



## Mosul Journal of Nursing

Online ISSN: 2663-0311 - Print ISSN: 2311-8784

Website: <https://mjn.mosuljournals.com>



# Knowledge of Women Regarding Menopause Phenomenon: A cross-sectional study

Renas Mohammed Khidhir<sup>1</sup> , Mona Gamal Mohamed<sup>2</sup> , Sirwan Khalid Ahmed<sup>3\*</sup> , Ramya Kundayi Ravi<sup>2</sup> , Nilda Ogsimer<sup>2</sup> ,

Department of Maternal and Neonatal Nursing, University of Raparin, Rania, Sulaimani, Kurdistan Region, 46012, Iraq

Email ID: [renas.mohamad@uor.edu.krd](mailto:renas.mohamad@uor.edu.krd)

RAK College of Nursing, RAK Medical and Health Sciences University, Ras Al Khiamah, UAE.

Email: [mona@rakmhsu.ac.ae](mailto:mona@rakmhsu.ac.ae)

RAK College of Nursing, RAK Medical and Health Sciences University, Ras Al Khiamah, UAE.

Email: [ramya@rakmhsu.ac.ae](mailto:ramya@rakmhsu.ac.ae)

RAK College of Nursing, RAK Medical and Health Sciences University, Ras Al Khiamah, UAE.

Email – [nilda@rakmhsu.ac.ae](mailto:nilda@rakmhsu.ac.ae)

**Sirwan Khalid Ahmed**

Department of Adult Nursing, College of Nursing, University of Raparin, Rania, Sulaimani, Kurdistan Region,

Iraq. Email: [sirwan.k.ahmed@gmail.com](mailto:sirwan.k.ahmed@gmail.com)

### Article information

#### Article history:

Received May 19, 2023

Accepted on September 15, 2023

Available online January 12, 2024

#### Keywords:

Knowledge, women's, health, menopause, Iraqi Kurdish, cross-sectional

#### Correspondence:

Sirwan Khalid Ahmed

[sirwan.k.ahmed@gmail.com](mailto:sirwan.k.ahmed@gmail.com)

### Abstract

**Background:** Menopause causes overwhelming physiological, emotional, and social dysfunction that has an impact on women's health. Women may experience compromised bodily functioning if they are unable to promptly identify and report any adverse effects. Many changes affect health, including vaginal dryness, hot flushes, sweating, and emotional changes. These symptoms are believed to be associated with women's health. Women must possess appropriate knowledge concerning health conditions before the onset of menopause to promote wellness and prevent exacerbation of the effects of menopause. Objective: This study attempts to identify the level of Knowledge of Iraqi Kurdish women regarding Menopause phenomenon in the Kurdistan region of Iraq.

**Methods:** This cross-sectional study was conducted in the Kurdistan region of Iraq between November 12, 2021, and April 3, 2022. A purposive sampling technique was used for data collection and 130 women participated.

**Results:** Most (73.1%) participants were in the pre-menopausal period before the age of 40, while 45.4% claimed that menopause occurred after the age of 55. The majority (91.5%) believed that estrogen hormones changed during middle age. In addition, 20.8% of the participants had hypertension and feelings of anxiety. Most (74.6%) sought employment at their children's schools. Finally, a high percentage of the sample women had a moderate level of information.

**Conclusion:** Healthcare providers need to prepare and implement educational interventional programs to further educate women and prepare them to improve their health and well-being during this phase of their lives.

DOI: [10.33899/mjn.2024.182704](https://doi.org/10.33899/mjn.2024.182704), Authors, 2023, College of Nursing, University of Mosul.

This is an open-access article under the CC BY 4.0 license (<http://creativecommons.org/licenses/by/4.0/>).

## **Introduction**

Menopause is part of the aging process in women and is regarded as the finale of every woman's best year, at which hormone production declines as a result of ovarian malfunction. Menopause has a direct impact on women's physical, psychological, social, and emotional well-being. Globally, 500 million women aged 42–55 years have reported adverse experiences upon onset of menopause, and this number has been projected to increase to 1200 million by 2030 (Heer et al., 2020). The average age at natural menopause onset has been reported to be 51 years among women from the United States, (Shahzad et al., 2021) 48.5 years among Jordanian women, (Bustami et al., 2021) 51–52 years among Emirati women, 48 years among Iran women, (Tanha et al., 2021) and 48.9 years among women from Asian countries, such as China (Wang et al., 2021). After menopause, women are at a high risk for developing noncommunicable diseases, including cardiovascular diseases, diabetes mellitus, and cancer, which are the major causes of mortality among women worldwide (Wang et al., 2021).

The menopause phenomenon results from a decrease in estrogen production, which reduces the frequency of ovulation and remarkably alters the functioning of the reproductive system. The inability of ovaries to change the hormone levels leads to adverse symptoms, such as headaches, sleep disturbances, and mood swings, as well as vasomotor symptoms (e.g., hot flashes, night sweats, increased anxiety). Vasomotor symptoms such as night sweats and hot flashes are the only specific symptoms linked to menopause (Santoro et al., 2021). The immediate side effects of menopause are related to a deficit in estrogen, which is associated with health problems among women, including vasomotor symptoms, urogenital atrophy, osteoporosis, cardiovascular disease, cancer, and reduced cognitive and sexual functions (Eftekhar et al., 2021). The decline in estrogen levels contributes to the development of vasomotor symptoms, such as hot flashes and night sweats, which are considered the first symptoms of menopause experienced by 75% of premenopausal women (Peacock & Ketvertis, 2021). This process affects the temperature center of the brain (Viotti et al., 2021).

Menopause negatively affects women's lives, and severe signs and symptoms may considerably affect not only their personal and social functioning but also their quality of life. In 2022, Özkan et al. conducted a comparative study between women in Turkey and Poland and reported that depression scores were higher among premenopausal women, whereas psychological health scores, social relationship scores, and environmental relationship scores were lower among Polish women (Özkan et al., 2022). The frequency and intensity of psychological, vasomotor, and somatic symptoms, which all have a significant negative effect on the quality of life, are higher during the perimenopausal stage (Górecka & Krzyżanowska, 2022). In Iran, women had reported experiencing severe adverse effects of menopause, which had affected their personal and social well-being and, thus, their health status (Nazarpour et al., 2020).

Menopause causes overwhelming physiological, emotional, and social dysfunctions that affect women's health. Women may experience compromised bodily functioning if they are unable to promptly identify and report adverse effects. Several symptoms of menopause, such as vaginal dryness, hot flashes, sweating, and emotional changes, can affect women's health (Muharam et al., 2021). Hence, women must possess appropriate knowledge regarding health conditions prior to the onset of menopause in order to promote their wellness and prevent the exacerbation of the effects of menopause. Such knowledge may enhance the understanding of normal changes, thereby facilitating the identification and differentiation of menopausal symptoms from other disease conditions (Hickey et al., 2022). Menopausal women may also identify critical information that would aid strategic programs to raise awareness and improve their quality of life (Kafaei-Atria et al., 2022). The possession of related knowledge will help women to embrace inevitable hormonal changes that could affect their psychological well-being, and women's knowledge and attitudes related to menopause would aid in establishing coping strategies with a positive outlook. Furthermore, the deterioration of physical, mental, and emotional health among women motivates

healthcare workers to develop health management strategies for coping with the adverse effects of menopause, and relevant knowledge will enable health practitioners to collaborate in determining and alleviating adverse signs and symptoms. These health management strategies could improve health conditions, thereby enhancing women's quality of life.

Hormonal therapy is recognized as the standard treatment for hormonal dysfunction and has been proven to alleviate adverse signs and symptoms during the early stages of menopause. According to the vast majority of international consensuses, hormone therapy during menopause should aim at reducing the vasomotor symptoms and urinary atrophy. Menopausal women require a wide range of information, including information on cancer, clinical signs of menopause, and non-hormonal treatment options (Rees et al., 2022). In addition to pharmacological treatments, non-pharmacological interventions (e.g., maintaining a healthy lifestyle) are highly recommended by experts. Therefore, it is important for stakeholders to improve policies that cater to menopausal women's wellness. Additionally, healthcare policies and decision-making must be reliable, sustainable, and accurate to improve women's understanding and thus help them achieve peace of mind and happiness (Hassan et al., 2022). The provision of evidence-based information may help women to prepare for changes and transition, empower them to manage adverse menopausal symptoms, and inculcate confidence in facing challenges during the menopausal life stage (Wang et al., 2021).

The current population has changed its lifestyle, nutrition, and knowledge sources. An appropriate understanding pertaining to the occurrence of certain physical, mental, social, and psychological changes during menopause would help women to cope with these changes with better readiness. A considerable number of women experience menopause without adequate understanding of the physiological changes and related symptoms, leading to feelings of instability and confusion. Hence, the acquisition of knowledge is imperative for women experiencing menopause in order to mitigate potential repercussions. Acquiring appropriate knowledge can result in a reduction of physical and psychological symptoms. The present study aimed to determine the level of knowledge regarding

menopause among Iraqi Kurdish women in the Kurdistan region of Iraq.

## **Methods**

### **Design and time frame of the study**

This cross-sectional study was conducted on 130 women in the Kurdistan region of Iraq between November 12, 2021, and April 3, 2022. A purposive sampling technique was used for data collection. This study adhered to the STROBE reporting guidelines and checklist for observational research.

### **Setting and aim**

A group of women from the Rania district in the Kurdistan region of Iraq participated in this study. This study attempted to evaluate the level of knowledge regarding menopause among menopausal women in the Kurdistan region of Iraq.

### **Sampling and sample size**

As previously mentioned above, a purposive sampling technique was employed for data collection. Considering that no previous studies have examined women's knowledge about menopause in the Kurdistan region of Iraq, the sample size for this study was calculated as 130 women, assuming a response rate of 50% with 95% confidence interval and error margin of 5%.

### **Inclusion and exclusion criteria**

Women aged between  $\geq 18$  years and  $< 60$  years who agreed to participate in the study were included. Women aged  $< 18$  years or  $> 60$  years and those who were unable to communicate such as speech disorders were excluded from this study.

### **Study tools**

In order to properly collect data and to achieve the goals, a questionnaire was constructed by thoroughly reviewing previous studies in the literature (Hassanzadeh et al., 2003; Noroozi et al., 2013; Nusrat et al., 2008; Shahzad et al., 2021). The questionnaire consisted of the following parts: Part I comprised the sociodemographic attributes of the sample (e.g., age, educational level, religion, marital status) and Part II pertained to women's knowledge regarding menopause and comprised 22 multiple-choice questions covering all expected knowledge about menopause (e.g., definition, expected age, causes of death, signs and symptoms, side effects, hormonal

changes, behavioral changes, lifestyle factors such as physical activity and exercise). A score of 1 indicated a “correct” response, whereas a score of 0 indicated an “incorrect” response. Consequently, the overall score ranged from 0 to 22, with scores of 17.1–22, 11.1–17, and 0–11 indicating better knowledge, moderate knowledge, and poor knowledge, respectively.

### Validity and reliability

To accomplish the current goals, content validity analyses of the original instrument were conducted by a panel of 13 gynecologic and nursing specialists, who evaluated the questionnaire’s readability, usefulness, and completeness. A pilot study involving 20 female participants was performed prior to data collection. Pearson’s correlation was adopted as a method for measuring trustworthiness, and a total of 20 women were randomly selected using an evaluation instrument to determine the questionnaire’s accuracy. The interview was conducted with the women who composed the sample and was directed by the questions on the questionnaire (Ahmed, 2024). The test–retest method and Pearson’s correlation coefficient were used to ensure a high degree of reliability and stability ( $r$ ). Socioeconomic characteristics provided the basis for the correlations ( $r = 0.99$  and  $r = 0.96$ ). The findings of the pilot study indicated that each interview with one woman took approximately 20–30 minutes and confirmed that the questionnaire’s items were straightforward and useful. Additionally, the results of the pilot study showed that the questionnaire’s reliability in gathering data on midlife women was satisfactory. A scale was utilized to quantify and rank the questions regarding the scope of collected data.

### Ethics approval

This study was conducted in accordance with the principles embodied in the Declaration of Helsinki and was approved by the College of Nursing Ethics Committee at the University of Raparin in the Kurdistan region of Iraq (approval no.: 7/22/2644; date of approval: September 8, 2021). Written informed consent was obtained from the participants after the researchers explained the aim of the study to them.

### Statistical analysis

The data were organized and coded into computer files. Statistical analysis was performed using SPSS version 25 (IBM Corp., Armonk, NY, USA), and a statistician was consulted with regard to data analysis.

Statistical significance was set at a  $p$ -value of  $<0.05$ . Data analysis was conducted using the following approaches and degrees of significance: (1) nonsignificant,  $p > 0.05$ ; (2) significant,  $p < 0.05$ ; and (3) highly significant,  $p < 0.00$ . One-way analysis of variance was used to compare knowledge levels and age groups. The dependent variable was women’s knowledge, and the independent variable was sociodemographic characteristics.

## RESULTS

A total of 130 women participated in this study. As shown in **Table 1**, 46.2% of the participants had completed secondary school, 99.2% were Muslim, and 63.8% were married. Of participants, 20.8% had hypertension and anxiety, 4.6% reported pregnancy and preeclampsia, and 74.6% sought employment at their children’s schools (Table 2). Participants aged 55–65 years accounted for 42.3% of the sample, and the majority (80%) of the participants regarded cardiovascular disease as a midlife disease. The participants identified more than one vasomotor symptom, with hot flashes (55.4%) and irregular menstrual cycles (33.8%) being the most frequently reported symptoms. Of the participants, 52.3% believed that they were in the premenopausal stage. As shown in **Table 3**, 73.1% of the participants were in the premenopausal period before the age of 40 years, whereas 45.4% claimed that menopause occurred after 55 years of age. Overall, 91.5% of women believed that their estrogen levels changed at midlife, 66.2% believed that estrogen and progesterone were commonly replaced hormones during midlife, and 46.9% believed that estrogen caused urinary tract atrophy.

Overall, 50% of the participants identified anovulation as the cause of noncyclic uterine bleeding (Table 4). Approximately 72% of the participants identified depression as the most common sign and symptom of psychological change. Furthermore, 63.1% of participants identified socioeconomic status as a factor influencing healthcare services, whereas 56.4% considered that psychological factors played a role in life. The majority (79.2%) of participants considered menopause to be a risk disease disorder. As shown in Table 5, 83.1% of the participants identified hypertension as a common midlife disease. At midlife, the majority of participants claimed to be taking

vitamin D and calcium supplements. Among them, 77.7% deemed history screening as necessary and important to the nursing process, and 61.5% believed that chronic disease prevention was an important intervention for women. Hysterectomy (57.7%) was the most common surgical procedure performed at midlife among the participants (Table 6). Of participants, 98.5% considered physical activity as the most important intervention for preventing arthritis and osteoporosis, and 99.2% believed that reducing

arthritis, osteoporosis, and cardiovascular disease was important to prevent weight gain. One-way analysis of variance indicated that women’s knowledge levels and their age groups did not significantly differ ( $F = 1.165$ ,  $p = 0.330$ ) (Table 7). Only 30.76% of the participants showed good knowledge, whereas 69.24% had moderate knowledge regarding menopause, menopausal symptoms, complications, and health management during this phase (Figure 1).

**Table 1.** Distribution of women’s demographic attributes.

| <b>Variables</b>              | <b>Frequency</b> | <b>%</b>     |
|-------------------------------|------------------|--------------|
| <b>Age group</b>              |                  |              |
| 20–30 years                   | 75               | 57.7         |
| 31–40 years                   | 42               | 32.3         |
| 41–55 years                   | 13               | 10           |
| <b>Educational level</b>      |                  |              |
| Primary school graduate       | 10               | 7.7          |
| Secondary school graduate     | 60               | 46.2         |
| Institute graduate            | 29               | 22.3         |
| Nursing college graduate      | 31               | 23.8         |
| <b>Total</b>                  | <b>130</b>       | <b>100.0</b> |
| <b>Religion</b>               |                  |              |
| Muslim                        | 129              | 99.2         |
| Others                        | 1                | .8           |
| <b>Total</b>                  | <b>130</b>       | <b>100.0</b> |
| <b>Marital status</b>         |                  |              |
| Single                        | 44               | 33.8         |
| Married                       | 83               | 63.8         |
| Without children and divorced | 1                | .8           |
| With children and divorced    | 2                | 1.5          |
| <b>Total</b>                  | <b>130</b>       | <b>100.0</b> |

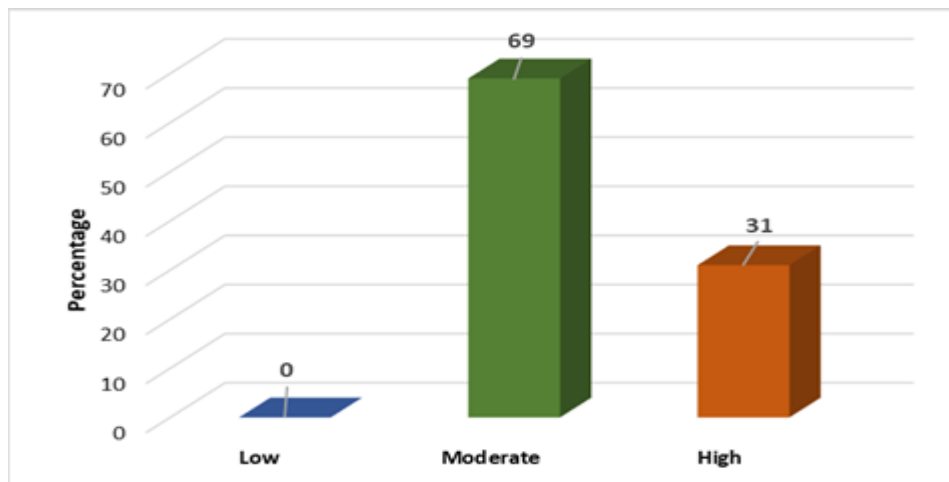
**Table 2.** Sample distribution regarding information related to women's health at midlife.

| Items concerned with information  |         |        |                            |
|---|---------|--------|----------------------------|
| Menopausal women  | Yes (n) | No (n) | Percentage of true answers |
| Women had hypertension and anxiety  | 27      | 103    | 74.6                       |
| Changes in women that occurred when their children finished school and left their home at midlife | 97      | 33     |                            |
| Women were pregnant and had preeclampsia  | 6       | 124    |                            |
| Women's age at menopause  |         |        | 36.2                       |
| 35–45 years   | 28      | 102    |                            |
| 45–55 years   | 47      | 83     |                            |
| 55–65 years   | 55      | 75     |                            |
| Disease during menopause  |         |        |                            |
| Mental disease  | 11      | 119    | 80.0                       |
| Cardiovascular disease  | 104     | 16     |                            |
| Anemia  | 15      | 115    |                            |
| Symptoms of instability upon onset of vasomotor symptoms  |         |        |                            |
| Bradycardia   | 14      | 116    |                            |
| Hot flushes   | 72      | 58     | 55.4                       |
| Irregular menstrual cycles  | 44      | 86     |                            |
| Stage of women  |         |        |                            |
| Menstruation  | 53      | 77     | 6.9                        |
| Premenopause  | 68      | 62     |                            |
| Late menopause  | 9       | 121    |                            |

*Knowledge of Women Regarding Menopause Phenomenon*

**Table 3.** Sample distribution regarding information related to women’s health at midlife.

| Items concerned with information                       | Yes (n) | No (n) | Percentage of true answers |
|--|---------|--------|----------------------------|
| Period before the age of 40 years                      |         |        |                            |
| Menopause  | 18      | 112    | 73.1                       |
| Premenopause   | 95      | 35     |                            |
| Premature menopause                                    | 17      | 113    |                            |
| Menopause occurring after the age of 55 years          |         |        |                            |
| Late menopause   | 28      | 102    | 33.1                       |
| Postmenopause  | 43      | 87     |                            |
| Menopause  | 59      | 71     |                            |
| Hormones changed during menopause                      |         |        |                            |
| Prolactin  | 11      | 119    | 91.5                       |
| Estrogen   | 119     | 11     |                            |
| Hormones were commonly replaced in menopause           |         |        |                            |
| Estrogen and progesterone                              | 86      | 44     | 66.2                       |
| Prolactin  | 13      | 117    |                            |
| Adrenalin  | 31      | 99     |                            |
| Which hormone deficiency caused urinary tract atrophy? |         |        |                            |
| Progesterone   | 33      | 97     | 46.9                       |
| Testosterone   | 36      | 94     |                            |
| Estrogen   | 61      | 69     |                            |



**Figure 1:** Shows levels of knowledge of women about menopause phenomenon.

**Table 4.** Sample distribution regarding information related to women's psychological changes in life.

| Items concerned with knowledge              |         |        |                            |
|---|---------|--------|----------------------------|
| Noncyclic uterine bleeding can lead to:     | Yes (n) | No (n) | Percentage of true answers |
| Anovulation                                 | 65      | 65     |                            |
| Ovulation                                   | 46      | 84     | 50.0                       |
| Oocyte                                      | 19      | 111    |                            |
| Signs and symptoms of psychological changes |         |        |                            |
| Fatigue                                     | 13      | 117    | 17.7                       |
| Depression                                  | 94      | 36     |                            |
| Mood disorder                               | 23      | 107    |                            |
| Factors for healthcare services             |         |        |                            |
| Socioeconomic factors                       | 82      | 48     |                            |
| Physical factors                            | 27      | 103    | 20.8                       |
| Personal factors                            | 21      | 109    |                            |
| Factors playing a role in life              |         |        |                            |
| Psychological factors                       | 71      | 59     | 54.6                       |
| Social factors                              | 48      | 82     |                            |
| Smoking and tobacco factor                  | 11      | 119    |                            |
| Risk of health disorders                    |         |        |                            |
| Low educational level                       | 13      | 117    |                            |
| It's disorder of risk of disease            | 103     | 27     | 79.2                       |
| Confidence in the belief that one has faith | 14      | 116    |                            |



**Table 5.** Sample distribution regarding information related to women's age at midlife.

| Items concerned with information               |         |        |                           |
|--|---------|--------|---------------------------|
| Common chronic diseases in women at midlife    | Yes (n) | No (n) | Percentage of true answer |
| Hypertension                                   | 108     | 22     | 83.1                      |
| Renal disease                                  | 20      | 110    |                           |
| Hepatic disease                                | 2       | 128    |                           |
| Diet during menopause                          |         |        |                           |
| Vitamin D and calcium supplements              | 65      | 65     | 50.0                      |
| High fat and cholesterol                       | 42      | 88     |                           |
| High sodium                                    | 23      | 107    |                           |
| Necessary and important to the nursing process |         |        |                           |
| History screening                              | 101     | 29     | 77.7                      |
| Physical examination                           | 28      | 102    |                           |
| Surgical process                               | 1       | 129    |                           |
| Important intervention for women               |         |        |                           |
| Prevention of chronic diseases                 | 80      | 50     | 61.5                      |
| Provision of information and knowledge         | 36      | 94     |                           |
| Health promotion                               | 14      | 116    |                           |

**Table 6.** Sample distributions regarding women's lifestyle at midlife.

| Items concerned with information                               |         |        |                            |
|--|---------|--------|----------------------------|
| Common surgical operations in women at menopause stage         | Yes (n) | No (n) | Percentage of true answers |
| Cystectomy   | 46      | 84     | 35.4                       |
| Appendectomy   | 9       | 121    |                            |
| Hysterectomy   | 75      | 55     |                            |
| Physical activity as the major protection                      |         |        |                            |
| Reduction of arthritis or osteoporosis                         | 128     | 2      | 98.5                       |
| Prevention of renal diseases                                   | 2       | 128    |                            |
| Important to prevent weight gain                               |         |        |                            |
| Reduction of arthritis/osteoporosis and cardiovascular disease | 129     | 1      | 99.2                       |
| Prevention of gastrointestinal disease                         | 1       | 129    |                            |

**Table 7.** Comparative differences in women's knowledge levels and age groups.

| Age groups   | N   | Mean  | Std. deviation | F value (one-way ANOVA) | p-value |
|--------------|-----|-------|----------------|-------------------------|---------|
| 20–26 years  | 48  | 13.81 | 2.711          | 1.165                   | 0.330   |
| 27–33 years  | 36  | 12.92 | 2.156          |                         |         |
| 34–40 years  | 26  | 13.08 | 2.622          |                         |         |
| 41–47 years  | 16  | 13.81 | 2.040          |                         |         |
| 48–54 years  | 2   | 16.00 | 2.828          |                         |         |
| ≥55 years    | 2   | 13.50 | 0.707          |                         |         |
| <b>Total</b> | 130 | 13.45 | 2.469          |                         |         |

ANOVA, analysis of variance.

## Discussion

While menopausal transition varies among different ethnicities, it usually occurs at the age of 45–55 years (Lancet, 2022; Schoenaker et al., 2014). Several factors influence the age at menopause, including but not limited to the maternal age at menopause, alcohol consumption and tobacco smoking, physical activity level, dietary habits, and socioeconomic status (Ceylan & Özerdoğan, 2015). During this period, women experience numerous physiological and psychological changes and encounter diverse stressful events or challenges, such as family problems (e.g., divorce, death, taking care of parents, having children), balancing work and personal life, and work-related issues (e.g., career goals, frustrated goal attainment, securing financial resources) (Smith-DiJulio et al., 2008; Thomas et al., 2018). Appropriate actions to increase awareness about menopause and how to deal with related problems are recommended to prepare women for this phase in their lives (Maharrshi et al., 2022; Shahzad et al., 2021).

The present study aimed to evaluate the level of knowledge regarding menopause among Iraqi Kurdish women. Our results indicated that only 30.76% of the participants had good knowledge, whereas 69.24% had moderate knowledge about menopause, menopausal symptoms, complications, and health management during this phase. These findings are consistent with the results of similar studies conducted in Iran, (Thapa & Yang, 2022) northern Taiwan, (Tsao et al., 2004) and the United Arab Emirates (Smail et al., 2020). However, in contrast to previous studies conducted on African-Americans (Sharps et al., 2003) and middle-aged Danish women, (Køster, 1991) the

participants in the present study showed satisfactory or good knowledge about menopause.

An earlier study reported that women often lacked understanding about perimenopause and that the menopausal transition usually started at 5 years before menopause (El Khoudary et al., 2019). In the present study, 73.1% of the participants correctly identified the premenopause period, whereas only one-third of the participants correctly identified the menopause (36.2%) and postmenopause (33.1%) periods.

The menopausal transition is a period of marked hormonal instability and exhibits striking variations in the levels of ovarian hormones, mainly estrogen, progesterone, and testosterone. Because of these hormonal changes, women may experience a wide range of symptoms such as depression, mood swings, urogenital symptoms, sleep problems, and vasomotor symptoms (Hajesmaeel-Gohari et al., 2021). In the current study, 91.5% of the participants correctly identified estrogen as the main hormone that causes changes at midlife, and only 46.9% of the participants identified estrogen as the hormone responsible for causing changes in the urogenital system. Of all participants, 55.4% identified hot flashes as symptoms of vasomotor instability. Depression, mood disorders, and fatigue were the manifestations commonly observed at midlife in 57.69%, 17.7%, and 10% of the study participants, respectively. Similar to the findings of the present study, earlier studies reported hot flashes, night sweats, vaginal dryness, fatigue, and joint pain as the common problems encountered during menopause (Chen et al., 2015; Santoro et al., 2015). Similar to earlier reports, nearly two-thirds (74.6%) of the participants in our study claimed that

their major concern was that women often sought employment at their children's schools, thereby leaving home.

Midlife estrogen and progesterone levels fluctuate, increasing the risk of certain health problems such as heart disease, stroke, genitourinary problems, depression, and osteoporosis (Georgakis et al., 2016; Johnson et al., 2015). Several factors play a role in the development of these complications. In the present study, 80%, 11.54%, and 8.46% of the participants considered cardiovascular disease, anemia, and mental disease as major health concerns during midlife, respectively. More than one-third (77.7%) of the participants recognized the importance of screening for the prevention of chronic diseases. However, only 61.5% of the women believed that interventions to prevent chronic diseases were important during this period. Only half (50%) of them were aware of the type of diet to be followed during midlife, and most of the study participants reported that physical activity could reduce arthritis and osteoporosis (98.5%) and that preventing weight gain would provide protection from osteoporosis and cardiovascular disease (99.2%).

Seeking healthcare advice as a preventative method is an ideal way to enhance the quality of life and avoid complications. In many societies, women are disadvantaged owing to discrimination rooted in sociocultural factors. Hence, it is particularly important to recognize factors influencing health-seeking behaviors to develop plans for improving the utilization of healthcare services, particularly among women. A previous study reported a significant association between health-seeking behaviors among women and educational level, occupation, and household income (Myint et al., 2021). The majority of the participants in the present study identified socioeconomic factors as important factors influencing health-seeking behaviors and considered psychological factors as important factors playing a major role in life.

This study has a few limitations. First, the findings of this study are limited to midlife women in the menopausal transition stage and, hence, cannot be applied to the general population. Second, there was a possibility of recall bias, as this was a cross-sectional study.

## **Conclusion**

The findings of this study suggest that Iraqi Kurdish women have a remarkably low level of knowledge about menopause and how to manage common problems that occur during this period. Healthcare providers should plan and implement intervention programs to educate women and improve their health and well-being during this phase of their lives.

## **Declarations**

### **Ethics approval and consent to participate**

This study was conducted in accordance with the principles embodied in the Declaration of Helsinki and was approved by the College of Nursing Ethics Committee at the University of Raparin in the Kurdistan region of Iraq (approval no.: 7/22/2644; date of approval: September 8, 2021). Written informed consent was obtained from the participants after the researchers explained the aim of the study to them.

### **Consent for publication**

Written informed consent for publication was obtained from the participants.

### **Author contributions**

RMK, Conceptualization; RMK, Data curation; SKA, Formal analysis; SKA and, MGM Investigation; SKA, Methodology; SKA, RMK, Project administration; SKA, MGM, RKR, and NO Writing—original draft; SKA, MGM, RKR, and NO Writing—review & editing.

### **Acknowledgments**

The authors express their heartfelt gratitude to all individuals who participated in the study.

### **Funding**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### **Competing interests**

The authors declare that they have no competing financial interests or personal relationships that may have influenced the work reported in this study.

### **Availability of data and materials.**

All data reported in this study are available from the corresponding author upon reasonable request.

## References

- Ahmed, S. K. (2024). The pillars of trustworthiness in qualitative research. *Journal of Medicine, Surgery, and Public Health*, 2, 100051. <https://doi.org/10.1016/j.gmedi.2024.100051>
- Bustami, M., Matalka, K. Z., Elyyan, Y., Hussein, N., Hussein, N., Safieh, N. A., Thekrallah, F., Mallah, E., Abu-Qatouseh, L., & Arafat, T. (2021). Age of natural menopause among Jordanian women and factors related to premature and early menopause. *Risk Management and Healthcare Policy*, 14, 199.
- Ceylan, B., & Özerdoğan, N. (2015). Factors affecting age of onset of menopause and determination of quality of life in menopause. *Turkish Journal of Obstetrics and Gynecology*, 12(1), 43–49. <https://doi.org/10.4274/tjod.79836>
- Chen, M.-N., Lin, C.-C., & Liu, C.-F. (2015). Efficacy of phytoestrogens for menopausal symptoms: a meta-analysis and systematic review. *Climacteric: The Journal of the International Menopause Society*, 18(2), 260–269. <https://doi.org/10.3109/13697137.2014.966241>
- Eftekhar, T., Ghanbari, Z., Pournali, L., Pesikhani, M. D., Darvish, S., Ayati, E., & Hashemi, M. H. (2021). Changes of Pelvic Organ Prolapse Symptoms and Quality of Life One Year After Pessary Fitting. *Acta Medica Iranica*, 59(6), 327.
- El Khoudary, S. R., Greendale, G., Crawford, S. L., Avis, N. E., Brooks, M. M., Thurston, R. C., Karvonen-Gutierrez, C., Waetjen, L. E., & Matthews, K. (2019). The menopause transition and women's health at midlife: a progress report from the Study of Women's Health Across the Nation (SWAN). *Menopause (New York, NY)*, 26(10), 1213.
- Georgakis, M. K., Thomopoulos, T. P., Diamantaras, A.-A., Kalogirou, E. I., Skalkidou, A., Daskalopoulou, S. S., & Petridou, E. T. (2016). Association of age at menopause and duration of reproductive period with depression after menopause: a systematic review and meta-analysis. *JAMA Psychiatry*, 73(2), 139–149.
- Górecka, K., & Krzyżanowska, M. (2022). Prevalence of menopausal hormone therapy and alternative methods, health benefits experienced by peri- and postmenopausal Polish women. *Menopause Review/Przegląd Menopauzalny*, 21(1), 27–36.
- Hajesmaeel-Gohari, S., Shafiei, E., Ghasemi, F., & Bahaadinbeigy, K. (2021). A study on women's health information needs in menopausal age. *BMC Women's Health*, 21(1), 1–9.
- Hassan, L. A., El-Ghany, A., & Mustafa, G. (2022). Quality of Life among Post-menopausal Women in Beni Suef University Hospital. *Port Said Scientific Journal of Nursing*, 9(2), 269–287.
- Hassanzadeh, G., Yekkezare, S., Vaziri, S., Soroorirad, B., & Darki, L. (2003). Knowledge of women about menopause in Qazvin. *Journal of Inflammatory Diseases*, 7(4), 21–25.
- Heer, E., Harper, A., Escandor, N., Sung, H., McCormack, V., & Fidler-Benaoudia, M. M. (2020). Global burden and trends in premenopausal and postmenopausal breast cancer: a population-based study. *The Lancet Global Health*, 8(8), e1027–e1037.
- Hickey, M., Hunter, M. S., Santoro, N., & Ussher, J. (2022). Normalising menopause. *Bmj*, 377.
- Johnson, J. E., Gulanick, M., Penckofer, S., & Kouba, J. (2015). Does knowledge of coronary artery calcium affect cardiovascular risk perception, likelihood of taking action, and health-promoting behavior change? *Journal of Cardiovascular Nursing*, 30(1), 15–25.
- Kafaei-Atria, M., Nasiri, S., Izadi-Avanji, F. sadat, & Abbaszadeh, F. (2022). Quality of Life and Its Relevant Factors in Menopausal Women TT -. *Gums-Hnmj*, 32(2), 109–115. <https://doi.org/10.32598/jhnm.32.2.2143>
- Køster, A. (1991). Change-of-life anticipations, attitudes, and experiences among middle-aged Danish women. *Health Care for Women International*, 12(1), 1–13. <https://doi.org/10.1080/07399339109515922>
- Lancet, T. (2022). Attitudes towards menopause: time for change. In *Lancet (London, England)* (Vol. 399, Issue 10343, p. 2243). [https://doi.org/10.1016/S0140-6736\(22\)01099-6](https://doi.org/10.1016/S0140-6736(22)01099-6)
- Maharrshi, D., Gahlot, N., Kumar, U., & Paliwal, A. (2022). Menopause related quality of life among females of rural field practice area of a tertiary care centre in Jaipur. *European Journal of Molecular & Clinical Medicine*, 9(2), 572–579.
- Muharam, R., Sumapraja, K., Pratama, G., Azyati, M., & Prabowo, K. A. (2021). Impact of IVF on the Timing and Symptoms of Menopause. *International Journal of Women's Health*, 13, 889–893.
- Myint, M. H., Ravi, Y., & Abdalqader, M. A. (2021).

- Health Seeking Behaviour of Women with Menopausal Symptoms in Tampin, Negeri Sembilan, Malaysia. *Annals of the Romanian Society for Cell Biology*, 4965–4974.
- Nazarpour, S., Simbar, M., Ramezani Tehrani, F., & Alavi Majd, H. (2020). Factors associated with quality of life of postmenopausal women living in Iran. *BMC Women's Health*, 20(1), 1–9.
- Noroozi, E., Dolatabadi, N. K., Eslami, A. A., Hassanzadeh, A., & Davari, S. (2013). Knowledge and attitude toward menopause phenomenon among women aged 40-45 years. *Journal of Education and Health Promotion*, 2(1), 25.
- Nusrat, N., Nishat, Z., Gulfareen, H., Aftab, M., & Asia, N. (2008). Knowledge, attitude and experience of menopause. *J Ayub Med Coll Abbottabad*, 20(1), 56–59.
- Özkan, S., Lewko, J., Çınar, I. Ö., Türkçü, S. G., Piechocka, D. I., Sierzantowicz, R., Ak, P. S., Lewko, K., & Alataş, S. E. (2022). Relationships between psychological symptoms and quality of life in pre-and postmenopausal Turkish and Polish women: A cross-sectional study. *Progress in Health Sciences*, 12(1), 1–10.
- Peacock, K., & Ketvertis, K. M. (2021). *StatPearls. Menopause*. Treasure Island (FL).
- Rees, M., Abernethy, K., Bachmann, G., Bretz, S., Ceasu, I., Durmusoglu, F., Erkkola, R., Fistic, I., Gambacciani, M., & Geukes, M. (2022). The essential menopause curriculum for healthcare professionals: A European Menopause and Andropause Society (EMAS) position statement. *Maturitas*, 158, 70–77.
- Santoro, N., Epperson, C. N., & Mathews, S. B. (2015). Menopausal Symptoms and Their Management. *Endocrinology and Metabolism Clinics of North America*, 44(3), 497–515. <https://doi.org/10.1016/j.ecl.2015.05.001>
- Santoro, N., Roeca, C., Peters, B. A., & Neal-Perry, G. (2021). The menopause transition: signs, symptoms, and management options. *The Journal of Clinical Endocrinology & Metabolism*, 106(1), 1–15.
- Schoenaker, D. A. J. M., Jackson, C. A., Rowlands, J. V., & Mishra, G. D. (2014). Socioeconomic position, lifestyle factors and age at natural menopause: a systematic review and meta-analysis of studies across six continents. *International Journal of Epidemiology*, 43(5), 1542–1562. <https://doi.org/10.1093/ije/dyu094>
- Shahzad, D., Thakur, A. A., Kidwai, S., Shaikh, H. O., AlSuwaidi, A. O., AlOtaibi, A. F., Carrick, F. R., & Abdulrahman, M. (2021). Women's knowledge and awareness on menopause symptoms and its treatment options remains inadequate: a report from the United Arab Emirates. *Menopause*, 28(8), 918–927.
- Sharps, P. W., Phillips, J., Oguntimalide, L., Saling, J., & Yun, S. (2003). Knowledge, attitudes, perceptions and practices of African-American women toward menopausal health. *Journal of National Black Nurses' Association: JNBNA*, 14(2), 9–15.
- Smail, L., Jassim, G. A., & Sharaf, K. I. (2020). Emirati women's knowledge about the menopause and menopausal hormone therapy. *International Journal of Environmental Research and Public Health*, 17(13), 4875.
- Smith-DiJulio, K., Woods, N. F., & Mitchell, E. S. (2008). Well-being during the menopausal transition and early postmenopause: a longitudinal analysis. *Menopause (New York, N.Y.)*, 15(6), 1095–1102. <https://doi.org/10.1097/gme.0b013e3181728451>
- Tanha, K., Fahimfar, N., Nematollahi, S., Sajjadi-Jazi, S. M., Gharibzadeh, S., Sanjari, M., Khalagi, K., Hajivalizadeh, F., Raeisi, A., & Larijani, B. (2021). Annual incidence of osteoporotic hip fractures in Iran: a systematic review and meta-analysis. *BMC Geriatrics*, 21(1), 1–8.
- Thapa, R., & Yang, Y. (2022). Attitude Toward and Associating Factors of Menopause: A Study on Cambodian Women. *SAGE Open*, 12(4), 21582440221129256.
- Thomas, A. J., Mitchell, E. S., & Woods, N. F. (2018). The challenges of midlife women: themes from the Seattle midlife women's health study. *Women's Midlife Health*, 4(1), 1–10.
- Tsao, L.-I., Chang, W.-Y., Hung, L.-L., Chang, S.-H., & Chou, P.-C. (2004). Perimenopausal knowledge of mid-life women in northern Taiwan. *Journal of Clinical Nursing*, 13(5), 627–635. <https://doi.org/10.1111/j.1365-2702.2004.00904.x>
- Viotti, S., Guidetti, G., Sottimano, I., Traverso, L., Martini, M., & Converso, D. (2021). Do Menopausal Symptoms Affect the Relationship between Job Demands, Work Ability, and

Exhaustion? Testing a Moderated Mediation Model in a Sample of Italian Administrative Employees. *International Journal of Environmental Research and Public Health*, 18(19), 10029.

Wang, M., Kartsonaki, C., Guo, Y., Lv, J., Gan, W., Chen, Z.-M., Li, L.-M., Hu, C.-G., Yang, L., & Yu, M. (2021). Factors related to age at natural menopause in China: results from the China Kadoorie Biobank. *Menopause*, 28(10), 1130–1142.