



Knowledge of Kurdish women about menopause and its related factors: A cross-sectional study in Iraq

Mryam Yaseen Yaseen ^{1*}, Fatema Mohammed Azo ², Magroom Esmail Senior ², Hamdia Mirkhan Ahmed ³, Mahabat Hassan Saeed ⁴, Wahida Abdullah Ibraheem ⁵, Pshtiwan Dahir Majeed ¹

1. Erbil Medical Technical Institute, Erbil Polytechnic University, Erbil, Kurdistan Region-Iraq
2. Soran Technical College, Erbil Polytechnic University, Erbil, Kurdistan Region-Iraq
3. College of Health Sciences, Hawler Medical University, Erbil, Kurdistan Region-Iraq
4. College of Nursing, University of Sulaimani, Kurdistan Region-Iraq
5. College of Nursing, Hawler Medical University, Kurdistan Region-Iraq

* Correspondence: Mryam Yaseen. Erbil Medical Institute, Erbil Polytechnic University. Tel: +9647504473779; E-mail: mryam.yaseen @epu.edu.iq & maryam.yassin363@gmail.com

Abstract

Background: Satisfactory knowledge about menopause is important for women to overcome related challenges. Women with greater knowledge about menopause are more likely to effectively manage its symptoms and navigate this life stage more successfully. This study aimed to determine the level of knowledge of Kurdish women about menopause, as well as to find its association with menopausal status and sociodemographic and obstetrical characteristics.

Methods: This cross-sectional study was conducted on perimenopausal (161) and menopausal women (751) who were recruited through non-probability convenient sampling in Kurdistan Region, Iraq, from April to June 2022. For the purpose of the study, a questionnaire was developed that included questions on demographic characteristics, obstetric and menstrual history, and knowledge about menopause. The data were analyzed by frequency, percentage, and chi-square test using SPSS version 25. Ordered logistic regression analysis was performed to determine the effect of demographic and obstetrical factors on some dependent's variables of knowledge.

Results: The mean age of menopausal and perimenopausal women was 54.81±5.590 and 46.99±5.688 years, respectively. The participants had more knowledge about the concept and less about the health risks of menopause. On average, menopausal women were more knowledgeable about the definition of menopause compared with perimenopausal women; the difference was highly significant. Overall, the knowledge score indicated that 44% had fair knowledge, 37.6% had poor knowledge, and 18.4% had good knowledge about menopause.

Conclusion: Although many women view menopause as a positive life event, it is important to provide them with adequate education, so they can better understand the natural process of menopause to lead a healthy life.

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Highlights

What is current knowledge?

Knowledge about the definition of menopause, age at menopause, and various symptoms of menopause is helpful to adapt to this step of life, as it is an inevitable life event. Very few studies examined the knowledge of Kurdish women regarding menopause.

What is new here?

Both menopausal and peri-menopausal Kurdish women are aware about menopause-related events but their knowledge is limited and not fully accurate.

Introduction

Menopause is the physiological ending of the menstrual cycle associated with progressing age in any woman; however, it is considered an undesirable phenomenon among various women. Somewhat this confidence is due to misconceptions about menopause and partially due to the accurate reflection of the social situation of older women in society (1).

Perimenopause, also known as the menopausal transition, begins with the first occurrence of climacteric symptoms (such as irregular menstruation cycles), characterized by increasingly infrequent menstruation due to shifting hormonal levels, and ends 1 year after menopause. Menopause is defined as the permanent cessation of menstruation, confirmed after 12 months of amenorrhea. Postmenopause refers to the time period that begins 12 months after the last menstrual period (2).

Perimenopause occurs during the 40s for most women, but some notice changes as early as their mid-30s. Women may experience subtle changes in menstrual cycle length, duration, and flow even before perimenopause. Perimenopausal symptoms are a natural part of the aging process, though some

medications, cancer treatments, and ovary surgery can speed up the process or cause menopause sooner (3). For greatest women the climacteric (menopause) extent from yearly/mid 40's to late 50's/ yearly 60's including the premenopausal years, the menopause climax year, and the postmenopausal years generally known as the change of life (4).

Peri- and postmenopausal women experience a wide range of menopause symptoms, and their lifestyle patterns and bodily, emotional, societal and spiritual adaptation. Health-promoting existence forms and psychological adaptation have been considered vital subjects. Having a better understanding of the physical, mental, social, and psychological changes that occur during menopause can help women cope with these changes more readily and confidently (5).

Menopause is important because it does have its own morbidity and acts as a risk factor for earlier mortality from subsequent chronic disease. Despite being a natural phenomenon, menopause is classified as a disease by global organizations and many countries (6). Therefore, there is a significant need for community health systems to focus on the needs of menopausal women and provide adequate support and resources to this population. Proper management of the physiological, physical, psychological, and sexual symptoms that can greatly affect the quality of life of postmenopausal women requires a good understanding of their health status, which can help them regulate their own attention and maintain a positive outlook (7). In the absence of knowledge, it is very difficult to understand how menopause affects the psychosocial and overall well-being of menopausal women.

Knowledge about the definition of menopause, age at menopause, and various symptoms of menopause is helpful to adapt to this step of life, as it is an inevitable life event. Numerous studies have demonstrated that women often have inadequate knowledge about menopause and may hold negative attitudes toward this natural life stage. According to these studies, inadequate understanding and limited access to accurate information about menopause and its symptoms are exacerbated by inconsistent delivery and social discourse (8–16).

Menopause knowledge is low in Kurdish women. Very few studies have

been conducted to evaluate the level of knowledge about menopause in Kurdish women.

This study aimed to 1) assess the knowledge of perimenopausal and menopausal Kurdish women about menopause, 2) compare perimenopausal and menopausal women, and 3) find out the association between the level of knowledge and sociodemographic and obstetrical characteristics of them.

Methods

This cross-sectional interview survey was conducted on 912 women through non-probability convenient sampling in Kurdistan Region, Iraq, from April to June 2022. To determine the sample size, we used an online sample size calculator, 95% CI, margin error of 1.96%, and population proportion of 10%. The calculated sample size was 910; however, 912 cases were recruited. The target population was perimenopausal and menopausal women aged 30-60 years old who attended the primary health care centers and maternity teaching hospitals of 3 main cities of Kurdistan Region (Erbil [n=557], Duhok [n=248], and Sulaymaniyah [n=107]). Women with psychiatric disorders, pregnant women, those unable to speak Kurdish, and those unable to participate in the interview were excluded from the study. Data collection was conducted by face-to-face interviews using a structured questionnaire as the interview guide. The questionnaire consisted of 4 parts developed for use in this study. The demographic part included questions about age, age at marriage, education level, employment, residential status, living near a green space or large green yard, family type, religion, marital status, age of husband, education of husband, polygamy marriage, and body mass index (BMI). The second part included 12 questions about obstetric history. The third part included 8 questions about menstrual history. The fourth part was related to the menopause knowledge survey of Eun Kyung Kwak et al (17), and assessed the respondents' understanding on the concept of menopause, signs and symptoms, causes, associated health risks, treatment: (38 items categorizing), and source of information about menopause.

The total knowledge score of the participants was between 1 and 38 and classified into 3 categories as follows:

- Poor knowledge: scores between 1 and 13
- Fair knowledge: scores between 14 and 26.
- Good knowledge: scores between 27 and 38

To test the validity of the interview questionnaire, the investigators presented it to 10 experts from various fields, including medicine, statistics, nursing faculty, obstetrics, and gynecology. In addition, its reliability was determined by a repeated test, in which 20 women (10 perimenopausal and 10 menopausal women) completed the questionnaire with a 10-day interval.

This study was approved by the Scientific and Ethics Committee of Erbil Medical Technical Institute, Erbil Polytechnic University (code: 2643).

All participants were informed of the study's objective, and consent for the interview was taken from the respondents.

Data analysis

Data entry and analysis were performed using SPSS version 25 (SPSS Inc, Chicago, IL, USA). Missing data were corrected and presented as mean \pm SD for continuous variables with a normal distribution, median for continuous variables without a normal distribution, and proportions for categorical variables. The chi-square test was used to determine associations. P values less than 0.05 were considered statistically significant.

Results

Characteristics of respondents

Table 1 shows the sociodemographic characteristics of the respondents. In this study, the mean age of menopausal and perimenopausal women was 54.81 ± 5.590 and 46.99 ± 5.688 years, respectively. The mean age at marriage was 19.01 ± 4.684 years for menopausal women and 19.63 ± 7.206 years for perimenopausal women. There was a statistically significant difference between the groups in age, age at marriage, level of education, occupation, residency, green space, age of husband, education level of husband, polygamy, and BMI (Table 1).

Knowledge about menopause

In general, respondents had good knowledge about the concept of menopause. On average, menopausal women were more knowledgeable about the definition of menopause compared with perimenopausal women; the difference was highly significant (Table 2).

Knowledge about signs and symptoms

There was a highly significant difference between the perimenopausal and menopausal respondents in terms of their overall knowledge about the signs and symptoms of menopause (Table 2).

Knowledge about the causes of menopause

Generally, perimenopausal women had more knowledge about the causes of menopause; there were significant differences between the perimenopausal and menopausal respondents (Table 2).

Knowledge about the associated health risks of menopause

There were no significant differences in knowledge about the health risks associated with menopause between the menopausal and perimenopausal women (Table 2).

Knowledge about treatment

There were no significant differences in knowledge about treatment between the menopausal and perimenopausal women (Table 2).

Pamphlets and scientific magazines were the main sources of information about menopause for both menopausal and perimenopausal women in this study. Generally, there were no significant differences in knowledge about the sources of information about menopause between the menopausal and perimenopausal women (Table 2).

The results indicated that 44% of the participants had fair knowledge about menopause, 37.6% had poor knowledge, and 18.4% had good knowledge.

Table 3 shows an association between menopause stages and knowledge. As it can be seen, the computed chi-square value was found to be statically highly significant different knowledge of perimenopausal and menopausal women regarding menopause. Table 3 shows that menopausal women have the highest level of knowledge about all aspects of menopause, including its concept, signs/symptoms, causes, health risks, and treatment.

Table 4 shows the association between knowledge levels and the demographic variables of Kurdish women. The computed chi-square value was found to be statically significant with all variables at a 0.05 level of significance. It further revealed that the level of knowledge was dependent on age, age at marriage, level of education, residency, living near a green space or a big green yard, type of family, religion, marital status, age of husband, education of husband, polygamy, and BMI. This table also shows only for occupation of women there were no significant association was found because the p-value is greater than (0.05).

Table 5 shows a significant association between the knowledge of women and all factors ($P < 0.05$), except for age at first pregnancy ($P > 0.05$).

Ordered regression analysis for knowledge

Table 6 shows the ordered logistic regression of knowledge with related factors. In the model, knowledge use was the dependent variable; this took the value of 1 for knowledge and 0 for factors. Age, age at marriage, age at first pregnancy, level of education, occupation, residency, religion, and marital status as independent variables were used in the model. Also, the last categories of each group of factors were used as the reference group.

According to the chi-square value (168.701), the model was statistically significant ($P < 0.01$). Thus, we concluded that there was a very highly significant relationship between the dependent variables and independent variables.

The results showed a negative relationship between the predictors of age and knowledge; women with the highest age were less likely to have knowledge compared to those with the youngest age (odds ratio [OR], 0.988; 95% CI, 0.966-1.010). A significant negative relationship was also found between age at marriage and knowledge; married women with the highest age were less likely to have knowledge compared with those with the youngest age (OR, 0.909; 95% CI, 0.875-0.945). In other words, an increase in age at marriage was associated with a decrease in the level of knowledge about menopause.

The predictor of age at first pregnancy had a positive relationship with knowledge, meaning that women with higher age at first pregnancy are more likely to have higher levels of knowledge about menopause (OR, 1.027; 95% CI, 1.004-1.050). Also, there was a significant positive relationship between religion and the level of knowledge. Compared to Yazidi women, Muslim women were 6.092 times more likely to have a higher level of knowledge, while Christian women were 0.691 times more likely to have a higher level of knowledge.

Regarding education, a negative relationship was found between level of education and level of knowledge; women with illiterate, primary, intermediate, and secondary levels of education had lower levels of knowledge compared to women with higher levels of education (OR, 0.926, 0.542, and 0.207, respectively).

The level of knowledge about menopause was lower among housewives, employed women, and self-employed women compared to retired women (OR, 0.426, 0.534, and 0.450, respectively).

The regression analysis regarding residency revealed a positive relationship between knowledge level and living in urban areas. Women living in urban areas had a higher level of knowledge compared to those living in rural areas (OR, 1.225), whereas women living in rural areas had a lower level of knowledge compared to those living in urban areas (OR, 0.691). There was a negative relationship between knowledge level and marital status; the level of knowledge about menopause was lower among married, unmarried, and widowed women compared to divorced women (OR, 0.760, 0.107, and 0.279, respectively).

Table 1. The sociodemographic characteristics of the study sample

Variables	Menopause (n=751) No. (%)	Perimenopause (n= 161) No. (%)	P value
Age groups	< 40	14(1.9)	20(12.4)
	40-45	28(3.7)	19(11.8)
	> 45	709(94.4)	122(75.8)
	Mean±SD (54.81±5.590)	Mean±SD (46.99±5.688)	0.000
Age at marriage	< 20	393(52.3)	59(36.6)
	> 20 (20-37)	358(47.7)	102(63.4)
	Mean±SD (19.01±4.684)	Mean±SD (19.63±7.206)	0.000
Level of education	Illiterate	346 (46.1)	19(11.8)
	Primary	149(19.8)	51(31.7)
	Intermediate and secondary	167 (22.2)	75(46.6)
	Higher education	89(11.9)	16(9.9)
Occupation of women	Housewife	571(76.0)	104(64.6)
	Employed	151(20.1)	48(29.8)
	Self-occupation	16(2.1)	9(5.6)
Residency	Retired	13(1.7)	104(64.6)
	Urban	507(67.5)	122(75.8)
	Suburban	189(25.2)	24(14.9)
	Rural	55(7.3)	15(9.3)
Living near a green space or a big green yard	Yes	182(24.2)	23(14.3)
	No	569(75.8)	138(85.7)
	Nuclear	539(71.8)	126(78.3)
	Extended	212(28.2)	35(21.7)
Religion	Muslim	712(94.8)	152(94.4)
	Christian	21(2.8)	5(3.1)
	Yezidi	18(2.4)	4(2.5)
Marital status	Married	618(82.3)	132(82.0)
	Unmarried	17(2.3)	14(8.7)
	Widowed	97(12.9)	12(7.5)
	Divorced	19(2.5)	3(1.9)
Age of husband	Less than 35	109(14.5)	33(20.5)
	35-45	17(2.3)	13(8.1)
	More than 45	625(83.2)	115(71.4)
Education of husband	Illiterate	304(40.5)	33(20.5)
	Primary	175(23.3)	41(25.5)
	Intermediate and secondary	194(25.8)	71(44.1)
	Higher education	78(10.4)	16(9.9)
Polygamy	Unmarried and divorced	36(4.8)	17(10.6)
	Yes	51(6.8)	3(1.9)
	No	664(88.4)	141(87.6)
Body mass index (BMI)	Underweight	5(7)	21(13.0)
	Healthy	135(18.0)	68(42.2)
	Overweight	246(32.8)	72(44.7)
	Obese	365(48.6)	17(10.6)

Table 2. Knowledge of women about menopause

Questions	Menopause (n=751)		Perimenopause (n=161)		P value
	Incorrect No. (%)	Correct No. (%)	Incorrect No. (%)	Correct No. (%)	
Knowledge about the concept of menopause					
Menopause is a natural phase in every woman's life.	132(17.6)	619(82.4)	58(36.0)	103(64.0)	0.000
Menopause is the permanent cessation of menstruation.	166(22.1)	585(77.9)	81(50.3)	80(49.7)	0.000
Menopause occurs when a woman has not had menstrual bleeding for a year.	305(40.6)	446(59.4)	103(64.0)	58(36.0)	0.000
Menopause happens when ovaries stop estrogen production.	267(35.6)	484(64.4)	74(46.0)	87(54.0)	0.013
Menopause is a condition in which the ovaries stop functioning.	266(35.4)	485(64.6)	83(51.6)	78(48.4)	0.000
Women become menopausal at the age of 48-55 years.	327(43.5)	424(56.5)	91(56.5)	70(43.5)	0.003
Knowledge about the signs and symptoms of menopause					
Irritability	333(44.3)	418(55.7)	85(52.8)	76(47.2)	0.051
Depression	299(39.8)	452(60.2)	91(56.5)	70(43.5)	0.000
Forgetfulness	343(45.7)	408(54.3)	98(60.9)	63(39.1)	0.000
Vaginal dryness	294(39.1)	457(60.9)	85(52.8)	76(47.2)	0.001
No sexual desire	298(39.7)	453(60.3)	92(57.1)	69(42.9)	0.000
Lethargy	291(38.7)	460(61.3)	99(61.5)	62(38.5)	0.000
Hot flushes	271(36.1)	480(63.9)	79(49.1)	82(50.9)	0.002
Hair loss	346(46.1)	405(53.9)	98(60.9)	63(39.1)	0.001
Short-sighted	316(42.1)	435(57.9)	104(64.6)	57(35.4)	0.000
Weight gain	359(47.8)	392(52.2)	79(49.1)	82(50.9)	0.771
Excessive sweating	289(38.5)	462(61.5)	90(55.9)	71(44.1)	0.000
Skin dryness	370(49.3)	381(50.7)	109(67.7)	52(32.3)	0.000
Urine leakage	314(41.8)	437(58.2)	95(59.0)	66(41.0)	0.000
Painful intercourse	362(48.2)	389(51.8)	108(67.1)	53(32.9)	0.000
Sleep disturbance	332(44.2)	419(55.8)	98(60.9)	63(39.1)	0.000
Knowledge about the causes of menopause					
Menopause happens as a result of a decline in hormones due to aging.	174(23.2)	577(76.8)	77(47.8)	84(52.2)	0.000
Menopause occurs due to surgery.	452(60.2)	299(39.8)	106(65.8)	55(34.2)	0.182
Menopause occurs due to medications.	419(55.8)	332(44.2)	97(60.2)	64(39.8)	0.301
Knowledge about the health risks of menopause					
Osteoporosis	409(54.5)	342(45.5)	100(62.1)	61(37.9)	0.076
Cervical cancer	469(62.5)	282(37.5)	111(68.9)	50(31.1)	0.120
High blood pressure	374(49.8)	377(50.2)	86(53.4)	75(46.6)	0.405
Stroke	476(63.4)	275(36.6)	100(62.1)	61(37.9)	0.762
Diabetes	463(61.7)	288(38.3)	109(67.7)	52(32.3)	0.150
Heart disease	461(61.4)	290(38.6)	100(62.1)	61(37.9)	0.863
Breast cancer	443(59.0)	308(41.0)	97(60.2)	64(39.8)	0.768
Colon cancer	494(65.8)	257(34.2)	103(64.0)	58(36.0)	0.662
Knowledge about treatment					
Does not usually need treatment	261(34.8)	490(65.2)	82(50.9)	79(49.1)	0.000
Hormone replacement therapy can effectively control the symptoms of menopause	356(47.4)	395(52.6)	84(52.2)	77(47.8)	0.272
Exercise	386(51.4)	365(48.6)	79(49.1)	82(50.9)	0.592
Vitamin and food supplement intake	394(52.5)	357(47.5)	84(52.2)	77(47.8)	0.947
Stop smoking (for those who smoke)	447(59.5)	304(40.5)	99(61.5)	62(38.5)	0.644
Traditional remedies	556(74.0)	195(26.0)	101(62.7)	60(37.3)	0.004
Source of knowledge					
Family members (mother, sister)	434(57.8)	317(42.2)	96(59.6)	65(40.4)	0.668
Other women (older women, coworkers, friends)	417(55.5)	334(44.5)	86(53.4)	75(46.6)	0.625
Watching TV	339(45.1)	412(54.9)	97(60.2)	64(39.8)	0.000
Scientific magazines	148(19.7)	603(80.3)	63(39.1)	98(60.9)	0.000
Books	153(20.4)	598(79.6)	63(39.1)	98(60.9)	0.000
Medical and health personnel	238(31.7)	513(68.3)	81(50.3)	80(49.7)	0.000
Internet	275(36.6)	476(63.4)	83(51.6)	78(48.4)	0.000
Pamphlet	123(16.4)	628(83.6)	37(23.0)	124(77.0)	0.046

Table 3. The comparison of perimenopausal and menopausal women regarding their knowledge

Variables	What stage are you now? (Menopause stage)		P value
	Perimenopause No. (%)	Menopause No. (%)	
	161(17.7)	751(82.3)	
Knowledge about the concept of menopause (overall)			
Poor knowledge	73(33.5)	145(66.5)	***
Fair knowledge	49(16.3)	252(83.7)	(0.000)
Good knowledge	39(9.9)	354(90.1)	
Knowledge about the signs and symptoms of menopause (overall)			
Poor knowledge	65(36.3)	114(63.7)	**
Fair knowledge	67(16.0)	353(84.0)	(0.000)
Good knowledge	29(9.3)	284(90.7)	
Knowledge about the causes of menopause (overall)			
Poor knowledge	35(25.9)	100(74.1)	***
Fair knowledge	106(18.6)	463(81.4)	(0.000)
Good knowledge	20(9.6)	188(90.4)	
Knowledge about the health risks of menopause (overall)			
Poor knowledge	73(16.6)	367(83.4)	***
Fair knowledge	71(24.7)	217(75.3)	(0.000)
Good knowledge	17(9.2)	167(90.8)	
Knowledge about treatment (overall)			
Poor knowledge	81(17.9)	371(82.1)	**
Fair knowledge	53(22.5)	183(77.5)	(0.014)
Good knowledge	27(12.1)	197(87.9)	
Overall knowledge			
Poor knowledge	98(28.6)	245(71.4)	***
Fair knowledge	50(12.5)	351(87.5)	(0.000)
Good knowledge	13(7.7)	155(92.3)	

Note: ***, **, and * indicate significance levels at 1%, 5%, and 10%, respectively.

Table 4. The association between overall knowledge and sociodemographic characteristics of the participants

Variables	Overall knowledge			P value
	Poor knowledge No. (%)	Fair knowledge No. (%)	Good knowledge No. (%)	
Age of women				
Less than 40	9(26.5)	18(52.9)	7(20.6)	***
40-45	11(23.4)	32(68.1)	4(8.5)	(0.007)
More than 45	323(38.9)	351(42.2)	157(18.9)	
Age at marriage				
Less than 20	141(31.2)	218(48.2)	93(20.6)	***
More than and equal to 20 (20-37)	202(43.9)	183(39.8)	75(16.3)	(0.000)
Level of education				
Illiterate	113(31.0)	151(41.4)	101(27.7)	***
Primary	60(30.0)	123(61.5)	17(8.5)	(0.000)
Intermediate and secondary	144(59.5)	79(32.6)	19(7.9)	
Higher education	26(24.8)	48(45.7)	31(29.5)	
Occupation of women				
Housewife	243(36.0)	310(45.9)	122(18.1)	***
Employed	85(42.7)	73(36.7)	41(20.6)	(0.346)
Self-occupation	11(44.0)	11(44.0)	3(12.0)	
Retired	4(30.8)	7(53.8)	2(15.4)	
Residency				
Urban	225(35.8)	261(41.5)	143(22.7)	***
Suburban	93(43.7)	103(48.4)	17(8.0)	(0.000)
Rural	25(35.7)	37(52.9)	8(11.4)	
Living near a green space or a big green yard				
Yes	57(27.8)	121(59.0)	27(13.2)	***
No	286(40.5)	280(39.6)	141(19.9)	(0.000)
Family type				
Nuclear	287(43.2)	300(45.1)	78(11.7)	***
Extended	56(22.7)	101(40.9)	90(36.4)	(0.000)
Religion				
Muslim	316(36.6)	386(44.7)	162(18.8)	**
Christian	11(42.3)	11(42.3)	4(15.4)	(0.015)
Yezidi	16(72.7)	4(18.2)	2(9.1)	
Marital status				
Married	264(35.2)	329(43.9)	157(20.9)	***
Unmarried	15(48.4)	15(48.4)	1(3.2)	(0.000)
Widowed	54(49.5)	51(46.8)	4(3.7)	
Divorced	10(45.5)	6(27.3)	6(27.3)	
Age of husband/partner				
Less than 35	74(52.1)	61(43.0)	7(4.9)	***
35-45	5(16.7)	19(63.3)	6(20.0)	(0.000)
More than 45	264(35.7)	321(43.4)	155(20.9)	
Education of husband				
Illiterate	118(35.0)	141(41.8)	78(23.1)	***
Primary	67(31.0)	112(51.9)	37(17.1)	(0.000)
Intermediate and secondary	129(48.7)	100(37.7)	36(13.6)	
Higher education	29(30.9)	48(51.1)	17(18.1)	
Polygamy				
Unmarried and divorced	25(47.2)	21(39.6)	7(13.2)	***
Yes	27(50.0)	26(48.1)	1(1.9)	(0.007)
No	912(36.1)	354(44.0)	160(19.9)	
Body mass index				
Underweight	4(80.0)	0(0.0)	1(20.0)	***
Healthy	52(33.3)	92(59.0)	12(7.7)	(0.000)
Overweight	124(39.5)	131(41.7)	59(18.8)	
Obese	163(37.3)	178(40.7)	96(22.0)	

Note: ***, **, and * indicate significance levels at 1%, 5%, and 10%, respectively.

Table 5. The association between the overall level of knowledge and obstetrical characteristics

Variables	Overall knowledge			P value
	Poor knowledge No. (%)	Fair knowledge No. (%)	Good knowledge No. (%)	
Gravida				
Nulligravida and unmarried	42(53.2)	34(43.0)	3(3.8)	*** (0.000)
Primigravida	4(16.0)	6(24.0)	15(60.0)	
Multigravida	100(35.5)	100(35.5)	82(29.1)	
Grand multigravida	197(37.5)	261(49.6)	68(12.9)	
Para				
Nulliparous and unmarried	42(50.0)	35(41.7)	7(8.3)	*** (0.000)
Primiparous	5 (7.6)	13(19.7)	48(72.7)	
Multiparous	139(42.0)	135(40.8)	57(17.2)	
Grand multipara	157(36.4)	218(50.6)	56(13.0)	
Abortion				
0	215(42.2)	195(38.2)	100(19.6)	*** (0.000)
1-3	122(32.2)	198(52.2)	59(15.6)	
4 and more	6(26.1)	8(34.8)	9(39.1)	
Age at first pregnancy				
Less than 20	142(38.6)	160(43.5)	66(17.9)	(0.984)
20-34	198(36.9)	238(44.3)	101(18.8)	
35 and more	3(42.9)	3(42.9)	1(14.3)	
Number of vaginal deliveries				
No (unmarried or no vaginal delivery)	70(39.5)	63(35.6)	44(24.9)	**
Yes	273(37.1)	338(46.0)	16(9)	(0.013)
Number of cesarean sections				
No (unmarried or no cesarean section)	238(36.7)	306(47.2)	104(16.0)	***
Yes	105(39.8)	95(36.0)	64(24.2)	(0.002)
History of breastfeeding				
Yes	266(35.0)	342(45.1)	151(19.9)	***
No (no breastfeeding or unmarried)	77(50.3)	59(38.6)	17(11.1)	(0.001)
Duration of breastfeeding				
No breastfeeding or unmarried	78(50.3)	60(38.7)	17(11.0)	*** (0.000)
1-12 months	107(36.4)	99(33.7)	88(29.9)	
13-24 months	89(32.4)	141(51.3)	45(16.4)	
25 months and more	69(36.7)	101(53.7)	18(9.6)	
Gynecological problem				
Yes	28(25.2)	52(46.8)	31(27.9)	***
No	315(39.3)	349(43.6)	137(17.1)	(0.003)
Contraceptive use				
Yes	87(22.4)	178(45.8)	124(31.9)	***
No contraceptive use or unmarried	256(48.9)	223(42.6)	44(8.4)	(0.000)
Hormonal method (pill, injection, patch, implement)				
no use or unmarried	289(46.5)	288(46.3)	45(7.2)	***
Using now	14(24.6)	23(40.4)	20(35.1)	(0.000)
Previously used	40(17.2)	90(38.6)	103(44.2)	
IUD				
No use or unmarried	303(44.9)	323(47.9)	49(7.3)	***
Using now	9(37.5)	11(45.8)	4(16.7)	(0.000)
Previously used	31(14.6)	67(31.5)	115(54.0)	
Barrier method (condom, cap)				
No use or unmarried	332(43.7)	366(48.2)	61(8.0)	***
Using now	2(16.7)	6(50.0)	4(33.3)	(0.000)
Previously used	9(6.4)	29(20.6)	103(73.0)	
Sterilization				
No use or unmarried	335(42.7)	389(49.6)	61(7.8)	***
Using now	2(22.2)	5(55.6)	2(22.2)	(0.000)
Previously used	6(5.1)	7(5.9)	105(89.0)	
Natural methods (abstention, schedule)				
No use or unmarried	315(43.6)	350(48.5)	57(7.9)	***
Using now	9(31.0)	15(51.7)	5(17.2)	(0.000)
Previously used	19(11.8)	36(22.4)	106(65.8)	
Breast self-examination				
Yes	136(40.6)	128(38.2)	71(21.2)	**
No	207(35.9)	273(47.3)	97(16.8)	(0.024)
Breast examination by a physician				
Yes	93(32.7)	101(35.6)	90(31.7)	***
No	250(39.8)	300(47.8)	78(12.4)	(0.000)
Age at menarche				
Less than 12	40(24.2)	47(28.5)	78(47.3)	*** (0.000)
12	57(35.4)	97(60.2)	7(4.3)	
13	113(46.3)	109(44.7)	22(9.0)	
14	76(40.0)	94(49.5)	20(10.5)	
15 and more	57(37.5)	54(35.5)	41(27.0)	

Note: ***, **, and * indicate significance levels at 1%, 5%, and 10%, respectively.

Discussion

Our study aimed to determine the level of knowledge of Kurdish women about menopause, as well as to find its association with menopausal status and sociodemographic and obstetrical characteristics. The present study found that 18.4% of women had very little knowledge about menopause, while 43.1%, 34.3%, and 20.2% had knowledge about the concept, symptoms, and health consequences of menopause. Most of these women were unschooled group. Regarding menopause knowledge based on general characteristics, the study found that more educated and younger women were more likely to have knowledge about menopause. This finding is supported by a study conducted by Eun Kyung Kwak et al (17). The poor knowledge of the participants was associated with a low level of education, as has been shown in studies conducted on Emirati women (18). In the study by Abo C C et al in Nigeria, the knowledge level of the participants was above average (19). Shahzad et al showed that the majority (n=498, 82%) of participant women had fair to poor overall knowledge about menopause (20). In a study conducted in Jordan, more than half of the

participants had knowledge about several aspects of menopause (21). A study conducted in Iran found that only 1% of the studied women had good knowledge about menopause, and 11% had poor knowledge (10).

The participants of the present study were more aware of physiological symptoms (such as hot flushes, excessive sweating, and urine leakage) but were less knowledgeable about the physical signs and symptoms of menopause (such as forgetfulness, painful intercourse, irritability, and sleep disturbance). This finding is inconsistent with the results of studies conducted by Wong LP and Nur Liyana AH. For instance, Nur Liyana AH concluded that the majority of the women studied were more aware of physical signs and symptoms of menopause (such as depression, irritability, vaginal dryness, and lethargy) but were less knowledgeable about the physiological symptoms (such as hot flushes, excessive sweating, and urine leakage) (22).

Our results also showed that most respondents proposed no definitive treatment for menopause. More than half of the respondents decided on hormone replacement therapy (HRT) as a treatment option. Almost believed in exercise

Table 6. Ordered logit model for the regression of knowledge with related factors

Variables	Coefficient	Std. Error	P value	OR
Age	-0.012	0.011	0.267	0.988
Age at marriage	-0.095	0.020	0.000	0.909
Age at first pregnancy	0.026	0.012	0.023	1.027
Level of education				
Illiterate	-0.077	0.269	0.776	0.926
Primary	-0.612	0.273	0.025	0.542
Intermediate and secondary higher education (Ref)	-1.576	0.244	0.000	0.207
Occupation				
Housewife	-0.854	0.562	0.128	0.426
Employed	-0.627	0.565	0.268	0.534
Self-occupation retired (Ref)	-0.798	0.681	0.242	0.450
Residency				
Urban	0.203	0.249	0.414	1.225
Suburban rural (Ref)	-0.369	0.275	0.180	0.691
Religion				
Muslim	1.807	0.503	0.000	6.092
Christian Yezidi (Ref)	1.222	0.633	0.054	3.394
Marital status				
Married	-0.275	0.438	0.530	0.760
Unmarried	-2.230	0.700	0.001	0.107
Widowed	-1.277	0.481	0.008	0.279
Divorced (Ref)				

Note: *, **, and *** indicate significance levels at 0.1, 0.05, and 0.01, respectively.
Chi-square = 168.701; P value = 0.000; Log likelihood = 1697.989

and vitamin and food supplement intake for treatment of menopause. The respondents' knowledge about treatment options in this study was similar to that reported in other studies. In their opinion, exercise and vitamin supplements may overcome the signs and symptoms of menopause. Also, this is supported by a study conducted by Jeffrey M. Muirthat et al (23) in 2013, concluding that an increase in the amount of physical activity performed each day resulted in a positive effect on bone mineral density at the hip, Ward's triangle, trochanter, and femoral neck. The results of the study suggest that increasing daily physical activity through simple, everyday tasks can help prevent decreases in postmenopausal bone mineral density. Unexpectedly, nearly half of the respondents believed in traditional remedies rather than HRT or were unaware of HRT (22), while studies have shown that systemic menopausal hormone therapy is effective for treating vasomotor symptoms (hot flashes and night sweats). These treatments are also effective for treating the genitourinary syndrome of menopause (24).

According to our results, the most common sources of information about menopause were family and other women (older women, coworkers, and friends), while relatively little information was obtained from medical sources. This finding may suggest a lack of communication between health care personnel and women regarding menopause. Similar to our study, Pan et al (25) reported that Taiwanese women also chose family members, particularly women from their own generation (such as mothers or sisters), as the most frequently chosen source of menopause-related information.

Data on association of level of knowledge with demographic variables, shows that the calculated chi square value was statically significant with religion, residency, type of family and at 0.05 level of significance. It additional revealed that level of knowledge was reliant on religion, occupation of women, type of family and source of information. Also, the results of the ordered logistic regression of knowledge with related factors showed that a negative relationship was present between level of education and level of knowledge; women with illiterate, primary, intermediate, and secondary levels of education had lower levels of knowledge compared to women with higher levels of education; this result is consistent with a study conducted on Korean women (6). Women with insufficient or incorrect knowledge about menopause need to be educated and empowered to contribute to health management activities and improve their knowledge and care (26). Regarding menopause knowledge, according to educational background, less educated women were more likely to be concerned with menopause (27). Also, these findings are supported by the results of previous studies (22,25). Therefore, menopause knowledge was found to be vital in improving the ability to manage menopause. This result highlights the need for the development of educational programs to improve women's knowledge about menopause.

Finally, the large number of women questioned and the diversity of participating cities are also strengths of our study. We are looking at various ages, which might be considered a significant topic to examine. The surveys are flexible because researchers can ask many different questions on a variety of topics, and the phrasing on a particular question appears to be confusing a number of respondents, survey researchers are generally limited to a single instrument for collecting data, and access to journals and articles is restricted due to international issues. Thus, we recommend the performance of a more culturally sensitive study using this study as a baseline. The same study could be made with a pretest and posttest training and control group and used a standardized questionnaire.

Conclusion

This study found a statistically significant difference in knowledge about menopause between perimenopausal and menopausal women.

Health education has a significant impact on increasing knowledge, attitudes, and practices of menopausal women toward postmenopausal complications. Therefore, emphasis should be placed on educating postmenopausal women about the problems associated with menopause to improve their health behaviors during this stage.

The prevention concept encompasses various areas of medicine, health promotion, health maintenance, and reducing the distress of people, with health education being the most crucial step in prevention. Subsequently, education is a tool for public health, according to the results obtained from this study and similar studies; it was proved that all women who experienced menopause should be trained. Improving knowledge about natural menopause.

Women with insufficient or incorrect knowledge about menopause need to be encouraged to participate in health management activities for better knowledge and care. This study identifies the need for further research to be conducted in this area. A study may be conducted on training programs to improve women's knowledge.

List of abbreviations

BMI = Body Mass Index

HRT = Hormonal Replacement Therapy

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Ethical statement

This study is not an experimental study, and the data were collected through interviews with a sample of women who participated in the study. The proposal of the study was approved by the Scientific and Ethics Committee of Erbil Medical Technical Institute (number 2643), Erbil Polytechnic University, on 3 April 2022. Informed verbal consent was taken from all study participants as this approach is generally preferred by people in our community, and written consent is not common, which was approved by the Scientific and Ethics Committee of Erbil Medical Technical Institute, Erbil Polytechnic University. All methods that were used in this study are in accordance with the guidelines of Erbil Polytechnic University, Kurdistan Region, Iraq.

Conflict of interest

The authors declare that they have no competing interests.

Author contributions

MYY prepared the proposal, collected the data, wrote the manuscript, and submitted the manuscript to the journal. FMA analyzed and interpreted the data. MES collected the data and entered the data into SPSS software. HMA initiated

the idea and helped in analyzing and interpreting the data. MHS collected the data and entered the data into SPSS software. WAI collected the data and entered the data into SPSS software. PDM collected the data and entered the data into SPSS software. All authors participated in designing the questionnaire and reviewing the final draft of the manuscript.

Availability of data and material

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

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