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Our Experiences with The Menopause School: The Example of Adana, Turkey

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Abstract

Aim

Our study aims to share our experiences with the women who applied to the Menopause School established within the gynecology clinic of a secondary healthcare facility in the Adana region of Turkey. By doing so, epidemiological data concerning women in menopause and perimenopause will be shared with relevant stakeholders. Materials and Methods: The scope of our study encompasses women who attended the gynecology clinic of a state hospital in Turkey in 2023 and were enrolled in a menopause school for evaluation. A total of 187 women were included in the research. The study was conducted in a secondary healthcare facility in the Adana region of Turkey in 2023. Bone mineral density measurements were calculated using the Z-score for premenopausal participants and the T-score for postmenopausal women. Results: Among the participants, 73 individuals (39.2%) are in the premenopausal stage, while the others are menopausal. Breast imaging reports were classified using the BI-RADS system. Accordingly, participants classified as BI-RADS 1, 2, and 3 were included in the study, while those with other BI-RADS values were referred for further evaluation at relevant institutions. One hundred fourteen participants (61.2%) were classified with a BI-RADS value of "1." A total of 117 participants (62.9%) had average mammography results.

The most frequently observed finding in mammography was axillary lymph nodes, which were more commonly bilateral. According to the T-score, osteoporosis has been identified in 33 participants, while the Z-score indicates the presence of osteoporosis in 22 participants.

Conclusions
The T-score and Z-score are indispensable tools in the evaluation of osteoporosis, each offering distinct but complementary insights into bone health.

Keywords
Menopause; Pre-menopause; T-score; Z-score; Osteoporosis; BI-RADS system.

Introduction

Menopause and perimenopause represent significant physiological transitions in the female reproductive lifespan, characterized by complex endocrinological and symptomatic changes [1]. Menopause, typically defined as the permanent cessation of menstruation for twelve consecutive months, marks the end of a woman's reproductive years, generally occurring between the ages of 45 and 55. This transition is precipitated by the decline in ovarian follicular activity, leading to reduced levels of circulating estrogen and progesterone [2].

Perimenopause, or the menopausal transition, encompasses the period leading up to menopause, often commencing in a woman's late 30s to mid-40s and lasting approximately four to ten years [3]. During perimenopause, fluctuating hormone levels contribute to a variety of symptoms, including irregular menstrual cycles, vasomotor disturbances such as hot flashes and night sweats, and psychological symptoms like mood swings and cognitive changes [4]. The irregularity of ovulation during this phase is attributed to the erratic secretion of gonadotropins, particularly follicle-stimulating hormone (FSH) and luteinizing hormone (LH), which disrupts the feedback mechanisms of the hypothalamic-pituitary-ovarian axis [5].

The physiological changes associated with menopause and perimenopause have far-reaching implications on various organ systems. The reduction in estrogen levels is linked to increased risks of osteoporosis, cardiovascular disease, and urogenital atrophy [6]. Additionally, the decline in bone mineral density during this period necessitates proactive management strategies to mitigate the risk of fractures [7].

Menopause and osteoporosis are intricately linked conditions that significantly impact women's health, particularly in the postmenopausal period. Estrogen is pivotal in regulating bone remodeling by inhibiting bone resorption and promoting bone formation. Consequently, the precipitous drop in estrogen levels during menopause leads to an imbalance in this process, favoring bone resorption over formation [8]. This imbalance precipitates a rapid loss of bone mineral density (BMD), thereby increasing the risk of osteoporosis—a condition characterized by porous and fragile bones, making them susceptible to fractures [9]. Osteoporosis is a significant public health concern, particularly in postmenopausal women, due to its association with increased morbidity and mortality from fractures, especially hip, vertebral, and wrist fractures [10].

Women's health hospitals, family health centers, and public health centers under the Ministry of Health have established Menopause Schools. These schools aim to improve women's quality of life by addressing the difficulties experienced during these perimenopausal and menopausal period [11].

Our study aims to share our experiences with the women who applied to the Menopause School established within the gynecology clinic of a secondary healthcare facility in the Adana region of Turkey.

By doing so, epidemiological data concerning women in menopause and perimenopause will be shared with relevant stakeholders.

Material and Methods

Study population

The scope of our study encompasses women who attended the gynecology clinic of a state hospital in Turkey in 2023 and were enrolled in a menopause school for evaluation. All participants were in the perimenopausal or menopausal period. A total of 187 women were included in the research.

Study design and participants

The study was conducted in a secondary healthcare facility in the Adana region of Turkey in 2023. During this period, women who applied to the menopause school were the participants. The specific demographic characteristics of the participants were queried, and various diagnostic screening methods were used. Additionally, all participants were examined for osteoporosis. The data obtained were compared among themselves.

Exclusion criteria

1. Participants who refuse to participate in the study,
2. Those who are not in perimenopause or menopause,
3. Those with missing data.

Examined variables

1. Education
2. Mamography
3. BIRADS breast ca scan
4. COVID Situation
5. Chronic Disease
6. USG
7. Smear
8. Height
9. Weight
10. Body Mass Index (BMI)
11. T score for osteoporosis (Menopause)
12. Z Score for osteoporosis (Pre-Menopause)

Ethics

Ethical permissions were obtained from the secondary healthcare facility. Participants were not forced to participate in the research, and informed consent was obtained from them.

Statistical Analysis

Statistical analysis was performed using SPSS version 26. The suitability of the data for the variables was assessed using the Kolmogorov-Smirnov test for normal distribution. Relationships among categorical variables were investigated using Chi-square tests. The comparison of two repeated dependent means was conducted using the dependent samples t-test. A p-value of less than 0.05 was considered the

threshold for statistical significance.

Results

Of the participants, 15 individuals, constituting approximately 8%, have attained a university education, while around 75% of the other participants are primary school graduates. A total of 67 participants (36.0%) reported having contracted COVID-19. Among the participants, 73 individuals (39.2%) are in the premenopausal stage, while the others are menopausal.

Twenty-one participants do not have any chronic illnesses, while 165 participants have at least one chronic illness. The most commonly identified chronic diseases are Diabetes Mellitus and Hypertension. Breast imaging reports were classified using the BI-RADS system. Accordingly, participants classified as BIRADS 1, 2, and 3 were included in the study, while those with other BIRADS values were referred for further evaluation at relevant institutions. One hundred fourteen participants (61.2%) were classified with a BI-RADS value of "1." A total of 117 participants (62.9%) had average mammography results. The most frequently observed finding in mammography was axillary lymph nodes, which were more commonly bilateral.

Breast ultrasound (USG) results revealed cystic lesions in 40 participants (21.5%). Smear examinations of the participants showed that 37 individuals (19.8%) had atrophy. Participants' height and weight measurements were taken, and their Body Mass Index (BMI) values were calculated, with an average BMI of 28.86 ± 3.89.

Bone mineral density measurements were calculated using the Z-score for premenopausal participants and the T-score for postmenopausal women. A Z-score of -2.0 or lower indicated low bone mineral density. In T-scores, values ranging from -1 to -2.5 were classified as osteopenia, while scores of -2.5 or lower indicated osteoporosis. According to the T-score, osteoporosis has been identified in 33 participants, while the Z-score indicates the presence of osteoporosis in 22 participants. Fracture history has been identified in ten participants over forty (Table 1).

VARIABLES	COUNT	%
Education		
University	15	8,1
High School	32	16,8
Primary Education	139	75,1
COVID – 19 History		
+	73	39,2
-	113	60,8
Menopause Status		
Pre-menopause	73	39,2
Menopause	113	61,8
Chronic Illnesses		
+	21	11,3
-	165	88,7
BIRADS		
1	114	61,2
2	45	24,1
3	27	14,7
T-score		
≥ -1	98	52,9

(-1) – (-2,5)	55	29,5
≤ -2,5	33	17,6
Z Score		
>2,0	164	88,3
≤ -2,0	22	11,7

Table 1: Demographic Variables and Certain Characteristics of the Participants.

Premenopausal and menopausal groups were statistically compared in terms of their BIRADS, T Score, and BMI values, and intergroup differences were examined. According to the findings, BIRADS and T Score values exhibited significant differences between the groups (p=0.03 and <0.01, respectively). However, no significant difference was observed between the groups concerning BMI (Table 2).

	BI-RADS				**p**
	0	**1**	**2**	**3**	
Pre-menopause	7 (%9,5)	40 (%54,7)	17 (%23,2)	9 (%12,6)	**0,03**
Menopause	19 (%16,8)	60 (%53,0)	20 (%17,6)	14 (% 12,6)	
	T Score				**p**
	> -1	**-1.0 – (-2.5)**	**< 2,5**		
Pre-menopause	41 (%56,1)	21 (%28,7)	11 (%15,2)		**<0,01**
Menopause	57 (%50,4)	34 (%30,0)	22 (% 19,6)		
	BMI				**p**
Pre-menopause	28.88 ± 4.06				**0,7**
Menopause	28.99 ± 4.13				

Table 2: Analysis of Differences in BIRADS, T-Score, and BMI Values between groups.

Discussion

Our research has determined that many participants possess an educational level at or below primary school. This reflects the general characteristics of the region where the study was conducted. The inhabitants of this area typically have migrated from rural locations and have a lower educational level than the general population [12]. Approximately 40% of the participants have been identified as having contracted COVID-19, which aligns with data obtained from the Ministry of Health system. A considerable number of participants suffer from chronic illnesses. The most commonly identified chronic diseases are Diabetes Mellitus and Hypertension. The BI-RADS system was established to provide a standard for all radiologists to categorize and follow their findings. Participants categorized as BI-RADS 0, 4, 5, and 6 were referred to relevant units for additional imaging [13]. Those categorized as BI-RADS 1, 2, and 3 were included in the study. According to the T-score, osteoporosis has been identified in 17.6% of participants, while the Z-score indicates the presence of osteoporosis in 1.7% of participants.

In the pre-menopause group, the majority of participants have normal T-scores, whereas in the menopause group, osteopenia and osteoporosis are more prevalent. Findings from mammography and breast ultrasound examinations indicate that cystic disease is more prominent compared to others. Smear results frequently show atrophy in older participants relative to others. All individuals over the age of forty with a history of fractures have been identified with osteoporosis based on their T-scores.

Assessing bone mineral density (BMD) is crucial for diagnosing and managing osteoporosis, a condition characterized by decreased bone strength and increased fracture risk [14]. The T-score and Z-score are pivotal metrics derived from dual-energy X-ray absorptiometry scans, providing quantitative evaluations that inform clinical decision-making [15].

The T-score, which compares a patient's BMD to the mean BMD of a healthy, young adult reference population, is instrumental in diagnosing osteoporosis [16]. According to the World Health Organization (WHO), a T-score of -2.5 or lower indicates osteoporosis, whereas a T-score between -1.0 and -2.5 suggests osteopenia, a precursor to osteoporosis [17]. The clinical utility of the T-score lies in its predictive capacity for fracture risk. Numerous studies have demonstrated a strong correlation between low T-scores and increased fracture susceptibility, validating its role as a critical diagnostic criterion [14, 16]. However, it is essential to recognize that the T-score predominantly reflects BMD and does not account for other factors influencing bone strength, such as bone quality and microarchitecture [18].

In contrast, the Z-score, which compares a patient's BMD to the mean BMD of an age-matched and sex-matched population, is complementary in the clinical evaluation of osteoporosis [19]. The Z-score is particularly valuable in identifying secondary causes of osteoporosis in younger individuals and premenopausal women, for whom a low Z-score (typically below -2.0) may prompt further investigation into underlying pathologies, such as endocrine disorders, malabsorption syndromes, or medication-induced bone loss. The Z-score thus aids in distinguishing primary osteoporosis from secondary osteoporosis, guiding appropriate therapeutic interventions [18].

Despite their clinical utility, the T-score and Z-score have inherent limitations that must be acknowledged. The T-score's reliance on a young adult reference population may need to adequately reflect the bone health of older individuals, leading to potential overestimation or underestimation of fracture risk in specific population [20]. Moreover, the Z-score's dependence on normative data from an age-matched cohort may obscure the detection of bone loss in populations with a high prevalence of osteoporosis, thereby necessitating the integration of additional clinical and diagnostic parameters for comprehensive assessment [21, 22].

Furthermore, the interpretation of T-scores and Z-scores must be contextualized within a broader clinical framework [23]. Factors such as patient history, physical examination findings, biochemical markers of bone turnover, and comorbid conditions should be considered in conjunction with BMD measurements to formulate an individualized management plan [24]. Emerging imaging modalities and biomarkers hold promise in augmenting the diagnostic accuracy and prognostic utility of BMD assessments, enhancing osteoporosis management's precision [25].

Conclusion

The T-score and Z-score are indispensable tools in the evaluation of osteoporosis, each offering distinct

but complementary insights into bone health. While the T-score is central to diagnosing osteoporosis and assessing fracture risk, the Z-score provides critical information for identifying secondary causes of bone loss. The limitations inherent in these scores underscore the necessity for a holistic, multi-faceted approach to osteoporosis assessment, integrating clinical judgment with advanced diagnostic technologies. Future research should focus on refining these metrics and exploring novel biomarkers to enhance BMD measurements' predictive accuracy and clinical utility in osteoporosis management.

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