

## WOMEN AWARENESS AND KNOWLEDGE REGARDING HEALTH CARE IN POST MENOPAUSE IN KSA: A CROSS-SECTIONAL STUDY

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### **ABSTRACT**

**Objective:** This research aims to determine the factors responsible for Women's Awareness and Knowledge Regarding Health Care in Post Menopause in KSA.

**Methods:** This study will employ a cross-sectional design to assess the awareness and knowledge regarding healthcare in post-menopausal women in Saudi Arabia. A structured questionnaire will be used to collect data from the target population.

**Results:** The study included 702 participants. The most frequent Nationality among them was Saudi (n= 668, 95.2%), followed by non-Saudi (n= 34, 4.8%). The most frequent Age among study participants was 51 years and above (n= 302, 43%), followed by 40-50 years old (n= 211, 30.1%). The most frequent Marital Status among study participants was married (n= 560, 79.8%), followed by single (n= 79, 11.3%) The participant was asked if they used the contraceptive. The resale was close were was Yes (n= 355, 50.6%) and No (n=347, 49.4%). If yes, the most common kind of contraceptive was hormonal (n=160, 22.8%), followed by IUD (n=146, 20.8%), then condom (n=28, 4%), and others kind (n=21, 3%). Participants were asked if they were aware of perimenopause. Their results were yes (n=558, 79.5%) and no (n=144, 20.5%). The source of awareness most frequently was social media (n=241, 34.3%), followed by family (n=148, 21.1%). As for active search of formation perimenopause, the most frequent was Have not searched (n=316, 45%), followed by as soon as (n=206, 29.3%), then before symptoms (n=132, 18.8%), and long after (n=48, 6.8%). Participants were asked about a doctor's visit for menopause. The most frequent answers were Yes (n= 434, 61.8%) and No (n= 268, 38.1%). Methods used to relieve symptoms the most frequently Symptoms were Mood swings (n=293, 10.9%), followed by Myalgia/Arthralgia (n=273, 10.1%), and Weight changes (n=201, 7.5%).

Participants were asked about Chronic diseases. The most frequent answers were don't have any diseases (n=361, 39.8%), followed by Diabetes (n= 107, 11.8), then Hypertension (n=102, 11.2%), and Arthritis (n=83, 9.1%), Hypothyroidism (n=78, 8.6%), Hyperlipidemia (n= 66, 7.2%).

**Conclusion:** The study revealed that the level of awareness about perimenopause among women in Saudi Arabia is significantly associated with variables such as marital status, education level, parity, and age. The results showed that older women and those with higher education levels exhibit a greater awareness than other groups. Additionally, social media was identified as the most common source of information, highlighting the need to improve the quality of health content shared on these platforms.

## **INTRODUCTION**

When a woman's reproductive years come to a close, it is a time known as perimenopause. The menstrual cycle begins with the first sign of irregular menstruation and continues for another 12 months until the last menstrual period [1]. A broad variety of physical and emotional symptoms, as well as hormonal shifts, characterize this time [2]. As per the Stages of Reproductive Ageing Workshop +10 (STRAW + 10), there are four distinct stages that make up perimenopause, also known as menopausal transition: the early postmenopause (+1a, +1b, +1c), the early and late menopausal transition (-2 and -1), and the late reproductive stages (-3b and -3a) [3]. The typical course of menopause begins at about 47 years of age, continues through late menopausal transition around 49 years of age, and culminates in the first menopause symptom (FMP) between 51 and 52 years of age, a total of four years or more [1].

Perimenopause is characterized by a variety of physical and mental symptoms, including vasomotor symptoms (such as hot flashes, palpitations, night sweats, and sleep disturbances), genitourinary syndrome (such as regrouping vaginal dryness/itching, sexual complaints, and urinary symptoms), and bleeding abnormalities (menstrual flow). Additional symptoms, including those affecting the muscles, are also prevalent [1,2,4]. Joint discomfort and hot flashes were experienced by 77% and 75% of American women, respectively, during perimenopause [5,6]. In cross-sectional research conducted in Saudi Arabia, it was shown that perimenopausal women had symptoms more often than either premenopausal or postmenopausal women [7]. Compared to other demographics, perimenopausal women in Saudi Arabia had more severe symptoms, according to previous studies [8]. It is important to note that perimenopause may have significant effects on everyday functioning and quality of life. Furthermore, perimenopause is associated with a significantly higher prevalence of various morbidities compared to post-menopause [9]. These include cardiovascular disease, breast cancer, and osteoarthritis.

A longer life expectancy and a larger population have brought increased focus to menopause and perimenopause in recent years. According to projections, 1.2 billion women will be experiencing menopause or post-menopause by the year 2030 [10]. Additionally, menopause is anticipated to last for about a third of a woman's life [11]. To alleviate symptoms and enhance perimenopausal women's quality of life, effective measures are required.

Following this thinking, women's knowledge is crucial in improving subjective illness perception, coping mechanisms, treatment adherence, and acceptable disease management results. It was shown that women's ability to seek healthcare throughout menopause was significantly impacted by their degree of understanding of menopausal symptoms and coping mechanisms [12]. There was an increase in menopausal symptoms reported by women who had a negative outlook on menopause in general [13]. Data on the extent to which Saudi women are knowledgeable about

perimenopause and the variables that influence this knowledge is lacking. Therefore, we will survey Saudi women in the peri-menopausal years to find out what they knew and how they felt about it. With this information, we can better understand where women are in terms of knowledge and behavior change, which might lead to better perimenopause management and lessen the toll it has on quality of life.

### **Justification**

The justification for this study arises from the significant health challenges that women face during post-menopause, including increased risks of cardiovascular diseases, osteoporosis, and other age-related conditions. In Saudi Arabia, cultural and social factors may impact women's access to information and healthcare services during this critical stage. Limited awareness and knowledge about post-menopausal health can lead to delayed diagnoses and inadequate management of these conditions. Therefore, understanding the current level of awareness among women in KSA will provide valuable insights into potential gaps in healthcare education and accessibility, which can guide future health initiatives.

Furthermore, the study is crucial in improving public health outcomes for women in Saudi Arabia as life expectancy increases. Post-menopausal healthcare knowledge is critical in preventive care and ensuring the well-being of aging populations. Given the evolving healthcare infrastructure and the emphasis on women's health under Vision 2030, this research will contribute to shaping policies and interventions that can empower women with the necessary information and resources to navigate the post-menopausal phase of life effectively.

### **Research Problem**

The research problem centers on the insufficient awareness and knowledge among women in Saudi Arabia regarding healthcare during post-menopause, a critical period characterized by significant physical and hormonal changes. Despite the potential health risks associated with post-menopause, including osteoporosis, cardiovascular issues, and mental health challenges, many women may not receive adequate education or guidance on managing these conditions. The lack of proper awareness could lead to poor health outcomes, increased healthcare costs, and a diminished quality of life. Identifying the gaps in knowledge and understanding the barriers to accessing healthcare information during this phase is essential to addressing the problem.

Another dimension of the problem is the cultural and social context in KSA, where taboos and misconceptions surrounding menopause may further contribute to the lack of open discussion and education on post-menopausal health. Women may be reluctant to seek medical advice or may not know what healthcare options are available to them. This research aims to uncover the extent of this issue by assessing the level of awareness and knowledge among women in different regions of Saudi Arabia. Understanding these gaps can help in developing tailored educational programs and healthcare services that ensure women are better equipped to manage their health post-menopause.

## **METHODS**

### **Study design**

This study will employ a cross-sectional design to assess the awareness and knowledge regarding healthcare in post-menopausal women in Saudi Arabia. A structured questionnaire will be used to collect data from the target population.

### **Study approach**

The study will be conducted across various healthcare facilities, community centers, and online platforms in multiple regions of Saudi Arabia, including urban and rural areas, to ensure diverse representation.

#### Study population

The target population includes all women under study, regardless of age, residing in Saudi Arabia.

#### Sample and Sampling

##### Study sample

A sample size of approximately 702 women will be determined based on power calculations to ensure the representativeness of the findings. A stratified random sampling technique will be used to select participants from different regions, ensuring adequate representation across various socio-economic backgrounds.

##### Study tool

For the current study, a questionnaire was adopted for data collection and categorized as a study tool.

##### Data collection

Data will be collected using a structured, self-administered questionnaire distributed online and in healthcare facilities. Trained researchers will guide participants in completing the questionnaires in person where needed.

##### Data analysis

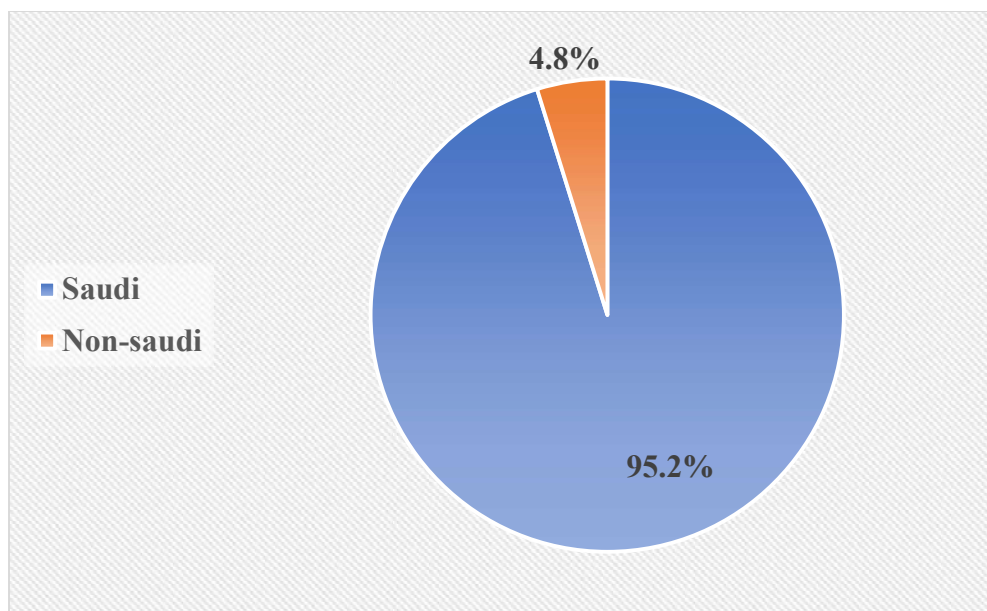
Descriptive statistics (frequencies, means, and standard deviations) will be used to summarize the data. Chi-square tests and logistic regression analysis will examine associations between awareness levels and demographic variables. A p-value  $<0.05$  will be considered statistically significant.

##### Ethical considerations

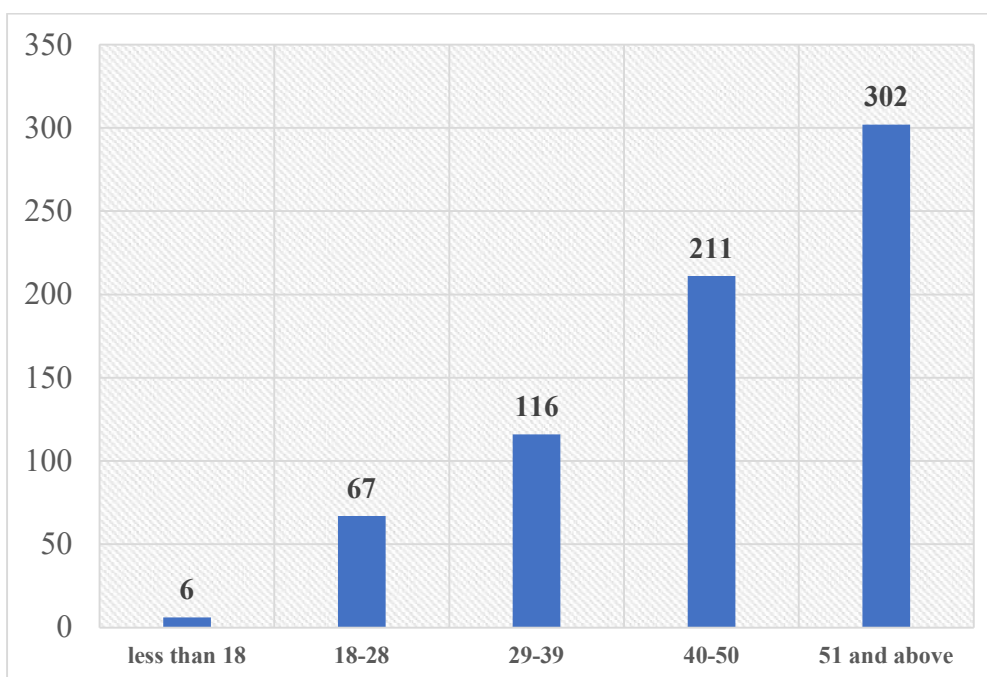
Ethical approval for the study will be obtained from the relevant Institutional Review Board (IRB). Informed consent will be secured from all participants, ensuring confidentiality and anonymity. Participants will be informed of their right to withdraw from the study at any time without any consequences.

## **RESULTS**

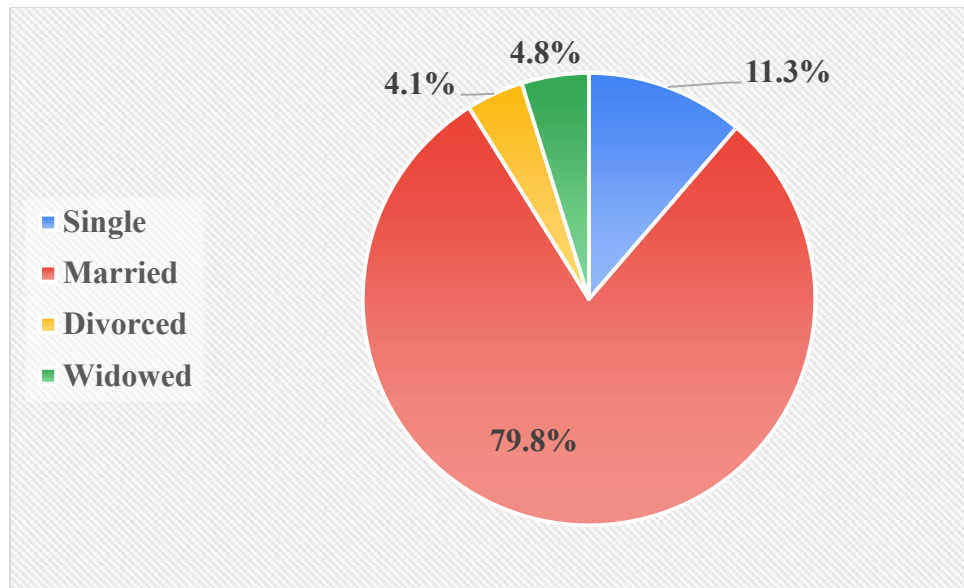
The study included 702 participants. The most frequent Nationality among them was Saudi ( $n=668$ , 95.2%), followed by non-Saudi ( $n=34$ , 4.8%). Figure 1 shows the nationality distribution among study participants. The most frequent Age among study participants was 51 years and above ( $n=302$ , 43%), followed by 40-50 years old ( $n=211$ , 30.1%). Figure 2 shows the Age distribution among study participants. The most frequent Marital Status among study participants was married ( $n=560$ , 79.8%), followed by single ( $n=79$ , 11.3%). Figure 3 shows the distribution of marital status among study participants.



**Figure 1: Nationality distribution among study participants**

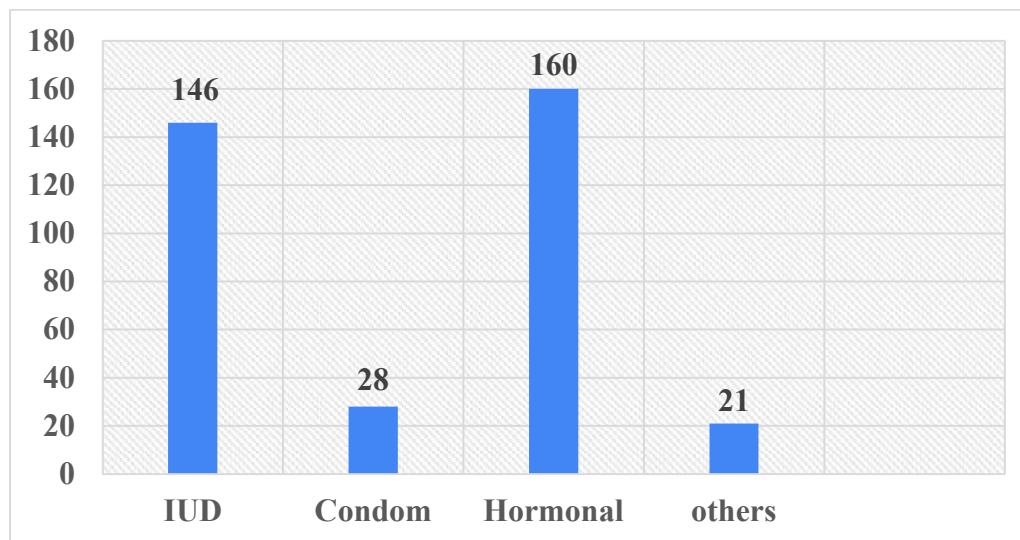


**Figure 2: Age distribution among study participants**



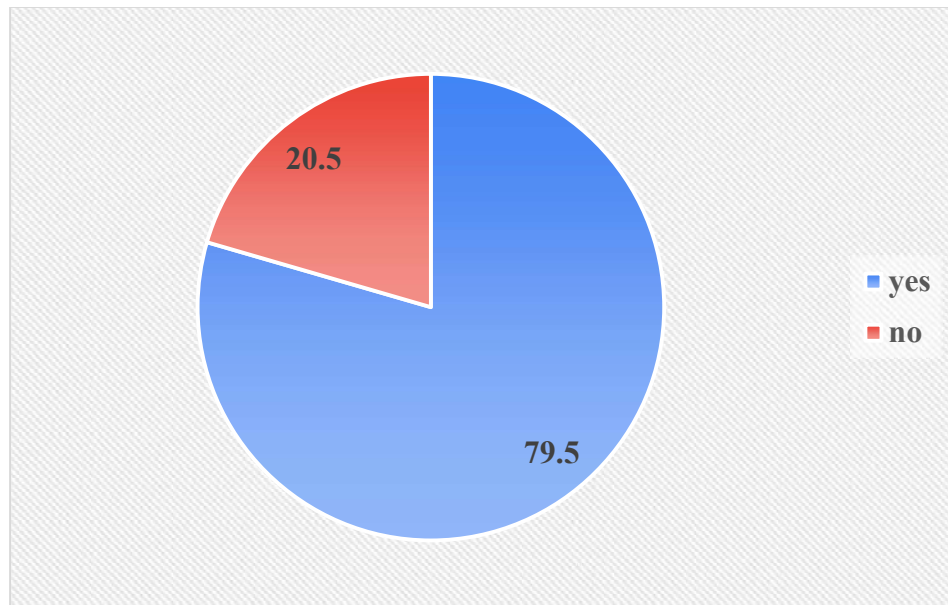
**Figure 3: Marital Status distribution among study participants**

The participant was asked if they used the contraceptive. The response was close was Yes (n=355, 50.6%) and No (n=347, 49.4%). If yes, the most common kind of contraceptive was hormonal (n=160, 22.8%), followed by IUD (n=146, 20.8%), then condom (n=28, 4%), and others kind (n=21, 3%). Figure 4 shows the distribution of contraceptive use among study participants.

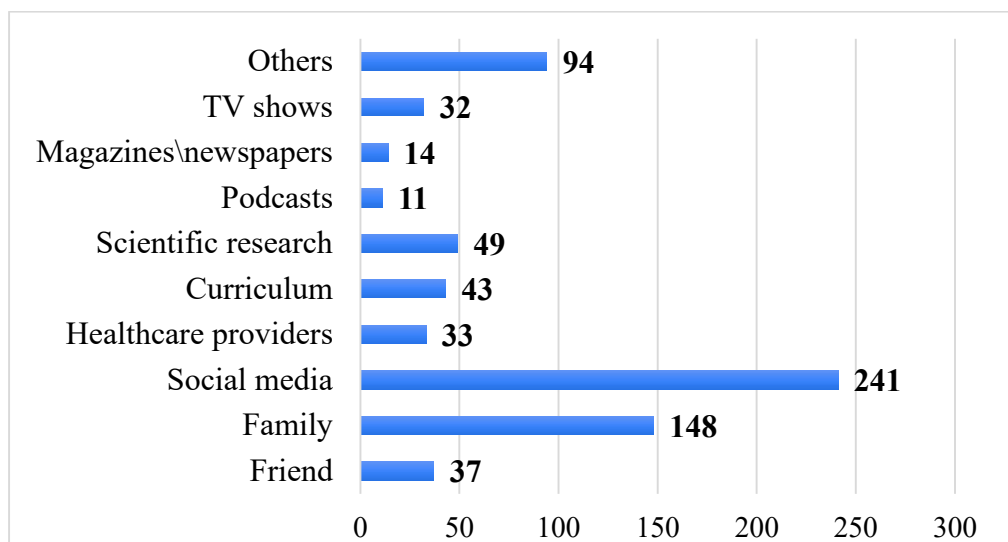


**Figure 4: Contraceptive use distribution among study participants**

Participants were asked if they were aware of perimenopause. Their results were yes (n=558, 79.5%) and no (n=144, 20.5%). Figure 5 shows the awareness of perimenopause distribution among study participants. The source of awareness most frequently was social media (n=241, 34.3%), followed by family (n=148, 21.1%). Figure 6 Source of awareness distribution among study participants. As for active search of formation perimenopause, the most frequent was Have not searched (n=316, 45%), followed by as soon as (n=206, 29.3%), then before symptoms (n=132, 18.8%), and long after (n=48, 6.8%).



**Figure 5: Awareness of perimenopause distribution among study participants**



**Figure 6: Source of awareness distribution among study participants**

Participants were asked to assess their knowledge. Their responses and results are presented in Table 2.

| <b>Table 2: Knowledge among study participants</b>           |       |           |         |
|--------------------------------------------------------------|-------|-----------|---------|
| Survey item                                                  |       | Frequency | Percent |
| Amenorrhea can be a natural phenomenon associated with aging | True  | 458       | 65.2%   |
|                                                              | False | 244       | 34.7%   |
| Amenorrhea May be associated with infertility                | True  | 148       | 21.0%   |
|                                                              | False | 554       | 78.9%   |
| Amenorrhea may be a result of the disease                    | True  | 495       | 70.5%   |
|                                                              | False | 207       | 29.4%   |

Participants were asked about a doctor's visit for menopause. The most frequent answers were Yes (n= 434, 61.8%) and No (n= 268, 38.1%). Methods used to relieve symptoms the most frequently Symptoms were Mood swings (n=293, 10.9%), followed by Myalgia/Arthralgia (n=273, 10.1%), and Weight changes (n=201, 7.5%).

Participants were asked about Chronic diseases. The most frequent answers were don't have any diseases (n=361, 39.8%), followed by Diabetes (n= 107, 11.8), then Hypertension (n=102, 11.2%), and Arthritis (n=83, 9.1%), Hypothyroidism (n=78, 8.6%), Hyperlipidemia (n= 66, 7.2%).

## **DISCUSSION**

This study assessed the awareness and knowledge of post-menopausal healthcare among women in Saudi Arabia, revealing important insights into the factors influencing awareness and their implications for public health. The results indicate that the majority of participants were aware of perimenopause (79.5%), with social media being the most frequently reported source of information (34.3%). Consistent with previous research, higher education levels were associated with greater awareness of menopause. Women with bachelor's and postgraduate degrees exhibited significantly higher awareness levels than those with lower educational attainment. This relationship aligns with global trends emphasizing education's critical role in health literacy. Efforts to bridge the knowledge gap among less educated women are crucial and may require targeted educational programs and culturally sensitive health campaigns. Another notable finding was the significant influence of marital status, with married women demonstrating higher awareness levels compared to their single, divorced, or widowed counterparts. This difference might be attributed to the shared experiences and discussions within marital relationships or greater engagement with healthcare providers during family planning or childbirth. Interestingly, the study revealed that nearly half of the participants (50.6%) reported using contraceptives, with hormonal methods being the most common. This factor may contribute to increased interactions with healthcare providers, thus enhancing awareness of menopause-related health issues. Healthcare practitioners should leverage such opportunities to provide comprehensive education about perimenopausal and post-menopausal health. Regarding symptom management, the most frequently reported symptoms were mood swings (10.9%), myalgia/arthralgia (10.1%), and weight changes (7.5%). While these symptoms are widely recognized as part of the menopausal transition, the relatively low rates of doctor visits for menopause (61.8%) suggest that many women may not be receiving adequate medical guidance. Addressing this gap requires greater advocacy for routine check-ups and discussing menopause during healthcare visits. Finally, the study demonstrates the relationship between awareness and age, parity, and education variables. Older women and those with children were more likely to be aware of menopause-related health issues, possibly due to their life experiences and increased interaction with healthcare systems. This observation emphasizes the need to prioritize educational efforts for younger women to prepare them for this transition.

## **CONCLUSION**

The study revealed that the level of awareness about perimenopause among women in Saudi Arabia is significantly associated with variables such as marital status, education level, parity, and age. The results showed that older women and those with higher education levels exhibit a greater awareness than other groups. Additionally, social media was identified as the most common source

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#### ANNEX 1: DATA COLLECTION TOOL

|                        |                    |                         |              |           |
|------------------------|--------------------|-------------------------|--------------|-----------|
| <b>Age</b>             |                    | <b>Nationality</b>      | Saudi        | Non-Saudi |
| <b>Age at menarche</b> |                    | <b>Age at menopause</b> |              |           |
| <b>Marital status</b>  | Single             | Married                 | Divorced     | Widowed   |
| <b>Education</b>       | Illiterate/Primary | Middle school           | High school  |           |
|                        | Diploma            | Bachelor                | Postgraduate |           |

|                        |                |           |                |                |                 |
|------------------------|----------------|-----------|----------------|----------------|-----------------|
| Parity                 | None           |           | 1-4            | 5 or more      |                 |
| Smoking                | Smoker         | Ex-smoker |                | Passive smoker | Non-smoker      |
| Contraceptive use      | No             |           |                | Yes            |                 |
| If yes,                | Hormonal       |           | Condom         |                | IUD             |
| Comorbidities          | None           |           | Diabetes       |                | Hypertension    |
|                        | Hyperlipidemia |           | Asthma         |                | Hyperthyroidism |
|                        | Hypothyroidism |           | Cardiovascular |                | Renal           |
|                        | Liver          |           | Arthritis      |                | Others          |
| Chronic Medication use | Yes            |           |                | No             |                 |

|                                 |            |           |
|---------------------------------|------------|-----------|
| <b>Knowledge about symptoms</b> | <b>Yes</b> | <b>No</b> |
| <b>Irregular menstruation</b>   |            |           |
| <b>Mood swings</b>              |            |           |
| <b>Bad mood</b>                 |            |           |
| <b>Weight changes</b>           |            |           |
| <b>Hot flashes</b>              |            |           |
| <b>Vaginal dryness</b>          |            |           |
| <b>Low libido</b>               |            |           |
| <b>Insomnia</b>                 |            |           |
| <b>Myalgia/Arthralgia</b>       |            |           |
| <b>Migraines</b>                |            |           |
| <b>Night sweating</b>           |            |           |

|                               |  |  |
|-------------------------------|--|--|
| <b>Lack of concentration</b>  |  |  |
| <b>Lack of excitement</b>     |  |  |
| <b>Urinary incontinence</b>   |  |  |
| <b>Palpitations</b>           |  |  |
| <b>Dryness and itching</b>    |  |  |
| <b>Urinary tract symptoms</b> |  |  |
| <b>Osteoporosis/fractures</b> |  |  |
| <b>Uterine prolapse</b>       |  |  |
| <b>Depression/Mental</b>      |  |  |

|                                                              |                                    |
|--------------------------------------------------------------|------------------------------------|
| <b>Awareness</b>                                             |                                    |
| Awareness about perimenopause                                | Yes                                |
|                                                              | No                                 |
| Sources of Awareness                                         | Friend                             |
|                                                              | Family                             |
|                                                              | Social media                       |
|                                                              | Healthcare providers               |
|                                                              | Curriculum                         |
|                                                              | Scientific research                |
|                                                              | Podcasts                           |
|                                                              | Magazines and newspapers           |
|                                                              | TV shows                           |
|                                                              | Others                             |
| Active search for information about perimenopause            | As soon as symptoms started        |
|                                                              | Long after symptoms started        |
|                                                              | Before symptoms started            |
|                                                              | Have not searched                  |
| <b>Knowledge</b>                                             |                                    |
| Amenorrhea can be a natural phenomenon associated with aging | True                               |
|                                                              | False                              |
| Amenorrhea may be associated with infertility                | True                               |
|                                                              | False                              |
| Amenorrhea may be result from the disease                    | True                               |
|                                                              | False                              |
| Visited a doctor for perimenopause                           | Yes                                |
|                                                              | No                                 |
| Methods used to mitigate symptoms                            | Wearing light clothes              |
|                                                              | Avoiding hot places                |
|                                                              | Cool showers and cold drinks       |
|                                                              | Vaginal moisturizers or lubricants |
|                                                              | Kegel exercises                    |

|  |                         |
|--|-------------------------|
|  | Avoiding triggers       |
|  | Exercising              |
|  | Losing weight           |
|  | Reducing stress         |
|  | Herbal therapy          |
|  | Other lifestyle changes |

#### APPENDIX 2: Participants responses to scale items

| variable              |                    | Frequency | Percent |
|-----------------------|--------------------|-----------|---------|
| <b>Age</b>            | less than 18       | 8         | 1.1 %   |
|                       | 18-28              | 66        | 9.4%    |
|                       | 29-39              | 116       | 16.5%   |
|                       | 40-50              | 204       | 29.1%   |
|                       | 51 and above       | 308       | 43.9%   |
| <b>Nationality</b>    | Saudi              | 668       | 95.2%   |
|                       | Non-Saudi          | 34        | 4.8%    |
| <b>Marital Status</b> | Single             | 79        | 11.3%   |
|                       | Married            | 560       | 79.8%   |
|                       | Divorced           | 29        | 4.1%    |
|                       | Widowed            | 34        | 4.8%    |
| <b>Education</b>      | Illiterate/Primary | 11        | 1.6%    |
|                       | Middle school      | 45        | 6.4%    |
|                       | High school        | 112       | 16.0%   |
|                       | Diploma            | 93        | 13.2%   |
|                       | Bachelor           | 382       | 54.4%   |
|                       | Postgraduate       | 59        | 8.4%    |

| age menarche |           |         |
|--------------|-----------|---------|
|              | Frequency | Percent |
| less than 10 | 52        | 100.0%  |
| 11-13        | 416       | 59.3%   |
| 14 - 16      | 221       | 31.5%   |
| 17 and above | 13        | 1.9%    |

| age menopause |           |         |
|---------------|-----------|---------|
|               | Frequency | Percent |
| not yet       | 344       | 49.0%   |
| less than 40  | 0         | 0.0%    |
| 40 - 44       | 17        | 2.4%    |
| 45 - 48       | 68        | 9.7%    |
| 49 and more   | 273       | 38.9%   |

| Contraceptive use |           |         |
|-------------------|-----------|---------|
|                   | Frequency | Percent |
| Yes               | 355       | 50.6%   |
| No                | 347       | 49.4%   |

| If yes   |           |         |
|----------|-----------|---------|
|          | Frequency | Percent |
| IUD      | 146       | 20.8    |
| Condom   | 28        | 4.0     |
| Hormonal | 160       | 22.8    |
| others   | 21        | 3.0     |

| Chronic Medication use |           |         |
|------------------------|-----------|---------|
|                        | Frequency | Percent |
| yes                    | 221       | 31.5%   |

|    |     |       |
|----|-----|-------|
| no | 481 | 68.5% |
|----|-----|-------|

| Awareness perimenopause |           |         |
|-------------------------|-----------|---------|
|                         | Frequency | Percent |
| yes                     | 558       | 79.5%   |
| no                      | 144       | 20.5%   |

| Sources awareness        |           |         |
|--------------------------|-----------|---------|
|                          | Frequency | Percent |
| Friend                   | 37        | 5.3%    |
| Family                   | 148       | 21.1%   |
| Social media             | 241       | 34.3%   |
| Healthcare providers     | 33        | 4.7%    |
| Curriculum               | 43        | 6.1%    |
| Scientific research      | 49        | 7.0%    |
| Podcasts                 | 11        | 1.6%    |
| Magazines and newspapers | 14        | 2.0%    |
| TV shows                 | 32        | 4.6%    |
| Others                   | 94        | 13.4%   |

| Active search formation perimenopause |           |         |
|---------------------------------------|-----------|---------|
|                                       | Frequency | Percent |
| As soon as symptoms started           | 206       | 29.3%   |
| Long after symptoms started           | 48        | 6.8%    |
| Before symptoms started               | 132       | 18.8%   |
| Have not searched                     | 316       | 45.0%   |

| Parity    |           |         |
|-----------|-----------|---------|
|           | Frequency | Percent |
| 5 or more | 289       | 41.2%   |
| 1-4       | 309       | 44.0%   |
| none      | 104       | 14.8%   |

|                 | Count | Percentage (%) |
|-----------------|-------|----------------|
| Diabetes        | 107   | 11.8%          |
| Hypertension    | 102   | 11.2%          |
| Arthritis       | 83    | 9.1%           |
| Hypothyroidism  | 78    | 8.6%           |
| Hyperlipidemia  | 66    | 7.2%           |
| Asthma          | 20    | 2.2%           |
| Hyperthyroidism | 15    | 1.6%           |
| Cardiovascular  | 10    | 1.1%           |
| Renal           | 7     | 0.7%           |
| Liver           | 5     | 0.5%           |
| Others          | 52    | 5.7%           |
| None            | 361   | 39.8%          |

| Smoking        |           |         |
|----------------|-----------|---------|
|                | Frequency | Percent |
| Smoker         | 46        | 6.5%    |
| Ex-smoker      | 15        | 2.1%    |
| Passive smoker | 28        | 3.9%    |
| Non-smoker     | 613       | 87.3%   |

| Visited doctor for perimenopause |           |         |
|----------------------------------|-----------|---------|
|                                  | Frequency | Percent |
| Yes                              | 434       | 61.8%   |
| No                               | 268       | 38.1%   |

|                    | Frequency | Percentage |
|--------------------|-----------|------------|
| Mood swings        | 293       | 10.9%      |
| Myalgia/Arthralgia | 273       | 10.1%      |

|                        |     |      |
|------------------------|-----|------|
| Weight changes         | 201 | 7.4% |
| Low libido             | 173 | 6.4% |
| Hot flashes            | 168 | 6.2% |
| Insomnia               | 160 | 5.9% |
| Lack of concentration  | 159 | 5.9% |
| Irregular menstruation | 159 | 5.9% |
| Bad mood               | 140 | 5%   |
| Migraines              | 137 | 5%   |
| None                   | 112 | 4%   |
| Vaginal dryness        | 111 | 4%   |
| Night sweating         | 110 | 4.1% |
| Palpitations           | 94  | 3.4% |
| Urinary incontinence   | 78  | 2.9% |
| Dryness and itching    | 67  | 2.4% |
| Osteoporosis/fractures | 56  | 2.0% |
| Uterine prolapse       | 44  | 1.6% |
| Lack of excitement     | 43  | 1.6% |
| Depression/Mental      | 29  | 1.0% |
| others                 | 24  | 0.8% |

**Table 1: Knowledge among study participants**

| Survey item                                                  |       | Frequency | Percent |
|--------------------------------------------------------------|-------|-----------|---------|
| Amenorrhea can.be a natural phenomenon associated with aging | True  | 458       | 65.2%   |
|                                                              | False | 244       | 34.7%   |
| Amenorrhea. May be associated with infertility               | True  | 148       | 21.0%   |
|                                                              | False | 554       | 78.9%   |
| Amenorrhea may be a result from the disease                  | True  | 495       | 70.5%   |
|                                                              | False | 207       | 29.4%   |

### **Chi-Square Test**

#### **Frequencies**

| Awareness perimenopause |               |               |          |
|-------------------------|---------------|---------------|----------|
|                         | Observed<br>N | Expected<br>N | Residual |
| yes                     | 558           | 351.0         | 207.0    |
| no                      | 144           | 351.0         | -207.0   |
| Total                   | 702           |               |          |

| <b>Marital status</b> |               |               |          |
|-----------------------|---------------|---------------|----------|
|                       | Observed<br>N | Expected<br>N | Residual |
| Single                | 79            | 175.5         | -96.5    |
| Married               | 560           | 175.5         | 384.5    |
| Divorced              | 29            | 175.5         | -146.5   |
| Widowed               | 34            | 175.5         | -141.5   |
| Total                 | 702           |               |          |

| <b>Education</b>   |               |               |          |
|--------------------|---------------|---------------|----------|
|                    | Observed<br>N | Expected<br>N | Residual |
| Illiterate/Primary | 11            | 117.0         | -106.0   |
| Middle school      | 45            | 117.0         | -72.0    |
| High school        | 112           | 117.0         | -5.0     |
| Diploma            | 93            | 117.0         | -24.0    |
| Bachelor           | 382           | 117.0         | 265.0    |
| Postgraduate       | 59            | 117.0         | -58.0    |
| Total              | 702           |               |          |

| <b>Parity</b> |               |               |          |
|---------------|---------------|---------------|----------|
|               | Observed<br>N | Expected<br>N | Residual |
| 5 or more     | 289           | 234.0         | 55.0     |
| 1-4           | 309           | 234.0         | 75.0     |
| none          | 104           | 234.0         | -130.0   |
| Total         | 702           |               |          |

| <b>Age Level</b> |               |               |          |
|------------------|---------------|---------------|----------|
|                  | Observed<br>N | Expected<br>N | Residual |
| 18-28            | 211           | 175.5         | 35.5     |
| 29-39            | 40            | 175.5         | -135.5   |

|              |     |       |        |
|--------------|-----|-------|--------|
| 40-50        | 73  | 175.5 | -102.5 |
| 51 and above | 378 | 175.5 | 202.5  |
| Total        | 702 |       |        |

| Test Statistics |                          |                       |                      |                      |                      |
|-----------------|--------------------------|-----------------------|----------------------|----------------------|----------------------|
|                 | Awareness perimenopausal | Marital status        | Education            | Parity               | Age                  |
| Chi-Square      | 244.154 <sup>a</sup>     | 1131.835 <sup>b</sup> | 774.444 <sup>c</sup> | 109.188 <sup>d</sup> | 405.316 <sup>b</sup> |
| df              | 1                        | 3                     | 5                    | 2                    | 3                    |
| Asymp. Sig.     | <.001                    | <.001                 | <.001                | <.001                | <.001                |

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 351.0.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 175.5.

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 117.0.

d. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 234.0.

p-value = 0.001 < 0.05, there was a relationship between awareness of perimenopause and age, marital status, education, and parity.