

Awareness and Knowledge Level of Early Menopause and Its Consequences Among Medical Faculty Staff

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Abstract

Aim: Early menopause, defined as the cessation of ovarian function before the age of 45, is a condition that negatively affects women's physical health, fertility, and psychosocial well-being. Due to its association with premature loss of fertility, it is also a source of concern for many women. This study aimed to evaluate the awareness and knowledge level regarding early menopause among the employees of a university hospital in Türkiye.

Methods: This cross-sectional descriptive study was conducted using a structured, face-to-face questionnaire administered to hospital staff. Participants' demographic characteristics, lifestyle habits, menstrual history, and knowledge of early menopause were analyzed.

Results: A total of 100 personnel participated, 89% of whom were female. The mean age was 35.6 years. While 78% of participants were aware that early menopause could lead to osteoporosis, only 5% correctly identified that hormone replacement therapy (HRT) cannot preserve fertility. Moreover, 85% of participants had no knowledge regarding the recommended duration of HRT use.

Conclusions: The findings indicate that knowledge about early menopause is insufficient even among healthcare professionals. Addressing this gap requires not only community-based awareness campaigns but also structured educational programs targeting healthcare workers.

Keywords: Early menopause; hormone replacement therapy; osteoporosis

1. Introduction

Early menopause, defined as the permanent cessation of menstrual cycles before the age of 45, is a significant health concern with multifaceted effects on women's lives. Approximately 4% of women are affected¹. Major risk factors include genetic predisposition, low body mass index, smoking, early menarche, nulliparity, pelvic surgeries, and oncological treatments²⁻⁴. Early menopause is associated with long-term complications such as infertility, osteoporosis, cardiovascular diseases, cognitive impairments, and depression⁵⁻⁷. Previous literature has predominantly focused on early menopause in oncology patient populations, while awareness in the general population—and particularly among healthcare workers—remains underexplored. Existing studies suggest that inadequate knowledge and awareness among healthcare professionals may negatively influence the quality of support and management provided to affected women^{8,9}. Understanding early menopause and evaluating healthcare workers' knowledge of this important stage in women's health is essential to ensure timely and appropriate care. This study aimed to

assess early menopause awareness among the staff of a university hospital.

2. Materials and Methods

Sampling method

This cross-sectional descriptive study was conducted between January and March 2024 among staff employed at a university hospital in Türkiye. All procedures complied with the Declaration of Helsinki. Ethical approval was obtained from the Clinical Research Ethics Committee of Faculty of Medicine of a university hospital (October 13, 2023; No. 47/137/2023). Participants were recruited using a convenience sampling approach. All eligible staff members who were present during the data collection period and agreed to participate were included. Participation was voluntary and written informed consent was obtained.

Table 1

Patient Awareness and Knowledge Questionnaire on Premature Menopause

Question/Variable	Response Options / Fill-in
Date of survey
Age
Gender
Your position in the hospital
Department/unit you work in
Years in current position
Marital status	Single / Married / Widowed / Separated / Divorced
Income level	Income > Expenses / Income = Expenses / Expenses > Income
Are you aware of egg/embryo freezing as a method to preserve fertility?	Yes / No
From where did you obtain this information?
Is it legally possible in Turkey for single women with decreased ovarian reserve to freeze their eggs?	Yes / No / Unsure
Is it legally possible in Turkey for married women with decreased ovarian reserve to freeze their eggs?	Yes / No / Unsure
Is it legally possible in Turkey for married women with decreased ovarian reserve to freeze embryos?	Yes / No / Unsure
Is it legally possible in Turkey for single women undergoing cancer treatment to freeze their eggs?	Yes / No / Unsure
Is it legally possible in Turkey for married women undergoing cancer treatment to freeze their eggs?	Yes / No / Unsure
Is it legally possible in Turkey for married women undergoing cancer treatment to freeze embryos?	Yes / No / Unsure

Inclusion and exclusion criteria

Healthcare personnel employed at the university hospital during the study period who were aged 18 years or older and agreed to participate were included in the study. Both female and male staff members were eligible for inclusion. Participants who declined to provide informed consent were absent during the data collection period, or submitted incomplete questionnaires were excluded from the study.

Data collection tools

The questionnaire used in this study was developed by the researchers based on a comprehensive review of the literature on early menopause, hormone replacement therapy, fertility preservation and associated health consequences. No previously validated or standardized scale specific to early menopause awareness among healthcare workers was identified in the literature; therefore a study-specific questionnaire was constructed.

Table 2

Knowledge and Attitude Questionnaire on Premature Menopause

Item No.	Statement	Response Options
1	Osteoporosis is one of the major consequences of premature menopause.	Agree / No opinion / Disagree
2	Delayed diagnosis of premature menopause is a risk factor for osteoporosis.	Agree / No opinion / Disagree
3	Osteoporosis in premature menopause is associated with low estrogen levels.	Agree / No opinion / Disagree
4	If there are no contraindications, estrogen-containing hormone therapy is recommended in premature menopause for bone health.	Agree / No opinion / Disagree
5	Estrogen-containing hormone replacement therapy and oral contraceptives are equally effective in preserving bone mineral density in premature menopause.	Agree / No opinion / Disagree
6	Hormone replacement therapy is not a contraceptive method.	Agree / No opinion / Disagree
7	Hormone replacement therapy can be used for a maximum of 5 years in premature menopause.	Agree / No opinion / Disagree
8	Patients with premature menopause should maintain normal body weight, engage in weight-bearing exercise, and avoid smoking to protect bone health.	Agree / No opinion / Disagree
9	Patients with premature menopause should use daily calcium and vitamin D supplements for bone health.	Agree / No opinion / Disagree
10	Estradiol-containing hormone replacement therapy preserves fertility in premature menopause.	Agree / No opinion / Disagree
11	Cancer drugs may cause premature menopause.	Agree / No opinion / Disagree
12	Ovarian surgeries are risk factors for premature menopause.	Agree / No opinion / Disagree
13	Menstrual irregularities may be a symptom of premature menopause.	Agree / No opinion / Disagree

Sample size

A priori sample size estimation was performed before data collection. Based on an expected proportion of adequate knowledge regarding early menopause of 50% (most conservative estimate), with a 95% confidence level and a 10% margin of error, the minimum required sample size was calculated as 96 participants. To account for potential non-response or incomplete questionnaires,

the target sample size was set at 100 and the study was completed with 100 participants.

Two instruments were administered face-to-face by the researchers. The first form collected sociodemographic data (age, gender, marital status, years of service, income level) and assessed knowledge of legal regulations regarding fertility preservation (Table 1).

The second instrument was a 14-item Likert-type scale (Agree, No opinion, Disagree) evaluating knowledge and attitudes toward early menopause, covering themes such as bone health, hormone replacement therapy, diagnosis, risk factors, and reproductive health (Table 2).

Statistical analysis

Data were analyzed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were applied to summarize the findings and presented as mean \pm standard deviation for continuous variables and frequencies and percentages for categorical variables. Group comparisons were performed using the chi-square test for categorical variables. Independent samples t-test or one-way ANOVA was used to compare knowledge levels across age groups, professional categories, and years of service, as appropriate. A *p*-value <0.05 was considered statistically significant.

3. Results

A total of 100 hospital staff members participated, of whom 89% were female, with a mean age of 35.6 years. Variables such as marital status, income level, and length of service were recorded.

Comparative analyses showed no statistically significant differences in overall knowledge levels according to age groups, professional categories, or years of service ($p>0.05$ for all). Similarly, no significant association was found between demographic variables and correct knowledge regarding hormone replacement therapy and fertility preservation.

Knowledge about legal regulations for fertility preservation was found to be limited. Fortyone percent correctly stated that single women with diminished ovarian reserve cannot legally undergo oocyte cryopreservation in Türkiye. Seventy-nine percent were aware that married women with diminished ovarian reserve are legally allowed to freeze their eggs, while 33% believed that married women cannot freeze embryos under such circumstances.

Regarding early menopause, 78% of participants identified osteoporosis as a major consequence, and 56% recognized delayed diagnosis as a risk factor for osteoporosis. However, only 44% knew that estrogen therapy could be recommended in the absence of contraindications. While 34% acknowledged that HRT is not a contraceptive method, 85% were unaware of the appropriate duration for HRT use. Only 5% correctly stated that HRT cannot preserve fertility. Furthermore, 45% were aware that chemotherapy can induce early menopause, and 52% recognized ovarian surgery as a risk factor. Half of the respondents identified menstrual irregularity as a potential symptom of early menopause.

4. Discussion

This study specifically evaluated awareness and knowledge regarding early menopause, rather than menopause in general, among healthcare workers. Our findings demonstrate that although participants were relatively aware of well-known consequences such as osteoporosis, knowledge gaps were pronounced in areas directly related to early menopause, including fertility preservation,

hormone replacement therapy and legal regulations. This discrepancy suggests that early menopause is frequently conceptualized by healthcare workers within the broader framework of menopause, leading to potential under-recognition of its unique clinical and reproductive implications.

In comparison with previous studies, most of which focus on general menopausal awareness, our results indicate a lower level of accurate knowledge regarding fertility-related outcomes of early menopause. For instance, only 5% of participants correctly identified that hormone replacement therapy does not preserve fertility, a finding that is more striking when contrasted with studies reporting higher awareness of symptom control benefits of HRT in natural menopause. This highlights a critical distinction between early menopause and age-appropriate menopause that is insufficiently addressed in current educational resources.

The predominance of female participants (89%) reflects the gender distribution of the healthcare workforce in many hospital settings; however, this imbalance may have influenced the findings. Female healthcare workers may have greater personal interest or experiential awareness regarding menopausal issues, potentially leading to an overestimation of overall knowledge levels. Conversely, the limited participation of male healthcare workers may contribute to an underrepresentation of knowledge gaps in this group. Future studies should aim for a more balanced gender distribution to better evaluate sex-specific differences in awareness and educational needs.

Overall, the limited alignment between early menopause-specific knowledge and clinical practice underscores the need for targeted educational interventions that clearly differentiate early menopause from natural menopause. Improving this distinction among healthcare workers may facilitate earlier recognition, appropriate counseling, and timely referral for fertility preservation and hormone therapy.

The present findings demonstrate that knowledge regarding early menopause is limited even among healthcare personnel. Significant gaps were identified, particularly in areas such as hormone replacement therapy, fertility preservation, and legal rights. Similar studies have reported a lack of awareness about the systemic impacts of early menopause^{1,5-7}.

Community-based awareness campaigns initiated with healthcare professionals could enhance the effectiveness of knowledge dissemination. The need for comprehensive educational programs specifically targeting healthcare workers has been widely emphasized. Despite being the primary source of information for women regarding menopausal symptoms and treatment options, many healthcare professionals fail to adequately explain the benefits and risks of hormone therapy⁸. This lack of information may result in women entering menopause unprepared and being unable to manage symptoms effectively¹⁰. Healthcare providers must therefore understand not only the medical but also the emotional and psychological dimensions of menopause^{11,12}.

Studies evaluating the educational preparedness of healthcare professionals have highlighted curriculum deficiencies and the urgent need for reform. Recent research has shown that many healthcare providers, including general practitioners, receive inadequate training on menopause management¹³. Structured menopause education should be integrated into medical curricula, ensuring that healthcare workers' knowledge and skills align with patient needs^{14,15}. Continuing professional development opportunities play a key role in addressing knowledge gaps and improving health outcomes for women during this transitional stage^{10,16}.

The mismatch between the lived experiences of menopausal women and the knowledge of healthcare professionals is

concerning. Many employed women report that menopausal symptoms negatively impact their work productivity, yet a considerable number of healthcare workers lack awareness of the occupational health implications¹⁷. Women often request greater workplace support and information on menopause. Therefore, training programs for healthcare professionals should comprehensively address the workplace dimension of menopause¹⁸.

Healthcare professionals' knowledge influences not only patient care but also healthcare costs and workplace well-being. Untreated menopausal symptoms are associated with higher healthcare expenditures and reduced workforce productivity¹⁰. Adequate training in effective symptom management can enhance patient satisfaction and improve

Contribution to the literature

This study provides original data on early menopause awareness specifically among healthcare workers, a population that is expected to guide and counsel women at risk. Unlike most previous studies focusing on menopause in general or on patient populations, this study highlights knowledge gaps related to early menopause-specific issues, particularly fertility preservation, hormone replacement therapy, and legal regulations. By demonstrating that even healthcare professionals have limited awareness of these critical aspects, the study emphasizes the need to distinguish early menopause from natural menopause in both clinical practice and medical education.

Furthermore, this study contributes to the literature by addressing early menopause awareness within a workplace and health systems perspective, suggesting that insufficient professional knowledge may delay diagnosis, counseling, and appropriate management. The findings support the integration of structured early menopause education into undergraduate curricula and continuing professional development programs. Therefore, this study not only identifies a knowledge gap but also provides evidence to inform educational and institutional interventions targeting healthcare workers.

Limitations

This study has several limitations. First, the cross-sectional design limits causal inferences between demographic characteristics and knowledge levels regarding early menopause.

Second, the study was conducted in a single university hospital with a relatively small sample size, which may limit the generalizability of the findings. Third, the use of a researcher-developed questionnaire without formal psychometric validation may have affected measurement precision, although content relevance was ensured through expert review.

Additionally, data were based on self-reported responses, which may be subject to response and social desirability bias. Finally, the predominance of female participants may have influenced overall knowledge estimates and limits the ability to evaluate gender-based differences in awareness

5. Conclusion

Addressing the knowledge gap regarding early menopause requires a multifaceted approach. Key components include the enhancement of healthcare professional education, the development of workplace support measures, and the integration of digital solutions.

Innovative tools such as digital health technologies hold promise for improving outcomes in menopausal women by offering personalized information and symptom management platforms. Integrating such technologies into primary care may transform approaches to menopause and benefit both affected women and the professionals who support them²⁵. Ultimately, reducing the

challenges associated with early menopause will require a comprehensive strategy encompassing curriculum reform, open communication, workplace adaptations, and accessible information platforms. Educational programs and up-to-date information initiatives should aim to raise awareness, facilitate early diagnosis, and improve treatment pathways.

Early menopause is a clinically significant condition with multidimensional impacts on women's health. This study has revealed substantial knowledge deficits among healthcare workers, underlining the need for targeted education to enhance the quality of care and support provided during one of life's key transitions.

Because the risk factors and symptoms of early menopause can sometimes be overlooked, patients may lose fertility and experience delays in hormone replacement therapy initiation. Increasing public and professional awareness is essential to ensure timely intervention. As a relatively new public health topic, initiating awareness efforts within the healthcare community may maximize educational effectiveness.

Statement of ethics

Our study was approved by the Clinical Researchs Ethical Committee of Cukurova University Faculty of Medicine with a decision numbered October 13, 2023; 47/137/2023.

genAI

No artificial intelligence-based tools or generative AI technologies were used in this study. The entire content of the manuscript was originally prepared, reviewed, and approved by both authors.

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Conflict of interest statement

The authors declare that they have no conflict of interest.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Author contributions

Concept/Design: ANÇG; Data acquisition: MO, ZSB, ANÇG; Data analysis and interpretation: MKÖ, ANÇG; Drafting manuscript: MKÖ, ANÇG; Critical revision of manuscript: MKÖ, ANÇG; Final approval and accountability: MKÖ, MO, ANÇG; Technical or material support: MKÖ; Supervision: ANÇG

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