

# Exploring the Level of Knowledge and Attitudes among Female Cancer Patients towards Fertility Preservation in KSA

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**Abstract:** This review synthesizes the existing literature on fertility preservation knowledge and attitudes among female cancer patients, a subject growing in significance at the intersection of oncology and reproductive health. It encompasses diverse studies, including empirical research, theoretical analyses, and case studies, thereby furnishing a comprehensive understanding of the subject matter. The research's context is anchored in the escalating necessity for fertility preservation awareness among cancer patients, a need propelled by the advancements in cancer treatment and the increasing prevalence of cancer among women of reproductive age. The pivotal research question probes into the perceptions of fertility preservation among female cancer patients and gauges the extent of their awareness regarding the available options. This review is of great importance, as it delves into a relatively unexplored domain within a distinct cultural and geographical setting, enriching the global discourse on cancer care and reproductive rights. The review meticulously scrutinizes studies utilizing qualitative and quantitative methodologies, ensuring an exhaustive topic analysis. The findings unveil a pervasive lack of awareness and knowledge about fertility preservation within the target demographic, a situation further complicated by the cultural and religious contexts that shape attitudes toward fertility preservation. These findings highlight the imperative for augmented educational initiatives and policy interventions to bolster fertility preservation awareness and accessibility. The review concludes with a discussion of the implications of these findings for healthcare providers, policymakers, and cancer care advocates. It underscores the need for culturally attuned educational programs and policy reforms to support FP. This scholarly endeavour augments the academic discourse on fertility preservation in the context of cancer care and bears significant practical implications for enhancing patient outcomes and quality of life.

**Keywords:** Fertility preservation, cancer patients, knowledge, gynecologic cancers, counseling, reproductive health, oncofertility, egg freezing, Islamic Fatwas, healthcare providers, decision-making, educational interventions.

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## 1. LITERATURE REVIEW

### 1.1 Introduction

Fertility preservation plays a crucial role in the management of cancer and the overall quality of life for women of reproductive age. Clinical guidelines strongly recommend providing fertility counseling to patients before initiating cancer treatments (Martinez et al., 2017; Oktay et al., 2018). The aim is to offer women the opportunity to preserve their fertility and have biological children in the future. However, for women with standard gynecologic cancers, fertility preservation can be challenging due to the potential removal of reproductive organs as part of their treatment (Taylan & Oktay, 2019).

To address this complex challenge, it is essential to provide personalized counseling by a multidisciplinary team, considering the individual patient's circumstances and evaluating the benefits, risks, and safety of fertility preservation options (Stein et al., 2020). In addition to fertility-sparing strategies, established fertility preservation techniques should be considered (De Felice et al., 2018). For women who desire to pursue parenthood but are unable to conceive naturally,

alternative family building options such as egg donation, embryo donation, the use of a gestational carrier, or adoption can be appropriate alternatives (Holman, 2019; Chan et al., 2017). It is important to note that regret around fertility choices can be reduced with pre-treatment counseling for gynecologic cancer patients (Chan et al., 2017).

In Saudi Arabia, fertility preservation practices align with both the Islamic Fatwas and the regulations of the Saudi System of Fertilization and Embryology Units. According to these guidelines, third-party reproduction, including the use of sperm, oocytes, or embryos from donors or banking, is prohibited both legally and religiously. Additionally, fertility preservation options, such as embryo freezing, are only available to married couples, and in cases of divorce or death, frozen embryos must be destroyed (Oxford University, 2019).

However, there is limited research on the knowledge, attitudes, and practice of female cancer patients regarding fertility preservation in Saudi Arabia. Understanding their perspectives is crucial for healthcare providers to offer appropriate support and guidance in making informed decisions about fertility preservation options. Therefore, this literature review aims to explore the existing knowledge, attitudes, and beliefs of female cancer patients in Saudi Arabia concerning fertility preservation. By examining the current literature, this study seeks to contribute to the understanding of the factors that influence decision-making regarding fertility preservation in this specific population. The findings of this review will aid in developing effective strategies and interventions to support female cancer patients in making well-informed choices regarding their reproductive health in Saudi Arabia.

### **1.2 Search Strategy:**

A comprehensive search strategy was conducted to identify relevant literature for Knowledge and Attitudes Among Female Cancer Patients Towards Fertility. Several electronic databases were searched, including; PubMed, MEDLINE and Google Scholar. The search strategy involved the use of keywords such as "fertility preservation," "knowledge," "attitude," "awareness," "female cancer patients," "reproductive age," "oocyte cryopreservation," "oncofertility," and "medical egg freezing." These keywords were combined using Boolean operators (e.g., AND, OR) to ensure a comprehensive search of the existing literature.

The inclusion and exclusion criteria for the search methodology were explicitly defined in order to identify top-cited, relevant, and recently published articles. The criteria focused on research studies that explored and assessed knowledge and attitudes towards fertility preservation (FP). Both quantitative and qualitative research designs were included, and the timeframe was limited to articles published between 2017 and 2023. Only studies published in English and in peer-reviewed journals were considered.

The selection of articles was determined based on several priorities. The first priority was relevance, with a focus on key themes related to different types of female fertility preservation. The second priority was reliability, considering the credibility and reputation of the authors or the selected journal. Finally, the inclusion and exclusion of articles also took into account the timeliness, giving preference to more recent sources if they scored high in terms of relevance and reliability.

## **2. SEARCH RESULTS**

According to search strategy several studies from various country were reviewed according to inclusion and exclusion criteria. the studies were classified in regarding to Knowledge, Attitudes, and practice; Factors Influencing Fertility Preservation Decision-making; and Effectiveness of Educational Interventions on Improving Knowledge and Attitudes towards Fertility Preservation among Female Cancer Patients. After screening, reports different studies only 18 study were included in this literature review according to inclusion and exclusion criteria, from them 4 studies conducted in KSA.

Gonçalves, V., Ferreira, P. L., Saleh, M., Tamargo, C., & Quinn, G. P. (2022) conducted a systematic review to summarize the perspectives of young women with gynecologic cancers on fertility and fertility preservation. Thirteen studies were included in the review, revealing that most women valued fertility preservation procedures as a means to restore fertility and gender identity. However, there was suboptimal fertility counseling and significant variability among studies. The potential negative impact of impaired fertility on mental health and quality of life was also highlighted. The findings emphasize the importance of including patients with gynecologic cancer in research studies and the need for improved provision of fertility counseling and referral by healthcare professionals (Gonçalves et al., 2022).

***Theme 1- Knowledge, Attitudes, and practice of Female Cancer Patients Regarding Fertility Preservation:***

The lack of knowledge among healthcare providers regarding fertility preservation can greatly impact patients' understanding, attitudes, behaviors, and perspectives. Obstetrics and Gynecology (OB/GYN) residents are often the first line of professionals to incorporate fertility preservation technologies into their practice, making it crucial for them to have a comprehensive understanding of the relationship between age and fertility for their patients.

According to a study conducted in Iran by Omani-Samani et al (2021), it has been observed that there is a lack of knowledge and awareness regarding fertility preservation (FP) among adult cancer patients and parents of younger cancer patients. The research aimed to assess the knowledge and attitudes towards FP in this population. A total of 384 participants, including parents of cancer patients under 18 years of age and cancer patients over 18 years of age, were conveniently selected from two major referral hospitals. A self-administered questionnaire consisting of 25 items was used to measure their knowledge and attitudes towards FP. Responses were recorded as yes/no or on a 4-point Likert scale. The findings revealed that the majority of parents (96.3%) and cancer patients (88.4%) were unaware of FP methods such as embryo cryopreservation, while 97.5% of parents and 89.0% of cancer patients were unaware of sperm cryopreservation. The attitudes towards utilizing FP options were influenced by factors such as financial cost, lack of access, and limited information about available FP options. This study highlights the concerning lack of knowledge regarding the fertility risks associated with cancer treatment and the available FP options among Iranian adult cancer patients and their parents, particularly among the parents. To ensure that cancer patients and their parents can make informed decisions about FP services, it is crucial for oncologists and fertility specialists to discuss these options during consultations.

In A cross-sectional study conducted by Harzif et al.(2020) in Indonesia aimed to assess the knowledge and beliefs of OB/GYN residents regarding age-related fertility decline, intentions, and the role of religion in fertility preservation. A questionnaire was used to collect data from 92 residents at Cipto Mangunkusumo Hospital. The majority of participants believed that OB/GYNs should discuss potential childbearing desires and age-related fertility decline with patients, preferably during annual health examinations. Cancer patients were more likely to consider oocyte cryopreservation compared to those prioritizing their careers. Most residents, regardless of their religious background, accepted fertility preservation options such as sperm, oocyte, embryo, and ovarian cortex cryopreservation. However, oocyte and sperm donor methods were deemed unacceptable by a significant proportion of residents due to the belief that these should only be given to legitimate partners. It is important for OB/GYN specialists to address age-related fertility decline and frozen egg storage during women's wellness examinations.

A systematic review, conducted by Clasen, et al(2023) it focused on the experiences of female childhood cancer patients and survivors regarding oncofertility care. Oncofertility care includes providing information about the risk of gonadal damage, fertility counseling, and fertility preservation options. However, there is limited reporting on these experiences. The objective of this review was to summarize the available evidence on the experiences of female childhood cancer patients and survivors regarding oncofertility care. The PubMed and Embase databases were systematically searched, resulting in the inclusion of 7 articles after assessment and bias evaluation. The outcome measures included data on the experiences of female childhood cancer patients and survivors regarding fertility information, counseling, and preservation. The results indicate that satisfaction with oncofertility care varied among female patients and survivors. Challenges in communication with healthcare professionals were reported, and preferences for receiving general information at diagnosis and more detailed fertility information later were expressed. Regrets after fertility counseling were underreported but were associated with refusing fertility preservation. Additionally, regardless of counseling, concerns about future children's health and effects on relationships were reported. These findings suggest the need to improve the content of fertility information, enhance the communication skills of healthcare professionals, and consider the timing of counseling.

In KSA A cross-sectional study was conducted, by (Abusanad et al., 2022). This study aimed to investigate the current status of oncofertility support and fertility preservation (FP) among men and women of reproductive age with cancer in Saudi Arabia, where there is limited knowledge on this subject including oncology patients of reproductive age from an academic hospital. Data on patients' characteristics, cancer type, treatment modalities, and oncofertility support were collected and analyzed to evaluate the level of oncofertility support and identify potential influencing factors (Abusanad et al., 2022).

The study included 135 patients, with 39.3% males and 60.7% females. Despite 66.7% of patients believing they were fertile at the time of diagnosis and over half expressing a desire to have children in the future, only 37.8% received fertility counseling, and merely 17% consulted a fertility specialist. Sperm cryopreservation was the most common FP method

among male patients (6.7%), while the majority of both genders (87.4%) did not utilize any FP method. Approximately two-thirds of the patients had knowledge about TRI and FP methods. Only 57.3% of female patients were informed about the possibility of post-treatment amenorrhea, and psychological support was received by only 8.1% of the entire cohort (Abusanad et al., 2022). In conclusion, despite the satisfactory knowledge of TRI and FP among patients, oncologists rarely referred their patients to specialized fertility services. More than half of the patients expressed a desire to have children in the future, but limited oncofertility care and FP procedures hindered this aspiration. Several factors influenced patients' knowledge of TRI, fertility counseling, and FP. It is crucial to incorporate oncofertility into management planning as it significantly impacts patients' quality of life (Abusanad et al., 2022).

Another study, In KSA Ramya Sindi (2020) conducted a cross-sectional study to assess the awareness level, knowledge, and attitude towards fertility preservation among cancer patients in the Makkah region of Saudi Arabia. The study included 132 cancer patients aged 14 to 85 years who completed a closed-ended questionnaire. The findings revealed that approximately 50% of the respondents were aware of fertility preservation. However, most participants had not discussed fertility preservation options with their healthcare providers or been referred to a fertility clinic before starting treatment. The majority of patients expressed the need for the Saudi Ministry of Health to play a more active role in increasing awareness and recommended the establishment of public fertility services for cancer patients. The study highlights the need for improved knowledge and attitude among both the general public and clinicians, suggesting the establishment of fertility services and referral centers to enhance awareness and provide better options for fertility preservation. Further research focusing on cancer care and fertility preservation rights in Saudi Arabia is recommended.

#### ***Theme 2- Knowledge, Attitudes, and practice among oncologists regarding fertility preservation (FP)***

In Iran a survey study conducted by Vesali et al. (2019) aimed to examine the knowledge, attitudes, and current practice of Iranian oncologists regarding fertility preservation (FP) services for cancer patients. The survey included 103 radiation oncologists and hematologists who attended national and international congresses and symposia in Iran. A self-administered questionnaire consisting of 23 items was used to collect data on knowledge, attitudes, and practice. The most well-known FP methods among Iranian oncologists were gonadotropin-releasing hormone therapy and sperm cryopreservation, scoring 2.77 (1.10) and 2.64 (1.00) respectively, which were above the median value of 2.5 on a 4-point Likert scale. However, the mean knowledge score across all FP options was 2.25 (0.71). Age was considered the most important reason for discussing FP with patients (mean score 3.75), while heredity was considered the least important (mean score 2.98). In terms of practice, most oncologists did not provide written information about FP, but 72.5% reported referring cancer patients to reproductive specialists. This study suggests that Iranian oncologists would benefit from more information on FP methods to prevent fertility loss in cancer patients.

In another systematic review, conducted by Vindrola et al (2017) explore the factors influencing the discussion of fertility preservation (FP) with children (0-15 years) and adolescents/young adults (16-24 years) with cancer. Six databases were searched using relevant keywords and inclusion criteria. The criteria included being published in a peer-reviewed journal, focusing on healthcare professionals' (HCPs') beliefs, attitudes, or practices regarding fertility issues in cancer patients, primary data collection from HCPs, and focusing on HCPs who provide services to young patients. Out of 6,276 articles identified, 16 articles representing 14 studies were included in the final review. The results revealed five main factors influencing HCPs' discussion of FP with young cancer patients: HCPs' knowledge, sense of comfort, patient factors (e.g., sexual maturity, prognosis, partnership status, initiation of conversation), parent factors (e.g., HCPs' perception of parental involvement), and availability of educational materials. Future efforts should focus on ensuring HCPs possess knowledge about cancer-related FP and receive adequate training on discussing information with young patients and their parents.

A study conducted in Indonesia aimed to explore the knowledge and attitudes of obstetricians and gynecologists regarding fertility preservation (FP) in cancer patients. A questionnaire was used to collect data from 80 participants. The questionnaire assessed their knowledge and attitudes towards FP. The results showed that the majority of participants (86.3%) were aware of FP, but their knowledge was limited to pre-treatment with GnRH Agonists and not other FP methods. Additionally, 95% expressed the need for more information on the topic. Most participants agreed that discussing FP with newly diagnosed cancer patients was a high priority (92.5%), but 45% believed that treating the primary cancer was more important than FP. While many participants reported checking the importance of future fertility for their cancer patients and suggesting FP options (80%), only a small percentage provided written information (15.1%) or referred patients to fertility specialists (35%). The study found that the main barriers to initiating discussions about FP were poor success rates of FP options, patients' inability to afford FP treatment, poor patient prognosis, lack of knowledge among obstetricians and

gynecologists, and limited availability of fertility services in their area. This study highlights the lack of knowledge about FP options among Indonesian obstetricians and gynecologists and suggests that the provision of information to patients about FP may be sub-optimal. Harzif et al. (2017)

In Saudi Arabia (Arafa et al., 2023). conducted a study aimed to assess any advancements in the knowledge, attitude, and referral practices of oncologists regarding FP. The results revealed that most oncologists exhibited high levels of knowledge and positive attitudes toward FP. However, there is room for improvement in their referral practices. The majority of oncologists were familiar with the available FP options. Several factors were found to significantly influence the discussion of FP between oncologists and their patients, including the number of existing children (96.6%), marital status, cost, and type of cancer (76.7%, 65.7%, and 58.9%, respectively) (Arafa et al., 2023). In conclusion, there has been a notable improvement in the knowledge and attitude of oncologists towards FP in Saudi Arabia. However, there is still a need for enhancement in patients' counseling and referral to fertility services. The development of clinical practice guidelines for FP in cancer patients in Saudi Arabia is lacking, and implementing such guidelines would greatly improve FP services. Therefore, efforts should be made to improve patients' counseling and referral to fertility services and establish comprehensive clinical practice guidelines for FP in Saudi Arabia (Arafa et al., 2023).

Another study, In KSA Ahmad Sindi et al. (2022) conducted a cross-sectional study to assess the knowledge, attitude, and practice of health practitioners towards fertility preservation in cancer patients in Saudi Arabia. The study revealed a significant knowledge gap among health practitioners, with 90% expressing a need for more knowledge about fertility preservation. The lack of fertility preservation clinics and high costs were found to influence attitudes and practice. Importantly, 92% of the participants agreed that the Saudi Ministry of Health should establish guidelines and provide fertility preservation services for cancer patients. The study highlights the need for enhanced education and training for health practitioners, as well as the establishment of dedicated clinics and guidelines to ensure comprehensive care for cancer patients in Saudi Arabia.

### ***Theme 3- Factors Influencing Fertility Preservation Decision-making among Female Cancer Patients***

According to Daly et al. (2019), the discussion and decision-making process regarding fertility preservation (FP) for women undergoing cancer treatments can be challenging for both patients and healthcare providers. To gain a comprehensive understanding of the factors influencing these discussions and decisions, the researchers conducted a systematic review of qualitative research studies. The review focused on patient and provider perspectives on barriers and facilitators to FP decision-making. The researchers searched major bibliographic databases and grey literature in English from 1994 to 2016. They screened article titles, abstracts, and full texts, ultimately including 29 studies that met their inclusion criteria out of a total of 74 studies identified. The selected studies were published from 2007 onwards. Thematic analysis and quality assessment were conducted on the included studies. The analysis revealed three main types of barriers to FP discussions and decision-making. Firstly, providers' discomfort and patients' discontent were often linked to deficits in FP knowledge, skills, and information. Secondly, psychosocial factors and clinical issues influenced providers' practices and patients' decision-making processes. Lastly, material, social, and structural factors, such as lack of resources and accessibility, posed challenges to FP discussions. The review also identified potential facilitators to FP discussions and decision-making. The study highlights the need for improving physicians' knowledge and enhancing women's decision-making processes and access to FP. The authors discuss potential strategies to address these issues, along with suggesting areas for policy development and further research.

Persky, Gruschow, Sinaii, Carlson, Ginsberg, and Dowshen (2020) conducted a cross-sectional survey study in a pediatric, aimed to explore the attitudes of transgender and gender diverse (TGGD) youth and their parents towards fertility preservation (FP) decision-making. , hospital-based gender clinic from April to December 2017. in United States, The participants included TGGD youth and their parents, who completed electronic surveys containing 34 items for youth and 31 items for parents. The survey items focused on factors influencing FP decisions, desire for biological children, and willingness to delay gender-affirming hormones (GAH) for FP. The study included 64 youth, with a mean age of 16.8 years, 64% of whom were assigned female at birth. Additionally, 46 parents participated in the study. The findings revealed that a small percentage of youth (20%) and parents (13%) considered having biological children or grandchildren as important. Only 3% of youth and 33% of parents were willing to delay GAH for FP. The most common factor influencing youth FP decision-making was discomfort with reproductive anatomy they do not identify with (69%). For parents, a significant factor was whether FP was important to their child (61%). Paired analyses indicated that youth and parents had similar responses regarding youth desire for biological children and willingness to delay GAH for FP. The study's results suggest

that the majority of TGGD youth and their parents do not prioritize having biological offspring and are unwilling to delay GAH for FP. Discomfort with reproductive anatomy was a crucial factor influencing youth FP decision-making, while the wishes of their child played a significant role for parents. The authors suggest the need for future qualitative research to gain a deeper understanding of TGGD youth and parent attitudes towards FP. This research can aid in developing shared decision-making tools.

According to a systematic review by Wang, Anazodo, and Logan (2019), there is a significant gap in the provision of fertility information to cancer patients, leading to unmet information needs and inadequate decision-making regarding fertility preservation. The study aimed to evaluate the effectiveness and use of patient decisionaids (PtDAs) in supporting cancer patients' decision-making about fertility preservation.

The review, conducted in March 2018, included electronic search databases such as Medline, EMBASE, PSYCHInfo, PubMed, and Web of Science. A total of 12 papers detailing 11 studies, involving 772 participants and evaluating nine decision aids, were analyzed. The findings indicated that PtDAs significantly increased fertility preservation knowledge and decreased decisional conflict among cancer patients. Overall satisfaction with the decision aids was reported to be high. The review identified only two decision aids specifically developed for cancer patients, with one tool integrated into a web page. Additionally, one implementation study had been completed. The authors concluded that PtDAs could effectively complement current fertility counseling practices by improving information satisfaction and decision-making outcomes. However, further research is needed to assess the appropriateness of these resources for patients across the reproductive age range. Future implementation studies are expected to aid in the dissemination of these tools into clinical practice.

#### ***Theme 4- Effectiveness of Educational Interventions on Improving Knowledge and Attitudes towards Fertility Preservation among Female Cancer Patients***

According to a systematic review by Zhang, Jiang, Huang, Kako, Kajiwara, Lyu, and Miyashita (2021), the field of oncofertility emphasizes the importance of providing timely fertility preservation (FP) to cancer patients of reproductive age. However, healthcare providers often lack the necessary knowledge and practice in this area. The review aimed to assess the effectiveness of educational programs on FP for healthcare providers. The search was conducted in October 2019 using databases such as MEDLINE, PsycINFO, CINAHL, Web of Science, PubMed, and Scopus. The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. Out of the 160 identified articles, five relevant articles published between 2009 and 2019 were included in the review. Of these, three were quantitative nonrandomized studies, one was a randomized controlled trial, and one was a qualitative study. The programs targeted oncology nurses, social workers, and oncology fellows and residents. The findings revealed that four out of the five programs significantly improved healthcare providers' knowledge about FP. However, only the Educating Nurses about Reproductive Issues in Cancer Healthcare program demonstrated improvement in clinical practice ( $P < 0.01$ ). It is important to note that most studies used self-made questionnaires or tools to assess the effects of the training programs. The review highlighted the need for high-quality randomized controlled trials using standardized tools to provide robust evidence on the effectiveness of training programs.

In a study conducted by Ehrbar et al. (2021) investigated the long-term effectiveness of an online decision aid (DA) for female cancer patients considering fertility preservation (FP). The study aimed to assess the impact of the DA on knowledge, attitude, and decisional regret. The results showed that participants had a significantly more positive attitude than negative attitude towards FP ( $p = 0.001$ ). Although decisional regret scores were relatively low in both the control group (T2: mean = 19.00, SD = 13.24; T3: mean = 22.0, SD = 20.67) and the intervention group (T2: mean = 14.12, SD = 11.07; T3: mean = 12.94, SD = 13.24), there were no statistically significant differences between the two groups or within each group. However, there was a positive association between decisional conflict and decisional regret at T3 ( $p = 0.001$ ,  $r = 0.510$ ). The study concluded that the online DA served as an additional source of knowledge and had the potential to positively impact decisional regret in the long term. It suggested that providing an online DA as a complement to fertility counseling could facilitate decision-making for female cancer patients considering FP.

In a study conducted in the Netherlands by Van den Berg et al. (2021) aimed to develop and test a tailored online fertility preservation decision aid (DA) for female cancer patients. The researchers recognized that making decisions about future fertility can be challenging for these patients and that personalized information tailored to their specific cancer type and treatment is crucial for informed decision-making. However, cancer-specific DAs were not yet available. The DA was systematically developed by a multidisciplinary steering group consisting of 21 members. The development process

involved multiple iterations of draft development, three rounds of alpha testing, and revisions. The drafts were based on current guidelines, literature, and the needs of patients and healthcare professionals. Overall, 24 cancer-specific DAs were developed. In the alpha testing phase, cancer survivors and healthcare professionals found the DA to be highly helpful in decision-making, rating it 8.5 on a scale of 1-10. The cancer-specific information and the tool for recognizing personal values were particularly valued. Revisions were made to improve readability, personalization, usability, and to avoid giving false hope. The study concluded that a fertility preservation DA with cancer-specific information is essential in the daily care of female cancer patients and should be widely accessible. The final Dutch version of the DA was highly appraised, valid, and useful in decision-making. The researchers plan to evaluate its effectiveness with newly diagnosed patients and translate and adapt it according to national and international guidelines.

### 3. CONCLUSION

Previous studies have shown that there is limited awareness and knowledge about fertility preservation among cancer patients in various countries. In the context of Saudi Arabia, there is a significant gap in research regarding the awareness, knowledge, and attitude towards fertility preservation among female cancer patients. The study mentioned earlier conducted in the Makkah region is the first of its kind in Saudi Arabia. Therefore, there is a need for more studies to explore the awareness and knowledge gaps specific to the Saudi Arabian population. This will help in understanding the unique challenges and factors influencing the decision-making process regarding fertility preservation among female cancer patients in Saudi Arabia.

In conclusion, the existing studies on knowledge, attitude, and awareness of fertility preservation among female cancer patients highlight a significant gap in understanding and awareness of this important aspect of cancer treatment. Specifically, in the context of Saudi Arabia, there is a lack of research on this topic. The study conducted in the Makkah region is the first step in addressing this gap in knowledge. However, further research is needed to comprehensively explore the specific challenges and factors influencing the decision-making process regarding fertility preservation among female cancer patients in Saudi Arabia. By bridging this knowledge gap and increasing awareness, healthcare providers can better support and guide cancer patients in making informed decisions about fertility preservation options, ultimately improving their overall quality of life and reproductive health outcomes.

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