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LETTER

Strengthening Evidence Interpretation for a Descriptive Study Focusing on a Screening-Prevention-Treatment Model for Menopause Care in Rural Settings [Letter]

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Dear editor

We read with great interest the study by Xie et al introducing a "Screening–Prevention–Treatment" Model (SPT-Model) for managing menopause-related chronic diseases in rural settings.[1] We commend the authors for this practical exploration, which may provide valuable insights into addressing the substantial public health challenge of a high disease burden but low healthcare utilization among rural menopausal women. We would, however, like to raise several concerns regarding the study design and interpretation of the findings, with the aim of fostering scholarly discussion.

First, the authors state that their objective was "to evaluate the real-world implementation of a closed-loop SPT-Model" and conclude in their abstract that "This closed-loop model effectively addresses fragmented care for rural menopausal women… significantly improves diagnostic conversion rates and resource efficiency, ….".[1] However, the study includes neither a control group (concurrent or historical) nor a longitudinal before-and-after comparison, but reports only cross-sectional data from a single screening cohort in 2025. These data only provide static descriptive information at one time point during the model's implementation and cannot support causal inferences that the model itself improves diagnosis-to-treatment conversion rate (DTCR), healthcare resource utilization, or continuity of care. Therefore, we believe the current findings are more appropriately regarded as baseline data for future prospective controlled studies than as evidence confirming the effectiveness of the SPT-Model per se.

Second, Xie et al use the "DTCR" as a key outcome to evaluate the effectiveness of the SPT-Model. In principle, this indicator should be defined as the proportion of diagnosed participants who subsequently receive treatment. However, as shown in Table 3, the reported DTCR was calculated by dividing the number of participants receiving hormone replacement therapy (HRT; n = 626) by the number of participants with menopausal symptoms (n = 1,995).[1] This calculation may be inappropriate because menopausal symptoms do not necessarily indicate a confirmed diagnosis. Thus, the reported measure more closely reflects the HRT treatment initiation rate among symptomatic participants than the true DTCR. Moreover, HRT is not the standard first-line treatment for all menopause-related chronic diseases; for instance, antidepressants and cognitive-behavioral therapy are recommended as first-line interventions for menopausal depression by guidelines and expert consensus, and HRT is not FDA-approved for treating mood disturbances.[2] By restricting the numerator to HRT recipients, the indicator may therefore fail to capture the full spectrum of evidence-

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based interventions received and consequently provide an incomplete picture of real treatment conversion performance achieved under the SPT-Model.

Third, based on the higher HRT use among symptomatic participants aged 40–45 years, the authors suggest that this age group may represent a "window of opportunity" for proactive screening.[1] However, this conclusion is based solely on descriptive statistics. The study neither performs between-group comparisons nor adjusts for potential confounders, such as symptom severity, educational attainment, income level, insurance status, and comorbidity burden. Therefore, it remains unclear whether age constitutes an independent determinant of the observed conversion rate. Furthermore, although Table 3 shows a marked difference between participants aged 40–45 years and the overall population (72.09% vs 31.37%), no statistical comparisons (eg, *Chi*-Square test *p-values*) or 95% confidence intervals are reported, making the precision and statistical significance of this difference difficult to assess. As such, the current finding is better interpreted as an observational signal warranting further validation, rather than as a conclusion supported by sufficient evidence.

Fourth, sex hormone levels fluctuate substantially during the perimenopausal transition.[3] Therefore, defining "Abnormal" hormone levels (Table 3) based on a single venous blood sample may misclassify normal physiological variation as pathological abnormalities. Additionally, the authors do not report the criteria used to define abnormality for each hormone (eg, follicle-stimulating hormone, luteinizing hormone, and estradiol). Specifically, it remains unclear which guideline or consensus is followed, whether age- or menopausal status-specific thresholds are applied, whether repeat testing is required for confirmation, and whether abnormalities are defined by a single abnormal indicator or multiple abnormal indicators. Without these methodological details, it is difficult to determine the extent to which the reported 28.46% abnormality rate reflects clinically meaningful endocrine dysfunction.

Fifth, the authors state that the SPT-Model "utilized the modified Kupperman Index (KMI) to drive targeted interventions rather than … passive patient visits," indicating that the KMI score was used for risk stratification and to guide HRT initiation. In Table 4, they further compare HRT utilization across KMI score categories and interpret the increasing treatment rates (6–15 points vs 16–30 points vs >30 points: 6.73% vs 65.5% vs 100%) as evidence of the model's risk stratification capability.[1] However, because treatment decisions are themselves predicated on the KMI score—ie, only participants above a certain threshold are referred for HRT—the graded differences in treatment rates are inherently expected, representing an inevitable consequence of implementing this clinical pathway. The results in Table 4 more plausibly reflect the implementation adherence to the clinical pathway of the SPT-Model, rather than its independent efficacy in improving self-management outcomes among participants. To substantiate the latter, further comparisons are required, focusing on treatment coverage, symptom remission rates, and follow-up adherence among populations with comparable severity levels before and after the implementation of the SPT-Model.

Sixth, we wish to raise a further point concerning ethical and economic considerations. In the study, 915 asymptomatic participants classified as "Normal" (KMI scores <6 points) nevertheless underwent serum sex hormone testing.[1] This may not be necessary. Including asymptomatic individuals in large-scale laboratory testing not only increases avoidable healthcare expenditure (approximately 220 CNY per person, amounting to over 200,000 CNY in public funds), but may also induce psychological distress due to incidental abnormal laboratory reports in otherwise healthy women undergoing normal physiological aging. An effective screening strategy should focus on individuals with potential clinical benefit rather than indiscriminately implementing laboratory testing among all age-eligible women. Therefore, it may be more appropriate to consider the KMI, which directly reflects symptom burden and patient-reported experience, as an initial screening tool, with laboratory testing reserved for those requiring differential diagnosis (eg, KMI scores ≥16 points, indicating moderate-to-severe symptoms[4]).

In summary, the SPT-Model proposed by Xie et al provides an important reference for optimizing primary care services. Our comments are not intended to challenge the value of the study, but rather to encourage methodological rigor. We also look forward to the authors' clarification, which may further strengthen the evidence supporting the feasibility and reliability of this model.

Abbreviations

DTCR, Diagnosis-to-Treatment Conversion Rate; FDA, Food and Drug Administration; HRT, Hormone Replacement Therapy; KMI, Kupperman Index; SPT-Model, "Screening-Prevention-Treatment" Model.

Data Sharing Statement

Data availability is not applicable as no new data was generated or analyzed in this communication.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no competing interests in this communication.

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