

Policy Brief

Childbearing Recommendations for Women of Reproductive Age with Breast Cancer: A Policy Brief

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ABSTRACT

Background and purpose: In recent decades, there has been an increasing trend in postponing pregnancy to the final years of the reproductive age. Accordingly, the growing number of young women with breast cancer (BC) has caused some women at reproductive aged diagnosed with BC to consider pregnancy after completing treatment. Since the fertility rate has decreased in Iran in recent decades and given that young BC women have an essential role in the fertility rate, this policy brief was conducted to investigate the childbearing recommendations for women of reproductive age with BC.

Materials and methods: A systematical search was first conducted in international databases such as Google Scholar, Scopus, Web of Sciences, Cochrane Library, and PubMed, as well as national databases such as SID and MagIran, and in some international health websites to find the most relevant evidence.

Results: The results led to the extraction of three main themes: Myths, facts, and considerations about childbearing. Overall, there was no comprehensive clinical guideline or document for the management of childbearing issues among women with BC.

Conclusion: In cases of BC, women of reproductive age not only require high-quality cancer treatments, but also need comprehensive support for their fertility status to adhere to their treatment successfully. Also, physicians and other healthcare providers should update their information to be able to give complete responses to these women's questions and main concerns regarding childbearing issues and the prognosis of cancer after pregnancy.

Keywords: Breast cancer, Childbearing, Reproductive-aged, Policy brief

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1. Introduction

Breast cancer (BC) stands as the most prevalent cancer among women worldwide [1], and its incidence is increasing among childbearing-aged women [2]. According to the National Cancer Institute Surveillance, <2.7% of BC occurred in women younger than 35 [3]. In general, BC in young women is characterized by a lower estrogen receptor expression and higher malignancy rate. So, after BC diagnosis, young women aged under 35 years are more likely to suffer from cancer-related recurrence and death than their older counterparts [4].

In recent decades, the rising trend of postponing pregnancy to the final years of the reproductive period and the growing number of young women diagnosed with BC encouraged some reproductive-aged women with BC to experience pregnancy after completing their cancer treatments [5, 6]. In addition, the declining fertility rate has recently been a substantial challenge in developing and developed countries, so many reproductive medicine and demography policymakers have attempted to address this challenge from different dimensions [7]. Studies show that the fertility rate among BC patients and survivors was considerably lower than that among general reproductive-aged women [8, 9].

Overall, cancer treatments such as chemotherapy and radiotherapy may hurt germ cells and negatively affect women's reproductive status, causing serious concern for the healthcare community [2]. Although the results of an epidemiological study revealed no mortality increase associated with childbearing after the BC diagnosis, the fear of cancer recurrence and death is considerably high among reproductive-aged women with cancer and their families [4, 6].

In Iranian and Eastern cultures, childbearing brings joyfulness and completes women's femininity. In some families, the childbearing issue is so vital that if women become infertile or catch diseases that lead to temporal infertility, their marital life might be threatened and ended [10]. So, young women diagnosed with BC have serious concerns regarding their childbearing status [11].

The literature review reveals no specific guidelines regarding the management of fertility status in reproductive-aged women who are diagnosed with cancer. Thus, physicians and other healthcare professionals lack enough clinical instructions or published guidelines to manage these women. Given the decline in fertility rate in Iran over recent decades and recognizing the pivotal

role of young BC patients as a reproductive-aged group of women, this policy brief was conducted to assess the childbearing recommendations for these women. This policy brief emphasizes the critical need for policymakers to establish acceptable clinical guidelines regarding childbearing issues in women with BC.

2. Materials and Methods

The research question addressed in this study was to determine the childbearing recommended approaches in reproductive-aged women diagnosed with BC. To compile this policy brief study, researchers performed a comprehensive search in international databases such as [Google Scholar](#), [Scopus](#), [Web of Sciences](#), [Cochrane Library](#), [UpToDate](#), [BMJ Best Evidence](#), and [PubMed](#), as well as Iranian national databases such as [Scientific Information Database \(SID\)](#) and [Magiran](#). In addition, some general international health websites, including the [World Health Organization \(WHO\)](#), the International [Federation of Gynecology and Obstetrics \(FIGO\)](#), the [United Nations Population Fund \(UNFPA\)](#), and the [Clinical Practice Guidelines \(CPGs\)](#), were assessed to find published guidelines and packages in this topic. Finally, some specialized websites were explicitly searched to find related literature: [American Cancer Society/American Society of Clinical Oncology Breast Cancer Survivorship Care Guideline](#), [International Guidelines on Breast Cancer Care](#), [European Society for Medical Oncology \(ESMO\)](#), [National Comprehensive Cancer Network \(NCCN\)](#), and [Clinical Care Option \(CCO\)](#).

During the search process, we considered no limitations regarding language, the study design, and publication year to enhance our accessibility to the related literature. The inclusion criteria in study selection were as follows: Each type of study that refers to childbearing or fertility issues in BC patients, studies published in valid journals or valid websites, and studies referring to fertility concerns of BC patients or BC survivors. However, studies conducted on women with other cancers were excluded from this study.

3. Results

The results are presented in three main categories: Myths, realities, and considerations surrounding childbearing among BC patients. [Table 1](#) presents strategies with priorities and policy suggestions. [Table 2](#) lists strategies with higher emphasis, final policy recommendations, and their strengths and weaknesses.

Table 1. The policies and recommendations to improve the management of childbearing issues among patients with the diagnosis of BC

Row	Main Policy	Policy Recommendation
1	Empowerment healthcare providers regarding childbearing issues among women with a diagnosis of BC	<ul style="list-style-type: none"> - Holding workshops, congress or symposiums, and evidence-based journal clubs specifically regarding the childbearing issues and pregnancy of BC patients, emphasizing the possibility of pregnancy among BC survivors, maternal and neonatal outcomes, the effect of pregnancy on cancer prognosis, and the survival rate after pregnancy experience in previous cases - Emphasizing the important role of physicians or other healthcare providers in rendering valid information regarding childbearing issues to patients - Revising the opinions of some physicians regarding preventing pregnancy among BC patients by providing level I evidence regarding the safety of BC survivors following pregnancy - Highlighting the therapeutic relationship between physicians and patients to achieve positive treatment outcomes - Empowering healthcare providers, such as oncologists, gynecologists, midwives, psychologists, and psychiatrists, to provide multidimensional services to these patients as a high-risk population during treatment and also after surviving pregnancy - Considering an educational plan specifically for the management of pregnancy among patients with chronic diseases such as cancer for midwifery students
2	The ministry of health healthcare system's role in reflecting the specific reproductive needs programs for patients with BC	<ul style="list-style-type: none"> - Considering the specific culture-based clinical guidelines by the Ministry of Health regarding pregnancy issues and their management for patients with cancer - Considering the monitoring systems in healthcare systems to watch the physicians' and midwives' function in the management of BC survivors - Using information and network technology to facilitate communication and interactions between different fields - Allocating financial credits for interdisciplinary projects in the field of health - Considering a grant from the government to the ministry of health for specialized studies on the issues of BC patients
3	Considering specialized research teams to conduct fertility studies in cancer patients in cancer research centers	<ul style="list-style-type: none"> - Publishing specific documents, update reports, and packages for the management of pregnancy among reproductive-age women with the diagnosis of BC by professional researchers in the field of oncology and gynecology - Designing cohort studies on reproductive-aged BC survivors to follow their pregnancy occurrence and estimate the pregnancy rate in this population compared to the general population
4	Empowerment of reproductive-aged women with a diagnosis of BC regarding childbearing issues	<ul style="list-style-type: none"> - Considering the specific counseling sessions on childbearing issues for new cancer-diagnosed patients along with cancer treatment visits, such as fertility preservation options before initiating treatment to increase their opportunity for motherhood experience after treatment. - Considering the psychological supportive sessions for patients and their husbands or other family members to cope with disease and treatment compliance successfully - Holding the group psychological sessions for patients who intend to experience pregnancy and invite BC survivors who experience motherhood to share their experience with newly diagnosed women with cancer - Listing the major concerns of patients with cancer and providing the scientific evidence to answer their questions regarding their disease condition and fertility potential - Providing information about the safety interval from completing cancer treatment to the occurrence of pregnancy - Considering the follow-up visits after completing the cancer treatment until pregnancy occurrence to prepare them for pregnancy successfully - Considering more prenatal visits in pregnant BC survivors and, in addition, considering specific phone lines for them to contact their healthcare providers in emergencies

Myths of childbearing in BC patients

The available information about the safety and feasibility of pregnancy after BC does not provide definitive evidence. Thus, pregnancy after BC is surrounded by myths, not facts. As the survival rate among young women with BC increases, This issue must be carefully assessed and clarified [12].

In the early 20th century, a common belief prevailed that BC conflicts with pregnancy and pregnancy in patients with BC are associated with decreased survival rates. Therapeutic abortion was a response to this belief that the hormonal response of pregnancy resulted in poor patient outcomes [13]. After all, BC is a hormonal tumor, and during pregnancy, female hormones increase. Therefore, there was a general concern that pregnancy can increase the risk of cancer recurrence

Table 2. Final policies and recommendations to prioritize and improve the management of childbearing issues among patients with the diagnosis of BC

Row	Final Strategy	Final Policy Recommendation	Strength	Weakness
1	Considering the specific reproductive needs programs for patients with BC by The Ministry of Health	<ul style="list-style-type: none"> - Specifying culture-based clinical guidelines regarding pregnancy issues and their management for patients with cancer - Considering the monitoring systems to monitor the physicians' and midwives' function in the management of BC survivors 	<ul style="list-style-type: none"> - Responding to patients' needs and addressing their fertility concerns - Satisfying with the educational activities carried out by the upstream system - Providing high-quality services to the patients - Improving the follow-up of the patient's needs and condition by healthcare providers 	<ul style="list-style-type: none"> - Requiring the participation of a wide range of specialists - Needing widespread supervision - Imposing structural costs on the medical science education system - Needing for consultation and policy discourse at different levels - Time-consuming and costly monitoring procedures
2	Empowerment of healthcare providers regarding childbearing issues among women with a diagnosis of BC	<ul style="list-style-type: none"> - Holding workshops, congress or symposiums, and evidence-based journal clubs specifically regarding childbearing issues, the effect of pregnancy on cancer prognosis, and the survival rate - Emphasizing the important role of physicians or other healthcare providers in providing valid information regarding childbearing issues to patients - Empowering healthcare providers to provide multidimensional services to these patients during treatment and pregnancy 	<ul style="list-style-type: none"> - Updating physicians' knowledge, awareness, and practice in managing these cases - Improving the therapeutic outcomes of these patients and better pregnancy outcomes 	<ul style="list-style-type: none"> - Having limited time for physicians to provide specific consultation in addition to routine cancer care - Discrepancy between physicians regarding the importance of fertility counseling and preservation among BC patients
3	Empowerment of reproductive-aged women with a diagnosis of BC regarding childbearing issues	<p>Holding specific counseling sessions on childbearing issues for new cancer-diagnosed patients, along with cancer treatment visits</p> <ul style="list-style-type: none"> - Providing psychological supportive sessions for patients and their husbands or other family members to cope with disease and treatment compliance successfully - Providing information about the safety interval from completing cancer treatment to the occurrence of pregnancy - Considering the follow-up visits after completing the cancer treatment until pregnancy occurrence to prepare them for pregnancy successfully 	<ul style="list-style-type: none"> - Successfully adjusting to the treatment processes and procedures through higher information - Successfully spending the stressful interval between treatment completion and the occurrence of pregnancy - Providing higher mental health and improved personal and social function - Increasing life expectancy and improving quality of life 	<ul style="list-style-type: none"> - Time-consuming counseling sessions - The difficulty in setting the counseling time sessions due to the special patient's physical health and treatment procedure

among BC survivors [14]. Additionally, some psychological problems appeared in this regard. According to the results of an Iranian qualitative study to explore the psychological response of BC survivors, factors such as incompetence, despair of life, fear of disease recurrence, and fear of a child growing up without a mother had been the most common psychological reaction of BC survivors [15].

The transition to motherhood responsibilities accompanied by the fear of cancer recurrence and becoming an ill mother are some challenges among patients [16]. Concerns regarding transmitting the genes of cancer to newborns [17] and fear of losing a pregnancy and its subsequent grief were other BC patients' challenges. Other most common challenges of BC survivors after childbirth were fear of inability to breastfeed due to

mastectomy, failure to devote enough energy to taking care of the newborn and meeting the child's needs, and the sense of dependency on family members, especially the husband's support to perform motherhood responsibilities [18].

The wrong myths regarding the conflicts of childbearing after diagnosis of BC arise from the lack of patients' health information regarding fertility potential. Actually, healthcare providers do not provide enough information to their patients [12].

As concerns about childbearing are added to the disease distress and its treatment challenges, the possibility of psychiatric disorders among patients rises. Therefore, counseling sessions must be held for newly diagnosed BC patients in their reproductive age to in-

form them about the chance of a healthy pregnancy after BC and possible disease outcomes.

Overall, the assessed studies had been conducted on a generally small sample size, and their population does not represent all young women with BC worldwide with different cultures and religions.

Realities of childbearing in BC patients

Some oncologists believe that in cases with cancer, the survival of patients is more important than preserving their fertility potential, so they do not present information about fertility preservation options and childbearing issues. Young BC patients have specific reproductive needs and concerns that physicians commonly do not satisfactorily address before initiating cancer treatment [19].

Many women experience considerable anxiety and distress regarding the possibility of infertility, conceiving, completing a healthy pregnancy, and childbirth. Overall, oncologists' leading causes of concern were the possible effects of previous exposure to anticancer treatments on the fetus's health, such as raising the risk of congenital abnormalities, delivery problems, or birth complications. Factors such as age and use of adjuvant chemotherapy are essential predictors of ovarian function among reproductive-aged women with BC [17].

In general, the reproductive health needs of patients as a vital survivorship issue should be assessed in the initiation of the treatment to reduce their psychological health-related fertility issues. They should be aware that, generally, the pregnancy rate may decrease after the BC treatment due to the possible effect of treatments on fertility potential. Still, this reality should not disappoint the young patients attempting to conceive after treatment, and various studies indicate that BC survivors can experience healthy pregnancies and have healthy children.

Considerations of childbearing in BC patients

In the 21st century, returning to normal life after cancer treatment should be considered an important issue in cancer care management [20]. Decisions about childbearing are complex and challenging after a BC diagnosis. Women experience a sense of uncertainty due to their indefinite disease statuses [4] and the potential long-term side effects of anticancer treatments, such as premature ovarian failure and subsequent disturbed fertility [20]. Generally, the pregnancy decision is affected by various important factors, such as the woman's

desire for more pregnancies, age, the statistical risk of early cancer recurrence, and the potential effect of estrogens on the risk of BC recurrence [21].

Despite recent studies showing that childbirth after the BC treatment is associated with no adverse effect on cancer recurrence or survival rate for early-stage BC patients, physicians advise patients to attempt to conceive at least two years after cancer treatments. However, this hypothesis is partially correct [22] because there is limited high-quality evidence to support this hypothesis. In addition, an assessment of the published guidelines showed that BC-related fertility was not assessed among these patients. Overall, studies regarding the fertility needs of patients and healthcare specialists' knowledge and attitudes regarding the specific patient's fertility needs are limited, and most of the available information has been retrieved through qualitative studies [23].

According to the maternal health care guideline published by the Iranian health system, no guideline exists to assess the pregnancy and childbearing issues for this high-risk population, and most of the policies have been designed for healthy women [24]. As these women generally have more than one health problem and there are no guidelines or educational packages in the primary health care units, it is necessary to prepare and validate a comprehensive service package that meets patients' needs at different levels.

Two study authors recently cooperated with another research member's team who designed and validated an educational pregnancy health package for BC survivors. Based on the qualitative study and literature review findings, a pregnancy health package for BC survivors was developed in seven chapters. The results of the validity or quality assessment of the package according to the six domains of the appraisal of guidelines for research and evaluation instrument II tool were reported as follows: The score for the scope and purpose domain was 95.55%, the stakeholder involvement domain was 89.16%, the score for the rigor of development domain was 92.97%, clarity of presentation domain was 94.44%, the score of applicability domain was 87.06%, and the score of editorial independence domain was calculated 93.75%. This package is a valuable resource for women who intend to get pregnant after completing BC treatment [11].

4. Discussion

This policy brief investigated the childbearing considerations among BC patients according to the most reliable evidence and reported them in three main categories: Myths, realities, and considerations. Overall, childbearing considerations are an essential issue that should be assessed in BC patients. These patients generally know little information regarding their fertility status, disease condition after pregnancy, and side effects of treatment on fertility consequences. In addition, because physicians generally ignore their information needs during treatment, these women would develop myths about fertility potentials [25]. These issues represented the lack of clinical and cultural-based guidelines regarding the management of these patients, leading to difficulty in assessing their fertility needs by physicians and other healthcare providers.

With the increasing survival rate due to improvements in screening procedures and advances in the treatment options among BC patients, they consider childbearing issues after BC treatment an essential clinical challenge [26]. In clinical practice, gynecologists and oncologists are faced with the challenge of educating about childbearing issues and cancer-related fertility matters to BC patients. In this policy brief study, the authors affirmed the necessity of considering educational courses and evidence-based journal clubs according to the latest published literature regarding pregnancy during cancer treatment and also pregnancy rate and outcomes among BC survivors.

One of the principal vital issues in reproductive-aged patients with BC who intend to experience childbearing after the treatment of BC is psychological concerns. These concerns comprise high levels of anxiety and distress regarding their ability to complete a healthy pregnancy and also fear of the possible adverse effects of adjuvant therapy on their fetus's health and development, concerns regarding the transmission of the genes of cancer to newborn [17] and fear of stillbirth and its subsequent grief [27, 28]. In addition, fear of disease recurrence after experiencing pregnancy, fear of motherless children growing up, and concern regarding the child's well-being after the mother's death [18, 29] were other psychological issues reported by some of the BC survivors with experience of motherhood after treatment [18]. According to the results of an Iranian qualitative study on the psychological response of BC survivors, factors such as incompetence, despair of life, and fear of disease recurrence had been the most common psychological reaction of BC survivors [15]. The results of

a qualitative study regarding the fertility concern of BC survivors during the perinatal period showed that they need more information and valuable resources about fertility and reproductive issues as they experience a higher possibility of psychological distress [30]. This policy brief also indicates the significant role of psychological counseling sessions during cancer treatment for young women with considerable distress regarding the fertility potential following cancer and its treatment.

When discussing "childbearing after BC" with the general population, many ask whether it is possible to experience pregnancy after cancer. This question shows the general population's lack of knowledge and awareness, even women diagnosed with BC. One of the crucial actions to find these women's concerns during cancer diagnosis is to perform a qualitative study in this regard. Also, this population's lack of special programs is seriously felt in mass media and cyberspace. A literature review of a published qualitative study among Iranian BC patients, which assessed the perceived conflicts of BC patients, showed that the women's concerns regarding pregnancy include fear of recurrence of cancer following pregnancy, fear of losing the pregnancy, fear of the disease's effect on the consequences of pregnancy, all caused by their lack of knowledge about fertility issues after cancer [31]. Regarding the relationship between pregnancy after BC treatment and survival rate and disease recurrence, studies have indicated that BC survivors who conceived had higher survival and lowered BC recurrence than those who did not conceive [32, 33].

The results of this policy brief provide information about the possibility of childbearing after BC and safe delay intervals before conception [34]. For women with localized BC with a good prognosis, survival is unlikely to be compromised if pregnancy occurs within 6 months of diagnosis. To avoid the adverse effects of adjuvant treatment on birth outcomes, it is recommended to delay pregnancy for 6 to 12 months after completion of treatment because younger women have significantly lower survival rates and higher local and distant recurrence than older women. Individuals younger than 33 years are recommended to delay pregnancy for at least 3 years to reduce the risk of recurrence, while patients with lymph node involvement should postpone pregnancy for at least 5 years after treatment [22].

Conclusion

Altogether, there are no comprehensive guidelines for the management of childbearing issues among women with a diagnosis of cancer. However, in illnesses like can-

cer, reproductive-aged women not only need high-quality cancer treatment but also require multidimensional and multidisciplinary comprehensive supportive care regarding their fertility status to adjust to their treatment successfully. Also, as a suggestion, physicians and other healthcare providers should update their information to present complete responses to patients' questions and main concerns regarding childbearing issues and the prognosis of illness after pregnancy.

In this current policy brief, we only reported the best evidence regarding pregnancy and childbearing issues in patients with BC with no systematic design. However, limited published evidence on this issue was another limitation that highlights the necessity for other studies in this regard. Although the authors of this study recently published a systematic review regarding the pregnancy rate and maternal and neonatal outcome among BC survivors, we suggest that other high-quality studies regarding the childbearing consideration among BC patients be performed to dispel the prevalent myths in this regard and improve the quality of life of these women.

Ethical Considerations

Compliance with ethical guidelines

This project tried to follow the Declaration of Helsinki as a statement of ethical principles for medical research on human subjects.

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Authors contributions

Conceptualization: Zohreh Shahhosseini; Writing the original draft: Marzieh Azizi; Methodology, review and editing: All authors.

Conflict of interest

The authors declared no conflict of interest.

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