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Menopausal Symptoms and Attitudes Toward Menopause Among Women in Türkiye: a Systematic Review and Meta-Analysis

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Menopausal Symptoms and Attitudes Toward Menopause Among Women in Türkiye: a Systematic Review and Meta-Analysis

ABSTRACT

Background: Menopause is a natural transition that can produce vasomotor, somatic, psychological, and urogenital symptoms, and women's attitudes toward menopause may shape both symptom experience and help-seeking. Evidence from Türkiye has not been quantitatively synthesized.

Objective: To synthesize the severity and prevalence of menopausal symptoms and attitudes toward menopause among women in the menopausal period in Türkiye.

Methods: This systematic review and meta-analysis followed PRISMA and COSMOS-E guidance and was registered in PROSPERO (CRD420251119487). We searched national and international databases in June 2025. Risk of bias was assessed with the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for cross-sectional studies. Data were synthesized using random-effects meta-analysis, exploratory subgroup/moderator analyses, and narrative synthesis; small-study effects (funnel plots and Egger's test) and the certainty of evidence (GRADE-informed appraisal) were also assessed.

Results: In total, 41 studies (published 2011–2025; combined sample n=7,509; age range largely 40–65 years) were included. The pooled mean Menopause Rating Scale (MRS) total score was 17.42 (95% CI 15.54–19.30; I^2=98.8%), with subscale means highest for psychological (6.79) and lowest for urogenital (4.04) symptoms. The most frequently reported symptom was hot flushes (44.2%), and the least frequent was sexual problems (18.0%). The pooled mean Attitude Toward Menopause Scale (ATMS/MİTÖ) score was 40.81 (95% CI 35.69–45.94; I^2=98.8%), reflecting moderately positive attitudes. Between-study heterogeneity was very high across analyses, and the overall certainty of evidence was low to very low.

Conclusions: Among midlife women in Türkiye, menopausal symptoms are on average moderate, with psychological complaints most prominent and hot flushes most frequently reported, and attitudes toward menopause are on average moderately positive. Because

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of very high heterogeneity, possible small-study effects, and limited control of confounding in the primary studies, the pooled estimates should be interpreted as descriptive summaries rather than precise national estimates. The findings can inform tailored, culturally appropriate education and symptom-management services in women's health care.

Keywords: menopause; climacterium; attitudes toward menopause; menopausal symptoms; systematic review; meta-analysis.

BACKGROUND

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Menopause is a natural and inevitable life stage that marks the end of female reproductive capacity, arising from the cessation of ovarian function and the consequent decline in oestrogen and progesterone production [1]. Natural menopause is clinically defined as 12 consecutive months of amenorrhoea not attributable to other causes. During the menopausal period, the fall in circulating hormone levels gives rise to vasomotor symptoms such as hot flushes and night sweats; musculoskeletal complaints; neurological and psychological problems; gynaecological issues; depressive symptoms; urological problems; and other systemic manifestations [2-6]. In a recent systematic review and meta-analysis, Fang and Colleagues (2024) reported that women most frequently experienced musculoskeletal complaints (65.43%) and vasomotor symptoms (54–66%) [7]. The epidemiology of menopausal symptoms is shaped by multiple factors, including the geographic characteristics of the country and region, national socio-economic

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development, income distribution, and the diagnostic approaches employed. Although these symptoms are not life-threatening, they may adversely affect many women's quality of life, including work, marital and social relationships [8-9]. The World Health Organization underscores the responsibility of health professionals to provide holistic, evidence-based care [10]. The WHO further highlights that respectful, person-centred counselling and access to evidence-based options for symptom management are core components of midlife women's health care.

Prior research indicates a link between women's attitudes towards menopause and the symptoms they experience. Negative attitudes are associated with greater symptom severity, whereas more positive attitudes are associated with fewer symptoms [10-14]. Yet many women are unaware that their complaints may be menopausal in origin and are unfamiliar with available counselling and treatment options; shame and hesitancy in voicing vasomotor and psychosocial symptoms are common [10]. In this context, women's health nurses—together with all health professionals—should recognise menopause as a physiological transition, be knowledgeable about menopausal symptoms and the factors that shape women's attitudes towards menopause, and adopt supportive roles to help women cope with symptoms [15]. In the context of Türkiye, synthesising the existing evidence can inform culturally appropriate health education and service delivery.

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Objective and Research Questions

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The objective of this systematic review is to determine menopausal symptoms and attitudes towards menopause among women in the menopausal period in Türkiye, drawing on studies previously conducted in the country. We pre-specified the review outcomes and analytic approach to support transparency and reproducibility. Primary outcomes were the severity of menopausal symptoms (e.g., total and domain scores on the Menopause Rating Scale) and attitudes towards menopause assessed with validated instruments; secondary outcomes included the prevalence of individual symptoms. The review addresses the following questions:

1. What is the level of menopausal symptom severity among women in the menopausal period in Türkiye?
2. Which menopausal symptom is most frequently experienced by these women?
3. What are women's attitudes towards menopause in Türkiye?

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METHODS

Study design

This study is a systematic review and meta-analysis. The development of the protocol, the conduct of the review, and the reporting followed the PRISMA Statement (checklist for reporting systematic reviews and meta-analyses) and the COSMOS-E guidance (Guidance on conducting systematic reviews and meta-analyses of observational studies of aetiology) [16—17]. The study protocol was registered in PROSPERO on 4th of August 2025 (registration number (CRD420251119487). To minimise risk of bias,

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study selection, data extraction and quality assessment were performed independently by the second and third authors (N.E.Ö.Y. and E.G.Ö.), and then consolidated into a single document during meetings involving all authors. Any discrepancies between reviewers were resolved by re-checking the relevant sources and by discussion. In addition, prior to each stage, a pilot exercise was conducted to prevent bias and establish a shared perspective among reviewers. Ethics approval was not required because this review synthesized data from previously published studies.

Search strategy

Electronic searches for this systematic review were conducted between 1 and 30 June 2025 in PubMed, EBSCOhost databases (MEDLINE and CINAHL), Embase via Ovid, PsycINFO, the Cochrane Library, DOAJ, Web of Science, DergiPARK, Scopus, Türk Medline, Türkiye Atıf Dizini, TR Dizin and the YÖK National Thesis Center. The search was structured around four core concepts—menopause/climacterium, menopausal symptoms, attitudes toward menopause, and the Turkish population—each expanded with relevant synonyms and, where supported by the database, controlled vocabulary (e.g., MeSH or Emtree terms). Within each concept, terms were combined using the Boolean operator OR, and the concepts were then combined using AND. Representative core terms included "menopause," "climacterium," "perimenopause," "postmenopause," "menopausal symptoms," "climacteric symptoms," "menopausal attitude," and "attitude toward menopause," together with their Turkish equivalents (e.g., "menopoz," "klimakterium," "menopoz semptomları," "menopoza ilişkin

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tutum") in the Turkish-language databases. Searches were adapted to the syntax and field tags of each database. For additional retrieval, the reference lists of prior narrative and systematic reviews, as well as those of the studies included in this review, were screened.

Eligibility criteria and study selection

Eligible studies for this systematic review were identified using the PEOS framework:

Population (P): Women in the menopausal period.

Exposure (E): Menopausal symptoms.

Outcomes (O): Menopausal symptoms in women and attitudes towards menopause.

Study design (S): Observational studies conducted in Türkiye and published in Turkish or English between 2010 and 2025.

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Two reviewers independently screened titles and abstracts after duplicate removal. Potentially eligible reports were retrieved in full text and assessed independently against the predefined PEOS criteria. Disagreements between reviewers were resolved through discussion and, when necessary, by consultation with the third reviewer. Reasons for full-text exclusion were recorded and are reported in the PRISMA 2020 flow diagram. Studies conducted outside Türkiye, studies that did not employ an observational/survey design, and studies focusing on specific disease groups were excluded. Validated outcome instruments, such as the Menopause Rating Scale for symptom severity and Turkish-validated

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scales for attitudes toward menopause, were considered acceptable measures. The study selection process is shown in Figure 1.

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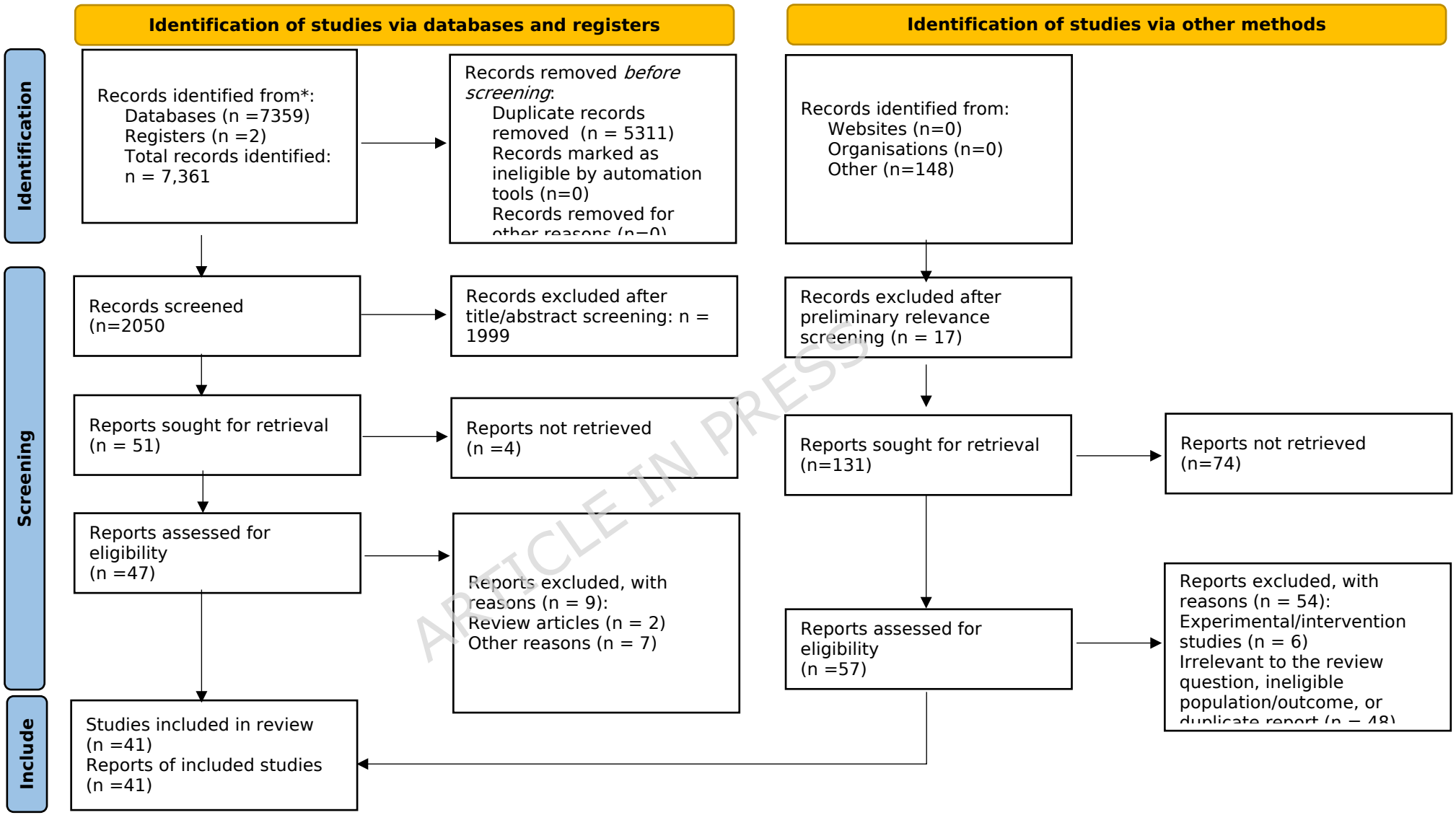

Figure 1. PRISMA 2020 flow diagram for study selection in this systematic review and meta-analysis.

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.
Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

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Assessment of Methodological Quality

The methodological quality of the studies included in this systematic review was appraised using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for cross-sectional studies [18]. The checklist comprises eight items, each rated as "yes", "no", "unclear", or "not applicable". In this review, overall methodological quality was classified according to the proportion of "yes" responses: studies with ≤50% "yes" responses were considered poor quality, those with >50% to 80% were considered moderate quality, and those with >80% were considered good quality. However, because JBI item S6 specifically addresses whether strategies to deal with confounding factors were stated, studies with high overall checklist scores but without explicit confounding control were interpreted cautiously in the overall risk-of-bias judgment. Two reviewers independently applied the JBI checklist; disagreements were resolved by consensus.

Data Extraction

Data were obtained using a data extraction tool developed by the research team. The form captured author and year of publication, study design, sample size, year (s) of data collection, mean age, and variables related to menopausal symptoms. The extraction form also documented definitions of menopausal status, instruments employed (e.g., MRS and validated attitude scales), and any imputation or conversions performed. A blank copy of the extraction form is provided in the Supplementary Materials to facilitate reproducibility. For studies assessing attitudes toward menopause, extracted outcomes were classified according to the format reported in the primary studies: continuous scale-based outcomes, categorical/proportional outcomes, or narrative-only findings. Continuous

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outcomes were extracted as mean, standard deviation, and sample size where available. Categorical or proportional findings were extracted as percentages or frequencies, and narrative-only findings were recorded descriptively. Missing information, including age not reported in the original study, was marked as “NR”. No imputation was performed for missing data.

Pilot Exercise

To minimise potential sources of bias, pilot exercises were conducted with all researchers prior to each stage of the review process (searching, study selection, data extraction, and quality appraisal) to establish a shared protocol. In addition, each stage was performed independently by two researchers, and the resulting records were merged into a single dataset during joint meetings.

Data Synthesis

Data from the included studies were synthesized using meta-analysis. Variation, standard error, confidence intervals, sample homogeneity, sample size and saturation, and the analytical models used in the primary studies can influence the precision of pooled estimates [19]. Because different instruments were used across studies, a random-effects model was adopted for effect size estimation. When outcomes were reported on different scales, standardised effect sizes were calculated to enable synthesis; for proportions (symptom prevalence), random-effects meta-analysis of proportions with variance-stabilising transformation was used. Missing or not-reported outcome data were not imputed. For symptom-specific prevalence analyses, studies that did not report a given symptom were excluded from the analysis of that symptom and were not treated as having zero

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prevalence. Continuous outcomes were synthesized as mean scores when the same scale and scoring direction were used. When outcomes were reported on different scales or in non-convertible formats, they were summarized narratively rather than statistically pooled. For attitude toward menopause outcomes, quantitative pooling was restricted to studies using the same attitude scale and reporting sufficient numerical data, including mean, standard deviation, and sample size. Studies reporting only percentages, categorical findings, or qualitative/narrative statements were not transformed into mean scores because the available data did not permit valid conversion. These findings were therefore summarized descriptively in the harmonized evidence table. Studies using different attitude instruments were not statistically pooled together unless scale compatibility and scoring direction could be confirmed.

The Q statistic was used to inform model choice between fixed- and random-effects. A statistically significant Q ($p<0.05$) was interpreted as evidence that studies do not share a common effect—i.e., that there is heterogeneity [19-20]. In addition, the I^2 (%) statistic was calculated as the percentage of total variation due to heterogeneity rather than chance; accordingly, both Q and I^2 (%) were examined in this review. Publication bias and small-study effects were assessed using funnel plots and Egger's regression test when at least 10 studies were available for a given outcome. Funnel plot asymmetry was interpreted cautiously because it may arise from several sources, including between-study heterogeneity, methodological differences, and small-study effects, rather than publication bias alone [21].

Exploratory subgroup/moderator analyses were conducted where sufficient data were available to examine whether pooled estimates differed across study-level

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characteristics [22]. Statistical significance of subgroup differences was assessed using the Q statistic partitioned into Q_between and Q_within. Q_between was used to test differences between subgroup categories, whereas Q_within was used to assess residual heterogeneity within categories [19-20]. Subgroup analyses were conducted for geographical region for the MRS total score and for MRS subscales where appropriate. Because the number of studies was limited for several subgroup categories and substantial heterogeneity was present, these analyses were interpreted as exploratory. Multivariable meta-regression with additional moderators (e.g., age, menopausal status, study setting, instrument type) was not performed because these characteristics were inconsistently reported across studies, instrument type was already restricted within each pooled analysis, and several strata contained very few studies; under such conditions, and given the very high residual heterogeneity, multivariable models would be unstable and potentially misleading. Quantitative pooling was restricted to a single validated and comparable instrument within each outcome domain. For menopausal symptom burden, only studies using the Menopause Rating Scale (MRS) were combined in the pooled mean-score analyses, and for attitudes toward menopause only studies using the ATMS/MİTÖ with sufficient numerical data (mean, standard deviation, and sample size) were pooled. Studies that used other instruments (e.g., MENQOL, MTDÖ, or study-specific questionnaires) were not statistically combined with these scales; their findings were summarized descriptively. The scoring systems, score ranges, subscales, and interpretation/cut-off conventions of the instruments are provided in the Supplementary Materials. All analyses were conducted in R (version 4.4.3) using appropriate meta-analytic packages (e.g., *metafor*), and two-sided 95% confidence intervals are reported.

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The certainty of the pooled evidence was appraised using an approach informed by the GRADE framework, adapted for non-comparative syntheses of observational prevalence and mean-score data. Certainty was downgraded for risk of bias (limited control of confounding; JBI item S6), inconsistency (very high statistical heterogeneity), imprecision, and suspected small-study/publication effects, and was not downgraded for indirectness because all studies were conducted in the target population (women in Türkiye).

RESULTS

Study Selection

We identified observational studies conducted across diverse regions in Türkiye and settings spanning primary care (Family Health Centres), secondary/tertiary hospitals and online community samples. Table 1 summarises study characteristics, including design, setting, sample size, age, instruments and key findings for menopausal symptoms and, where available, attitudes toward menopause. Sample sizes ranged from 100 to 1,013 participants, and the most frequently used instrument was the Menopause Rating Scale (MRS), followed by MENQOL and Turkish-validated attitude scales. The MRS provided the common outcome framework and underpinned the quantitative synthesis presented below.

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Table 1. Characteristics of included studies on menopausal symptoms among Turkish women.

Authors (year) / City	Study design	Setting	Sample (n)	Age range / mean	Instruments	Key findings
Özer & Gözükara, 2016 / Şanlıurfa	Descriptive	Family Health Center (FHC)	300	45–88	Questionnaire	Vasomotor: “numbness/tingling in hands and feet” (76.3%); Emotional: “feeling blue” (83.3%); CNS:

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						"forgetfulness" (63.3%); Hair/skin: "hair loss" (46.7%); Musculoskeletal: "joint/bone pain" (76.0%); Cardiovascular: "tightness/palpitations" (75.3%); Urogenital: "urinary incontinence" (53.7%); Gastrointestinal: "constipation" (75.3%); Sleep: "difficulty initiating/maintaining sleep; early awakening" (72.0%).
Çakır Palaz & Yavaş, 2025 / Bandırma	Cross-sectional	University Hospital	277	25–65	MENQOL	Most frequent: vasomotor symptoms (mean = 3.48); Sexual (mean = 2.84); Physical (mean = 2.63); Psychological (mean = 2.61).
Kızılırmak & Seviğ, 2011 / Kayseri	Descriptive	Health Centre	336	40–59	Questionnaire	Most common symptom: hot flushes (81.8%); others: forgetfulness (79.2%), joint pain (73.5%), irritability (69%), back pain (63.7%).
Tümer & Kartal, 2018 / Muğla	Descriptive & cross-sectional	Cultural Centre	152	43–60	Questionnaire; MRS; ATMS (MİTÖ)	MRS subscales: psychological (8.96±4.94), urogenital (5.35±3.09), somatic (2.85±1.99); MRS total (14.65±7.62).
Yaşar & Yeyğel, 2023 / Türkiye	Descriptive	Online survey	297	45–60	Demographic form; MRS; ATMS (MİTÖ)	MRS subscales: psychological (9.43±6.06), urogenital (3.59±3.12), somatic (2.69±1.94); MRS total (15.72±9.86).
Çelik Sis & Pasinlioğlu, 2014 / Erzurum	Descriptive & cross-sectional	Research Hospital	263	35–64	Questionnaire; MRS	MRS subscales: psychological (13.12±4.59), urogenital

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						(5.35±3.09), somatic (4.19±2.08); MRS total (22.67±8.06).
Kurt & Arslan, 2020 / Sakarya	Descriptive	Training & Research Hospital	204	≥45	MRS; Participant form; Menopause Symptom Coping Form	MRS subscales: somatic (7.1±3.7), psychological (6.9±4.3), urogenital (3.4±3.0); MRS total (17.6±8.8).
Dündar & Aksu, 2021 / —	Analytical –cross-sectional	KETEM	359	40–64	Questionnaire; MYTL	~Half reported irritability/tension (56%); followed by headache/dizziness (25.6%) and hot flushes/night sweats (24%).
Demirtaş & Şahin, 2024 / İstanbul	Descriptive & cross-sectional	Online platform	225	40–65	Personal Info; Internet Use; MRS	MRS subscales: somatic (5.56±3.18), psychological (4.89±3.31), urogenital (3.40±2.98); MRS total (13.86±7.92).
Zorlu et al., 2022 / Sivas	Descriptive	FHC	154	40–64	Descriptive Form; MRS; Alternative Practices Form	MRS subscales: somatic (9.14±3.26), psychological (7.81±3.42), urogenital (3.59±2.36); MRS total (20.55±7.00).
Engindeniz, Ertürk & Aytekin, 2024 / Bursa	Descriptive & cross-sectional	FHC	1013	40–60	Questionnaire; MRS	In postmenopausal women, most frequent complaints: physical & mental exhaustion (82.8%), irritability (78.4%), depressed mood (76.4%).
Aksoy Derya, Altıparmak & Öztaş, 2021 / Mediterranean Region	Cross-sectional	State Hospital	306	40–65	MRS; Personal Info; GRAS; SQOL-F	MRS subscales: somatic (6.64±3.15), psychological (7.15±4.27), urogenital (4.35±3.00); MRS total (18.15±9.14).
Şentürk Erenel et al., 2015 / Ankara	Cross-sectional	State Hospital	229	40–64	ASEX; MRS; Personal Info	MRS subscales by age: 40–49y somatic (7.06±3.54), 50–64y somatic (7.64±3.88); 40–49y psychological (6.89±4.31), 50–

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						64y psychological (8.26±4.41); 40–49y urogenital (4.15±3.49), 50–64y urogenital (4.90±3.49); MRS total (20.13±9.20).
Uludağ et al., 2014 / Çanakkale	Descriptive & cross-sectional	University Hospital	300	40–65	Questionnaire; MRS; SF-36	MRS total 16.3±8.9; psychological 6.4±4.1; somatic 5.9±3.4; urogenital 3.7±3.1.
Polat & Karasu, 2022 / Osmaniye	Descriptive	FHC	259	40–65	Personal Info; MRS; BTATÖ	MRS subscales: somatic (3.87±2.35), psychological (13.06±6.07), urogenital (4.65±2.87); MRS total (21.59±10.30).
Erdem Çetin & Eroğlu, 2015 / Tokat	Descriptive	Health Centre	100	50–64	Questionnaire	Most frequent symptoms: vasomotor (97%), emotional (91%), CNS (74%).
Darici Koçan & Cangöl, 2023 / Kırklareli	Cross-sectional	FHC	270	45–65	Demographic Form; MRS	MRS subscales: somatic (3.54±2.58), psychological (3.14±2.67), urogenital (1.69±2.03); MRS total (8.37±5.42).
Düşli et al., 2022 / İstanbul	Descriptive	University Hospital	300	Mean 53.60±4.67	Demographic Form; MSBF	Most frequent: hot flushes (92.3%), then irritability/tension (72%), night sweats (70.7%), weight gain (65.7%), musculoskeletal pain (62.8%), insomnia/fatigue (62.3%).
Özer Yurdal, Özsoy & Karaçam, 2024 / Çanakkale	Analytical –cross-sectional	University Hospital; State Hospital; FHC; KETEM	250	40–65	Questionnaire; ATMS (MİTÖ); CMÖ; MRS	Health-care workers: MRS total 7.53±6.47; somatic 3.27±2.50; psychological 2.84±2.70; urogenital 1.43±2.05.
Ünlü et al., 2022 / Tokat	Descriptive & cross-sectional	FHC	870	40–60	MRS; MTDÖ; Questionnaire	MRS subscales: somatic (5.14±3.88), psychological

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						(5.40±4.10), urogenital (2.98±2.99); MRS total (13.5±10.1).
Çakıl & Ünsal, 2020 / Kırşehir	Descriptive	FHC	364	50–65	ÖEYÖ	Most frequent symptoms: hot flushes & night sweats (82.6%), followed by forgetfulness (74.9%), joint/bone pain (68.9%), restlessness/irritability (68.3%), feeling blue (66.9%).
Alpaslan Arar & Erbil, 2023 / Black Sea region	Descriptive & cross-sectional	State Hospital	381	40–64	MRS; DLAC; Personal Info	Most frequent: sleep problems (80.9%); hot flushes/sweating (60.3%); depressed mood (60.3%); physical & mental fatigue (value missing in source); anxiety (60.3%).
Avcı, 2013 / İstanbul	Descriptive & cross-sectional	Training & Research Hospital	120	45–59	Demographic Form; MRS; MENQOL	MRS subscales: somatic (7.908±4.241), psychological (8.883±4.489), urogenital (5.733±3.694); MRS total (22.525±9.833).
Tunç, 2014 / Sivas	Descriptive & cross-sectional	State Hospital	254	≥40	Personal Info; MRS; Menopause Knowledge Form	MRS subscales: somatic (7.41±3.14), psychological (6.57±3.12), urogenital (4.94±3.92); MRS total (18.92±7.69).
Gökgöz, 2014 / Malatya	Descriptive	University Hospital	270	40–65	Demographic Form; MENQOL	Most frequent symptoms: hot flushes (86.9%), sweating (82.1%), vaginal dryness/dyspareunia (81.7%), weight gain (76.5%), muscle/joint pain (70.4%).
Görmüş, 2017 / Samsun	Descriptive & correlational	University Hospital	206	40–60	Demographic form; MRS; SQOL-F (CYKÖ)	MRS subscales: somatic (9.2±3.9), psychological (11.5±4.0), urogenital

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						(6.4±3.2); MRS total (26.4±9.7).
Tunçarslan, 2019 / Erzincan	Descriptive	University Hospital	297	40–60	Descriptive Form; MSPSS (ÇBASDÖ); MRS	MRS total 18.84±7.19; symptoms below moderate on scale bounds.
Parmaksız, 2019 / Kastamonu	Descriptive & cross-sectional	State Hospital	180	≤65	Data Form; SLWS; Menopausal Complaint Scale	Most frequent: hot flushes (86.7%), cold sweats (76.37%); joint pains (73.9%); nape/headache (62.2%).
Aygün, 2019 / Ankara	—	University Hospital	112	40–64	MRS; Questionnaire; BDI	Severe/very severe symptoms most often: irritability (23.2%), joint/muscle problems (22.3%), sexual problems (19.6%).
Cirban & Özsoy, 2023 / Zonguldak	Descriptive & analytical	FHC	424	40–64	MRS; MTDÖ; CMÖ; Demographic form	MRS subscales: somatic (6.23±3.58), psychological (6.43±4.45), urogenital (4.45±3.01); MRS total (17.11±9.43).
Uyanık, 2020 / İstanbul	Descriptive & correlational	FHC	220	45–65	Case Identification Form; MRS	Most frequent symptom: hot flushes (62.3%).
Çulha, 2020 / İzmir	—	University Hospital	384	≥45	Questionnaire; MRS	MRS subscales: somatic (5.46±2.70), psychological (5.17±3.42), urogenital (2.81±2.79); MRS total (13.45±7.03).
Gökçer, 2022 / İstanbul	Descriptive	Training & Research Hospital	178	45–55	Demographic Form; ATMS (MİTÖ); MRS	MRS subscales: somatic (3.55±2.14), psychological (13.48±6.12), urogenital (5.18±3.24); MRS total (22.22±9.97).
Bilgin, 2023 / İstanbul	Prospective & analytical	Training & Research Hospital	203	≥40	MRS; Patient Info	MRS subscales: somatic (2.70±1.88), psychological (9.58±5.04), urogenital (3.12±2.50); MRS total (15.40±7.70).

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Çekici, 2023 / Çorum	Descriptive	Training & Research Hospital	184	≥40	Sociodemographic Form; MRS; NWLS (HİYKÖ)	MRS subscales: somatic (11.57±4.33), psychological (6.38±2.75), urogenital (5.85±3.41); MRS total (23.78±9.54).
Kocatepe, 2023 / İstanbul	Cross-sectional & descriptive	Training & Research Hospital	149	45–65	Questionnaire; MRS	MRS subscales: somatic (2.77±1.81), psychological (8.74±4.96), urogenital (2.91±2.41); MRS total (14.42±7.65).
Aral, 2024 / İstanbul	Cross-sectional	City Hospital	213	45–65	Participation Form; MRS	MRS subscales: somatic (5.52±4.14), psychological (4.96±4.51), urogenital (3.92±3.59); MRS total (14.40±10.25).
Sertkaya, 2024 / İstanbul	Cross-sectional & descriptive	FHC	245	40–55	Personal Info; MRS	MRS subscales: somatic (5.67±2.96), psychological (7.55±3.21), urogenital (3.43±2.78); MRS total (16.65±7.16).

Abbreviations

FHC: Family Health Center (primary care);
KETEM: Cancer Early Diagnosis, Screening and Education Center;
MRS: Menopause Rating Scale (MSDÖ);
MENQOL: Menopause-Specific Quality of Life Questionnaire (MÖYKÖ);
ATMS (MİTÖ): Attitude Toward Menopause Scale;
MTDÖ: Menopause Attitude Evaluation Scale;
MSPSS (ÇBASDÖ): Multidimensional Scale of Perceived Social Support;
ASEX: Arizona Sexual Experiences Scale;
SQOL-F (CYKÖ): Sexual Quality of Life Questionnaire-Female; SF-36: 36-Item Short Form Health Survey;
BDI (BDE): Beck Depression Inventory;
MSBF: Menopause Symptom Coping Form;
BTATÖ: Attitudes Toward Complementary and Alternative Medicine Scale;
DLAC: Daily Living Activities Checklist;
SLWS: Sense/Meaning in Life Scale;
NWLS (HİYKÖ): Nursing Work-Life Quality Scale;
ÖEYÖ: Self-Efficacy Scale;
CMÖ: Sexual Myths Scale.

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A brief overview of women's attitudes toward menopause in Türkiye is presented in Table 2, which lists study settings, instruments, and principal findings across the included studies.

Table 2. Harmonized reporting of studies assessing attitudes toward menopause among women in Türkiye.

Authors, year / location	Study design	Setting	Sample, n	Age, years	Attitude instrument	Outcome format reported in primary study	Scale-based result, mean ± SD	Categorical / proportional result	Harmonized interpretation	Use in synthesis
Özer & Gözükara, 2016 / Şanlıurfa	Descriptive	FHC	300	45–88	Questionnaire	Proportional / narrative	NA	96.7% viewed menopause positively because they were freed from childbearing	Positive attitude reported descriptively	Narrative synthesis only; not included in pooled mean
Tümer & Kartal, 2018 / Muğla	Descriptive, cross-sectional	Cultural centre	152	43–60	ATMS / MİTÖ	Continuous scale score	46.15 ± 11.68	NA	Positive attitude	Included in ATMS pooled mean
Yaşar & Yeyğel, 2023 / Türkiye	Descriptive	Online survey	297	45–60	ATMS / MİTÖ	Continuous scale score	46.04 ± 14.46	NA	Positive attitude	Included in ATMS pooled mean
Dündar & Aksu, 2021 / Aydın	Analytical, cross-sectional	KETEM	359	40–64	ATMS / MİTÖ	Continuous scale score	35.24 ± 6.13	NA	Negative attitude	Included in ATMS pooled mean
Tezce & Beydağ, 2021 /	Descriptive, cross-sectional	Training and research	110	NR	MTDÖ; SQOL-F	Proportional / categorical	NA	60.9% reported negative feelings	Negative feelings reported descriptively	Narrative synthesis only; not

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Kocaeli		hospital						upon entering menopause		included in pooled mean
Gümüşay & Erbil, 2019 / Black Sea region	Descriptive	Training and research hospital	197	45–65	ATMS / MİTÖ	Continuous scale score and proportional result	36.06 ± 7.34	72.1% had negative attitudes toward menopause	Negative attitude	ATMS mean included in pooled mean; percentage reported narratively
Ağralı, Ünal & Kaya Şenol, 2022 / Osmaniye	Descriptive	State hospital	180	39–68	MTDÖ; TTTÖ	Continuous scale score	24.06 ± 7.40	NA	Moderate attitude level	Descriptive scale-based synthesis only; not pooled with ATMS
Özer Yurdal, Özsoy & Karaçam, 2024 / Çanakkale	Analytical, cross-sectional	University hospital; state hospital; FHC; KETEM	250	40–65	ATMS / MİTÖ	Continuous scale score	47.08 ± 12.37	NA	Positive attitude	Included in ATMS pooled mean
Ünlü et al., 2022 / Tokat	Descriptive, cross-sectional	FHC	870	40–60	MTDÖ	Continuous scale score	26.80 ± 7.00	NA	Negative menopausal attitude	Descriptive scale-based synthesis only; not pooled with ATMS
Cirban & Özsoy, 2023 / Zonguldak	Descriptive, analytical	FHC	424	40–64	MTDÖ	Continuous scale score	27.86 ± 8.06	NA	Above moderate / positive attitude	Descriptive scale-based synthesis only; not pooled with ATMS

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Gökçer, 2022 / İstanbul	Descriptive	Training and research hospital	178	45–55	ATMS / MİTÖ	Continuous scale score	43.63 ± 16.12	NA	Positive attitude	Included in ATMS pooled mean

Abbreviations: FHC: Family Health Centre; KETEM: Cancer Early Diagnosis, Screening and Education Centre; ATMS / MİTÖ: Attitude Toward Menopause Scale; MTDÖ: Menopause Attitude Evaluation Scale; SQOL-F: Sexual Quality of Life Questionnaire–Female; TTTÖ: Attitudes Toward Using Complementary Therapies Scale; NA: not applicable; NR: not reported in the original study.

Table note: Outcome reporting was harmonized according to the type of data available in the primary studies. Continuous scale-based outcomes were extracted as mean ± standard deviation when available. Categorical or proportional findings were reported separately and were not transformed into mean scores. Narrative-only findings were summarized descriptively. Studies using ATMS/MİTÖ with available mean, standard deviation, and sample size were included in the pooled ATMS analysis. Studies using MTDÖ or reporting only categorical/proportional or narrative outcomes were not statistically pooled with ATMS results because of differences in measurement instruments or insufficient information for valid transformation. NR indicates not reported in the original study. No imputation was performed for missing data.

Table 3 presents the JBI risk-of-bias assessment for studies assessing attitudes toward menopause, whereas Table 4 presents the assessment for studies assessing menopausal symptoms. This separation was used to improve clarity because not all included studies assessed both outcome domains. Although many studies met several checklist items related to sample definition, outcome measurement and statistical analysis, the overall judgments were interpreted cautiously because reporting of confounding-related domains was limited, particularly for JBI item S6, which assesses whether strategies to deal with confounding factors were stated.

Table 3. Risk-of-bias assessment of studies assessing attitudes toward menopause using the JBI Critical Appraisal Checklist for cross-sectional studies. (JBI Critical Appraisal Checklist for cross-sectional studies-Codes: Y = Yes; N = No; S1–S8 = JBI items; Quality score = % “Yes”)

Study	S1	S2	S3	S4	S5	S6	S7	S8	Overall quality
Ağralı, Ünal & Kaya Şenol, 2022	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Cirban & Özsoy, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Dündar & Aksu, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Gökçer, 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)

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Gümüşay & Erbil, 2019	Y	N	Y	Y	Y	Y	Y	Y	Good (87.5%)
Özer & Gözükara, 2016	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer Yurdal, Özsoy & Karaçam, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tezce & Beydağ, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tümer & Kartal, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Ünlü et al., 2022	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Yaşar & Yeyğel, 2023	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Item-level "Yes" proportion	**100%**	**90.9%**	**100%**	**100%**	**81.8%**	**63.6%**	**100%**	**100%**	

Table 4. Risk-of-bias assessment of studies assessing menopausal symptoms using the JBI Critical Appraisal Checklist for cross-sectional studies. (JBI Critical Appraisal Checklist for cross-sectional studies -Codes: Y = Yes; N = No; S1–S8 = JBI items; Quality score = % "Yes").

Study	S1	S2	S3	S4	S5	S6	S7	S8	Overall quality
Aksoy Derya, Altıparmak & Öztaş, 2021	Y	N	Y	Y	Y	N	Y	Y	Moderate (75%)
Alpaslan Arar & Erbil, 2023	Y	N	Y	Y	Y	Y	Y	Y	Good (87.5%)
Aral, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Avcı, 2013	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Aygün, 2019	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Bilgin, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Cirban & Özsoy, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Çakıl & Ünsal, 2020	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Çakır Palaz & Yavaş, 2025	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Çekici, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Çelik Sis & Pasinlioğlu, 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Çulha, 2020	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Darici Koçan & Cangöl, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)

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Demirtaş & Şahin, 2024	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Dişli et al., 2022	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Dündar & Aksu, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Engindeniz, Ertürk & Aytekin, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Erdem Çetin & Eroğlu, 2015	Y	Y	N	N	N	N	Y	Y	Poor (50%)
Gökçer, 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Gökgöz, 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Görmüş, 2017	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Kızılırmak & Seviğ, 2011	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Kocatepe, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Kurt & Arslan, 2020	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer & Gözükara, 2016	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer Yurdal, Özsoy & Karaçam, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Parmaksız, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Polat & Karasu, 2022	Y	N	Y	Y	Y	N	Y	Y	Moderate (75%)
Şentürk Erenel et al., 2015	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Sertkaya, 2024	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Tunç, 2014	N	Y	Y	Y	Y	Y	Y	Y	Good (87.5%)
Tunçarslan, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tümer & Kartal, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Uludağ et al., 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Uyanık, 2020	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Ünlü et al., 2022	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Yaşar & Yeyğel, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Zorlu et al., 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Item-level "Yes" proportion	**97.4%**	**92.1%**	**97.4%**	**97.4%**	**68.4%**	**28.9%**	**100%**	**100%**	

Note: S1–S8 refer to the eight items of the JBI Critical Appraisal Checklist for cross-sectional studies. S6 assesses whether strategies to deal with confounding factors were stated. Because low

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compliance with S6 may affect the internal validity of observational cross-sectional studies, the overall appraisal was interpreted cautiously.

Screening results

A total of 7,509 records were identified through database searches and supplementary sources. After removal of duplicates, 47 studies were retained for full-text assessment based on title/abstract screening. Following evaluation against the inclusion criteria and the availability of analysable data, 41 studies were included in this systematic review, and data extraction was undertaken for these studies. Details of the study selection process are presented in Figure 1.

Characteristics of studies and participants

The included studies were conducted between 2002 and 2024 and published between 2011 and 2025. Most employed a cross-sectional design. Eleven studies were conducted in Family Health Centres [23-32], two in KETEM centres [27,33], two in primary health centres [34-35], sixteen in training/research or university hospitals [8,27,36-49], one in a cultural centre [50], one online [51], six in state hospitals [27,52- 56] and one in a city hospital [57]. Furthermore, data were collected from multiple institutions in some studies, including public hospitals, family health centers, and teaching/research or university hospitals. All studies reported menopausal symptoms (see Table 1). Studies assessing women's attitudes toward menopause were conducted in Family Health Centres (n=4) [2,23, 27,29], a cultural centre (n=1) [50], online (n=1) [58], KETEM (n=2) [27,33], training/university hospitals (n=4) [14, 27,45,59] and state hospitals (n=2) [6; 27] (see Table 2).

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Regarding instruments, 24 studies on menopausal symptoms used researcher-developed questionnaires or survey forms. One study employed the MENQOL (Menopause-Specific Quality of Life Scale) together with the Self-Efficacy Scale; other tools included the Menopausal Complaint Screening List (MYTL) and the Menopause Complaint Scale; 29 studies used the Menopause Rating Scale (MRS). In the 11 studies evaluating attitudes toward menopause, questionnaires/survey forms were used; attitudes were measured with the Attitude Toward Menopause Scale (ATMS; n=6) and the Menopause Attitude Evaluation Scale (MTDÖ; n=4) (Table 2). Where multiple instruments were used within a study, all are reported; instrument counts are non-exclusive.

Risk-of-bias assessment findings

Risk-of-bias findings are presented separately according to the two main outcome domains of the review. Table 3 presents the JBI appraisal of studies assessing attitudes toward menopause, whereas Table 4 presents the JBI appraisal of studies assessing menopausal symptoms. This separation was used to improve clarity because not all included studies assessed both outcomes or contributed data to the same synthesis. Across the included studies, the weakest methodological domain was JBI item S6, which evaluates whether strategies to deal with confounding factors were stated. Therefore, the overall judgments were interpreted cautiously, and studies with otherwise high checklist scores but without explicit strategies for confounding control were not considered free from important methodological limitations.

Meta-analytical findings

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Table 5 presents exploratory random-effects subgroup estimates of the pooled MRS total score by geographical region. The pooled mean MRS total score varied across regions, with the lowest estimate observed in the Aegean region and the highest estimate observed in Eastern Anatolia. The between-subgroup heterogeneity test was statistically significant (Q_between = 819.130, $p < 0.001$), suggesting regional variability in MRS total scores. However, because several regions were represented by a small number of studies, including regions represented by a single study, these findings should be interpreted cautiously.

Table 5. Exploratory random-effects subgroup analysis of MRS total score by geographical region.

Region	k	Pooled mean	Z	$Q_{between}$ (Q_b)
Mediterranean	2	19.850	11.542***	
Eastern Anatolia	1	22.670	45.614***	
Aegean	2	13.944	23.609***	
Black Sea	4	20.174	6.941***	**819.130*** **
Marmara	11	15.359	10.599***	
Türkiye (nationwide)	1	15.720	27.476***	
Central Anatolia	4	19.883	51.414***	

Note. MRS: Menopause Rating Scale. Q_between indicates the between-region heterogeneity test.*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 6 summarises the overall random-effects meta-analysis of the MRS total score across 24 studies. The pooled mean MRS total score was 17.423 (95% CI: 15.544–19.302), indicating a considerable overall symptom burden among the included samples. Between-study heterogeneity was very high ($Q = 2063.082$, $p < 0.001$; $I^2 = 98.837\%$), indicating that the pooled estimate should be interpreted cautiously. Higher MRS total scores indicate greater menopausal symptom severity.

Table 6. Overall random-effects meta-analysis of MRS total score (k = 24).

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Outcome	Pooled mean	95% CI lower	95% CI upper	Z	Q	I^2 (%)
MRS total score	17.423	15.544	19.302	18.174***	2063.082***	98.837

Note. MRS: Menopause Rating Scale; CI: confidence interval. Higher MRS scores indicate greater menopausal symptom severity.*p < 0.05, **p < 0.01, ***p < 0.001.

Table 7 reports random-effects pooled means for MRS subscales. The pooled mean was highest for psychological symptoms and lowest for urogenital symptoms. The between-subscale test was statistically significant (Q_between = 1458.161, p < 0.001), indicating differences across MRS subscale domains.

Table 7. Exploratory random-effects subgroup analysis of MRS subscale scores (k=24).

MRS Subscale	k	Pooled Mean	Z	$Q_{between}$ (Q_b)
Psychological	24	6.792	12.931***	
Somatic	24	5.790	14.898***	1458.161***
Urogenital	24	4.040	15.735***	

Note. MRS: Menopause Rating Scale. Q_between indicates the between-subscale heterogeneity test. *p < 0.05, **p < 0.01, ***p < 0.001.

Figure 2 presents random-effects pooled prevalence estimates of nine menopausal symptoms with 95% confidence intervals. Studies that did not report a given symptom were excluded from the analysis of that specific symptom and were not treated as having zero prevalence. Hot flushes had the highest pooled prevalence (44.2%, 95% CI: 30.6–58.2), followed by sweating (42.1%, 95% CI: 28.3–56.6), whereas sexual problems had the lowest pooled prevalence (18.0%, 95% CI: 11.6–25.3). Given the substantial clinical and methodological heterogeneity across studies, these estimates should be interpreted as descriptive summary estimates

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rather than precise national prevalence estimates.

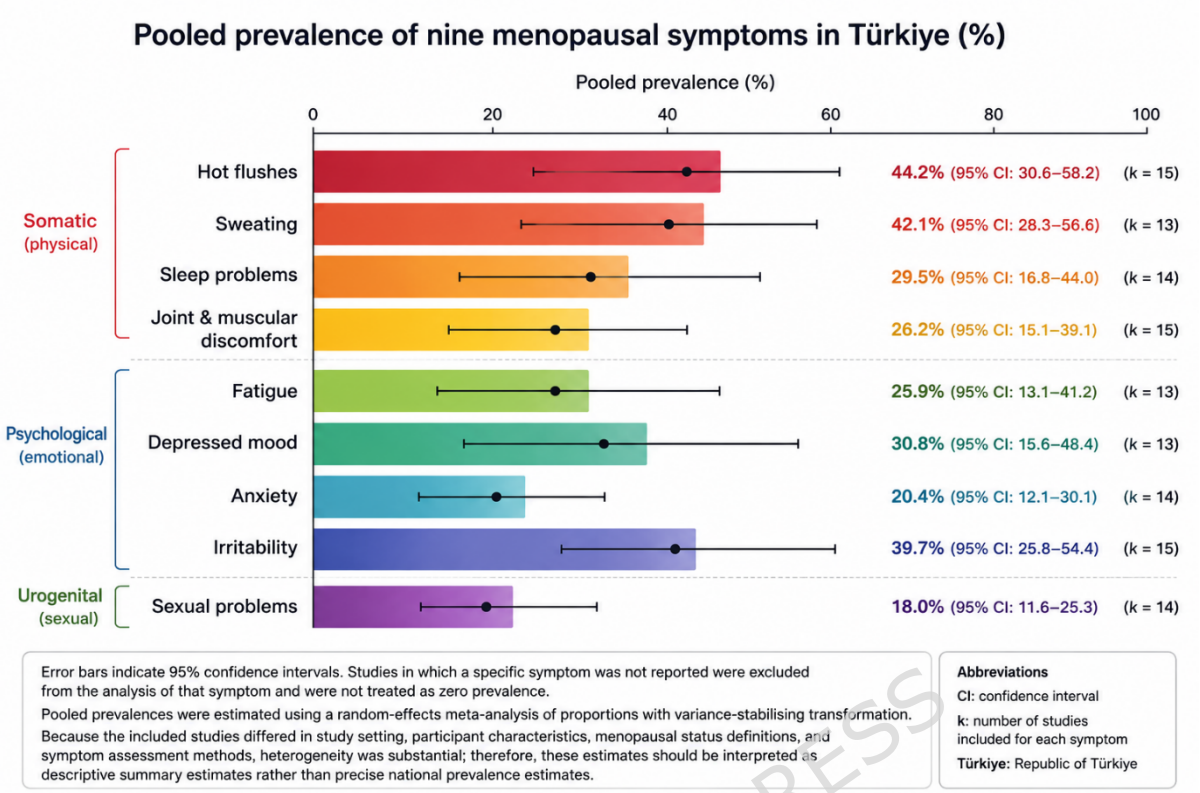

Figure 2. Pooled prevalence of menopausal symptoms in Türkiye. Random-effects pooled prevalence estimates of nine menopausal symptoms in Türkiye.

Error bars indicate 95% confidence intervals. Studies in which a specific symptom was not reported were excluded from the analysis of that symptom and were not treated as zero prevalence. Pooled prevalences were estimated using a random-effects meta-analysis of proportions with variance-stabilising transformation. Because the included studies differed in study setting, participant characteristics, menopausal status definitions, and symptom assessment methods, heterogeneity was substantial; therefore, these estimates should be interpreted as descriptive summary estimates rather than precise national prevalence estimates.

Table 8 presents findings for attitudes toward menopause based on six studies using the relevant attitude scale: the pooled mean score was 40.81 (95% CI 35.69–45.94), significantly different from zero ($Z = 15.61$; $p < 0.001$), with substantial heterogeneity ($Q = 241.69$; $p < 0.001$; I^2 (%) $= 98.76$). Considering the

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instrument's scoring range, this average reflects a moderate level of attitudes toward menopause among women in Türkiye.

Table 8. Random-effects meta-analysis of attitudes toward menopause (ATMS/MİTÖ total score; k = 6).

Outcome	Pooled mean	95% CI lower	95% CI upper	Z	Q	I^2 (%)
ATMS/MİTÖ total score	40.81	35.69	45.94	15.61***	241.69***	98.76

Note. ATMS/MİTÖ: Attitude Toward Menopause Scale; CI: confidence interval. *p < 0.05, **p < 0.01, ***p < 0.001.

Publication bias and small-study effects were assessed for outcomes with at least 10 contributing studies. Egger's regression test suggested possible small-study effects for the MRS total score (p = 0.0002), psychological subscale (p < 0.001), somatic subscale (p < 0.001), and urogenital subscale (p < 0.001). Egger's test was not performed for the ATMS/MİTÖ pooled analysis because fewer than 10 studies were available. For symptom-specific prevalence analyses, Egger's test suggested possible small-study effects for anxiety (p = 0.020) and sexual problems (p = 0.004), whereas no statistically significant small-study effects were detected for hot flushes, sweating, sleep problems, joint and muscular discomfort, fatigue, depressed mood, or irritability. Given the very high heterogeneity across the main analyses, these findings were interpreted cautiously, and funnel plot asymmetry was not considered diagnostic of publication bias.

Based on a GRADE-informed appraisal, the overall certainty of the pooled estimates was rated as low to very low. The main reasons for downgrading were the very high between-study heterogeneity (I^2 ≈ 98–99%), the limited reporting of strategies to control confounding in the primary studies (JBI item S6), and the suspected small-

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study effects identified for several outcomes on Egger's test. Indirectness was not a concern because the evidence was derived directly from the population of interest. A summary of the certainty assessment for each outcome is provided in the Supplementary Materials (Supplementary Table). Accordingly, the pooled prevalence and mean-score estimates should be regarded as descriptive summaries rather than precise or definitive national estimates.

DISCUSSION

This systematic review and meta-analysis synthesized the findings of 41 studies identified from 7,509 records to determine menopausal symptoms and attitudes toward menopause among women in the menopausal period. In the pooled analysis, the mean Menopause Rating Scale (MRS) total score was 17.423 (95% CI: 15.544–19.302), reflecting the average symptom burden observed across the included samples. The pooled mean for the MRS psychological subscale was the highest, while the urogenital subscale showed the lowest pooled mean. However, between-study heterogeneity was very high; therefore, these pooled estimates should be interpreted cautiously and should not be considered precise national estimates (see Table 6)**.** The pooled mean for the MRS psychological subscale was the highest, while the urogenital subscale exhibited the lowest pooled mean. Similar to the present findings regarding the prominence of psychological symptoms, Yisma et al. (2017) reported a predominance of psychological complaints. However, comparisons across countries should be made cautiously because menopausal status definitions, symptom measurement tools, sampling frames and socio-cultural contexts differ across studies. [60]. Subedi et al. (2022) found that somatic symptoms were most common and urogenital symptoms least common among 424

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postmenopausal women in Nepal [61]. In Korean women, Kwak et al. (2014) observed high overall symptom burden with physical symptoms most prominent [62]. Gupta et al. (2016) reported that low back pain predominated in women aged 45–50 years, back pain plus mental problems in women aged 51–55 years, and back pain with urinary problems in women aged 56–60 years. Given the very high between-study heterogeneity, these pooled estimates should be interpreted with caution [63].

In this review, hot flushes had the highest pooled prevalence (44.2%, 95% CI: 30.6–58.2), followed by sweating (42.1%, 95% CI: 28.3–56.6), whereas sexual problems had the lowest pooled prevalence (18.0%, 95% CI: 11.6–25.3). Importantly, studies that did not report a given symptom were excluded from the analysis of that symptom and were not treated as having zero prevalence. Because symptom definitions, measurement tools and study populations varied across the included studies, these pooled prevalence estimates should be interpreted as descriptive summary estimates rather than precise national prevalence estimates. In line with our findings, Fang et al. (2024) reported vasomotor symptoms among the most common complaints (54–66%) [7]. Similarly, Yisma et al. (2017) found hot flushes to be the most frequent symptom among perimenopausal (57%) and postmenopausal (84%) women, and overall (65.9%) [60]. Joseph and Varghese (2017) also identified hot flushes (58%) as the most commonly reported symptom among Indian women [64]. By contrast, Nik Hazlina et al. (2022) concluded that psychological symptoms (42.1%) were most frequent during perimenopause, and genitourinary syndrome (55.1%) during postmenopause (65). Khatoon et al. (2018) reported joint and muscular discomfort (87%) and depressed mood (70%) as the most frequent complaints [66]; Shrestha and Pandey (2017) found mood swings

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(80%) and irritability (68%) to be the most prevalent in Nepal ([67]; Singh and Pradhan (2014) observed sleep disturbance (62.7%), muscle/joint pain (59.1%) and hot flushes (46.4%) as the leading complaints in postmenopausal Indian women [68]; and Ganapathy et al. (2018) reported back pain (96%), reduced physical strength (92%) and fatigue/weakness (89%) as the most frequent symptoms among women aged 40–60 years [69]. Pathak and Shivaswamy (2018) similarly identified feeling depressed/sad (63.9%), sweating (63.5%) and impatience towards others (61.7%) [70], while Prajapati et al. (2018) reported muscle/joint pain (36.8%), hot flushes (29.25%) and abnormal bleeding as the most common complaints [71].

The pooled mean score for the Attitude Toward Menopause Scale (ATMS; MİTÖ) across studies from Türkiye was 40.8, which—considering the scale range—indicates a moderate, generally positive attitude towards menopause. Studies from Türkiye frequently reported positive attitudes [6, 27,23,45,50,58]. Conversely, Ünlü et al. (2022), Gümüşay & Erbil (2019), Tezce & Beydağ (2021) and Dündar & Aksu (2021) reported negative attitudes [14,29,3,59]. These discrepancies may reflect differences in education, age, cultural context and socioeconomic status. Thapa & Yang (2022) found that most women aged 40–60 held negative attitudes—more pronounced in perimenopause than postmenopause—linked to viewing menopause as a condition requiring treatment, concerns about sexuality and impacts on quality of life [72]. Similarly, Kwak et al. (2014) (Korea), Ahmadi et al. (2025) (Iran) and Mohammadi et al. (2024) reported predominantly negative attitudes, with symptom burden correlated with more negative views [62,73-74]. Nevertheless, the high heterogeneity observed in the pooled ATMS analysis suggests that this estimate should be interpreted cautiously. Differences in attitude

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instruments, scoring interpretation, education level, age distribution, menopausal status and cultural context may have contributed to the variability across studies.

Strengths and limitations

The strengths of this review include comprehensive searches across multiple national and international sources, the inclusion of recent studies, and the use of validated instruments to assess menopausal symptoms and attitudes in many of the included studies. However, several limitations should be considered. Between-study heterogeneity was very high for the main pooled outcomes, limiting the precision and generalisability of the summary estimates.The subgroup/moderator analyses should be considered exploratory because some categories included only a small number of studies and between-study heterogeneity was very high. Therefore, these analyses should not be interpreted as evidence of causal or independent moderator effects. For the same reasons, formal sensitivity analyses such as outlier exclusion or leave-one-out re-estimation were not used to "correct" the pooled estimates, because the very high heterogeneity ($I^2 \approx 98–99\%$) reflects genuine clinical and methodological diversity across studies rather than a few aberrant data points, and removing individual studies in strata with only one or two studies could create a false impression of precision. Accordingly, the pooled estimates are presented as descriptive summary estimates rather than definitive values. In addition, reporting of strategies to address confounding was limited in many primary studies, which may affect the internal validity of the findings. Outcome reporting was also heterogeneous, particularly for attitude-related outcomes and symptom prevalence data. Although we harmonized the presentation of outcomes and avoided treating unreported symptoms as zero prevalence,

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language and publication biases cannot be fully excluded. Possible small-study effects were observed in some analyses. Egger's regression test suggested asymmetry for the MRS total score, MRS subscales, anxiety, and sexual problems. Nevertheless, these findings were interpreted cautiously because funnel plot asymmetry is not diagnostic of publication bias and may reflect substantial heterogeneity, differences in study design, sample characteristics, or measurement approaches. This further supports interpreting the pooled estimates as descriptive summaries rather than precise national estimates.

CONCLUSIONS AND RECOMMENDATIONS

This systematic review and meta-analysis synthesised 41 studies on menopausal symptoms and attitudes toward menopause among women in Türkiye. The pooled mean MRS total score was 17.423, and psychological symptoms had the highest pooled subscale mean. Hot flushes had the highest pooled prevalence (44.2%), whereas sexual problems had the lowest pooled prevalence (18.0%) after excluding studies in which the relevant symptom was not reported. The pooled mean ATMS/MİTÖ score was 40.81, suggesting moderately positive attitudes toward menopause among studies using this scale. However, because heterogeneity was very high and reporting of confounding control was limited in many primary studies, these findings should be interpreted cautiously.

Based on these findings, women's health nurses and other health professionals should provide regular, structured and culturally tailored education to support symptom recognition, coping skills and access to evidence-based counselling or treatment when needed. Future research in Türkiye should prioritise prospective designs, consistent definitions of menopausal status, standardized symptom and

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attitude measures, and adjustment for key confounders to improve comparability across studies.

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Abbreviations:

ASEX: Arizona Sexual Experiences Scale;
SQOL-F (CYKÖ): Sexual Quality of Life Questionnaire-Female; SF-36: 36-Item Short Form Health Survey;
BDI (BDE): Beck Depression Inventory;
CMÖ: Sexual Myths Scale.
FHC: Family Health Center (primary care);
KETEM: Cancer Early Diagnosis, Screening and Education Center;
MRS: Menopause Rating Scale (MSDÖ);
MENQOL: Menopause-Specific Quality of Life Questionnaire (MÖYKÖ);
ATMS (MİTÖ): Attitude Toward Menopause Scale;
MSBF: Menopause Symptom Coping Form;
BTATÖ: Attitudes Toward Complementary and Alternative Medicine Scale;
DLAC: Daily Living Activities Checklist;
MTDÖ: Menopause Attitude Evaluation Scale;
MSPSS (ÇBASDÖ): Multidimensional Scale of Perceived Social Support;
MYTL: Menopausal Complaint Screening List
NR:not reported in the source.
ÖEYÖ: Self-Efficacy Scale;
SLWS: Sense/Meaning in Life Scale;
NWLS (HİYKÖ): Nursing Work-Life Quality Scale;
TTTÖ: Attitudes Toward Using Complementary Therapies Scale

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Declarations

Ethics and consent to participate

This systematic review and meta-analysis did not require ethical approval as it involved only the analysis of data from previously published studies."

Consent for publication

Not applicable: the review uses only aggregated data from previously published studies, with no identifiable individual data.

Clinical trial number

Not applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are available on the researcher's computer. The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

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Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Nazlı Emel Özer Yurdal, Emine Gerçek Öter and Ayten Dinç jointly designed and planned the research process. Data were collected by NEÖY and EGÖ, and analyses were performed by AD and NEÖY. The authors take equal responsibility for writing, reviewing, and editing the article. All the authors read and approved the final manuscript.

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Menopausal Symptoms and Attitudes Toward Menopause Among Women in Türkiye: a Systematic Review and Meta-Analysis

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Menopausal Symptoms and Attitudes Toward Menopause Among Women in Türkiye: a Systematic Review and Meta-Analysis

ABSTRACT

Background: Menopause is a natural transition that can produce vasomotor, somatic, psychological, and urogenital symptoms, and women's attitudes toward menopause may shape both symptom experience and help-seeking. Evidence from Türkiye has not been quantitatively synthesized.

Objective: To synthesize the severity and prevalence of menopausal symptoms and attitudes toward menopause among women in the menopausal period in Türkiye.

Methods: This systematic review and meta-analysis followed PRISMA and COSMOS-E guidance and was registered in PROSPERO (CRD420251119487). We searched national and international databases in June 2025. Risk of bias was assessed with the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for cross-sectional studies. Data were synthesized using random-effects meta-analysis, exploratory subgroup/moderator analyses, and narrative synthesis; small-study effects (funnel plots and Egger's test) and the certainty of evidence (GRADE-informed appraisal) were also assessed.

Results: In total, 41 studies (published 2011–2025; combined sample n=7,509; age range largely 40–65 years) were included. The pooled mean Menopause Rating Scale (MRS) total score was 17.42 (95% CI 15.54–19.30; I^2=98.8%), with subscale means highest for psychological (6.79) and lowest for urogenital (4.04) symptoms. The most frequently reported symptom was hot flushes (44.2%), and the least frequent was sexual problems (18.0%). The pooled mean Attitude Toward Menopause Scale (ATMS/MİTÖ) score was 40.81 (95% CI 35.69–45.94; I^2=98.8%), reflecting moderately positive attitudes. Between-study heterogeneity was very high across analyses, and the overall certainty of evidence was low to very low.

Conclusions: Among midlife women in Türkiye, menopausal symptoms are on average moderate, with psychological complaints most prominent and hot flushes most frequently reported, and attitudes toward menopause are on average moderately positive. Because

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of very high heterogeneity, possible small-study effects, and limited control of confounding in the primary studies, the pooled estimates should be interpreted as descriptive summaries rather than precise national estimates. The findings can inform tailored, culturally appropriate education and symptom-management services in women's health care.

Keywords: menopause; climacterium; attitudes toward menopause; menopausal symptoms; systematic review; meta-analysis.

BACKGROUND

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Menopause is a natural and inevitable life stage that marks the end of female reproductive capacity, arising from the cessation of ovarian function and the consequent decline in oestrogen and progesterone production [1]. Natural menopause is clinically defined as 12 consecutive months of amenorrhoea not attributable to other causes. During the menopausal period, the fall in circulating hormone levels gives rise to vasomotor symptoms such as hot flushes and night sweats; musculoskeletal complaints; neurological and psychological problems; gynaecological issues; depressive symptoms; urological problems; and other systemic manifestations [2-6]. In a recent systematic review and meta-analysis, Fang and Colleagues (2024) reported that women most frequently experienced musculoskeletal complaints (65.43%) and vasomotor symptoms (54–66%) [7]. The epidemiology of menopausal symptoms is shaped by multiple factors, including the geographic characteristics of the country and region, national socio-economic

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development, income distribution, and the diagnostic approaches employed. Although these symptoms are not life-threatening, they may adversely affect many women's quality of life, including work, marital and social relationships [8-9]. The World Health Organization underscores the responsibility of health professionals to provide holistic, evidence-based care [10]. The WHO further highlights that respectful, person-centred counselling and access to evidence-based options for symptom management are core components of midlife women's health care.

Prior research indicates a link between women's attitudes towards menopause and the symptoms they experience. Negative attitudes are associated with greater symptom severity, whereas more positive attitudes are associated with fewer symptoms [10-14]. Yet many women are unaware that their complaints may be menopausal in origin and are unfamiliar with available counselling and treatment options; shame and hesitancy in voicing vasomotor and psychosocial symptoms are common [10]. In this context, women's health nurses—together with all health professionals—should recognise menopause as a physiological transition, be knowledgeable about menopausal symptoms and the factors that shape women's attitudes towards menopause, and adopt supportive roles to help women cope with symptoms [15]. In the context of Türkiye, synthesising the existing evidence can inform culturally appropriate health education and service delivery.

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Objective and Research Questions

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The objective of this systematic review is to determine menopausal symptoms and attitudes towards menopause among women in the menopausal period in Türkiye, drawing on studies previously conducted in the country. We pre-specified the review outcomes and analytic approach to support transparency and reproducibility. Primary outcomes were the severity of menopausal symptoms (e.g., total and domain scores on the Menopause Rating Scale) and attitudes towards menopause assessed with validated instruments; secondary outcomes included the prevalence of individual symptoms. The review addresses the following questions:

1. What is the level of menopausal symptom severity among women in the menopausal period in Türkiye?
2. Which menopausal symptom is most frequently experienced by these women?
3. What are women's attitudes towards menopause in Türkiye?

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METHODS

Study design

This study is a systematic review and meta-analysis. The development of the protocol, the conduct of the review, and the reporting followed the PRISMA Statement (checklist for reporting systematic reviews and meta-analyses) and the COSMOS-E guidance (Guidance on conducting systematic reviews and meta-analyses of observational studies of aetiology) [16—17]. The study protocol was registered in PROSPERO on 4th of August 2025 (registration number (CRD420251119487). To minimise risk of bias,

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study selection, data extraction and quality assessment were performed independently by the second and third authors (N.E.Ö.Y. and E.G.Ö.), and then consolidated into a single document during meetings involving all authors. Any discrepancies between reviewers were resolved by re-checking the relevant sources and by discussion. In addition, prior to each stage, a pilot exercise was conducted to prevent bias and establish a shared perspective among reviewers. Ethics approval was not required because this review synthesized data from previously published studies.

Search strategy

Electronic searches for this systematic review were conducted between 1 and 30 June 2025 in PubMed, EBSCOhost databases (MEDLINE and CINAHL), Embase via Ovid, PsycINFO, the Cochrane Library, DOAJ, Web of Science, DergiPARK, Scopus, Türk Medline, Türkiye Atıf Dizini, TR Dizin and the YÖK National Thesis Center. The search was structured around four core concepts—menopause/climacterium, menopausal symptoms, attitudes toward menopause, and the Turkish population—each expanded with relevant synonyms and, where supported by the database, controlled vocabulary (e.g., MeSH or Emtree terms). Within each concept, terms were combined using the Boolean operator OR, and the concepts were then combined using AND. Representative core terms included "menopause," "climacterium," "perimenopause," "postmenopause," "menopausal symptoms," "climacteric symptoms," "menopausal attitude," and "attitude toward menopause," together with their Turkish equivalents (e.g., "menopoz," "klimakterium," "menopoz semptomları," "menopoza ilişkin

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tutum") in the Turkish-language databases. Searches were adapted to the syntax and field tags of each database. For additional retrieval, the reference lists of prior narrative and systematic reviews, as well as those of the studies included in this review, were screened.

Eligibility criteria and study selection

Eligible studies for this systematic review were identified using the PEOS framework:

Population (P): Women in the menopausal period.

Exposure (E): Menopausal symptoms.

Outcomes (O): Menopausal symptoms in women and attitudes towards menopause.

Study design (S): Observational studies conducted in Türkiye and published in Turkish or English between 2010 and 2025.

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Two reviewers independently screened titles and abstracts after duplicate removal. Potentially eligible reports were retrieved in full text and assessed independently against the predefined PEOS criteria. Disagreements between reviewers were resolved through discussion and, when necessary, by consultation with the third reviewer. Reasons for full-text exclusion were recorded and are reported in the PRISMA 2020 flow diagram. Studies conducted outside Türkiye, studies that did not employ an observational/survey design, and studies focusing on specific disease groups were excluded. Validated outcome instruments, such as the Menopause Rating Scale for symptom severity and Turkish-validated

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scales for attitudes toward menopause, were considered acceptable measures. The study selection process is shown in Figure 1.

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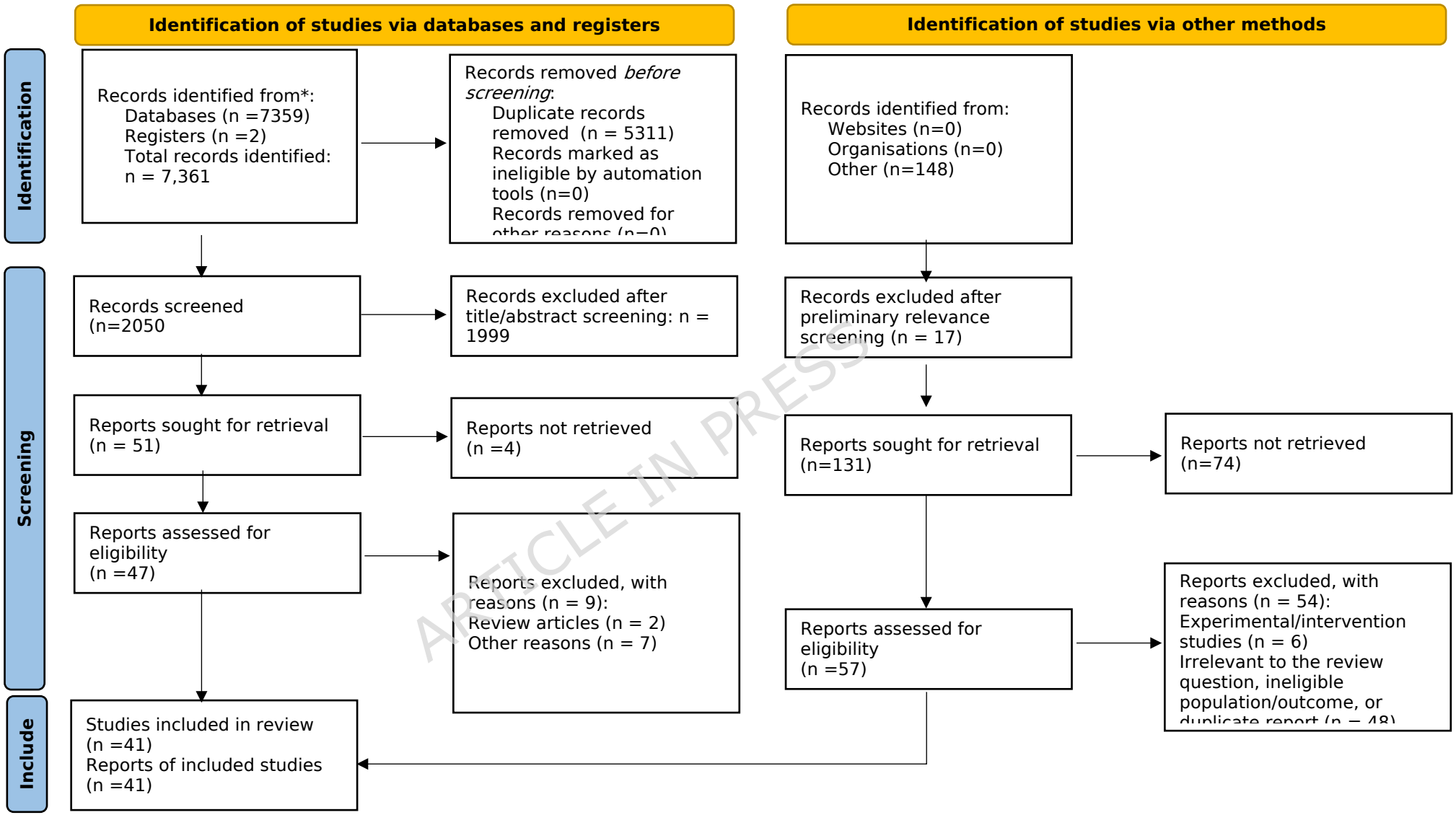

Figure 1. PRISMA 2020 flow diagram for study selection in this systematic review and meta-analysis.

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.
Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

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Assessment of Methodological Quality

The methodological quality of the studies included in this systematic review was appraised using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for cross-sectional studies [18]. The checklist comprises eight items, each rated as "yes", "no", "unclear", or "not applicable". In this review, overall methodological quality was classified according to the proportion of "yes" responses: studies with ≤50% "yes" responses were considered poor quality, those with >50% to 80% were considered moderate quality, and those with >80% were considered good quality. However, because JBI item S6 specifically addresses whether strategies to deal with confounding factors were stated, studies with high overall checklist scores but without explicit confounding control were interpreted cautiously in the overall risk-of-bias judgment. Two reviewers independently applied the JBI checklist; disagreements were resolved by consensus.

Data Extraction

Data were obtained using a data extraction tool developed by the research team. The form captured author and year of publication, study design, sample size, year (s) of data collection, mean age, and variables related to menopausal symptoms. The extraction form also documented definitions of menopausal status, instruments employed (e.g., MRS and validated attitude scales), and any imputation or conversions performed. A blank copy of the extraction form is provided in the Supplementary Materials to facilitate reproducibility. For studies assessing attitudes toward menopause, extracted outcomes were classified according to the format reported in the primary studies: continuous scale-based outcomes, categorical/proportional outcomes, or narrative-only findings. Continuous

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outcomes were extracted as mean, standard deviation, and sample size where available. Categorical or proportional findings were extracted as percentages or frequencies, and narrative-only findings were recorded descriptively. Missing information, including age not reported in the original study, was marked as “NR”. No imputation was performed for missing data.

Pilot Exercise

To minimise potential sources of bias, pilot exercises were conducted with all researchers prior to each stage of the review process (searching, study selection, data extraction, and quality appraisal) to establish a shared protocol. In addition, each stage was performed independently by two researchers, and the resulting records were merged into a single dataset during joint meetings.

Data Synthesis

Data from the included studies were synthesized using meta-analysis. Variation, standard error, confidence intervals, sample homogeneity, sample size and saturation, and the analytical models used in the primary studies can influence the precision of pooled estimates [19]. Because different instruments were used across studies, a random-effects model was adopted for effect size estimation. When outcomes were reported on different scales, standardised effect sizes were calculated to enable synthesis; for proportions (symptom prevalence), random-effects meta-analysis of proportions with variance-stabilising transformation was used. Missing or not-reported outcome data were not imputed. For symptom-specific prevalence analyses, studies that did not report a given symptom were excluded from the analysis of that symptom and were not treated as having zero

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prevalence. Continuous outcomes were synthesized as mean scores when the same scale and scoring direction were used. When outcomes were reported on different scales or in non-convertible formats, they were summarized narratively rather than statistically pooled. For attitude toward menopause outcomes, quantitative pooling was restricted to studies using the same attitude scale and reporting sufficient numerical data, including mean, standard deviation, and sample size. Studies reporting only percentages, categorical findings, or qualitative/narrative statements were not transformed into mean scores because the available data did not permit valid conversion. These findings were therefore summarized descriptively in the harmonized evidence table. Studies using different attitude instruments were not statistically pooled together unless scale compatibility and scoring direction could be confirmed.

The Q statistic was used to inform model choice between fixed- and random-effects. A statistically significant Q ($p<0.05$) was interpreted as evidence that studies do not share a common effect—i.e., that there is heterogeneity [19-20]. In addition, the I^2 (%) statistic was calculated as the percentage of total variation due to heterogeneity rather than chance; accordingly, both Q and I^2 (%) were examined in this review. Publication bias and small-study effects were assessed using funnel plots and Egger's regression test when at least 10 studies were available for a given outcome. Funnel plot asymmetry was interpreted cautiously because it may arise from several sources, including between-study heterogeneity, methodological differences, and small-study effects, rather than publication bias alone [21].

Exploratory subgroup/moderator analyses were conducted where sufficient data were available to examine whether pooled estimates differed across study-level

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characteristics [22]. Statistical significance of subgroup differences was assessed using the Q statistic partitioned into Q_between and Q_within. Q_between was used to test differences between subgroup categories, whereas Q_within was used to assess residual heterogeneity within categories [19-20]. Subgroup analyses were conducted for geographical region for the MRS total score and for MRS subscales where appropriate. Because the number of studies was limited for several subgroup categories and substantial heterogeneity was present, these analyses were interpreted as exploratory. Multivariable meta-regression with additional moderators (e.g., age, menopausal status, study setting, instrument type) was not performed because these characteristics were inconsistently reported across studies, instrument type was already restricted within each pooled analysis, and several strata contained very few studies; under such conditions, and given the very high residual heterogeneity, multivariable models would be unstable and potentially misleading. Quantitative pooling was restricted to a single validated and comparable instrument within each outcome domain. For menopausal symptom burden, only studies using the Menopause Rating Scale (MRS) were combined in the pooled mean-score analyses, and for attitudes toward menopause only studies using the ATMS/MİTÖ with sufficient numerical data (mean, standard deviation, and sample size) were pooled. Studies that used other instruments (e.g., MENQOL, MTDÖ, or study-specific questionnaires) were not statistically combined with these scales; their findings were summarized descriptively. The scoring systems, score ranges, subscales, and interpretation/cut-off conventions of the instruments are provided in the Supplementary Materials. All analyses were conducted in R (version 4.4.3) using appropriate meta-analytic packages (e.g., *metafor*), and two-sided 95% confidence intervals are reported.

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The certainty of the pooled evidence was appraised using an approach informed by the GRADE framework, adapted for non-comparative syntheses of observational prevalence and mean-score data. Certainty was downgraded for risk of bias (limited control of confounding; JBI item S6), inconsistency (very high statistical heterogeneity), imprecision, and suspected small-study/publication effects, and was not downgraded for indirectness because all studies were conducted in the target population (women in Türkiye).

RESULTS

Study Selection

We identified observational studies conducted across diverse regions in Türkiye and settings spanning primary care (Family Health Centres), secondary/tertiary hospitals and online community samples. Table 1 summarises study characteristics, including design, setting, sample size, age, instruments and key findings for menopausal symptoms and, where available, attitudes toward menopause. Sample sizes ranged from 100 to 1,013 participants, and the most frequently used instrument was the Menopause Rating Scale (MRS), followed by MENQOL and Turkish-validated attitude scales. The MRS provided the common outcome framework and underpinned the quantitative synthesis presented below.

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Table 1. Characteristics of included studies on menopausal symptoms among Turkish women.

Authors (year) / City	Study design	Setting	Sample (n)	Age range / mean	Instruments	Key findings
Özer & Gözükara, 2016 / Şanlıurfa	Descriptive	Family Health Center (FHC)	300	45–88	Questionnaire	Vasomotor: “numbness/tingling in hands and feet” (76.3%); Emotional: “feeling blue” (83.3%); CNS:

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						"forgetfulness" (63.3%); Hair/skin: "hair loss" (46.7%); Musculoskeletal: "joint/bone pain" (76.0%); Cardiovascular: "tightness/palpitations" (75.3%); Urogenital: "urinary incontinence" (53.7%); Gastrointestinal: "constipation" (75.3%); Sleep: "difficulty initiating/maintaining sleep; early awakening" (72.0%).
Çakır Palaz & Yavaş, 2025 / Bandırma	Cross-sectional	University Hospital	277	25–65	MENQOL	Most frequent: vasomotor symptoms (mean = 3.48); Sexual (mean = 2.84); Physical (mean = 2.63); Psychological (mean = 2.61).
Kızılırmak & Seviğ, 2011 / Kayseri	Descriptive	Health Centre	336	40–59	Questionnaire	Most common symptom: hot flushes (81.8%); others: forgetfulness (79.2%), joint pain (73.5%), irritability (69%), back pain (63.7%).
Tümer & Kartal, 2018 / Muğla	Descriptive & cross-sectional	Cultural Centre	152	43–60	Questionnaire; MRS; ATMS (MİTÖ)	MRS subscales: psychological (8.96±4.94), urogenital (5.35±3.09), somatic (2.85±1.99); MRS total (14.65±7.62).
Yaşar & Yeyğel, 2023 / Türkiye	Descriptive	Online survey	297	45–60	Demographic form; MRS; ATMS (MİTÖ)	MRS subscales: psychological (9.43±6.06), urogenital (3.59±3.12), somatic (2.69±1.94); MRS total (15.72±9.86).
Çelik Sis & Pasinlioğlu, 2014 / Erzurum	Descriptive & cross-sectional	Research Hospital	263	35–64	Questionnaire; MRS	MRS subscales: psychological (13.12±4.59), urogenital

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						(5.35±3.09), somatic (4.19±2.08); MRS total (22.67±8.06).
Kurt & Arslan, 2020 / Sakarya	Descriptive	Training & Research Hospital	204	≥45	MRS; Participant form; Menopause Symptom Coping Form	MRS subscales: somatic (7.1±3.7), psychological (6.9±4.3), urogenital (3.4±3.0); MRS total (17.6±8.8).
Dündar & Aksu, 2021 / —	Analytical –cross-sectional	KETEM	359	40–64	Questionnaire; MYTL	~Half reported irritability/tension (56%); followed by headache/dizziness (25.6%) and hot flushes/night sweats (24%).
Demirtaş & Şahin, 2024 / İstanbul	Descriptive & cross-sectional	Online platform	225	40–65	Personal Info; Internet Use; MRS	MRS subscales: somatic (5.56±3.18), psychological (4.89±3.31), urogenital (3.40±2.98); MRS total (13.86±7.92).
Zorlu et al., 2022 / Sivas	Descriptive	FHC	154	40–64	Descriptive Form; MRS; Alternative Practices Form	MRS subscales: somatic (9.14±3.26), psychological (7.81±3.42), urogenital (3.59±2.36); MRS total (20.55±7.00).
Engindeniz, Ertürk & Aytekin, 2024 / Bursa	Descriptive & cross-sectional	FHC	1013	40–60	Questionnaire; MRS	In postmenopausal women, most frequent complaints: physical & mental exhaustion (82.8%), irritability (78.4%), depressed mood (76.4%).
Aksoy Derya, Altıparmak & Öztaş, 2021 / Mediterranean Region	Cross-sectional	State Hospital	306	40–65	MRS; Personal Info; GRAS; SQOL-F	MRS subscales: somatic (6.64±3.15), psychological (7.15±4.27), urogenital (4.35±3.00); MRS total (18.15±9.14).
Şentürk Erenel et al., 2015 / Ankara	Cross-sectional	State Hospital	229	40–64	ASEX; MRS; Personal Info	MRS subscales by age: 40–49y somatic (7.06±3.54), 50–64y somatic (7.64±3.88); 40–49y psychological (6.89±4.31), 50–

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						64y psychological (8.26±4.41); 40–49y urogenital (4.15±3.49), 50–64y urogenital (4.90±3.49); MRS total (20.13±9.20).
Uludağ et al., 2014 / Çanakkale	Descriptive & cross-sectional	University Hospital	300	40–65	Questionnaire; MRS; SF-36	MRS total 16.3±8.9; psychological 6.4±4.1; somatic 5.9±3.4; urogenital 3.7±3.1.
Polat & Karasu, 2022 / Osmaniye	Descriptive	FHC	259	40–65	Personal Info; MRS; BTATÖ	MRS subscales: somatic (3.87±2.35), psychological (13.06±6.07), urogenital (4.65±2.87); MRS total (21.59±10.30).
Erdem Çetin & Eroğlu, 2015 / Tokat	Descriptive	Health Centre	100	50–64	Questionnaire	Most frequent symptoms: vasomotor (97%), emotional (91%), CNS (74%).
Darici Koçan & Cangöl, 2023 / Kırklareli	Cross-sectional	FHC	270	45–65	Demographic Form; MRS	MRS subscales: somatic (3.54±2.58), psychological (3.14±2.67), urogenital (1.69±2.03); MRS total (8.37±5.42).
Düşli et al., 2022 / İstanbul	Descriptive	University Hospital	300	Mean 53.60±4.67	Demographic Form; MSBF	Most frequent: hot flushes (92.3%), then irritability/tension (72%), night sweats (70.7%), weight gain (65.7%), musculoskeletal pain (62.8%), insomnia/fatigue (62.3%).
Özer Yurdal, Özsoy & Karaçam, 2024 / Çanakkale	Analytical –cross-sectional	University Hospital; State Hospital; FHC; KETEM	250	40–65	Questionnaire; ATMS (MİTÖ); CMÖ; MRS	Health-care workers: MRS total 7.53±6.47; somatic 3.27±2.50; psychological 2.84±2.70; urogenital 1.43±2.05.
Ünlü et al., 2022 / Tokat	Descriptive & cross-sectional	FHC	870	40–60	MRS; MTDÖ; Questionnaire	MRS subscales: somatic (5.14±3.88), psychological

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						(5.40±4.10), urogenital (2.98±2.99); MRS total (13.5±10.1).
Çakıl & Ünsal, 2020 / Kırşehir	Descriptive	FHC	364	50–65	ÖEYÖ	Most frequent symptoms: hot flushes & night sweats (82.6%), followed by forgetfulness (74.9%), joint/bone pain (68.9%), restlessness/irritability (68.3%), feeling blue (66.9%).
Alpaslan Arar & Erbil, 2023 / Black Sea region	Descriptive & cross-sectional	State Hospital	381	40–64	MRS; DLAC; Personal Info	Most frequent: sleep problems (80.9%); hot flushes/sweating (60.3%); depressed mood (60.3%); physical & mental fatigue (value missing in source); anxiety (60.3%).
Avcı, 2013 / İstanbul	Descriptive & cross-sectional	Training & Research Hospital	120	45–59	Demographic Form; MRS; MENQOL	MRS subscales: somatic (7.908±4.241), psychological (8.883±4.489), urogenital (5.733±3.694); MRS total (22.525±9.833).
Tunç, 2014 / Sivas	Descriptive & cross-sectional	State Hospital	254	≥40	Personal Info; MRS; Menopause Knowledge Form	MRS subscales: somatic (7.41±3.14), psychological (6.57±3.12), urogenital (4.94±3.92); MRS total (18.92±7.69).
Gökgöz, 2014 / Malatya	Descriptive	University Hospital	270	40–65	Demographic Form; MENQOL	Most frequent symptoms: hot flushes (86.9%), sweating (82.1%), vaginal dryness/dyspareunia (81.7%), weight gain (76.5%), muscle/joint pain (70.4%).
Görmüş, 2017 / Samsun	Descriptive & correlational	University Hospital	206	40–60	Demographic form; MRS; SQOL-F (CYKÖ)	MRS subscales: somatic (9.2±3.9), psychological (11.5±4.0), urogenital

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						(6.4±3.2); MRS total (26.4±9.7).
Tunçarslan, 2019 / Erzincan	Descriptive	University Hospital	297	40–60	Descriptive Form; MSPSS (ÇBASDÖ); MRS	MRS total 18.84±7.19; symptoms below moderate on scale bounds.
Parmaksız, 2019 / Kastamonu	Descriptive & cross-sectional	State Hospital	180	≤65	Data Form; SLWS; Menopausal Complaint Scale	Most frequent: hot flushes (86.7%), cold sweats (76.37%); joint pains (73.9%); nape/headache (62.2%).
Aygün, 2019 / Ankara	—	University Hospital	112	40–64	MRS; Questionnaire; BDI	Severe/very severe symptoms most often: irritability (23.2%), joint/muscle problems (22.3%), sexual problems (19.6%).
Cirban & Özsoy, 2023 / Zonguldak	Descriptive & analytical	FHC	424	40–64	MRS; MTDÖ; CMÖ; Demographic form	MRS subscales: somatic (6.23±3.58), psychological (6.43±4.45), urogenital (4.45±3.01); MRS total (17.11±9.43).
Uyanık, 2020 / İstanbul	Descriptive & correlational	FHC	220	45–65	Case Identification Form; MRS	Most frequent symptom: hot flushes (62.3%).
Çulha, 2020 / İzmir	—	University Hospital	384	≥45	Questionnaire; MRS	MRS subscales: somatic (5.46±2.70), psychological (5.17±3.42), urogenital (2.81±2.79); MRS total (13.45±7.03).
Gökçer, 2022 / İstanbul	Descriptive	Training & Research Hospital	178	45–55	Demographic Form; ATMS (MİTÖ); MRS	MRS subscales: somatic (3.55±2.14), psychological (13.48±6.12), urogenital (5.18±3.24); MRS total (22.22±9.97).
Bilgin, 2023 / İstanbul	Prospective & analytical	Training & Research Hospital	203	≥40	MRS; Patient Info	MRS subscales: somatic (2.70±1.88), psychological (9.58±5.04), urogenital (3.12±2.50); MRS total (15.40±7.70).

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Çekici, 2023 / Çorum	Descriptive	Training & Research Hospital	184	≥40	Sociodemographic Form; MRS; NWLS (HİYKÖ)	MRS subscales: somatic (11.57±4.33), psychological (6.38±2.75), urogenital (5.85±3.41); MRS total (23.78±9.54).
Kocatepe, 2023 / İstanbul	Cross-sectional & descriptive	Training & Research Hospital	149	45–65	Questionnaire; MRS	MRS subscales: somatic (2.77±1.81), psychological (8.74±4.96), urogenital (2.91±2.41); MRS total (14.42±7.65).
Aral, 2024 / İstanbul	Cross-sectional	City Hospital	213	45–65	Participation Form; MRS	MRS subscales: somatic (5.52±4.14), psychological (4.96±4.51), urogenital (3.92±3.59); MRS total (14.40±10.25).
Sertkaya, 2024 / İstanbul	Cross-sectional & descriptive	FHC	245	40–55	Personal Info; MRS	MRS subscales: somatic (5.67±2.96), psychological (7.55±3.21), urogenital (3.43±2.78); MRS total (16.65±7.16).

Abbreviations

FHC: Family Health Center (primary care);
KETEM: Cancer Early Diagnosis, Screening and Education Center;
MRS: Menopause Rating Scale (MSDÖ);
MENQOL: Menopause-Specific Quality of Life Questionnaire (MÖYKÖ);
ATMS (MİTÖ): Attitude Toward Menopause Scale;
MTDÖ: Menopause Attitude Evaluation Scale;
MSPSS (ÇBASDÖ): Multidimensional Scale of Perceived Social Support;
ASEX: Arizona Sexual Experiences Scale;
SQOL-F (CYKÖ): Sexual Quality of Life Questionnaire-Female; SF-36: 36-Item Short Form Health Survey;
BDI (BDE): Beck Depression Inventory;
MSBF: Menopause Symptom Coping Form;
BTATÖ: Attitudes Toward Complementary and Alternative Medicine Scale;
DLAC: Daily Living Activities Checklist;
SLWS: Sense/Meaning in Life Scale;
NWLS (HİYKÖ): Nursing Work-Life Quality Scale;
ÖEYÖ: Self-Efficacy Scale;
CMÖ: Sexual Myths Scale.

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A brief overview of women's attitudes toward menopause in Türkiye is presented in Table 2, which lists study settings, instruments, and principal findings across the included studies.

Table 2. Harmonized reporting of studies assessing attitudes toward menopause among women in Türkiye.

Authors, year / location	Study design	Setting	Sample, n	Age, years	Attitude instrument	Outcome format reported in primary study	Scale-based result, mean ± SD	Categorical / proportional result	Harmonized interpretation	Use in synthesis
Özer & Gözükara, 2016 / Şanlıurfa	Descriptive	FHC	300	45–88	Questionnaire	Proportional / narrative	NA	96.7% viewed menopause positively because they were freed from childbearing	Positive attitude reported descriptively	Narrative synthesis only; not included in pooled mean
Tümer & Kartal, 2018 / Muğla	Descriptive, cross-sectional	Cultural centre	152	43–60	ATMS / MİTÖ	Continuous scale score	46.15 ± 11.68	NA	Positive attitude	Included in ATMS pooled mean
Yaşar & Yeyğel, 2023 / Türkiye	Descriptive	Online survey	297	45–60	ATMS / MİTÖ	Continuous scale score	46.04 ± 14.46	NA	Positive attitude	Included in ATMS pooled mean
Dündar & Aksu, 2021 / Aydın	Analytical, cross-sectional	KETEM	359	40–64	ATMS / MİTÖ	Continuous scale score	35.24 ± 6.13	NA	Negative attitude	Included in ATMS pooled mean
Tezce & Beydağ, 2021 /	Descriptive, cross-sectional	Training and research	110	NR	MTDÖ; SQOL-F	Proportional / categorical	NA	60.9% reported negative feelings	Negative feelings reported descriptively	Narrative synthesis only; not

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Kocaeli		hospital						upon entering menopause		included in pooled mean
Gümüşay & Erbil, 2019 / Black Sea region	Descriptive	Training and research hospital	197	45–65	ATMS / MİTÖ	Continuous scale score and proportional result	36.06 ± 7.34	72.1% had negative attitudes toward menopause	Negative attitude	ATMS mean included in pooled mean; percentage reported narratively
Ağralı, Ünal & Kaya Şenol, 2022 / Osmaniye	Descriptive	State hospital	180	39–68	MTDÖ; TTTÖ	Continuous scale score	24.06 ± 7.40	NA	Moderate attitude level	Descriptive scale-based synthesis only; not pooled with ATMS
Özer Yurdal, Özsoy & Karaçam, 2024 / Çanakkale	Analytical, cross-sectional	University hospital; state hospital; FHC; KETEM	250	40–65	ATMS / MİTÖ	Continuous scale score	47.08 ± 12.37	NA	Positive attitude	Included in ATMS pooled mean
Ünlü et al., 2022 / Tokat	Descriptive, cross-sectional	FHC	870	40–60	MTDÖ	Continuous scale score	26.80 ± 7.00	NA	Negative menopausal attitude	Descriptive scale-based synthesis only; not pooled with ATMS
Cirban & Özsoy, 2023 / Zonguldak	Descriptive, analytical	FHC	424	40–64	MTDÖ	Continuous scale score	27.86 ± 8.06	NA	Above moderate / positive attitude	Descriptive scale-based synthesis only; not pooled with ATMS

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Gökçer, 2022 / İstanbul	Descriptive	Training and research hospital	178	45–55	ATMS / MİTÖ	Continuous scale score	43.63 ± 16.12	NA	Positive attitude	Included in ATMS pooled mean

Abbreviations: FHC: Family Health Centre; KETEM: Cancer Early Diagnosis, Screening and Education Centre; ATMS / MİTÖ: Attitude Toward Menopause Scale; MTDÖ: Menopause Attitude Evaluation Scale; SQOL-F: Sexual Quality of Life Questionnaire–Female; TTTÖ: Attitudes Toward Using Complementary Therapies Scale; NA: not applicable; NR: not reported in the original study.

Table note: Outcome reporting was harmonized according to the type of data available in the primary studies. Continuous scale-based outcomes were extracted as mean ± standard deviation when available. Categorical or proportional findings were reported separately and were not transformed into mean scores. Narrative-only findings were summarized descriptively. Studies using ATMS/MİTÖ with available mean, standard deviation, and sample size were included in the pooled ATMS analysis. Studies using MTDÖ or reporting only categorical/proportional or narrative outcomes were not statistically pooled with ATMS results because of differences in measurement instruments or insufficient information for valid transformation. NR indicates not reported in the original study. No imputation was performed for missing data.

Table 3 presents the JBI risk-of-bias assessment for studies assessing attitudes toward menopause, whereas Table 4 presents the assessment for studies assessing menopausal symptoms. This separation was used to improve clarity because not all included studies assessed both outcome domains. Although many studies met several checklist items related to sample definition, outcome measurement and statistical analysis, the overall judgments were interpreted cautiously because reporting of confounding-related domains was limited, particularly for JBI item S6, which assesses whether strategies to deal with confounding factors were stated.

Table 3. Risk-of-bias assessment of studies assessing attitudes toward menopause using the JBI Critical Appraisal Checklist for cross-sectional studies. (JBI Critical Appraisal Checklist for cross-sectional studies-Codes: Y = Yes; N = No; S1–S8 = JBI items; Quality score = % “Yes”)

Study	S1	S2	S3	S4	S5	S6	S7	S8	Overall quality
Ağralı, Ünal & Kaya Şenol, 2022	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Cirban & Özsoy, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Dündar & Aksu, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Gökçer, 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)

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Gümüşay & Erbil, 2019	Y	N	Y	Y	Y	Y	Y	Y	Good (87.5%)
Özer & Gözükara, 2016	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer Yurdal, Özsoy & Karaçam, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tezce & Beydağ, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tümer & Kartal, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Ünlü et al., 2022	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Yaşar & Yeyğel, 2023	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Item-level "Yes" proportion	**100%**	**90.9%**	**100%**	**100%**	**81.8%**	**63.6%**	**100%**	**100%**	

Table 4. Risk-of-bias assessment of studies assessing menopausal symptoms using the JBI Critical Appraisal Checklist for cross-sectional studies. (JBI Critical Appraisal Checklist for cross-sectional studies -Codes: Y = Yes; N = No; S1–S8 = JBI items; Quality score = % "Yes").

Study	S1	S2	S3	S4	S5	S6	S7	S8	Overall quality
Aksoy Derya, Altıparmak & Öztaş, 2021	Y	N	Y	Y	Y	N	Y	Y	Moderate (75%)
Alpaslan Arar & Erbil, 2023	Y	N	Y	Y	Y	Y	Y	Y	Good (87.5%)
Aral, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Avcı, 2013	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Aygün, 2019	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Bilgin, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Cirban & Özsoy, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Çakıl & Ünsal, 2020	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Çakır Palaz & Yavaş, 2025	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Çekici, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Çelik Sis & Pasinlioğlu, 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Çulha, 2020	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Darici Koçan & Cangöl, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)

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Demirtaş & Şahin, 2024	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Dişli et al., 2022	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Dündar & Aksu, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Engindeniz, Ertürk & Aytekin, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Erdem Çetin & Eroğlu, 2015	Y	Y	N	N	N	N	Y	Y	Poor (50%)
Gökçer, 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Gökgöz, 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Görmüş, 2017	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Kızılırmak & Seviğ, 2011	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Kocatepe, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Kurt & Arslan, 2020	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer & Gözükara, 2016	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer Yurdal, Özsoy & Karaçam, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Parmaksız, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Polat & Karasu, 2022	Y	N	Y	Y	Y	N	Y	Y	Moderate (75%)
Şentürk Erenel et al., 2015	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Sertkaya, 2024	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Tunç, 2014	N	Y	Y	Y	Y	Y	Y	Y	Good (87.5%)
Tunçarslan, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tümer & Kartal, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Uludağ et al., 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Uyanık, 2020	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Ünlü et al., 2022	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Yaşar & Yeyğel, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Zorlu et al., 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Item-level "Yes" proportion	**97.4%**	**92.1%**	**97.4%**	**97.4%**	**68.4%**	**28.9%**	**100%**	**100%**	

Note: S1–S8 refer to the eight items of the JBI Critical Appraisal Checklist for cross-sectional studies. S6 assesses whether strategies to deal with confounding factors were stated. Because low

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compliance with S6 may affect the internal validity of observational cross-sectional studies, the overall appraisal was interpreted cautiously.

Screening results

A total of 7,509 records were identified through database searches and supplementary sources. After removal of duplicates, 47 studies were retained for full-text assessment based on title/abstract screening. Following evaluation against the inclusion criteria and the availability of analysable data, 41 studies were included in this systematic review, and data extraction was undertaken for these studies. Details of the study selection process are presented in Figure 1.

Characteristics of studies and participants

The included studies were conducted between 2002 and 2024 and published between 2011 and 2025. Most employed a cross-sectional design. Eleven studies were conducted in Family Health Centres [23-32], two in KETEM centres [27,33], two in primary health centres [34-35], sixteen in training/research or university hospitals [8,27,36-49], one in a cultural centre [50], one online [51], six in state hospitals [27,52- 56] and one in a city hospital [57]. Furthermore, data were collected from multiple institutions in some studies, including public hospitals, family health centers, and teaching/research or university hospitals. All studies reported menopausal symptoms (see Table 1). Studies assessing women's attitudes toward menopause were conducted in Family Health Centres (n=4) [2,23, 27,29], a cultural centre (n=1) [50], online (n=1) [58], KETEM (n=2) [27,33], training/university hospitals (n=4) [14, 27,45,59] and state hospitals (n=2) [6; 27] (see Table 2).

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Regarding instruments, 24 studies on menopausal symptoms used researcher-developed questionnaires or survey forms. One study employed the MENQOL (Menopause-Specific Quality of Life Scale) together with the Self-Efficacy Scale; other tools included the Menopausal Complaint Screening List (MYTL) and the Menopause Complaint Scale; 29 studies used the Menopause Rating Scale (MRS). In the 11 studies evaluating attitudes toward menopause, questionnaires/survey forms were used; attitudes were measured with the Attitude Toward Menopause Scale (ATMS; n=6) and the Menopause Attitude Evaluation Scale (MTDÖ; n=4) (Table 2). Where multiple instruments were used within a study, all are reported; instrument counts are non-exclusive.

Risk-of-bias assessment findings

Risk-of-bias findings are presented separately according to the two main outcome domains of the review. Table 3 presents the JBI appraisal of studies assessing attitudes toward menopause, whereas Table 4 presents the JBI appraisal of studies assessing menopausal symptoms. This separation was used to improve clarity because not all included studies assessed both outcomes or contributed data to the same synthesis. Across the included studies, the weakest methodological domain was JBI item S6, which evaluates whether strategies to deal with confounding factors were stated. Therefore, the overall judgments were interpreted cautiously, and studies with otherwise high checklist scores but without explicit strategies for confounding control were not considered free from important methodological limitations.

Meta-analytical findings

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Table 5 presents exploratory random-effects subgroup estimates of the pooled MRS total score by geographical region. The pooled mean MRS total score varied across regions, with the lowest estimate observed in the Aegean region and the highest estimate observed in Eastern Anatolia. The between-subgroup heterogeneity test was statistically significant (Q_between = 819.130, $p < 0.001$), suggesting regional variability in MRS total scores. However, because several regions were represented by a small number of studies, including regions represented by a single study, these findings should be interpreted cautiously.

Table 5. Exploratory random-effects subgroup analysis of MRS total score by geographical region.

Region	k	Pooled mean	Z	$Q_{between}$ (Q_b)
Mediterranean	2	19.850	11.542***	
Eastern Anatolia	1	22.670	45.614***	
Aegean	2	13.944	23.609***	
Black Sea	4	20.174	6.941***	**819.130*** **
Marmara	11	15.359	10.599***	
Türkiye (nationwide)	1	15.720	27.476***	
Central Anatolia	4	19.883	51.414***	

Note. MRS: Menopause Rating Scale. Q_between indicates the between-region heterogeneity test.*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 6 summarises the overall random-effects meta-analysis of the MRS total score across 24 studies. The pooled mean MRS total score was 17.423 (95% CI: 15.544–19.302), indicating a considerable overall symptom burden among the included samples. Between-study heterogeneity was very high ($Q = 2063.082$, $p < 0.001$; $I^2 = 98.837\%$), indicating that the pooled estimate should be interpreted cautiously. Higher MRS total scores indicate greater menopausal symptom severity.

Table 6. Overall random-effects meta-analysis of MRS total score (k = 24).

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Outcome	Pooled mean	95% CI lower	95% CI upper	Z	Q	I^2 (%)
MRS total score	17.423	15.544	19.302	18.174***	2063.082***	98.837

Note. MRS: Menopause Rating Scale; CI: confidence interval. Higher MRS scores indicate greater menopausal symptom severity.*p < 0.05, **p < 0.01, ***p < 0.001.

Table 7 reports random-effects pooled means for MRS subscales. The pooled mean was highest for psychological symptoms and lowest for urogenital symptoms. The between-subscale test was statistically significant (Q_between = 1458.161, p < 0.001), indicating differences across MRS subscale domains.

Table 7. Exploratory random-effects subgroup analysis of MRS subscale scores (k=24).

MRS Subscale	k	Pooled Mean	Z	$Q_{between}$ (Q_b)
Psychological	24	6.792	12.931***	
Somatic	24	5.790	14.898***	1458.161***
Urogenital	24	4.040	15.735***	

Note. MRS: Menopause Rating Scale. Q_between indicates the between-subscale heterogeneity test. *p < 0.05, **p < 0.01, ***p < 0.001.

Figure 2 presents random-effects pooled prevalence estimates of nine menopausal symptoms with 95% confidence intervals. Studies that did not report a given symptom were excluded from the analysis of that specific symptom and were not treated as having zero prevalence. Hot flushes had the highest pooled prevalence (44.2%, 95% CI: 30.6–58.2), followed by sweating (42.1%, 95% CI: 28.3–56.6), whereas sexual problems had the lowest pooled prevalence (18.0%, 95% CI: 11.6–25.3). Given the substantial clinical and methodological heterogeneity across studies, these estimates should be interpreted as descriptive summary estimates

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rather than precise national prevalence estimates.

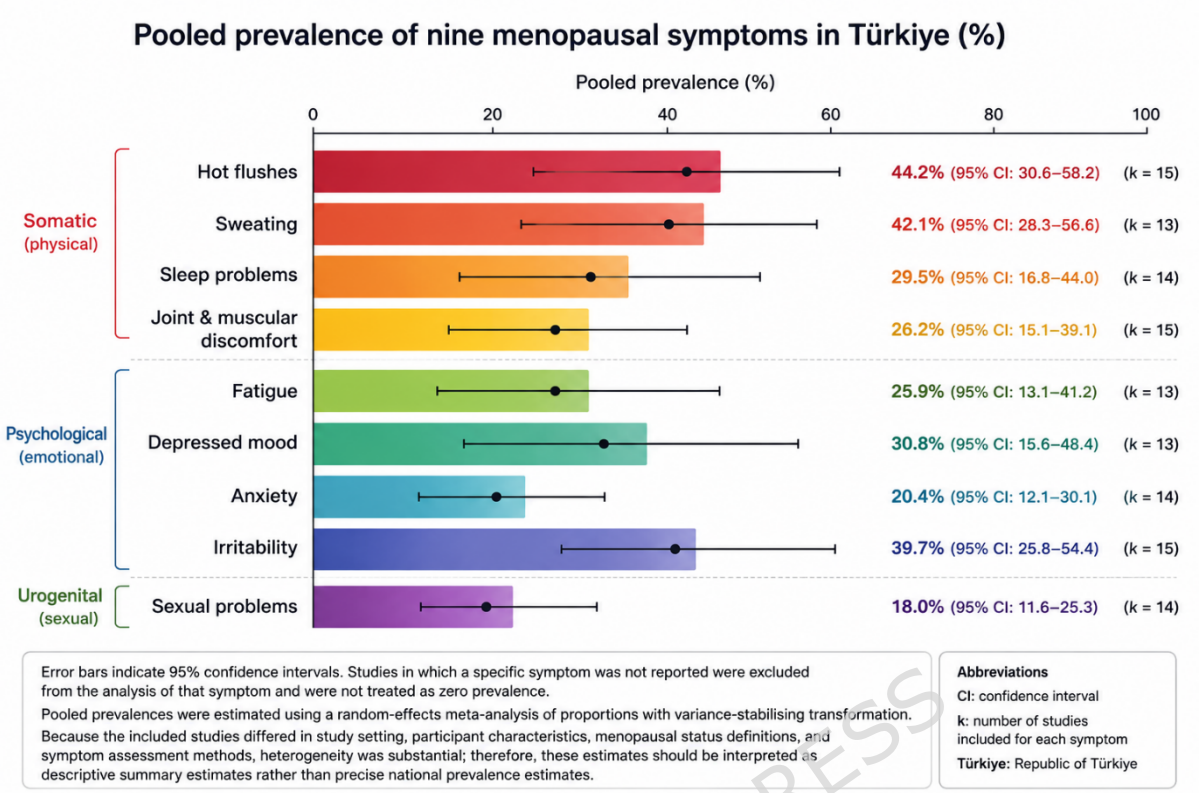

Figure 2. Pooled prevalence of menopausal symptoms in Türkiye. Random-effects pooled prevalence estimates of nine menopausal symptoms in Türkiye.

Error bars indicate 95% confidence intervals. Studies in which a specific symptom was not reported were excluded from the analysis of that symptom and were not treated as zero prevalence. Pooled prevalences were estimated using a random-effects meta-analysis of proportions with variance-stabilising transformation. Because the included studies differed in study setting, participant characteristics, menopausal status definitions, and symptom assessment methods, heterogeneity was substantial; therefore, these estimates should be interpreted as descriptive summary estimates rather than precise national prevalence estimates.

Table 8 presents findings for attitudes toward menopause based on six studies using the relevant attitude scale: the pooled mean score was 40.81 (95% CI 35.69–45.94), significantly different from zero ($Z = 15.61$; $p < 0.001$), with substantial heterogeneity ($Q = 241.69$; $p < 0.001$; I^2 (%) $= 98.76$). Considering the

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instrument's scoring range, this average reflects a moderate level of attitudes toward menopause among women in Türkiye.

Table 8. Random-effects meta-analysis of attitudes toward menopause (ATMS/MİTÖ total score; k = 6).

Outcome	Pooled mean	95% CI lower	95% CI upper	Z	Q	I^2 (%)
ATMS/MİTÖ total score	40.81	35.69	45.94	15.61***	241.69***	98.76

Note. ATMS/MİTÖ: Attitude Toward Menopause Scale; CI: confidence interval. *p < 0.05, **p < 0.01, ***p < 0.001.

Publication bias and small-study effects were assessed for outcomes with at least 10 contributing studies. Egger's regression test suggested possible small-study effects for the MRS total score (p = 0.0002), psychological subscale (p < 0.001), somatic subscale (p < 0.001), and urogenital subscale (p < 0.001). Egger's test was not performed for the ATMS/MİTÖ pooled analysis because fewer than 10 studies were available. For symptom-specific prevalence analyses, Egger's test suggested possible small-study effects for anxiety (p = 0.020) and sexual problems (p = 0.004), whereas no statistically significant small-study effects were detected for hot flushes, sweating, sleep problems, joint and muscular discomfort, fatigue, depressed mood, or irritability. Given the very high heterogeneity across the main analyses, these findings were interpreted cautiously, and funnel plot asymmetry was not considered diagnostic of publication bias.

Based on a GRADE-informed appraisal, the overall certainty of the pooled estimates was rated as low to very low. The main reasons for downgrading were the very high between-study heterogeneity (I^2 ≈ 98–99%), the limited reporting of strategies to control confounding in the primary studies (JBI item S6), and the suspected small-

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study effects identified for several outcomes on Egger's test. Indirectness was not a concern because the evidence was derived directly from the population of interest. A summary of the certainty assessment for each outcome is provided in the Supplementary Materials (Supplementary Table). Accordingly, the pooled prevalence and mean-score estimates should be regarded as descriptive summaries rather than precise or definitive national estimates.

DISCUSSION

This systematic review and meta-analysis synthesized the findings of 41 studies identified from 7,509 records to determine menopausal symptoms and attitudes toward menopause among women in the menopausal period. In the pooled analysis, the mean Menopause Rating Scale (MRS) total score was 17.423 (95% CI: 15.544–19.302), reflecting the average symptom burden observed across the included samples. The pooled mean for the MRS psychological subscale was the highest, while the urogenital subscale showed the lowest pooled mean. However, between-study heterogeneity was very high; therefore, these pooled estimates should be interpreted cautiously and should not be considered precise national estimates (see Table 6)**.** The pooled mean for the MRS psychological subscale was the highest, while the urogenital subscale exhibited the lowest pooled mean. Similar to the present findings regarding the prominence of psychological symptoms, Yisma et al. (2017) reported a predominance of psychological complaints. However, comparisons across countries should be made cautiously because menopausal status definitions, symptom measurement tools, sampling frames and socio-cultural contexts differ across studies. [60]. Subedi et al. (2022) found that somatic symptoms were most common and urogenital symptoms least common among 424

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postmenopausal women in Nepal [61]. In Korean women, Kwak et al. (2014) observed high overall symptom burden with physical symptoms most prominent [62]. Gupta et al. (2016) reported that low back pain predominated in women aged 45–50 years, back pain plus mental problems in women aged 51–55 years, and back pain with urinary problems in women aged 56–60 years. Given the very high between-study heterogeneity, these pooled estimates should be interpreted with caution [63].

In this review, hot flushes had the highest pooled prevalence (44.2%, 95% CI: 30.6–58.2), followed by sweating (42.1%, 95% CI: 28.3–56.6), whereas sexual problems had the lowest pooled prevalence (18.0%, 95% CI: 11.6–25.3). Importantly, studies that did not report a given symptom were excluded from the analysis of that symptom and were not treated as having zero prevalence. Because symptom definitions, measurement tools and study populations varied across the included studies, these pooled prevalence estimates should be interpreted as descriptive summary estimates rather than precise national prevalence estimates. In line with our findings, Fang et al. (2024) reported vasomotor symptoms among the most common complaints (54–66%) [7]. Similarly, Yisma et al. (2017) found hot flushes to be the most frequent symptom among perimenopausal (57%) and postmenopausal (84%) women, and overall (65.9%) [60]. Joseph and Varghese (2017) also identified hot flushes (58%) as the most commonly reported symptom among Indian women [64]. By contrast, Nik Hazlina et al. (2022) concluded that psychological symptoms (42.1%) were most frequent during perimenopause, and genitourinary syndrome (55.1%) during postmenopause (65). Khatoon et al. (2018) reported joint and muscular discomfort (87%) and depressed mood (70%) as the most frequent complaints [66]; Shrestha and Pandey (2017) found mood swings

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(80%) and irritability (68%) to be the most prevalent in Nepal ([67]; Singh and Pradhan (2014) observed sleep disturbance (62.7%), muscle/joint pain (59.1%) and hot flushes (46.4%) as the leading complaints in postmenopausal Indian women [68]; and Ganapathy et al. (2018) reported back pain (96%), reduced physical strength (92%) and fatigue/weakness (89%) as the most frequent symptoms among women aged 40–60 years [69]. Pathak and Shivaswamy (2018) similarly identified feeling depressed/sad (63.9%), sweating (63.5%) and impatience towards others (61.7%) [70], while Prajapati et al. (2018) reported muscle/joint pain (36.8%), hot flushes (29.25%) and abnormal bleeding as the most common complaints [71].

The pooled mean score for the Attitude Toward Menopause Scale (ATMS; MİTÖ) across studies from Türkiye was 40.8, which—considering the scale range—indicates a moderate, generally positive attitude towards menopause. Studies from Türkiye frequently reported positive attitudes [6, 27,23,45,50,58]. Conversely, Ünlü et al. (2022), Gümüşay & Erbil (2019), Tezce & Beydağ (2021) and Dündar & Aksu (2021) reported negative attitudes [14,29,3,59]. These discrepancies may reflect differences in education, age, cultural context and socioeconomic status. Thapa & Yang (2022) found that most women aged 40–60 held negative attitudes—more pronounced in perimenopause than postmenopause—linked to viewing menopause as a condition requiring treatment, concerns about sexuality and impacts on quality of life [72]. Similarly, Kwak et al. (2014) (Korea), Ahmadi et al. (2025) (Iran) and Mohammadi et al. (2024) reported predominantly negative attitudes, with symptom burden correlated with more negative views [62,73-74]. Nevertheless, the high heterogeneity observed in the pooled ATMS analysis suggests that this estimate should be interpreted cautiously. Differences in attitude

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instruments, scoring interpretation, education level, age distribution, menopausal status and cultural context may have contributed to the variability across studies.

Strengths and limitations

The strengths of this review include comprehensive searches across multiple national and international sources, the inclusion of recent studies, and the use of validated instruments to assess menopausal symptoms and attitudes in many of the included studies. However, several limitations should be considered. Between-study heterogeneity was very high for the main pooled outcomes, limiting the precision and generalisability of the summary estimates.The subgroup/moderator analyses should be considered exploratory because some categories included only a small number of studies and between-study heterogeneity was very high. Therefore, these analyses should not be interpreted as evidence of causal or independent moderator effects. For the same reasons, formal sensitivity analyses such as outlier exclusion or leave-one-out re-estimation were not used to "correct" the pooled estimates, because the very high heterogeneity ($I^2 \approx 98–99\%$) reflects genuine clinical and methodological diversity across studies rather than a few aberrant data points, and removing individual studies in strata with only one or two studies could create a false impression of precision. Accordingly, the pooled estimates are presented as descriptive summary estimates rather than definitive values. In addition, reporting of strategies to address confounding was limited in many primary studies, which may affect the internal validity of the findings. Outcome reporting was also heterogeneous, particularly for attitude-related outcomes and symptom prevalence data. Although we harmonized the presentation of outcomes and avoided treating unreported symptoms as zero prevalence,

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language and publication biases cannot be fully excluded. Possible small-study effects were observed in some analyses. Egger's regression test suggested asymmetry for the MRS total score, MRS subscales, anxiety, and sexual problems. Nevertheless, these findings were interpreted cautiously because funnel plot asymmetry is not diagnostic of publication bias and may reflect substantial heterogeneity, differences in study design, sample characteristics, or measurement approaches. This further supports interpreting the pooled estimates as descriptive summaries rather than precise national estimates.

CONCLUSIONS AND RECOMMENDATIONS

This systematic review and meta-analysis synthesised 41 studies on menopausal symptoms and attitudes toward menopause among women in Türkiye. The pooled mean MRS total score was 17.423, and psychological symptoms had the highest pooled subscale mean. Hot flushes had the highest pooled prevalence (44.2%), whereas sexual problems had the lowest pooled prevalence (18.0%) after excluding studies in which the relevant symptom was not reported. The pooled mean ATMS/MİTÖ score was 40.81, suggesting moderately positive attitudes toward menopause among studies using this scale. However, because heterogeneity was very high and reporting of confounding control was limited in many primary studies, these findings should be interpreted cautiously.

Based on these findings, women's health nurses and other health professionals should provide regular, structured and culturally tailored education to support symptom recognition, coping skills and access to evidence-based counselling or treatment when needed. Future research in Türkiye should prioritise prospective designs, consistent definitions of menopausal status, standardized symptom and

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attitude measures, and adjustment for key confounders to improve comparability across studies.

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Abbreviations:

ASEX: Arizona Sexual Experiences Scale;
SQOL-F (CYKÖ): Sexual Quality of Life Questionnaire-Female; SF-36: 36-Item Short Form Health Survey;
BDI (BDE): Beck Depression Inventory;
CMÖ: Sexual Myths Scale.
FHC: Family Health Center (primary care);
KETEM: Cancer Early Diagnosis, Screening and Education Center;
MRS: Menopause Rating Scale (MSDÖ);
MENQOL: Menopause-Specific Quality of Life Questionnaire (MÖYKÖ);
ATMS (MİTÖ): Attitude Toward Menopause Scale;
MSBF: Menopause Symptom Coping Form;
BTATÖ: Attitudes Toward Complementary and Alternative Medicine Scale;
DLAC: Daily Living Activities Checklist;
MTDÖ: Menopause Attitude Evaluation Scale;
MSPSS (ÇBASDÖ): Multidimensional Scale of Perceived Social Support;
MYTL: Menopausal Complaint Screening List
NR:not reported in the source.
ÖEYÖ: Self-Efficacy Scale;
SLWS: Sense/Meaning in Life Scale;
NWLS (HİYKÖ): Nursing Work-Life Quality Scale;
TTTÖ: Attitudes Toward Using Complementary Therapies Scale

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Declarations

Ethics and consent to participate

This systematic review and meta-analysis did not require ethical approval as it involved only the analysis of data from previously published studies."

Consent for publication

Not applicable: the review uses only aggregated data from previously published studies, with no identifiable individual data.

Clinical trial number

Not applicable.

Availability of data and materials

The datasets generated and/or analysed during the current study are available on the researcher's computer. The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

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Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Nazlı Emel Özer Yurdal, Emine Gerçek Öter and Ayten Dinç jointly designed and planned the research process. Data were collected by NEÖY and EGÖ, and analyses were performed by AD and NEÖY. The authors take equal responsibility for writing, reviewing, and editing the article. All the authors read and approved the final manuscript.

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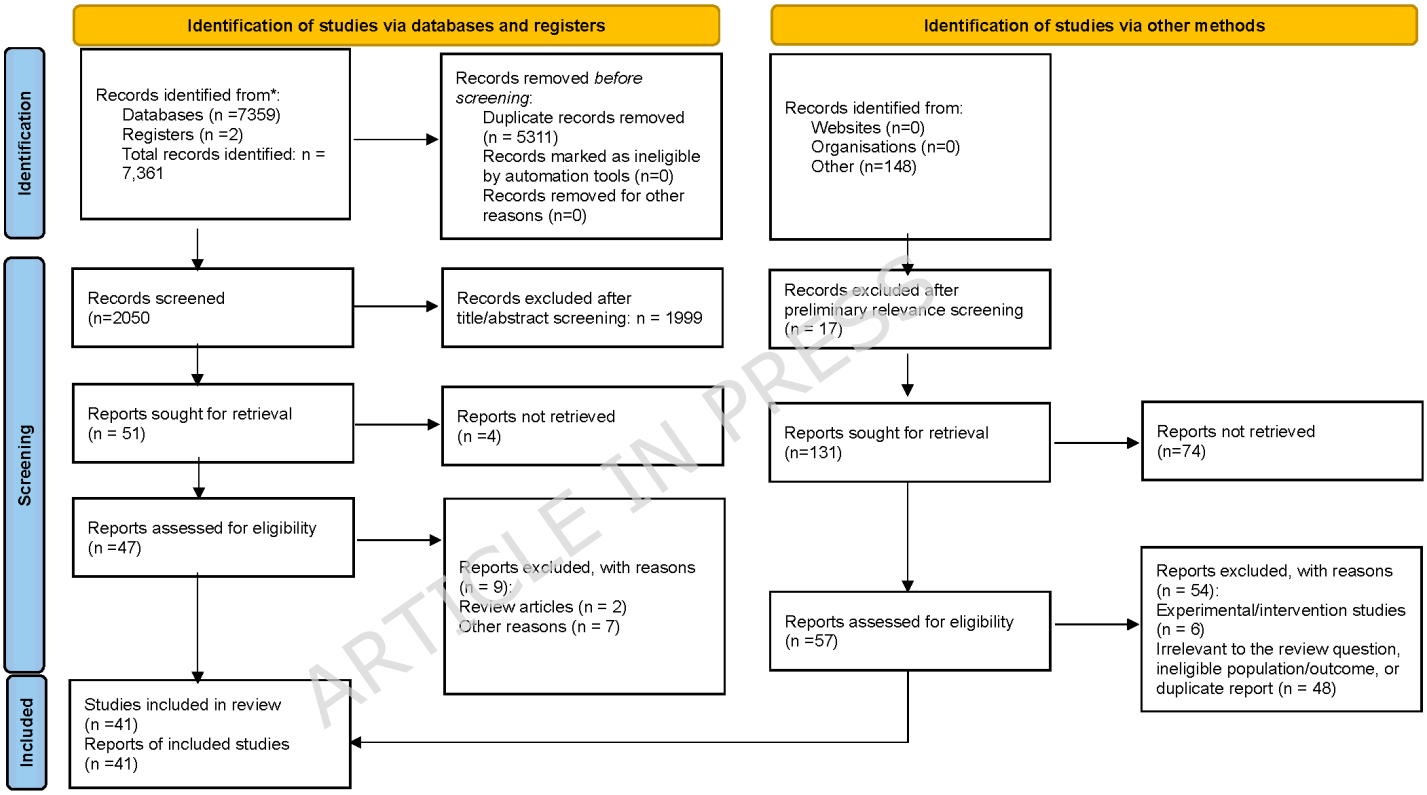

Figure 1. PRISMA 2020 flow diagram for study selection in this systematic review and meta-analysis.

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).
**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.
Source: Page MJ, et al. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.

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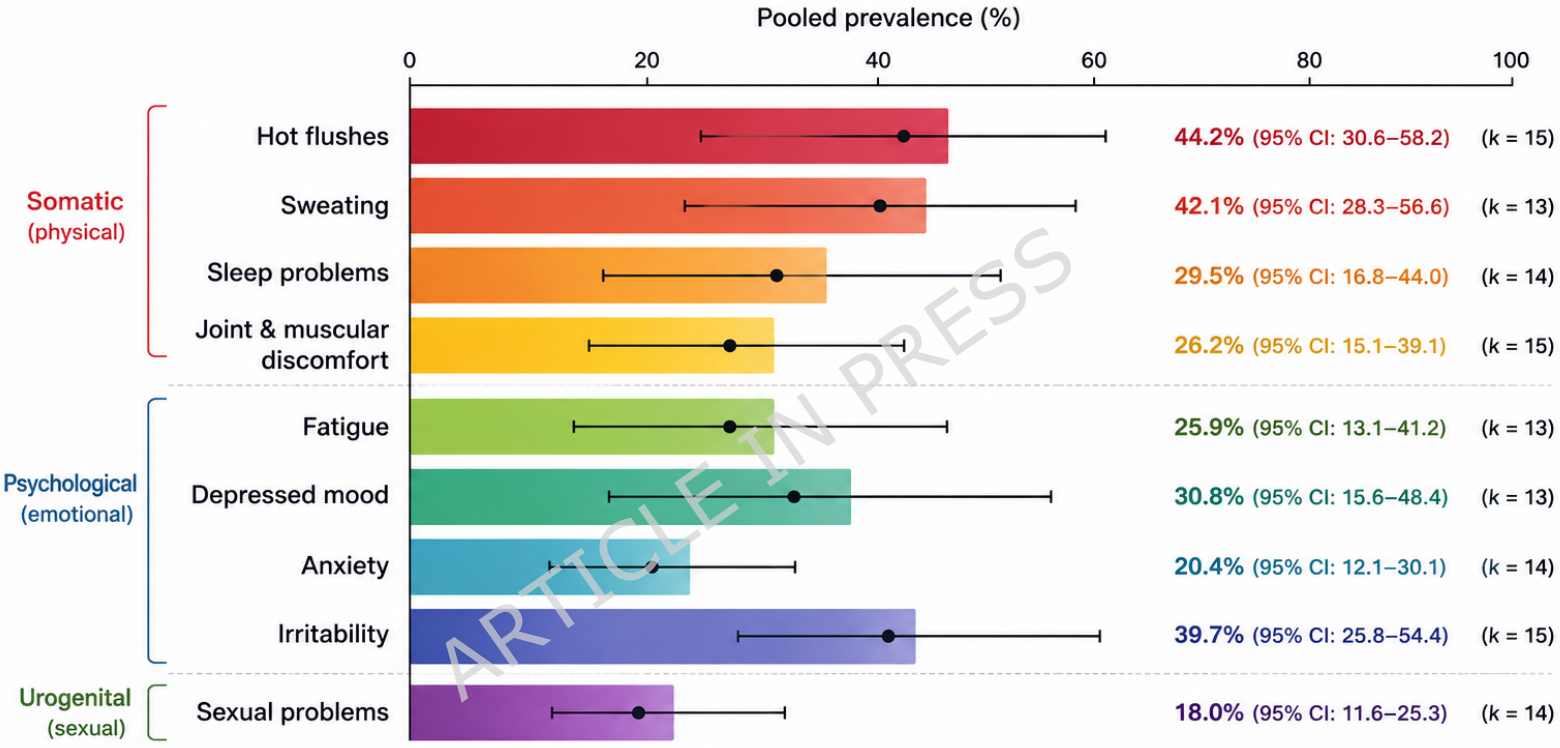
Pooled prevalence of nine menopausal symptoms in Türkiye (%)



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Error bars indicate 95% confidence intervals. Studies in which a specific symptom was not reported were excluded from the analysis of that symptom and were not treated as zero prevalence.

Pooled prevalences were estimated using a random-effects meta-analysis of proportions with variance-stabilising transformation. Because the included studies differed in study setting, participant characteristics, menopausal status definitions, and symptom assessment methods, heterogeneity was substantial; therefore, these estimates should be interpreted as descriptive summary estimates rather than precise national prevalence estimates.

Abbreviations

CI: confidence interval

k: number of studies included for each symptom

Türkiye: Republic of Türkiye

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Table 1. Characteristics of included studies on menopausal symptoms among Turkish women.

Authors (year) / City	Study design	Setting	Sample (n)	Age range / mean	Instruments	Key findings
Özer & Gözükara, 2016 / Şanlıurfa	Descriptive	Family Health Center (FHC)	300	45–88	Questionnaire	Vasomotor: "numbness/tingling in hands and feet" (76.3%); Emotional: "feeling blue" (83.3%); CNS: "forgetfulness" (63.3%); Hair/skin: "hair loss" (46.7%); Musculoskeletal: "joint/bone pain" (76.0%); Cardiovascular: "tightness/palpitations" (75.3%); Urogenital: "urinary incontinence" (53.7%); Gastrointestinal: "constipation" (75.3%); Sleep: "difficulty initiating/maintaining sleep; early awakening" (72.0%).
Çakır Palaz & Yavaş, 2025 / Bandırma	Cross-sectional	University Hospital	277	25–65	MENQOL	Most frequent: vasomotor symptoms (mean = 3.48); Sexual (mean = 2.84); Physical (mean = 2.63); Psychological (mean = 2.61).
Kızılırmak & Seviğ, 2011 / Kayseri	Descriptive	Health Centre	336	40–59	Questionnaire	Most common symptom: hot flushes (81.8%); others: forgetfulness (79.2%), joint pain (73.5%), irritability (69%), back pain (63.7%).

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Tümer & Kartal, 2018 / Muğla	Descriptive & cross-sectional	Cultural Centre	152	43–60	Questionnaire; MRS; ATMS (MİTÖ)	MRS subscales: psychological (8.96±4.94), urogenital (5.35±3.09), somatic (2.85±1.99); MRS total (14.65±7.62).
Yaşar & Yeyğel, 2023 / Türkiye	Descriptive	Online survey	297	45–60	Demographic form; MRS; ATMS (MİTÖ)	MRS subscales: psychological (9.43±6.06), urogenital (3.59±3.12), somatic (2.69±1.94); MRS total (15.72±9.86).
Çelik Sis & Pasinlioğlu, 2014 / Erzurum	Descriptive & cross-sectional	Research Hospital	263	35–64	Questionnaire; MRS	MRS subscales: psychological (13.12±4.59), urogenital (5.35±3.09), somatic (4.19±2.08); MRS total (22.67±8.06).
Kurt & Arslan, 2020 / Sakarya	Descriptive	Training & Research Hospital	204	≥45	MRS; Participant form; Menopause Symptom Coping Form	MRS subscales: somatic (7.1±3.7), psychological (6.9±4.3), urogenital (3.4±3.0); MRS total (17.6±8.8).
Dündar & Aksu, 2021 / —	Analytical–cross-sectional	KETEM	359	40–64	Questionnaire; MYTL	~Half reported irritability/tension (56%); followed by headache/dizziness (25.6%) and hot flushes/night sweats (24%).
Demirtaş & Şahin, 2024 / İstanbul	Descriptive & cross-sectional	Online platform	225	40–65	Personal Info; Internet Use; MRS	MRS subscales: somatic (5.56±3.18), psychological (4.89±3.31), urogenital (3.40±2.98); MRS total (13.86±7.92).
Zorlu et al., 2022 / Sivas	Descriptive	FHC	154	40–64	Descriptive Form; MRS; Alternative	MRS subscales: somatic (9.14±3.26),

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					Practices Form	psychological (7.81±3.42), urogenital (3.59±2.36); MRS total (20.55±7.00).
Engindeniz, Ertürk & Aytekin, 2024 / Bursa	Descriptive & cross-sectional	FHC	1013	40–60	Questionnaire; MRS	In postmenopausal women, most frequent complaints: physical & mental exhaustion (82.8%), irritability (78.4%), depressed mood (76.4%).
Aksoy Derya, Altıparmak & Öztaş, 2021 / Mediterranean Region	Cross-sectional	State Hospital	306	40–65	MRS; Personal Info; GRAS; SOOL-F	MRS subscales: somatic (6.64±3.15), psychological (7.15±4.27), urogenital (4.35±3.00); MRS total (18.15±9.14).
Şentürk Erenel et al., 2015 / Ankara	Cross-sectional	State Hospital	229	40–64	ASEX; MRS; Personal Info	MRS subscales by age: 40–49y somatic (7.06±3.54), 50–64y somatic (7.64±3.88); 40–49y psychological (6.89±4.31), 50–64y psychological (8.26±4.41); 40–49y urogenital (4.15±3.49), 50–64y urogenital (4.90±3.49); MRS total (20.13±9.20).
Uludağ et al., 2014 / Çanakkale	Descriptive & cross-sectional	University Hospital	300	40–65	Questionnaire; MRS; SF-36	MRS total 16.3±8.9; psychological 6.4±4.1; somatic 5.9±3.4; urogenital 3.7±3.1.
Polat & Karasu, 2022 / Osmaniye	Descriptive	FHC	259	40–65	Personal Info; MRS; BTATÖ	MRS subscales: somatic (3.87±2.35), psychological

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						(13.06±6.07), urogenital (4.65±2.87); MRS total (21.59±10.30).
Erdem Çetin & Eroğlu, 2015 / Tokat	Descriptive	Health Centre	100	50–64	Questionnaire	Most frequent symptoms: vasomotor (97%), emotional (91%), CNS (74%).
Darici Koçan & Cangöl, 2023 / Kırklareli	Cross-sectional	FHC	270	45–65	Demographic Form; MRS	MRS subscales: somatic (3.54±2.58), psychological (3.14±2.67), urogenital (1.69±2.03); MRS total (8.37±5.42).
Düşli et al., 2022 / İstanbul	Descriptive	University Hospital	300	Mean 53.60±4.67	Demographic Form; MSBF	Most frequent: hot flushes (92.3%), then irritability/tension (72%), night sweats (70.7%), weight gain (65.7%), musculoskeletal pain (62.8%), insomnia/fatigue (62.3%).
Özer Yurdal, Özsoy & Karaçam, 2024 / Çanakkale	Analytical–cross-sectional	University Hospital; State Hospital; FHC; KETEM	250	40–65	Questionnaire; ATMS (MİTÖ); CMÖ; MRS	Health-care workers: MRS total 7.53±6.47; somatic 3.27±2.50; psychological 2.84±2.70; urogenital 1.43±2.05.
Ünlü et al., 2022 / Tokat	Descriptive & cross-sectional	FHC	870	40–60	MRS; MTDÖ; Questionnaire	MRS subscales: somatic (5.14±3.88), psychological (5.40±4.10), urogenital (2.98±2.99); MRS total (13.5±10.1).
Çakıl & Ünsal, 2020 / Kırşehir	Descriptive	FHC	364	50–65	ÖEYÖ	Most frequent symptoms: hot flushes & night sweats (82.6%), followed by forgetfulness

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						(74.9%), joint/bone pain (68.9%), restlessness/irritability (68.3%), feeling blue (66.9%).
Alpaslan Arar & Erbil, 2023 / Black Sea region	Descriptive & cross-sectional	State Hospital	381	40–64	MRS; DLAC; Personal Info	Most frequent: sleep problems (80.9%); hot flushes/sweating (60.3%); depressed mood (60.3%); physical & mental fatigue (value missing in source); anxiety (60.3%).
Avcı, 2013 / İstanbul	Descriptive & cross-sectional	Training & Research Hospital	120	45–59	Demographic Form; MRS; MENQOL	MRS subscales: somatic (7.908±4.241), psychological (8.883±4.489), urogenital (5.733±3.694); MRS total (22.525±9.833).
Tunç, 2014 / Sivas	Descriptive & cross-sectional	State Hospital	254	≥40	Personal Info; MRS; Menopause Knowledge Form	MRS subscales: somatic (7.41±3.14), psychological (6.57±3.12), urogenital (4.94±3.92); MRS total (18.92±7.69).
Gökgöz, 2014 / Malatya	Descriptive	University Hospital	270	40–65	Demographic Form; MENQOL	Most frequent symptoms: hot flushes (86.9%), sweating (82.1%), vaginal dryness/dyspareunia (81.7%), weight gain (76.5%), muscle/joint pain (70.4%).
Görmüş, 2017 / Samsun	Descriptive & correlational	University Hospital	206	40–60	Demographic form; MRS; SQOL-F (CYKÖ)	MRS subscales: somatic (9.2±3.9), psychological (11.5±4.0), urogenital (6.4±3.2); MRS total (26.4±9.7).

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Tunçarslan, 2019 / Erzincan	Descriptive	University Hospital	297	40–60	Descriptive Form; MSPSS (ÇBASDÖ); MRS	MRS total 18.84±7.19; symptoms below moderate on scale bounds.
Parmaksız, 2019 / Kastamonu	Descriptive & cross-sectional	State Hospital	180	≤65	Data Form; SLWS; Menopausal Complaint Scale	Most frequent: hot flushes (86.7%), cold sweats (76.37%); joint pains (73.9%); nape/headache (62.2%).
Aygün, 2019 / Ankara	—	University Hospital	112	40–64	MRS; Questionnaire; BDI	Severe/very severe symptoms most often: irritability (23.2%), joint/muscle problems (22.3%), sexual problems (19.6%).
Cirban & Özsoy, 2023 / Zonguldak	Descriptive & analytical	FHC	424	40–64	MRS; MTDÖ; CMÖ; Demographic form	MRS subscales: somatic (6.23±3.58), psychological (6.43±4.45), urogenital (4.45±3.01); MRS total (17.11±9.43).
Uyanık, 2020 / İstanbul	Descriptive & correlational	FHC	220	45–65	Case Identification Form; MRS	Most frequent symptom: hot flushes (62.3%).
Çulha, 2020 / İzmir	—	University Hospital	384	≥45	Questionnaire; MRS	MRS subscales: somatic (5.46±2.70), psychological (5.17±3.42), urogenital (2.81±2.79); MRS total (13.45±7.03).
Gökçer, 2022 / İstanbul	Descriptive	Training & Research Hospital	178	45–55	Demographic Form; ATMS (MİTÖ); MRS	MRS subscales: somatic (3.55±2.14), psychological (13.48±6.12), urogenital (5.18±3.24); MRS total (22.22±9.97).

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Bilgin, 2023 / İstanbul	Prospective & analytical	Training & Research Hospital	203	≥40	MRS; Patient Info	MRS subscales: somatic (2.70±1.88), psychological (9.58±5.04), urogenital (3.12±2.50); MRS total (15.40±7.70).
Çekici, 2023 / Çorum	Descriptive	Training & Research Hospital	184	≥40	Sociodemographic Form; MRS; NWLS (HİYKÖ)	MRS subscales: somatic (11.57±4.33), psychological (6.38±2.75), urogenital (5.85±3.41); MRS total (23.78±9.54).
Kocatepe, 2023 / İstanbul	Cross-sectional & descriptive	Training & Research Hospital	149	45–65	Questionnaire; MRS	MRS subscales: somatic (2.77±1.81), psychological (8.74±4.96), urogenital (2.91±2.41); MRS total (14.42±7.65).
Aral, 2024 / İstanbul	Cross-sectional	City Hospital	213	45–65	Participation Form; MRS	MRS subscales: somatic (5.52±4.14), psychological (4.96±4.51), urogenital (3.92±3.59); MRS total (14.40±10.25).
Sertkaya, 2024 / İstanbul	Cross-sectional & descriptive	FHC	245	40–55	Personal Info; MRS	MRS subscales: somatic (5.67±2.96), psychological (7.55±3.21), urogenital (3.43±2.78); MRS total (16.65±7.16).

Abbreviations

FHC: Family Health Center (primary care);
KETEM: Cancer Early Diagnosis, Screening and Education Center;
MRS: Menopause Rating Scale (MSDÖ);
MENQOL: Menopause-Specific Quality of Life Questionnaire (MÖYKÖ);
ATMS (MİTÖ): Attitude Toward Menopause Scale;
MTDÖ: Menopause Attitude Evaluation Scale;
MSPSS (ÇBASDÖ): Multidimensional Scale of Perceived Social Support;
ASEX: Arizona Sexual Experiences Scale;

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SQOL-F (CYKÖ): Sexual Quality of Life Questionnaire-Female; SF-36: 36-Item Short Form Health Survey;
BDI (BDE): Beck Depression Inventory;
MSBF: Menopause Symptom Coping Form;
BTATÖ: Attitudes Toward Complementary and Alternative Medicine Scale;
DLAC: Daily Living Activities Checklist;
SLWS: Sense/Meaning in Life Scale;
NWLS (HİYKÖ): Nursing Work-Life Quality Scale;
ÖEYÖ: Self-Efficacy Scale;
CMÖ: Sexual Myths Scale.

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Table 2. Harmonized reporting of studies assessing attitudes toward menopause among women in Türkiye.

Authors, year / location	Study design	Setting	Sample, n	Age, years	Attitude instrument	Outcome format reported in primary study	Scale-based result, mean ± SD	Categorical / proportional result	Harmonized interpretation	Use in synthesis
Özer & Gözükara, 2016 / Şanlıurfa	Descriptive	FHC	300	45–88	Questionnaire	Proportional / narrative	NA	96.7% viewed menopause positively because they were freed from childbearing	Positive attitude reported descriptively	Narrative synthesis only; not included in pooled mean
Tümer & Kartal, 2018 / Muğla	Descriptive, cross-sectional	Cultural centre	152	43–60	ATMS / MİTÖ	Continuous scale score	46.15 ± 11.68	NA	Positive attitude	Included in ATMS pooled mean
Yaşar & Yeyğel, 2023 / Türkiye	Descriptive	Online survey	297	45–60	ATMS / MİTÖ	Continuous scale score	46.04 ± 14.46	NA	Positive attitude	Included in ATMS pooled mean
Dündar & Aksu, 2021 / Aydın	Analytical, cross-sectional	KETEM	359	40–64	ATMS / MİTÖ	Continuous scale score	35.24 ± 6.13	NA	Negative attitude	Included in ATMS pooled mean
Tezce & Beydağ, 2021	Descriptive, cross-sectional	Training and research	110	NR	MTDÖ; SQOL-F	Proportional / categorical	NA	60.9% reported negative	Negative feelings reported descripti	Narrative synthesis only;

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/ Kocaeli		hospital						feelings upon entering menopause	vely	not included in pooled mean
Gümüşay & Erbil, 2019 / Black Sea region	Descriptive	Training and research hospital	197	45–65	ATMS / MİTÖ	Continuous scale score and proportional result	36.06 ± 7.34	72.1% had negative attitudes toward menopause	Negative attitude	ATMS mean included in pooled mean; percentage reported narratively
Ağralı, Ünal & Kaya Şenol, 2022 / Osmaniye	Descriptive	State hospital	180	39–68	MTDÖ; TTTÖ	Continuous scale score	24.06 ± 7.40	NA	Moderate attitude level	Descriptive scale-based synthesis only; not pooled with ATMS
Özer Yurdal, Özsoy & Karaçam, 2024 / Çanakkale	Analytical, cross-sectional	University hospital; state hospital; FHC; KETEM	250	40–65	ATMS / MİTÖ	Continuous scale score	47.08 ± 12.37	NA	Positive attitude	Included in ATMS pooled mean
Ünlü et al., 2022 / Tokat	Descriptive, cross-sectional	FHC	870	40–60	MTDÖ	Continuous scale score	26.80 ± 7.00	NA	Negative menopausal attitude	Descriptive scale-based synthesis only; not pooled with ATMS
Cirban & Özsoy	Descriptive, analyti	FHC	424	40–64	MTDÖ	Continuous scale	27.86 ±	NA	Above moderate /	Descriptive scale-

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, 2023 / Zonguldak	cal					score	8.06		positive attitude	based synthesis only; not pooled with ATMS
Gökçer, 2022 / İstanbul	Descriptive	Training and research hospital	178	45–55	ATMS / MİTÖ	Continuous scale score	43.63 ± 16.12	NA	Positive attitude	Included in ATMS pooled mean

Abbreviations: FHC: Family Health Centre; KETEM: Cancer Early Diagnosis, Screening and Education Centre; ATMS / MİTÖ: Attitude Toward Menopause Scale; MTDÖ: Menopause Attitude Evaluation Scale; SQOL-F: Sexual Quality of Life Questionnaire–Female; TTTÖ: Attitudes Toward Using Complementary Therapies Scale; NA: not applicable; NR: not reported in the original study.

Table note: Outcome reporting was harmonized according to the type of data available in the primary studies. Continuous scale-based outcomes were extracted as mean ± standard deviation when available. Categorical or proportional findings were reported separately and were not transformed into mean scores. Narrative-only findings were summarized descriptively. Studies using ATMS/MİTÖ with available mean, standard deviation, and sample size were included in the pooled ATMS analysis. Studies using MTDÖ or reporting only categorical/proportional or narrative outcomes were not statistically pooled with ATMS results because of differences in measurement instruments or insufficient information for valid transformation. NR indicates not reported in the original study. No imputation was performed for missing data.

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Table 3. Risk-of-bias assessment of studies assessing attitudes toward menopause using the JBI Critical Appraisal Checklist for cross-sectional studies. (JBI Critical Appraisal Checklist for cross-sectional studies-Codes: Y = Yes; N = No; S1–S8 = JBI items; Quality score = % "Yes")

Study	S1	S2	S3	S4	S5	S6	S7	S8	Overall quality
Ağralı, Ünal & Kaya Şenol, 2022	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Cirban & Özsoy, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Dündar & Aksu, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Gökçer, 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Gümüşay & Erbil, 2019	Y	N	Y	Y	Y	Y	Y	Y	Good (87.5%)
Özer & Gözükara, 2016	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer Yurdal, Özsoy & Karaçam, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tezce & Beydağ, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tümer & Kartal, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Ünlü et al., 2022	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Yaşar & Yeyğel, 2023	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Item-level "Yes" proportion	**100%**	**90.9%**	**100%**	**100%**	**81.8%**	**63.6%**	**100%**	**100%**	

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Table 4. Risk-of-bias assessment of studies assessing menopausal symptoms using the JBI Critical Appraisal Checklist for cross-sectional studies. (JBI Critical Appraisal Checklist for cross-sectional studies -Codes: Y = Yes; N = No; S1–S8 = JBI items; Quality score = % "Yes").

Study	S1	S2	S3	S4	S5	S6	S7	S8	Overall quality
Aksoy Derya, Altıparmak & Öztaş, 2021	Y	N	Y	Y	Y	N	Y	Y	Moderate (75%)
Alpaslan Arar & Erbil, 2023	Y	N	Y	Y	Y	Y	Y	Y	Good (87.5%)
Aral, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Avcı, 2013	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Aygün, 2019	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Bilgin, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Cirban & Özsoy, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Çakıl & Ünsal, 2020	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Çakır Palaz & Yavaş, 2025	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Çekici, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Çelik Sis & Pasinlioğlu, 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Çulha, 2020	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Darici Koçan & Cangöl, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Demirtaş & Şahin, 2024	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Dişli et al., 2022	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Dündar & Aksu, 2021	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Engindeniz, Ertürk & Aytekin, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Erdem Çetin & Eroğlu, 2015	Y	Y	N	N	N	N	Y	Y	Poor (50%)
Gökçer, 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Gökgöz, 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)

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Görmüş, 2017	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Kızılırmak & Seviğ, 2011	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Kocatepe, 2023	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Kurt & Arslan, 2020	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer & Gözükara, 2016	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Özer Yurdal, Özsoy & Karaçam, 2024	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Parmaksız, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Polat & Karasu, 2022	Y	N	Y	Y	Y	N	Y	Y	Moderate (75%)
Şentürk Erenel et al., 2015	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Sertkaya, 2024	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Tunç, 2014	N	Y	Y	Y	Y	Y	Y	Y	Good (87.5%)
Tunçarslan, 2019	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Tümer & Kartal, 2018	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Uludağ et al., 2014	Y	Y	Y	Y	N	N	Y	Y	Moderate (75%)
Uyanık, 2020	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Ünlü et al., 2022	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Yaşar & Yeyğel, 2023	Y	Y	Y	Y	Y	Y	Y	Y	Good (100%)
Zorlu et al., 2022	Y	Y	Y	Y	Y	N	Y	Y	Good (87.5%)
Item-level "Yes" proportion	**97.4%**	**92.1%**	**97.4%**	**97.4%**	**68.4%**	**28.9%**	**100%**	**100%**	

Note: S1–S8 refer to the eight items of the JBI Critical Appraisal Checklist for cross-sectional studies. S6 assesses whether strategies to deal with confounding factors were stated. Because low compliance with S6 may affect the internal validity of observational cross-sectional studies, the overall appraisal was interpreted cautiously.

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Table 5. Exploratory random-effects subgroup analysis of MRS total score by geographical region.

Region	k	Pooled mean	Z	$Q_{between}$ (Q_b)
Mediterranean	2	19.850	11.542***	
Eastern Anatolia	1	22.670	45.614***	
Aegean	2	13.944	23.609***	
Black Sea	4	20.174	6.941***	**819.130*** **
Marmara	11	15.359	10.599***	
Türkiye (nationwide)	1	15.720	27.476***	
Central Anatolia	4	19.883	51.414***	

Note. MRS: Menopause Rating Scale. Q_between indicates the between-region heterogeneity test.*p < 0.05, **p < 0.01, ***p < 0.001

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Table 6. Overall random-effects meta-analysis of MRS total score (k = 24).

Outcome	Pooled mean	95% CI lower	95% CI upper	Z	Q	I^2 (%)
MRS total score	17.423	15.544	19.302	18.174***	2063.082***	98.837

Note. MRS: Menopause Rating Scale; CI: confidence interval. Higher MRS scores indicate greater menopausal symptom severity.*p < 0.05, **p < 0.01, ***p < 0.001.

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Table 7. Exploratory random-effects subgroup analysis of MRS subscale scores (k=24).

MRS Subscale	k	Pooled Mean	Z	$Q_{between}$ (Q_b)
Psychological	24	6.792	12.931***	
Somatic	24	5.790	14.898***	1458.161***
Urogenital	24	4.040	15.735***	

Note. MRS: Menopause Rating Scale. Q_between indicates the between-subscale heterogeneity test. *p < 0.05, **p < 0.01, ***p < 0.001.

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Table 8. Random-effects meta-analysis of attitudes toward menopause (ATMS/MİTÖ total score; k = 6).

Outcome	Pooled mean	95% CI lower	95% CI upper	Z	Q	I^2 (%)
ATMS/MİTÖ total score	40.81	35.69	45.94	15.61***	241.69***	98.76

Note. ATMS/MİTÖ: Attitude Toward Menopause Scale; CI: confidence interval. *p < 0.05, **p < 0.01, ***p < 0.001

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