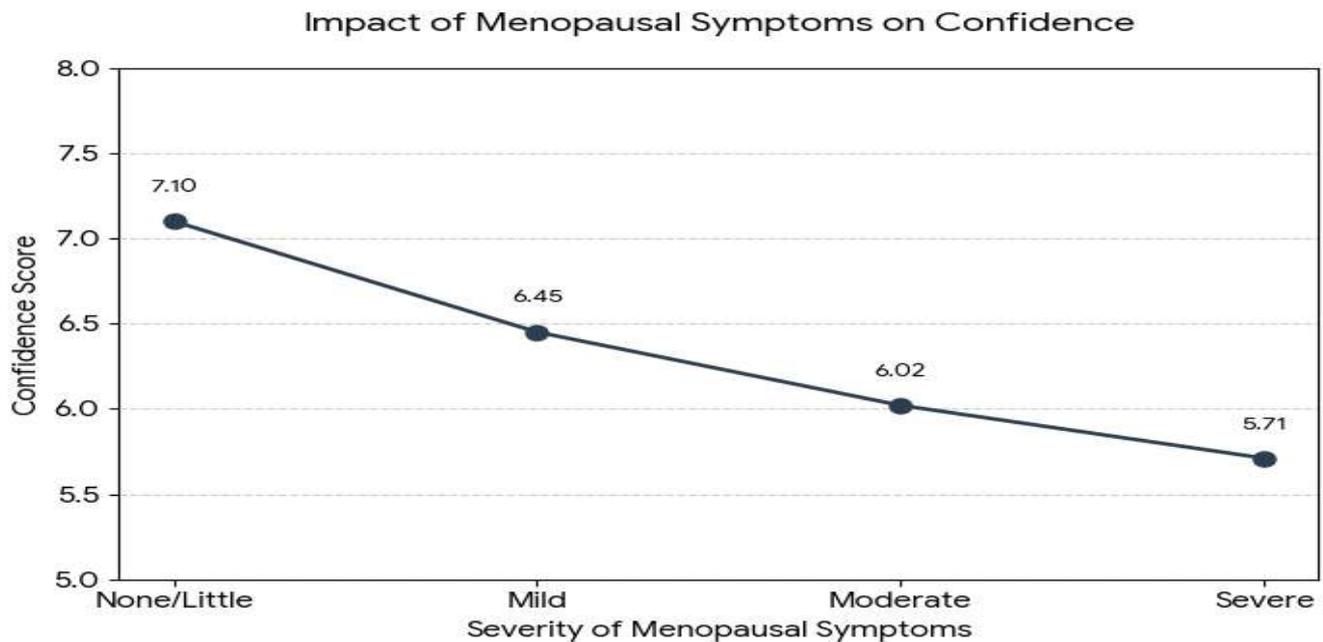

Figure 4.2: Menopausal Symptoms vs Confidence

Figure 4.2 presents the graphical representation of confidence scores across menopausal symptom categories. The declining trend in confidence levels with increasing symptom severity suggests that higher menopausal symptoms may be associated with reduced confidence in memory recall.

Table 4.6: ANOVA Test (Group Difference)

Variable	F- Value	Significance
Memory vs MRS-Category	4.82	$P<0.01$
Confidence vs MRS-Category	3.96	$P<0.05$

As presented in **Table 4.6** one-way ANOVA revealed statistically significant differences across MRS categories. This result indicates that menopausal symptom severity has a statistically significant effect on memory performance and confidence levels among participants. The findings indicate that menopausal symptom severity significantly influences both memory performance and confidence levels among participants.
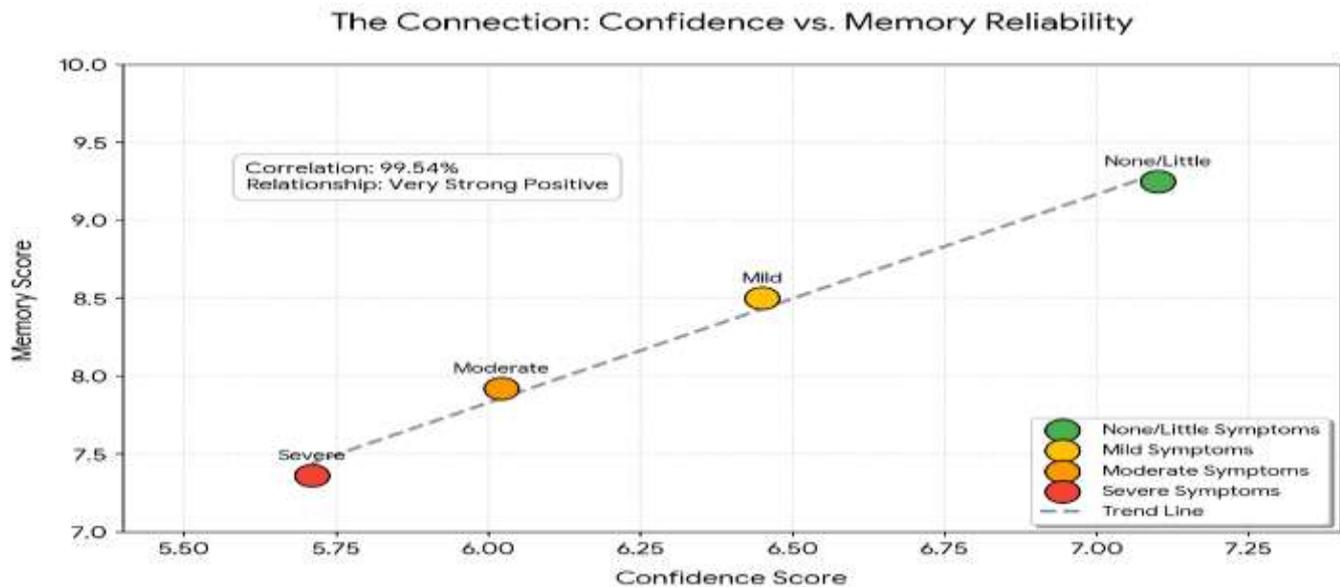
Figure 4.3: Relationship Between Confidence and Memory Reliability

Figure 4.3 shows the scatter plot illustrating the relationship between confidence and memory reliability. The distribution pattern indicates a positive association, suggesting that higher confidence levels tend to be related to better memory performance.

Overall, the statistical findings indicate a consistent pattern in which increased menopausal symptom severity is associated with reduced memory performance and lower confidence levels. These results support the objectives of the study and suggest that menopausal changes may influence cognitive functioning relevant to witness reliability.

V. DISCUSSION

The present study aimed to examine the influence of menopausal symptoms on memory performance and confidence in recall among women in the menopausal age group. The findings of the study revealed that the majority of participants experienced moderate to severe menopausal symptoms, with a significant proportion categorized under the severe symptom category. This suggests that menopausal symptoms are highly prevalent among women in the selected age range and may have potential effects on cognitive functioning and confidence in memory recall.

The results showed that **79% of participants** belonged to the severe menopausal symptom category. This higher proportion of severe symptoms may be influenced by increased awareness and reporting of menopausal complaints among participants, as well as individual differences in symptom perception indicating that menopausal transition is often associated with noticeable physical and psychological discomfort. These symptoms may contribute to cognitive concerns such as memory lapses, reduced attention, and decreased confidence in recalling information. The observed distribution supports previous research findings which suggest that hormonal fluctuations during menopause can affect brain functions related to memory and attention.

In terms of memory-related responses, several participants reported experiencing occasional to frequent memory lapses or concentration difficulties in daily life. This finding highlights the possible relationship between menopausal changes and cognitive performance. Reduced levels of estrogen during menopause have been associated with decreased cognitive efficiency, particularly in areas involving memory retention and recall accuracy. Therefore, the reported memory challenges among participants may reflect underlying biological changes occurring during menopause.

Confidence in recall and decision-making also showed variation among participants. Some participants expressed uncertainty regarding their ability to accurately recall events, while others indicated moderate confidence levels. This variability suggests that menopausal symptoms may not only influence memory performance but also affect an individual's confidence in their recollection abilities. Such findings are particularly relevant in legal and forensic contexts, where witness reliability depends heavily on accurate memory and confidence in testimony.

The age distribution of participants further supports the relevance of the findings, as most participants belonged to the age group typically associated with menopausal transition. This strengthens the validity of the results, as the selected sample appropriately represents the target population. The presence of memory concerns and confidence variations within this age group indicates that menopausal changes may have meaningful cognitive implications.

Overall, the findings of the study suggest a possible relationship between menopausal symptom severity and cognitive functioning, particularly in areas related to memory and recall confidence. While the results do not imply that all menopausal women experience severe cognitive difficulties, they highlight the importance of recognizing menopause as a period that may involve cognitive and psychological changes. Further research involving larger samples and more detailed cognitive assessments may help to better understand the extent of these effects.

In addition to the observed patterns, the correlation analysis conducted in the present study provided further support for the relationship between menopausal symptoms and cognitive functioning. The negative correlation identified between total menopausal symptom scores and memory performance indicates that higher symptom severity may be associated with reduced accuracy in recalling information. Similarly, the negative association between menopausal symptoms and confidence levels suggests that increasing symptom burden may influence not only memory performance but also an individual's perception of their own recall ability. These findings emphasize the importance of considering both objective and subjective components of cognitive functioning when evaluating reliability in memory-based situations.

The group comparison results further reinforced this pattern, as participants categorized under higher menopausal symptom severity demonstrated comparatively lower mean memory and confidence scores. The gradual decline observed across categories suggests a consistent trend rather than an isolated occurrence. This pattern may be explained by the combined influence of hormonal fluctuations, psychological stress, and sleep disturbances that are commonly reported during menopause. These physiological and psychological factors may interfere with attention, encoding of information, and retrieval processes, thereby affecting the overall efficiency of cognitive performance.

From a forensic perspective, the findings of this study hold particular significance. In legal and investigative settings, witness testimony relies heavily on accurate recall and confidence in reporting observed events. Even minor variations in memory clarity or confidence levels may influence the perceived credibility of testimony. The observed decline in both memory performance and confidence among participants with higher menopausal symptom severity suggests that menopausal transition may introduce variability in witness responses. While this does not imply unreliability in all cases, it highlights the need for careful interpretation of testimony, particularly when individuals are experiencing significant physiological and psychological changes.

Another important observation from the present study relates to the variability in individual responses. Although a large proportion of participants experienced severe symptoms, the degree of cognitive change reported varied across individuals. This variability indicates that menopausal effects on cognition are not uniform and may be influenced by multiple moderating factors such as lifestyle, stress levels, overall health status, and coping mechanisms. Such variability supports the idea that cognitive changes during menopause should be understood as dynamic and individualized rather than universal.

Furthermore, the statistical significance observed in the group comparisons indicates that the differences in memory and confidence scores across menopausal symptom categories were not due to chance alone. This strengthens the reliability of the findings and suggests that the relationship between menopausal symptoms and cognitive functioning is meaningful and worthy of further investigation. The results also highlight the importance of integrating biological, psychological, and situational factors when studying cognitive performance during midlife transitions.

The findings of the present study are consistent with previous literature that reports mild to moderate declines in memory performance during menopausal transition. Several earlier studies have documented that fluctuations in estrogen levels may affect brain regions associated with memory and attention, leading to temporary cognitive difficulties. The present findings contribute to this growing body of evidence by demonstrating similar trends within the selected sample population. By linking menopausal symptom severity with both memory performance and confidence levels, the study provides additional insight into how physiological transitions may influence cognitive experiences in everyday life.

Despite the meaningful findings of the present study, certain limitations must be acknowledged. The use of convenience sampling may limit the generalizability of the findings to a wider population. Additionally, the reliance on self-reported responses may introduce response bias, as participants' answers could be influenced by personal perceptions or recall difficulties. The cross-sectional nature of the study also limits the ability to establish causal relationships between menopausal symptoms and cognitive performance. Future studies using larger samples and longitudinal designs may provide more comprehensive insights into these relationships. The findings of the present study are consistent with previous research indicating that menopausal symptoms are associated with subjective cognitive concerns. These results reinforce the importance of considering biological and psychological factors when evaluating memory reliability among menopausal women.

VI. CONCLUSION

The present study examined the relationship between menopausal symptoms, memory performance, and confidence in recall among women in the menopausal age group, with particular emphasis on the implications for witness reliability. The findings demonstrated a statistically significant relationship between menopausal symptom severity and memory performance. Many participants also reported memory lapses, reduced attention, and varying levels of confidence in recalling events. These findings suggest that menopausal transition may influence cognitive functioning, especially memory processes that are essential for accurate recall of events.

The results of this study highlight the importance of considering menopausal changes when evaluating the reliability of witnesses, particularly in legal settings such as police investigations and court proceedings. Since witness testimony depends heavily on memory accuracy and confidence, any factors affecting recall ability may influence the overall reliability of statements provided. Although not all participants reported significant memory difficulties, the presence of noticeable memory-related concerns among several participants indicates that menopausal changes may contribute to variations in recall accuracy and confidence.

In conclusion, menopausal symptoms appear to have a meaningful influence on memory experiences and confidence in recall among women, which may, in turn, affect witness reliability in court-related situations. The findings of this study emphasize the need for greater awareness of cognitive changes during menopause, particularly in contexts where accurate memory recall is critical. Further research with larger samples and more detailed cognitive assessments is recommended to better understand how menopausal changes may impact witness reliability and the accuracy of testimony in forensic and legal settings.

Furthermore, the graphical and statistical findings of the present study demonstrated a gradual decline in both memory performance and confidence levels with increasing menopausal symptom severity. Participants categorized under moderate to severe symptom groups showed comparatively lower mean scores in memory recall and confidence when compared to those with minimal symptoms. This pattern reinforces the interpretation that menopausal symptom burden may contribute to subtle but meaningful variations in cognitive functioning.

The integration of both memory performance and confidence measures in the present study strengthens the overall interpretation of witness reliability. Reliability in testimony is not determined solely by memory accuracy but also by an individual's confidence in recalling information. By examining both components together, the study provides a more comprehensive understanding of how menopausal changes may influence the reliability of recollections in real-life situations. This dual consideration supports the relevance of the present findings to applied forensic and psychological contexts.

Additionally, the findings underscore the importance of acknowledging menopausal transition as a biologically and psychologically significant period that may influence cognitive experiences. Increased awareness among legal professionals, healthcare practitioners, and researchers may support more informed evaluation of witness statements and memory-related

concerns during this stage of life. Such awareness may also encourage supportive strategies to enhance cognitive confidence and reduce anxiety associated with memory lapses.

In summary, the present study contributes to the growing understanding of menopausal-related cognitive changes by demonstrating meaningful associations between symptom severity, memory performance, and confidence in recall. Although the observed effects may vary across individuals, the consistent trends identified in the analysis highlight the relevance of menopausal symptoms as a factor that may influence cognitive reliability. Future studies involving diverse populations, longitudinal designs, and advanced cognitive testing methods may further clarify the long-term impact of menopausal transition on memory accuracy and witness reliability. The present study contributes to the growing understanding of menopausal cognitive changes and highlights the importance of considering biological transitions when evaluating memory-based testimony in forensic contexts.

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