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# Survey situation of mental health of pregnant women with breast cancer: A systematic review study

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## Abstract:

A pregnant woman struggles with physical and mental problems caused by hormonal changes during her pregnancy. Now, if cancer is added to these difficult conditions, the pregnant woman will suffer a lot of psychological burden. We decided to conduct a systematic review study titled "Mental health examination of pregnant women with breast cancer" so that by examining this issue and emphasizing it more, we can reduce this mental burden. A systematic review was conducted on the English and Persian documents published throughout a 10-year period (2013–2023) in PubMed or MEDLINE, ScienceDirect, Web of Science, and Google Scholar databases. All documents were assessed for eligibility by titles or abstracts according to the search strategy, with the terms, such as mental health, pregnant woman, and pregnancy with breast cancer. The screening process was conducted by two independent authors. The selected articles were checked regarding inclusion and exclusion criteria. In total, 235 relevant studies were searched in 2013–2023, and after evaluating the full text of the article, 32 full-text articles were opted in accordance with the eligibility criteria, and finally, 26 full-text articles were reviewed systematically. According to the studies that were analyzed, the most common mental health disorders in pregnant women with breast cancer were depression, anxiety, and stress, which were created as a result of the fear of the possible consequences of cancer in the pregnant mother. To improve the level of mental health of women with cancer in Iran, the following solutions are suggested: 1. strengthening mental health services in primary health care, 2. appointing the trustee of the unit to improve the level of interdepartmental leadership and intradepartmental governance, 3. determining sustainable and targeted financial resources to provide mental health services needed by pregnant women with cancer, 4. moving the financial resources allocated to insurance mechanisms for greater financial protection, 5. expanding the umbrella of social support, and 6. a behavioral educational program that can be used to improve mental health, especially the symptoms of depression and anxiety in pregnant women with cancer.

## Keywords:

Breast cancer, mental health, pregnant women, pregnant women with cancer

## Introduction

Mental health means the presence of psychological well-being or the absence of mental illness. The state of mental health refers to someone whose performance is "at an acceptable level of emotional and behavioural regulation." From the perspective of positive or holistic psychology, mental health includes a person's ability to enjoy life and create a

balance between life activities and trying to achieve psychological resilience. According to the World Health Organization (WHO), mental health includes "mental well-being, perceived self-efficacy, autonomy, empowerment, intergenerational dependence, and self-actualization of one's intellectual and emotional abilities, as well as others." The WHO further states that a person's well-being is in realizing his abilities, coping with the normal pressures of life and productive work, and playing

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a role in society, cultural differences, subjective evaluations, and various specialized theories, all of which affect how to define “mental health.”<sup>[1]</sup> Good mental health can improve the quality of life, while poor mental health can make it worse. In general, the stages of diagnosis and treatment of any chronic disease can be the source of social and psychological pressures. Women with breast cancer are among a group of patients who are exposed to various social and psychological pressures. The health and progress of any society depend, to a large extent, on the health of women. Pregnancy and childbirth have a significant effect on women’s health, and they are considered important indicators for national health. However, the mental health of the pregnant mother has a permanent and long-term effect on the health of the child and the family. Approximately 25–50% of women with breast cancer experience repeated stress-related problems. They have to deal with things, such as how to treat others (answering their questions and concerns about the disease), the shock of the diagnosis and its associated consequences (death, loneliness, and pain), and worry about the results of the treatment. Physical appearance, changes in functions, and social roles of some women have caused a decrease in health and eventually death. Most women experience temporary or long-term psychological distress after being diagnosed with breast cancer. These disorders include negative emotions, depression, anxiety, anger, fear, sadness, and behaviors, such as withdrawing from social activities and loneliness and cutting off relationships with family, friends, and acquaintances. Psychological adjustment and quality of life among breast cancer survivors are not the same. However, most people who recover show an abundance of experiences of psychological distress, disruption of thoughts, feelings, and thoughts, general numbness, and withdrawal from new situations and ideas.<sup>[2,3]</sup> Breast cancer is the second most frequent cancer presenting during pregnancy. Pregnancy-associated breast cancer is defined as breast cancer that is diagnosed during pregnancy, lactation, or the first postpartum year. Physiologic changes related to pregnancy and the fetus are the most important diagnostic and therapeutic challenges for pregnant women. The signs and symptoms of pregnancy can mask breast cancer in a pregnant woman and lead to a late cancer diagnosis. In addition, concerning fetus safety, there are many limitations and contraindications to using diagnostic and therapeutic methods during pregnancy.<sup>[4]</sup> A pregnant woman struggles with physical and mental problems caused by hormonal changes during her pregnancy. Now, if cancer is added to these difficult conditions, the pregnant woman will suffer a lot of psychological burden.<sup>[5]</sup> Cancer patients suffer from many physical, psychological, and social problems, which may disrupt their quality of life. We decided to conduct a systematic review study titled “Mental health

examination of pregnant women with breast cancer” so that by examining this issue and emphasizing it more, we can reduce this mental burden.

## Materials and Methods

A systematic review was conducted in a 10-year period from 2013 to 2023 (April 30) in English and Persian in four databases, including PubMed or MEDLINE, ScienceDirect, Web of Science, and Google Scholar, with terms, such as mental health, pregnant woman, and pregnancy with breast cancer. All the related articles were assessed to find the eligible articles whose titles or abstracts survey the situation of mental health of pregnant women with breast cancer. We also searched the reference lists of related articles and used them in the review process. The screening process for articles was conducted by two independent authors. The selected articles were checked regarding inclusion and exclusion criteria.

### Data extraction

After considering all databases based on our keywords, the proper records were entered into EndNote X8 (Thomson Reuters, New York, USA) and the duplicate records were removed. The titles and abstracts of the searched articles were reviewed and screened for eligibility. We then conducted a full review of the related articles based on titles and abstracts for the final selection of articles. The methodological quality of selected articles was conducted based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist of an observational study. For each article, some information, including authors, objectives, place, sample size, statistical analysis, medical error variables, and the main results, was extracted. Each article was assessed independently by two authors, and then, the data were extracted independently. Another author was considered an arbiter to resolve any disagreements.

### Inclusion criteria

Studies that examined the mental health of pregnant women with breast cancer and all studies that were published in 2013–2023 (April 30) in English and Persian were included.

### Exclusion criteria

Studies of a randomized and qualitative nature and the review of clinical trials and all studies published at the conferences were excluded. Furthermore, studies with confusing results or incomprehensible analysis and studies showing bias or inconsistency resulting in the choice or bias of information were excluded.

### Search strategy

To find eligible articles, four databases were searched, including PubMed or Medline, Google Scholar, Web of

Science, and ScienceDirect. The keywords and search strategies are shown in Table 1. Descriptive data, including author, purpose, place of study, sample size, mental health variables of pregnant women with cancer, statistical analysis, and main results, are extracted.

## Results

The process of searching and selecting literature is illustrated in Figure 1. In total, 235 relevant files from four different databases and their resources were searched during the initial search. After deleting duplicate versions in the Endnote software (Endnote X8, Thomson reuter Co., New York, USA), 39 articles remained for screening based on titles and abstracts. In the evaluation of the whole text of the article, three complete texts were removed and 32 articles with the full text had the criteria to be eligible for the systematic review. Finally, after deleting six articles, 26 full-text articles were included in a systematic review as shown in Table 2. Finally, 26 articles were reviewed. All articles were Cross-sectional and descriptive. The year of publication of the articles varied from 2013 up to 2023. The articles were published in English and the rest of the articles were in Persian. The information presented in the articles was all collected from the site. After reviewing the research results, the most common mental health disorder in pregnant women with breast cancer was depression, anxiety, and stress. The most common causes of depression and anxiety in pregnant mothers with breast cancer are the fear of causing abnormalities in the fetus due to chemotherapy, the fear of not taking proper care of the child, the fear of not breastfeeding, the fear and worry of the children's normal development, and, as a result, the feeling the guilt of the mother and the feeling of not being able to properly comfort or bond emotionally with

her child and fear, worry, and stress about the death and orphanage of children. It is true that most of the mother's anxiety and worries are about her child, but she also has anxiety and stress about herself, such as the fear of losing her beauty and losing her hair due to chemotherapy and not being accepted by her husband.

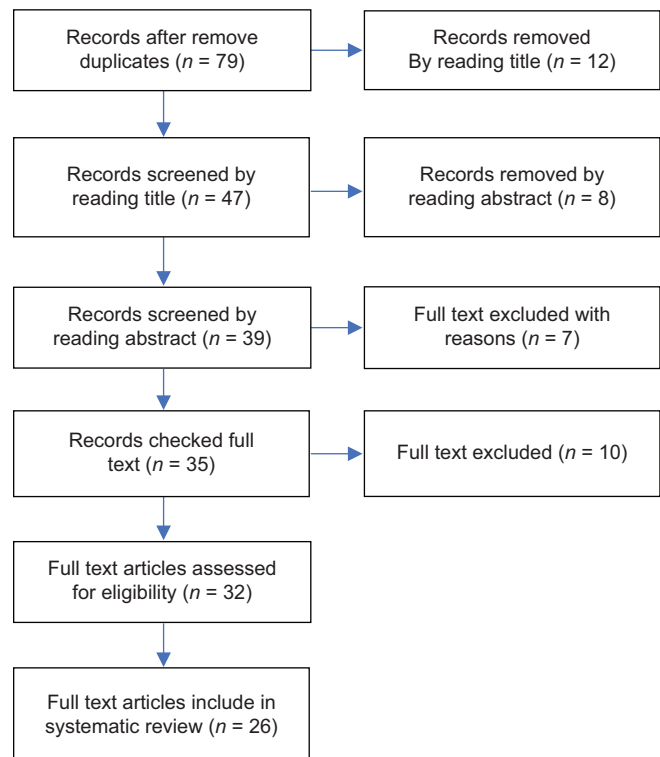
## Discussion

One of the most sensitive periods of a woman's life is pregnancy, which, due to physical changes, will also bring psychological changes.<sup>[27]</sup> The present study was conducted with the aim of explaining the mental health status of pregnant women with breast cancer in Iran and the world by reviewing the studies conducted in this field from 2013 to 2023. The findings of a phenomenological study showed that after the diagnosis of cancer in pregnant women, an emotional storm can be seen in them<sup>[6-9]</sup> because they have to simultaneously enjoy two opposing life events, enjoying pregnancy with feelings of disappointment and fear of facing death.<sup>[22,23]</sup> The factors that play a role in the psychological distress of these women are factors, such as disease characteristics, sociodemographic factors, the baby's health, pregnancy-related factors, and cognitive emotion regulation.<sup>[19]</sup>

Although the majority of pregnant women with breast cancer will have psychological and social problems, young women are more psychologically vulnerable due

**Table 1: Keywords and search strategies in three different databases**

Keywords/search strategy
PubMed/Medline Mental Health* OR * Mental Illness OR Mental Disorders* OR psychological distress OR Emotional health OR
Psychological morbidity OR Mental status OR Mental Health [Mesh] survey* OR explore*
Identify* OR diagnosis * OR correlate* OR influence* OR impact* OR Breast cancer* OR * Pregnancy Complications OR NOT mental health* OR mental disorders* OR
Emotional health * OR mental Illness OR mental health [Mesh] Breast cancer* OR Pregnancy Complications
Pregnant women
Google scholar mental health AND "Breast cancer
Science direct mental health AND "Breast cancer, OR Pregnancy Complications
Web of science mental health AND mental Disorders



**Figure 1: Flow diagram showing the selection of articles for the review Process**

**Table 2: Summary of included studies in this review based on the extracted data**

Row	Authors	Year	Objective	Place	Type of study	Sample size	Main results
1	Xin Zhang <i>et al.</i>	2021	Effects of continuous care combined with evidence-based nursing on mental status and quality of life and self-care ability in patients with liver from breast cancer	China	RCT	96 patients with liver metastases from breast cancer (two groups of 48, case and intervention) The intervention group received evidence-based nursing (EBN)	After nursing, the scores of self-care skills, self-responsibility, health knowledge, and self-idea of patients in the instance of watching, noticing, or making a statement and the scores of mental energy, social interaction, emotional restriction, and mental status of patients in (instance of watching, noticing, or making a statement) were much higher than those in the comparison group ( $P<0.05$ )
2	Yun-Chen Chang <i>et al.</i> <sup>[2]</sup>	2022	Short-term effect of Internet-delivered mindfulness-based stress reduction in mental health, self-efficacy, and body image among women with breast cancer during the COVID-19 pandemic	Taiwan	RCT	67 women with breast cancer were allocated to a 6-week iMBSR ( $n=41$ ) program or a waitlist control group ( $n=26$ )	iMBSR is a program that can improve mental health, body image, and self-efficacy in women with breast cancer
3	Jessica R. Gorman <i>et al.</i>	2009	Physical and mental health correlates of pregnancy following breast cancer	USA	Nested case–control study	81 younger participants (27 cases who had children after breast cancer and 54 controls)	Physical health scores were not different between cases and controls. However, mental health was 6 points higher among those who had children
4	Rebecca Troisi <i>et al.</i>	2018	Pregnancy complications and subsequent breast cancer risk in the mother	Denmark, Finland, Norway, and Sweden (1967–2013)	Case–control study	( $n=116,196$ )	No other pregnancy complication appeared to be associated with breast cancer risk. The current study indicated that other maternal, perinatal, and neonatal characteristics, such as twin pregnancies, lower maternal BMI, and premature delivery, also were associated with elevated breast cancer risk
5	Melanie Betchen <i>et al.</i> <sup>[5]</sup>	2020	This cross-sectional study of child cognitive, language, and motor development analyzes child behavior in the context of maternal psychosocial well-being after a cancer diagnosis during pregnancy	Rowan	This cross-sectional study	69 women and 71 children (two sets of twins) ages 6 months to 12 years	Maternal depressive and somatic symptoms were associated with more externalizing behaviors. Among younger children (0–3.5 years), maternal somatic symptoms were associated with poorer language performance. Moderation analysis showed that mothers with fewer somatic symptoms and utilization of less discipline had children with less externalizing behaviors and higher language scores (i.e., stronger verbal ability)
6	Thewes <i>et al.</i> <sup>[6]</sup>	2013	Psychological morbidity and stress but not social factors influence the level of fear of cancer recurrence in young women with early breast cancer	Australian states	Cross-sectional study	218 breast cancer survivors	Psychological morbidity is associated with FCR, but the majority of women with high levels of FCR do not also meet the criteria for a clinical level of GAD or hypochondriasis

Contd...

Table 2: Contd...

Row	Authors	Year	Objective	Place	Type of study	Sample size	Main results
7	Lesley Stafford <i>et al.</i> <sup>[7]</sup>	2022	Experiences of health professionals treating women diagnosed with cancer during pregnancy and proposals for service improvement	Australia	A prospective study	27 HPs were interviewed from five states across Australia, from the disciplines of obstetrics, oncology, and allied/mental health. Nearly half were currently treating women with GC	Systemic changes such as co-location of services and integration of supportive care are needed if comprehensive cancer and obstetric care are to be provided for women with GC. HPs would benefit from more interdisciplinary education and opportunities for mentorship. Clinical liaisons or cancer care coordinators would greatly enhance care for these women. The collation of evidence, available resources, training opportunities, and shared information would support HPs in treating this population. Formalized ways to connect women with GC with peer support are needed
8	Pagani O, <i>et al.</i> <sup>[8]</sup>	2013	Pregnancy after breast cancer: Are young patients willing to participate in clinical studies?	5 regions (Europe/ US/Canada/ Middle-East/ Australia)	A prospective study	217 patients	The best available retrospective evidence suggests that pregnancy after BC does not increase the risk of disease recurrence, and in young women with breast cancer, desire and hope for fertility and the occurrence of successful fertility have been reported
9	Federica Facchin <i>et al.</i> <sup>[9]</sup>	2021	"Lights and Shadows": an interpretative phenomenological analysis of the lived experience of being diagnosed with breast cancer during pregnancy	Italy	Qualitative study interpretative phenomenological analysis	Five women with breast cancer diagnosed during pregnancy	(1) The emotional storm experienced after cancer diagnosis and the importance of receiving appropriate information and being focused on treatment decisions; (2) physical changes and comparisons with healthy women, associated with feelings of sadness and inadequacy; and (3) being positive, feeling free to disclose all kinds of emotions, religion, and spirituality as sources of strength
10	Melanie Betchen <sup>[10]</sup>	2019	Effects of maternal psychological status post-cancer diagnosis in pregnancy on early childhood development	Rowan	Analytical study	77 women who experienced cancer during their pregnancies	Higher levels of maternal depression, anxiety, intrusive trauma symptoms, and avoidant trauma symptoms. It was seen in mothers with cancer during pregnancy
11	Jessica Howard-Anderson <i>et al.</i> <sup>[11]</sup>	2012	Quality of life, fertility concerns, and behavioral health outcomes in younger breast cancer survivors	California, Los Angeles	A systematic review	28 articles	Concerns about premature menopause, menopausal symptoms, and infertility were common in younger women (aged $\leq 50$ years) and had a role in the level of distress after treatment. Weight gain and physical inactivity were common health outcomes
12	Regina Matar and <i>et al.</i> <sup>[12]</sup>	2022	Timing of presentation and outcomes of women with stage IV pregnancy-associated breast cancer (PABC)	New York	Retrospective review	77 women, 51 (66%) in the postpartum group and 26 (34%) in the pregnant group	Among 17 women who continued pregnancy, no obstetric or fatal complications were noted. Clinic pathologic and treatment variables did not differ between groups

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Table 2: Contd...

Row	Authors	Year	Objective	Place	Type of study	Sample size	Main results
13	Lee YY and <i>et al.</i> <sup>[13]</sup>	1994–2008	Incidence and outcomes of pregnancy-associated cancer in Australia, 1994–2008: a population-based linkage study	Australia	Population-based cohort study	1798 new cancer diagnoses were identified, including 499 during pregnancy and 1299 postpartum	Women with cancer diagnosed during pregnancy had high rates of labor induction (28.5%), cesarean section (40.0%), and planned preterm birth (19.7%). Novel findings included a cancer association with multiple pregnancies and LGA
14	Hammarberg K and <i>et al.</i> <sup>[14]</sup>	2017	Healthcare experiences among women diagnosed with gestational breast cancer	Australia	Qualitative study	17 women who had been diagnosed with GBC	Comprehensive care and attention to the mental state of mothers during this period, the need for detailed counseling, and support for mothers in making decisions about treatment and continuation of pregnancy, increasing hope for recovery, and psychological support during this period of pregnancy are among the most important factors influencing mothers. There was a pregnant woman with breast cancer in this study. Interdisciplinary and patient communication were important components of the care experience. Comprehensive care was seen to encompass the “spirit,” “mind,” and “body.”
15	Hori R and Suzuki S <sup>[15]</sup>	2021	Shared decision-making support process for healthcare professionals for pregnant cancer patients and their families	Japan	Qualitative; semi-structured interviews, and focus group	14 women	To explore the process of shared decision-making for healthcare professionals supporting pregnant patients with cancer and their families. Five themes are integral to providing support: preparing for shared decision-making; healthcare professionals working in a team; concerning intentions to the patient and her family; improving the system to provide support; and providing support that helps informed decisions
16	Gomes <i>et al.</i> <sup>[16]</sup>	2021	Cancer during pregnancy: from the diagnosis to the repercussions on the family experience of maternity	Brazil	Qualitative; interviews	31 (12 women and 19 family members)	To explore how the diagnosis of cancer during pregnancy occurred and impact on the maternity experience. The diagnosis was based on symptoms that were confused with pregnancy. There are two main themes: being surprised by the diagnosis and suffering from the repercussions of cancer on pregnancy and health
17	Facchin <i>et al.</i> <sup>[17]</sup>	2021	“Lights and shadows”: an interpretative phenomenological analysis of the lived experience of being diagnosed with breast cancer during pregnancy	Italy	Qualitative; semi-structured interviews	5	To understand the lived experience of women being diagnosed with GBC. Three main themes emerged: overwhelming emotions, a sense of difference, and sources of strength. Stress is caused by the paradoxical coexistence of cancer and pregnancy

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Table 2: Contd...

Row	Authors	Year	Objective	Place	Type of study	Sample size	Main results
18	Kozu <i>et al.</i> <sup>[18]</sup>	2020	Experience of Japanese pregnant women with cancer in decision-making regarding cancer treatment and obstetric care	Japan	Qualitative; semi-structured interviews	8	To explore the experiences of pregnant women with cancer in decision-making and their views on the role of nurses in providing care. Decision-making experiences had three themes: interaction between the women and the fetus, family members and staff, dilemma and uncertainty, and redefinition of own decisions
19	Faccio <i>et al.</i> <sup>[19]</sup>	2020	Motherhood during or after breast cancer diagnosis: a qualitative study	Italy	Qualitative; case-control semi-structured interviews	38 (4 with GBC, 15 with cancer history, 19 with no cancer history)	To compare maternal representations in pregnant women with experience of GBC, breast cancer history, and those with no cancer history. The main themes were fears and worries for themselves and fetus/baby, meaning of motherhood, mother-fetus relationship, and partner support
20	Vandenbroucke <i>et al.</i> <sup>[20]</sup>	2017	Psychological distress and cognitive coping in pregnant women diagnosed with cancer and their partners	Belgium and Netherlands	Quantitative; cross-sectional survey	122 (61 women and 61 partners)	To identify women and partners at risk of high levels of distress based on their coping profile when diagnosed with cancer during pregnancy. Internalizing coping strategies in women and partners was associated with the highest levels of distress and these people may benefit from additional psychosocial support
21	Rees and Young <sup>[21]</sup>	2016	The experiences and perceptions of women diagnosed with breast cancer during pregnancy	UK	Qualitative; semi-structured interviews	3	To explore the experiences of women diagnosed with GBC. Cancer during pregnancy disrupted assumptions and expectations about pregnancy, new motherhood, and future life course
22	Ives <i>et al.</i> <sup>[22]</sup>	2012	The experience of pregnancy and early motherhood in women diagnosed with gestational breast cancer	Australia	Qualitative; semi-structured interviews	15 (4 women diagnosed during pregnancy and 11 postpartum)	To describe the psychosocial experiences of pregnancy in women diagnosed with GBC. Women make difficult decisions that impact their own, their family, and their unborn fetus/baby. They describe high levels of anxiety, distress, and conflict between concerns for their own and their baby's health and well-being
23	Henry <i>et al.</i> <sup>[23]</sup>	2012	The psychological impact of a cancer diagnosed during pregnancy: determinants of long-term distress	USA	Quantitative; cross-sectional survey	74	To explore variables associated with long-term psychological distress in women following cancer during pregnancy. The risk for distress was higher if they had not received fertility assistance and had been advised to terminate the pregnancy, delivery was preterm, delivery was by C-section, they produced insufficient milk to breastfeed, and they experienced recurrence or underwent surgery after pregnancy

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Table 2: Contd...

Row	Authors	Year	Objective	Place	Type of study	Sample size	Main results
24	Bandyk and Gilmore <sup>[24]</sup>	1995	Perceived concerns of pregnant women with breast cancer treated with chemotherapy	USA	Mixed methods; cross-sectional pilot survey	6	To identify the concerns of women who were treated with CT for GBC. Women's primary concern was "living to see my child grow up"
25	Vivien Leung et al. <sup>[25]</sup>	2020	Psychological aspects of gestational cancer: a systematic review	Australia	A systematic review	Two qualitative and three quantitative studies	Factors that contributed to women's psychological distress during gestational cancer included disease characteristics, sociodemographic factors, the baby's health, pregnancy-related factors, and cognitive emotion regulation. Four main themes emerged from the qualitative studies: concerns about the baby's health, lost opportunities, "not fitting in," and healthcare decision-making. These findings suggest that (a) women with gestational cancer experience psychological distress that is associated with concerns about their babies' health and (b) their healthcare experiences are affected by communication within multidisciplinary care teams
26	Chinn <sup>[26]</sup>	2019	To describe the experiences of young women with GBC	Canada	Narrative report	1	The accounts of young women and 8 months of pregnancy when diagnosed with GBC, discussed early delivery, genetic testing, and treatment. Breastfeeding and being positive

to disruption in life patterns.<sup>[21,22]</sup> Psychosocial stressors in these women include feelings of uncertainty about the future, loss of fertility, risk of menopause associated with treatment, practical management of breast cancer diagnosis and treatment, care of young children, women's experience of motherhood, and changes in sexuality. body image is to continue the job and financial burden.<sup>[22]</sup> In many of these mothers, fear and anxiety,<sup>[9]</sup> high levels of depression, and intrusive and avoidant trauma symptoms were seen due to concern about the possible consequences of cancer.<sup>[10]</sup> Factors, such as rumination, blaming oneself, blaming others, and catastrophizing, were related to the exacerbation of depression and anxiety symptoms.<sup>[20]</sup> In women who were diagnosed with this disease for the first time during pregnancy, the fear of death and orphanage of children was expressed. Feelings of vulnerability, shock, and confusion and inability to think correctly and take appropriate action were also seen. Significant physical changes following cancer and chemotherapy, especially hair loss, had caused discomfort and sadness to women. Also, these changes caused a decrease in the sense of femininity and had consequences, such as depression, low self-esteem, and mother–fetus attachment disorder.<sup>[9]</sup> In their study, Henry et al. (2012)<sup>[23]</sup> stated that the experience of things, such as having a

premature baby, cesarean delivery due to the need for a longer recovery period and more difficult care of the child, and the experience of breast cancer recurrence, are associated with increased stress and depression. Contrary to the findings of the above studies, Ives et al. (2012)<sup>[22]</sup> showed in their study that having a child after breast cancer treatment can have positive psychological effects on the mother. Some women consider having children after a cancer diagnosis as a degree of normality of life and as a result of improving the quality of life, which gives them hope for the future. Spouses of pregnant mothers with cancer consider having a child as a way to communicate with their partner and give meaning to life.<sup>[25]</sup> Howard-Anderson et al. (2012)<sup>[11]</sup> stated in their study that concern about premature menopause, menopausal symptoms, and infertility in women under 50 years of age with conserpstan plays a role in creating distress after treatment.

In the study of the adverse consequences of pregnancy and birth following the anxiety and stress of a mother suffering from depression during pregnancy, a high rate of induction of labor, cesarean section, planned premature birth,<sup>[13]</sup> spontaneous abortion, restriction of fetal growth, and cognitive, behavioral, and emotional problems in the child were seen.<sup>[20]</sup> In contrast, in the study



of Matar *et al.*<sup>[12]</sup> (2022) on 17 pregnant women with breast cancer, no obstetric or fetal complications were observed. One of the important stressful factors is deciding on cancer treatment during pregnancy. These women have to make very emotional decisions that disrupt their expectations about pregnancy and motherhood. Breast cancer treatment is a threat to women's sexual identity as a result of breast loss.<sup>[21]</sup> The decisions that each woman makes at this time are unique to her and are based not only on the information provided to her about treatment options but also on her life experiences, beliefs, values, and needs. The relationship between the woman and health professionals may also affect her decision.<sup>[22]</sup> In a qualitative study examining the experiences of Japanese pregnant women with cancer, mothers stated that in situations where an abortion or early delivery is offered to preserve the mother's health, they feel hesitant. This doubt seems to be due to the inconsistency of the nonverbal communication between the mother and the fetus and the verbal communication of the woman, the family, and the medical staff. As a result, these women feel lonely, anxious, and unable to express their feelings and information needs. These mothers feel that no one can understand and support them or solve the problems caused by pregnancy with cancer. Therefore, seeking help from psychiatric, psychological, obstetrician-gynecological, midwifery, and social workers will definitely be effective, and also the supportive role of family members can be useful. These women can regain decision-making power. The supportive role of family members is also prominent in this field.<sup>[18]</sup>

Faccio *et al.* (2020)<sup>[19]</sup> in a review of the motherhood experience showed that most pregnant women with breast cancer are afraid of the normal development of their children, especially if they have been treated with chemotherapy, radiotherapy, or hormone therapy. This fear is not only prominent during pregnancy, but many women worry that chemotherapy in the previous pregnancy will cause birth defects in the fetus in subsequent pregnancies. Also, mothers are worried about passing on a genetic mutation to their children.<sup>[22]</sup> In this regard, the results of two exploratory qualitative studies showed that these women are worried about the consequences of motherhood, such as the inability to breastfeed and the negative consequences of premature birth on the baby, and they emphasized the support of their husbands.<sup>[9]</sup> These mothers believe that breastfeeding is the safest and healthiest choice for mother and baby<sup>[23]</sup> and strengthens their relationship with their child.<sup>[9]</sup> Now, if it is not possible to breastfeed due to the reduction in milk production caused by the side effects of chemotherapy,<sup>[23]</sup> treatment that prevents them from breastfeeding, or premature birth,<sup>[21]</sup> and the level of distress in women who want to breastfeed increases and leads to feelings of guilt. In the mother,

there is a feeling of not being able to eat properly or bond emotionally with the child.<sup>[23]</sup> In fact, a woman's inability to breastfeed may be considered a threat to her femininity and her identity as a mother.<sup>[21]</sup> Clinical experience shows that bonding between mother and child under the title of attachment processes during and after delivery may be disrupted due to mothers' anxiety, which is more likely to occur in cases where the mother's treatment continues after delivery.<sup>[25]</sup> Disturbance in the attachment process between mother and baby can also affect the child's development and the mother's identity.<sup>[23]</sup> Mother's distress not only affects the child's behavior but also affects his cognitive development, and these negative effects highlight the importance of emotional support for these women.<sup>[10]</sup> The findings of Chang *et al.*'s study (2022)<sup>[2]</sup> showed that children under the age of 3 and a half of these mothers had weaker language performance. Mothers with less somatic symptoms and externalizing behaviors had children with stronger verbal abilities. Facchin *et al.* (2021)<sup>[9]</sup> found that the parenting abilities and care duties of these mothers decreased over time, leading to feeling of frustration and failure in them.

The findings of various studies regarding strategies to reduce the adverse psychological consequences of cancer in pregnancy showed that it is necessary to quickly diagnose distress symptoms in these women and refer them to psychosocial service centers. It is important to manage a mother who is in stressful situations during pregnancy on the one hand and is worried about adverse consequences, such as premature birth, low birth weight, neurodevelopmental disorders, and disabilities on the other hand.<sup>[23]</sup> The professional health team emphasized that routine care is insufficient to meet the needs of these women, and comprehensive care to meet the psychosocial needs of these women during pregnancy and before delivery should be prioritized.<sup>[7]</sup> Comprehensive care includes the care of the soul (psychological care), the mind (providing information), and the body (managing the side effects of treatment).<sup>[14]</sup> It is necessary to provide clear information about the disease, treatment, and prognosis of the mother and fetus after being exposed to cancer<sup>[20]</sup> and issues related to women's identity, including body image and sense of femininity in a format that is understandable for women.<sup>[8,9]</sup> Also, these people face many problems, especially in expressing their thoughts and feelings. Therefore, consulting with a psychologist is recommended to assess the level of distress and stress and provide appropriate strategies to solve this challenge. At least one consultation with a psychologist is recommended for psychosocial support and to help the couple identify and express their feelings and learn coping strategies.<sup>[15]</sup> Communicating with families who experience cancer during pregnancy, even in the form of

membership in online groups, can help them cope with this problem more easily by expressing their feelings, thoughts, and concerns.<sup>[16,20]</sup> Advances in technology have facilitated these communications and improved the integration of supportive care through electronic health record sharing, telehealth care, and multidisciplinary virtual conferencing. Although the health professional team also emphasizes holding face-to-face meetings,<sup>[7-17]</sup> another way to adapt to this disease and reduce distress is to have positive thoughts and attitude, support of wife, mother, and friends, and appeal to religious and spiritual beliefs.<sup>[9]</sup> Carrying out evidence-based continuous nursing care can also improve the quality of sleep, night terrors, depression, fatigue, distress, and anger in these mothers. Chang *et al.* (2022)<sup>[2]</sup> stated in their study that short-term Internet training based on mindfulness to reduce the stress of these women is effective in improving their mental health, body image, and self-efficacy. However, using cognitive processes, which are a way to regulate feelings and emotions, helps the mother not experience a threatening or stressful life.<sup>[20-24]</sup> Finally, it is recommended to change the care paradigm from a patient-centered approach to a disease-centered management to improve the complex decision-making processes, paying more attention to the psychosocial aspects of women.<sup>[25]</sup> Among the factors that cause anxiety in pregnant women are psychosocial problems and personality factors.<sup>[28,29]</sup>

### Limitations and recommendation

One of the limitations of the present study was the inaccessibility of some databases and the full texts of some of the articles. One of the strengths of this study was the broad range of literature obtained from different databases, so the findings can offer insights into subsequent research necessities. The results of the present study about situation of mental health of pregnant women with breast cancer can be used to make decisions and find strategies that promote mental health and awareness about such factors that play a decisive role in improving the mental health of pregnant women. Our review also identified further research. There is a pressing need for studies evaluating clinically diagnosed adverse mental health outcomes in samples of women likely to represent the cohort of survivors in the general population and with sufficient numbers to allow effects to be detected. Further clinical trial studies are particularly needed to investigate the effect of various therapeutic interventions on improving mental health in pregnant women suffering from cancer.

### Conclusion

Mental health during pregnancy is one of the issues that is of great concern today. Increasing the quality of life and preventing and reducing mental illnesses

are important goals for the mental health of pregnant women. From the beginning of pregnancy, the anxiety and emotions of a pregnant woman will have a direct effect on the fetus. In addition to causing complications during pregnancy, especially in early pregnancy and around childbirth, stress during pregnancy has a negative effect on the mental and psychological development of the fetus and causes behavioral disorders in childhood. The role of service providers in providing mental health for pregnant women is very important. It is suggested that every time a pregnant woman meets with a doctor, she should be given the opportunity to talk about her fears and concerns caused by cancer. In general, health workers are expected to be able to improve the knowledge and attitude of pregnant women in this field to reduce the worries of pregnant women. It seems necessary to identify susceptible people and provide special psychological care to these people during pregnancy and after delivery. Therefore, knowing and improving as much as possible the behaviors that promote mental health and awareness about such factors play a decisive role in improving the mental health of pregnant women. Finally, psychological and social care and support for the patient, giving the necessary and sufficient information to the patient, forming online groups, supporting a psychologist, reducing the stress of the patient, and supporting the family, spouse, and friends of the pregnant mother can greatly reduce the stress and worries of the patient. Considering the direct effect of women's mental health on other family members and the emotional sensitivity and vulnerability of this group, special attention to mental care during pregnancy is necessary despite physical care. Meanwhile, it is necessary to identify susceptible people and provide special psychological care to them during pregnancy and after delivery. Therefore, knowing and improving as much as possible the behaviors that promote mental health and awareness about such factors play a decisive role in improving the mental health of pregnant women. According to the results obtained, the severity of the problems in the psychiatry of cancer patients, and attention to improving the quality of life, they are especially concerned about health care and treatment. The treatment programs of the psychological team are more serious and more accessible. It is required at the level of hospitals. From the establishment and strengthening side supporting institutions and creating a culture for adaptation to species, the psychological problems of these patients seem necessary. According to the findings, the mental health of women in Iran is not in very good condition, which makes it necessary to move toward preventive interventions and strengthen health services. It doubles the soul. To improve the level of mental health of women with cancer in Iran, the following solutions are

suggested: 1. strengthening mental health services in primary health care, 2. appointing the trustee of the unit to improve the level of interdepartmental leadership and intradepartmental governance, 3. determining sustainable and targeted financial resources to provide mental health services needed by pregnant women with cancer, 4. moving the financial resources allocated to insurance mechanisms for greater financial protection, 5. expanding the umbrella of social support, and 6. a behavioral educational program that can be used to improve mental health, especially the symptoms of depression and anxiety in pregnant women with cancer.

### Key messages

Pregnancy-associated breast cancer is defined as breast cancer that is diagnosed during pregnancy, lactation, or the first postpartum year. Physiologic changes related to pregnancy and the fetus are the most important diagnostic and therapeutic challenges for pregnant women.

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### Conflicts of interest

There are no conflicts of interest.

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