

ANTROPOLOGÍA

Estilo de vida en mujeres con cáncer de mama: un estudio de revisión narrativa

Life style in women with breast cancer: a narrative review study

Estilo de vida em mulheres com cancro da mama: um estudo de revisão narrativa

Shiva Khodarahmi¹; Maryam Torki Harchegani²; Sedighe Jamali Gandomani^{3*}; & Zeinab Tavakol^{4*}

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¹Student Research Committee, School of Nursing and Midwifery. Shahid Beheshti University of Medical Sciences, Tehran, Iran. Ph.D. Candidates, Mother and Child Care Research Center, School of Nursing and Midwifery, Hamadan University of Medical Sciences, Hamadan, Iran. Orcid: <https://orcid.org/0000-0003-1447-7136>.

²Community-oriented Nursing Midwifery Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran. Orcid: <https://orcid.org/0000-0003-4143-5898>

³Community-oriented Nursing Midwifery Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran. Orcid: <https://orcid.org/0000-0002-8735-0673>; Correo electrónico: s_jamali64@yahoo.com

⁴Assistant Professor, Community-oriented Nursing Midwifery Research Center, Shahrekord University of Medical Sciences, Shahrekord, Iran. Orcid: <https://orcid.org/0000-0001-9743-4160>. Correo electrónico: zeinabtavakol@gmail.com

***Correspondencia:** Sedighe Jamali Gandomani and Dr. Zeinab Tavakol, Community-oriented Nursing Midwifery Research Center, Shahrekord University of Medical Sciences, Shahrekord, Irán.

Abstract: Objective: The present review study aimed to assess the lifestyle of women with breast cancer. Methods: In this study, information on Life style in women with breast cancer was obtained from Persian and English databases using Persian keywords and their English equivalent for "Life style, Breast Cancer" based on MeSH (medical subject headings) from 2000 to 2020. Among all the articles searched, 48 studies were included in the review research. To collect information from the studies, the articles were carefully reviewed and the results were extracted. Results: According to the available scientific evidence, lifestyle has an effect on health and some related factors such as inadequate physical activity, stress, eating patterns, bad behaviors such as smoking and drinking alcohol are associated with breast cancer. Conclusion: Therefore, interventions and trainings should be planned to provide a suitable and sufficient ground for guiding women towards healthy lifestyles and behavioral habits.

Keywords: Life style; breast cancer; women.

Resumen: Objetivo: El presente estudio de revisión tuvo como objetivo evaluar el estilo de vida de mujeres con cáncer de mama. Métodos: en este estudio, la información sobre el estilo de vida en mujeres con cáncer de mama se obtuvo de bases de datos en persa e inglés utilizando palabras clave en persa y su equivalente en inglés para "Estilo de vida, cáncer de mama" basado en MeSH (encabezamientos de temas médicos) de 2000 a 2020. Entre todos los artículos buscados, 48 estudios se incluyeron en la investigación de revisión. Para recopilar información de los estudios, se revisaron cuidadosamente los artículos y se extrajeron los resultados. Resultados: De acuerdo con la evidencia científica disponible, el estilo de vida tiene un efecto sobre la salud y algunos factores relacionados como la actividad física inadecuada, el estrés, los patrones de alimentación, las malas conductas como el tabaquismo y el consumo de alcohol se asocian con el cáncer de mama. Conclusión: Por lo tanto, las intervenciones y capacitaciones deben planificarse para proporcionar un terreno adecuado y suficiente para orientar a las mujeres hacia estilos de vida y hábitos de comportamiento saludables.

Palabras clave: Estilo de vida; cáncer de mama; mujeres.

Resumo: Objetivo: O presente estudo de revisão teve como objetivo avaliar o estilo de vida de mulheres com câncer de mama. Métodos: Neste estudo, as informações sobre estilo de vida em mulheres com câncer de mama foram obtidas de bancos de dados persa e inglês usando palavras-chave persas e seu equivalente em inglês para "Life style, Breast Cancer" com base no MeSH (medical subject headers) de 2000 a 2020. Entre todos os artigos pesquisados, 48 estudos foram incluídos na pesquisa de revisão. Para coletar informações dos estudos, os artigos foram cuidadosamente revisados e os resultados foram extraídos. Resultados: De acordo com as evidências científicas disponíveis, o estilo de vida tem efeito sobre a saúde e alguns fatores relacionados como atividade física inadequada, estresse, padrões alimentares, maus comportamentos como fumar e consumir álcool estão associados ao câncer de mama. Conclusão: Portanto, intervenções e treinamentos devem ser planejados para fornecer um terreno adequado e suficiente para orientar as mulheres para estilos de vida e hábitos comportamentais saudáveis.

Palavras-chave: Estilo de vida; câncer de mama; mulheres

INTRODUCCIÓN

In the coming decades, cancer will be a growing factor in the global burden of disease, and the number of new cases is expected to increase from 10 million in 2000 to 15 million in 2020, with about 60% of them are in the least developed countries of the world (Brunnicardi et al., 2010).

Among different types of cancer, breast cancer, which accounts for 27% of all cancers in women, is the most common and deadly malignancies among women. It is one of the most important factors in women's health in the world (Banegas et al., 2012). Since, the risk of developing this cancer in women's lifetime is 12% (one in eight cases) and the risk of its mortality is 3.6% (one in twenty-eight cases) (Akbarzade Pasha & Akbarzade Pasha, 2007).

Breast cancer is defined as an abnormal growth changes in breast tissue cells that occurs abnormally in the mammary glands (lobules) or in the ducts that connect the lobules to the nipple (duct) (Allred, 2010).

About 10 percent of women in the United States develop breast cancer at some point in their lives, making it the most common cause of death in women in the United States between the ages of 40 and 55. According to the American Cancer Society, every 15 minutes, 5 new cases of breast cancer are diagnosed, and every 15 minutes, a woman dies because of it (American Cancer Society, 2014). There are more cases of breast cancer in industrialized countries than in non-industrialized countries (Atarparsaee, Golchin, & Asvadi, 2001). The prevalence of breast cancer in the United States and Europe is twice that of Asian countries (International Agency for Research on Cancer, 2013). In Iran, the Age-Standardized Rate (ASR) of breast cancer was 26.4, 95% CI (20.1 to 31.7) (Rezaianzadeh et al., 2016).

About 5% of breast cancers are hereditary and 80 to 90% are sporadic, and although this cancer is more common in people over the age of 50, it can occur at any age (Gharekhani & Sadatin, 2004) and is one of the major public health problems in the world (Aghamolaei, Hasani, Avafian, & Zare, 2011).

In the past, the prevalence of breast cancer was attributed to the traditional lifestyle, but rapid socio-economic development and socio-cultural changes have led to a western lifestyle that has increased risk of breast cancer (Porter, 2008).

Studies have shown that there is a direct relationship between lifestyle and the incidence of cancer, so that the role of lifestyle in the incidence of common cancers such as breast cancer is more prominent than other reasons (Weinbreg & Komaroff, 2008). Cockerham et al. (2006), a contemporary sociologist, believe that high-risk behaviors such as alcoholism, drug abuse and smoking, neglect healthy diet, sedentary lifestyle, and refusal to exercise become norms which is created by internal mental structure in Life style.

Lifestyle is closely related to the social and economic status of individuals, but with other issues such as roles and activities, work and study habits, fun and relaxing activities, type and place of residence, the effect of cultural beliefs on nutrition and health, mode of transmission and movement, follow-up behaviors, health habits such as alcohol, drugs, nicotine, fun drugs, and stress levels are related (Black & Hawaks, 2009).

Harvie et al. (2015) in their study about diet and lifestyle and prevention of breast cancer concluded that exposure to smoking and alcohol in the period among menarche and first gestation may enhancement risk of breast cancer because the rapidly developing breast is particularly sensitive to carcinogenesis. On the other hand, high healthy lifestyle index scores were associated with decreased risk of breast cancer (Khalis et al., 2019). Also, lifestyle changes seem to be a simple, efficient, and economical way to help prevention breast cancer. In women with a confirmed breast cancer diagnosis, lifestyle changes are still very significant. Some factors, such as prevention of weight gain and smoking cessation, may improve the long-term survival chances of these patients (Hashemi, Karimi, & Mahboobi, 2014).

Given that breast cancer is the most common cancer in women that affects different aspects of their lives (PourRanjbar, A.-M.M., & Ghadimi, 2016) and numerous studies have shown, increasing lifestyle changes that set the movements, behaviors and behavioral orientation of an individual, group or culture are an important factor in the occurrence of this cancer (Fathi Najafi, Jabbarzadeh, Mojahedi Rezaian, & Mazloom, 2004). Therefore, the present review study aimed to assess the lifestyle of women with breast cancer.

METHOD

The present study was approved after obtaining the code of ethics of IR.SBMU.RE-TECH.REC.1398.539 in Shahid Beheshti University of Medical Sciences. This study was conducted by searching in full and as a review of texts in Persian and English databases including Elsevier Proquest, UpToDate, Scopus, Magiran, Irandoc, SID, Iran medex, Scencedirect, Ebsco, Pubmed, and Google Scholar. Extraction of related articles was done using the keywords Lifestyle, Breast Cancer, Diet, Obesity, Physical Activity, Cigarette, Alcohol, Stress based on Mesh.

Regardless of time constraints, all articles were searched with the aim of assessing lifestyle in women with breast cancer. After discarding duplicate and irrelevant articles, 53 related studies were reviewed and analyzed. Inclusion Criteria in this study were writing in Persian or English, working on lifestyle in breast cancer and choosing the right method in the studies. No restrictions in terms of race and ethnicity were considered in the selection of articles. Data extracted from the study were: study location, number of participants, demographic characteristics of participants, duration of the study, the impact of lifestyle on breast cancer.

RESULTS

Among all the articles searched in relation to the purpose of the research, duplicate and unrelated articles were excluded and finally 53 studies were included in the review research. To collect information from the studies, the articles were carefully reviewed and the results were extracted. Table1 indicates a summary of researches in the field of the lifestyle of women with breast cancer.

Diet

The results of several studies have shown that there is a statistically significant relationship between breast cancer and healthy eating, including consumption of fruits, vegetables, dairy products such as yogurt, milk, and cheese. Also, people who have a healthy diet and use a variety of vitamins in their diet are less likely to develop this type of cancer (Brennan, Cantwell, Cardwell, Velentzis, & Woodside, 2010; Sadeghi & al., 2017). In con-

trast, unhealthy diet and high intake of meat (such as Western food pattern), high consumption of tea and use of prepared food have an important role in causing this disease (Atarparsaee et al., 2001; Onsoni & Ranapor, 2011; Zhang et al., 2011). Hinpeng et al. (2001) conducted an extensive study in 6 countries of Singapore, France and the United Kingdom on 620 people, 200 of whom had breast cancer and 420 of whom were healthy. These researchers showed that in premenopausal age, one of the predisposing factors for breast cancer is improper and high-fat diet.

Kim et al. (2007) determined the relationship between diet and breast cancer among Korean women. The results showed that patients with breast cancer consumed significantly more high-fat foods and less antioxidant foods such as vitamin A, beta carotene, vitamin C and vitamin E compared to those in the control group. Consumption of eggs ($p < 0.01$), consumption of soy ($p < 0.01$), legumes ($p < 0.05$), vegetables ($p < 0.05$), spices ($p < 0.001$) in patients with breast cancer are significantly lower than others. A study by Potischman et al. (2002) showed that there is no association between breast cancer and red meat consumption, high-fat snacks, desserts and high-fat animal foods, but eating sweets increases the risk of breast cancer. This connection has nothing to do with the consumption of high-fat foods and carbonated beverages. The findings also reported that women who ate two to three meals a day were less likely to develop breast cancer than those who ate six or more meals. Boggs et al. (2010) revealed that coffee and caffeine are not associated with the risk of breast cancer among African women.

Fats and carbohydrates:

The Barrett-Connor-Friedlander cohort study showed that women with breast cancer consumed more fat, protein, and carbohydrates than others (Barrett Connor & Friedlander, 2000; Kim, Hong, Jeon, Sung, & Sung, 2007). Birkimer et al. (2002) also stated that fiber consumption is inversely associated with breast cancer and sugar and carbohydrate intake are positively associated with this type of cancer. While some studies have shown that there is a significant positive relationship between animal protein intake and breast cancer risk (Rogers et al., 2010; Sieri, Krogh, & Muti, 2002), but there is inverse relationship between breast cancer and carbohydrate intake (Sieri et al., 2002), folate, B vitamins, fruits, vegetables (Sant et al., 2007; Zhang et al., 2011) and fiber (Mattisson et al., 2004 Jan 12). On the other hand, the dietary pattern of vegetables, fruits, soy, whey, milk and fish has been associated with a reduced risk of breast cancer in women (Hirose, Matsuo, Iwata, & Tajima, 2007; Tumas, Niclis, Aballay, Osella, & Diaz Mdel, 2014; Wu, Yu, Tseng, & Pike, 2008). In Katsouyanni et al.(2001) study, animal protein was positively associated with breast cancer when consumed in large amounts, but the results did not report a significant association between fat and carbohydrate intake and breast cancer. In the study by Prentice et al.(2000), it was reported that there is no association between per capita consumption of carbohydrates and protein with the incidence of breast cancer, but this cancer is associated with dietary fat, especially solid fats (Binukumar & Mathew, 2005). They reported that high consumption of starch increases the risk of breast cancer.

They also stated that there is a positive correlation between animal fat and breast cancer, and that high intake of unsaturated fatty acids (mainly olive oil, corn and vegetable oil) are protective factors for breast cancer (Favero, Parpinel, & Montella, 1999). Noma et al. (2004) showed that fatty acids in fats play a role in preventing or exacerbating the proliferation of breast cancer tumors. Saturated and solid fats such as vegetable oils are harmful to this cancer. Appropriate fats that are good for preventing this type of cancer include omega 3 and 6 unsaturated fats found in vegetable oils such as canola and olives.

Cade et al found that there is no association between breast cancer and fat consumption (Cade, Thomas, & Vali, 1998). The findings of Hanf & Gonder (2005), in a meta-analysis of more than 20,000 breast cancers, also found that there was no relationship between the disease and dietary patterns, including animal fat intake.

The results of a case-control study by Naeini et al. (2017) in Tehran showed that fiber and diet containing vitamins B1, B2, B6 and folate are a protective factor against breast cancer, but there is no association between increased carbohydrate and fat intake with risk of breast cancer (Jamshidi Naeini, Akbari, Abdollahi, Ajami, & H., 2017). A study by Holmes et al in 2000 of 2,956 women with breast cancer found that reducing the intake of total fat intake, or even reducing the intake of certain types of fat, was not associated with a reduced risk of breast cancer (Holmes, Hunter, Colditz, & Stampfe, 2000).

Smoking and alcohol

According to the results of several studies, the ratio of breast cancer to the consumption of alcoholic beverages increases (Allen et al., 2009; Barrett Connor & Friedlander, 2000; Brennan et al., 2010; Inumaru, Silveira, & Naves, 2011; Tahergorabi, Moodi, & Mesbahzadeh, 2014) that is dose-dependent regardless of the type of alcohol consumed (Allen et al., 2009). Excessive alcohol consumption increases the chance of breast cancer to 2.12 (Mattisson et al., 2004 Jan 12).

In 2004, Reynolds et al. conducted a prospective study in California to determine the association between breast cancer and smoking, and reported that women with a higher risk of breast cancer observed among smokers than non-smokers. They started smoking at least 2 years before their first full-term pregnancy, or smoked for a longer or more intense period. They also stated that these results are relevant to women without a family history of breast cancer (Reynolds, Hurley, & Goldberg, 2004). A prospective study was also conducted in 2011 by Xue et al. (2011) on 11140 smoker women and 36017 non-smokers. The findings show that the prevalence of breast cancer is almost 30 % higher among women who smoke than those who have never smoked. Women who started smoking before the age of 20, or at least 5 years before their first pregnancy, are also at higher risk than others. Breast cancer is twice as common in women who smoke as in non-smokers,

and if they start smoking before the age of 12, their chances of developing cancer increase to 7.5 (Lash & Aschengrau, 2000).

Catsburg et al. (2015) conducted a prospective study in 2014 to determine the association between smoking and breast cancer in Canada. 22.1 years later, new cases of breast cancer occurred in 6,549 of the samples. The findings of this study showed that smoking is associated with breast cancer and this relationship is affected by the duration and amount of smoking, so that with 40 years of smoking with cigarettes a day, the chance of breast cancer is 1.57 and 1.21. They also revealed that the number of years of smoking before the first pregnancy is associated with a higher risk of breast cancer compared to post pregnancy. But, Baron and Longnecker reported in his article that the evidence obtained from a review of published articles on the relationship between smoking and breast cancer confirms the protective effect of smoking in this regard. In the study of Atarparsaee et al. (2001) there was no relationship between smoking and breast cancer, but the researchers cited the low number of smokers in the case group and women in the community detest for smoking and alcohol, which has caused incorrect information to be provided by the research units.

Physical activity

Researchers have shown in several studies that bad habits, such as sedentary lifestyle, are associated with breast cancer (Jafarinaia, Bahadorzai, Delpisheh, Sayehmiri, & Tavakoli, 2016; Malin, Matthews, & Shu, 2005; PourRanjbar et al., 2016; Shim et al., 2006 Oct). This association, along with the cause of obesity in postmenopausal ages, is more severe than before menopause (Malin et al., 2005). Atarparsaee et al. (2001) also reported a statistically significant relationship between exercise and non-incidence of this cancer. In fact, sedentary lifestyle followed by obesity may be important in breast cancer (Onsori & Ranapor, 2011; Saki, Hajizadeh, & Tehranian, 2011). According to studies, there is a correlation between physical activity and a reduction in breast cancer (Entezarmahdi, 2012; Saki et al., 2011). The risk of breast cancer in women who exercise moderately to severely 3 to 4 hours a week is reduced by an average of 30-40%. The researchers report a 25 percent increase in the incidence of breast cancer in overweight, obese and sedentary people. A body mass index above 25 increases the mortality rate from breast cancer by 1.6-1.34 compared to a higher body mass, so that with a body mass of 40 and above, the relative risk of developing breast cancer increases 2.12 times (Entezarmahdi, 2012).

Body mass index (BMI)

Lahmann et al. (2004) in their prospective study showed that there is a positive and significant relationship between obesity and breast cancer and in obese women as the risk of breast cancer is more than 31%. Based on their findings, by La Vecchia et al. (2011), the risk of postmenopausal breast cancer is 1.5 times higher in overweight women and about 2 times higher in obese women than lean women. The results of a study by Eliassen et al.

(2006) also showed that people who gained 55 pounds or more over the age of 18 were approximately 50 percent more likely to develop breast cancer, and gaining up to 22 percent pounds or more after menopause increased their risk of breast cancer of 18%.

In contrast, a number of studies have shown that obesity protects against developing premenopausal breast cancer. In this regard, a large meta-analysis showed that in women aged from 40 to 49, the risk of developing breast cancer was 14% in overweight women and 26% in obese women compared to women of normal weight. The main mechanisms of this inverse relationship are not well understood (Nelson et al., 2012).

Stress

Some studies have reported a significant relationship between tension (Atarparsae et al., 2001), stress (Helgesson, Cabrera, Lapidus, Bengtsson, & Lissner, 2003; Jafarinia et al., 2016) and breast cancer. Especially if the person is not able to control and restrain their stress (Cooper, Cooper, & Fargher, 1997).

A prospective study by Lillberg et al. (2003) showed that the risk ratio of breast cancer due to a stressful event in life increases by 1.07, and this ratio reaches to 1.35 when there is more than one stressors. Also, divorce and separation, death of spouse and death of friend are associated with a risk ratio of 2.26, 2 and 1.36 of this cancer, respectively. The researchers concluded that the relationship between stress and breast cancer was due to hormonal changes.

In the Geyer study (2001) in the group with breast cancer, women's stress levels were four times higher than other group. Chronic stress also has a significant positive relationship with breast cancer (Toleutay, Reznik, Kalmatayeva, & Smigelskas, 2013). Lillberg et al. (2001) conducted a prospective study on 10,519 Finnish women aged 18 and over. Subjects were divided into 3 groups without stress (23%), occasional stress (68%) and severe stress (9%) based on their daily stress score. Risk ratio of Breast cancer and daily stress level were measured using Cox risk ratio model and it was reported that there is no relationship between stress and breast cancer risk.

DISCUSSION

A review of several studies on women of different age groups around the world found that most studies on the impact of lifestyle on breast cancer have a positive relationship between lifestyle factors and breasts cancer.

Khasi et al. (2016) conducted a retrospective historical cohort study in 2016. Researchers reported although the cancer registration system works better than in the past, one of the reasons for the increasing incidence of breast cancer is a change in lifestyle.

Mousavi et al. (2011) showed that in Iranian society, environmental and hereditary factors play a lesser role in the development of breast cancer and lifestyle plays a significant and effective role in developing this type of cancer. The steep rise in breast cancer in developing countries is mainly due to adverse lifestyle changes including dietary changes (high fat intake and low consumption of fruits and vegetables), decreased physical activity, increased tobacco and alcohol consumption and obesity (Greenwald, 1999; Porter, 2008; Roohparvarzade, 2014; Scheen, Beck, De Flines, & Rorive, 2011 May-Jun; sellers, Anderson, & potter, 2000; Tahergorabi et al., 2014).

Therefore, adopting a healthy lifestyle such as physical activity, proper nutrition, prevention of overweight and obesity can prevent breast cancer (Roohparvarzade, 2014). The cause of overweight and obesity may also be influenced by a person's hormonal status, as evidence suggests that premenopausal obesity has not either any relationship with breast cancer (Kopans, 1998) or a protective factor (Jafarinia et al., 2016) against breast cancer in the postmenopausal period increases the chance of developing this cancer by 2.5 times (Jafarinia et al., 2016; Kopans, 1998).

The results of several studies have shown that in women with breast cancer who have a sedentary lifestyle, the risk of death is 35-50% lower and regular exercise in adolescence and adulthood can help reduce the risk of breast cancer (Moodi, Sharifirad, Tahergorabi, & Mostafavi, 2012). Thus, women who engage in regular physical activity experience a 10 to 20 percent lower risk of breast cancer than women who are inactive (Friedenreich & Cust, 2008).

Regarding the relationship between dietary patterns and breast cancer, researchers reported that increasing the consumption of animal foods and reducing the consumption of vegetables leads to an increased risk of breast cancer (Weihofen, 2010). Increased consumption of alcohol, red meat, animal fats and reduced consumption of vegetables, fruits and fiber are the underlying causes of breast cancer and stated that non-vegetarian eating habits (consumption of animal products and meat) alone does not increase the risk of developing this cancer. While if the meat is fried well done, it increases the chances of developing breast cancer. In addition, if alcohol is consumed regularly, it is essential to consume sufficient amounts of fresh vegetables and fruits. Researchers recommend traditional diets and cooking to prevent breast cancer (Hanf & Gonder, 2005). A study by Castello et al. (2014) reported that the Mediterranean diet (including high consumption of fruits, vegetables, beans, olive oil and vegetable oils) reduces the risk of breast cancer in Spanish women. Cottet et al. (2009) also reported that dietary patterns including consumption of vegetables, fruits, seafood, olive oil and sunflower oil in French postmenopausal women reduce the risk of breast cancer.

In the study of Linos et al.(2010) it was reported that reducing dietary fat in postmenopausal women has no effect on breast cancer risk, but a high-fat diet during adulthood is associated with an increased average risk of breast cancer in premenopausal

women. The study of Cigarette et al. (2009) also stated that improper cooking methods such as smoking, salting, intense heating of food by creating carcinogenic compounds increase the prevalence of breast cancer. Inumaru et al. (2011) reviewed 27 studies from 2007 to 2010 and found that a healthy lifestyle combined with exercise and a balanced weight reduced the risk of breast cancer, but alcohol consumption increased the risk of breast cancer. A meta-analysis by Gaudet et al. (2013) found that smokers were 12 percent more likely to develop breast cancer than women who had never smoked, and that the risk was higher for women who started smoking before the birth of their first child. Evidence suggests that even inactive exposure to smoking increases the risk of breast cancer (Petralia Sandra et al., 2000). A study by Lovelace (2004) reported that stress increases the risk of breast cancer. Stressful lifestyles are more associated with breast cancer than other cancers (Butow et al., 2000). Examining all of the effective factors in patients' lifestyles was one of limitations in the present study, and also utilizing back-up midwives has established only in a few hospitals – especially in private ones- and very limited number of public hospitals abide the presence of backup midwife with parturient due to the interior regulations and restricted resources. Therefore, the role of these care providers on mothers' perception and experience has not been specifically studied.

CONCLUSION

The conditions prevailing in the modern and industrial world today have led people to wrong lifestyle, bad eating and behavioral habits and sedentary lifestyle. According to the available scientific evidence, lifestyle has an effect on health and some related factors such as inadequate physical activity, stress, eating patterns, bad behaviors such as smoking and drinking alcohol are associated with breast cancer. Therefore, interventions and trainings should be planned to provide a suitable and sufficient ground for guiding women towards healthy lifestyles and behavioral habits.

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Table 1. Articles done in the field of the lifestyle of women with breast cancer.

Results	Sample and Specifications	Method of the study	Title	Year	Authors
There is no relationship between smoking and breast cancer	216 Healthy women and 107 women with breast cancer	Case-control	Investigation of relationship of individual and social characteristics, lifestyle and stressor factors with breast cancer in females	2001-Iran	Atarparsae& et al
Smoking increases the risk of breast cancer	180 Healthy women and 170 women with breast cancer	Case-control	Assessment of certain breast cancer risk factors during reproductive age in women in Mashhad	2004-Iran	Fathi Najafi& et al
Healthy diet and use a variety of vitamins, decrease the risk of breast cancer	39 case- control and cohort studies	Review study and meta-analysis	Dietary patterns and breast cancer risk: a review study and meta-analysis	2010-United Kingdom	Brennan& et al
High intake of meat (such as Western food pattern), high consumption of tea and use of prepared food have an important role in increase the risk of breast cancer	438 Healthy women and 438 women with breast cancer	Case-control	Dietary folate, vitamin B6, vitamin B12 and methionine intake and the risk of breast cancer by oestrogen and progesterone receptor status	2011-China	Zhang&et al
Improper and high-fat diet increase the risk of breast cancer in premenopausal age	420 Healthy women and 200 women with breast cancer	Case-control	Risk factors for breast cancer by age and menopausal status	2001-China	Hinpeng& et al
High Consumption of fat foods and less Consumption of antioxidant foods, increase the risk of breast cancer	97 Healthy women and 97 women with breast cancer	Case-control	Comparisons of food intake between breast cancer patients and controls in Korean women	2007-Korea	Kim & et al



There is no association between breast cancer and red meat consumption, high-fat snacks, desserts and high-fat animal foods, but eating sweets increases the risk of breast cancer	1451 Healthy women and 568 women with breast cancer in the range of 20-44 years old	Case-control	Increased risk of early-stage breast cancer related to consumption of sweet foods among women less than age 45 in the United States	2002-USA	Potischman& et al
Coffee and caffeine are not associated with the risk of breast cancer	52062 women 21-69 years old	Cohort	Tea and coffee intake in relation to risk of breast cancer in the Black Women's Health Study	2010-USA	Boggs& et al
Women with breast cancer consumed more fat, protein, and carbohydrates than others	590 women 40-79 years old	Cohort	Dietary fat, calories and the risk of breast cancer in postmenopausal woman: A prospective population-based study	2000- California	Barrett-Connor&Friedlander
There is a significant positive relationship between animal protein intake and breast cancer risk	In 3298 girls	Cohort	Diet throughout childhood and age at menarche in a contemporary cohort of British girls	2010-South-West United Kingdom	Rogers& et al
Fiber consumption is inversely associated with breast cancer but sugar and carbohydrate intake are positively associated with this type of cancer	31 case- control and cohort studies	A Review studies	Cancer of breast	2002-USA	Birkimer& et al
There is a positive relationship between animal protein intake and breast cancer, but there is inverse relationship between breast cancer and carbohydrate intake	214 women at Postmenopause age	Cohort	Fat and Protein intake and subsequent breast cancer risk in postmenopausal women	2002-Italy	Sieri& et al

Folate, B vitamins, fruits, vegetables decrease the risk of breast cancer	238 women without breast cancer	Cohort	Salad vegetables dietary pattern protects against HER-2-positive breast cancer: a prospective Italian study	2007-Italy	Sant& et al
High fibre and low fat decrease the risk of breast cancer	11 726 postmenopausal women	Cohort	Intakes of plant foods, fibre and fat and risk of breast cancer--a prospective study in the Malmö Diet and Cancer cohort	2004- Sweden	Mattisson& et al
Soy food has protective effects against breast cancer	1 cohort and 7 case-control studies	Meta-analysis	Epidemiology of soy exposures and breast cancer risk	2008-USA	Wu& et al
Women who eat fruits and vegetables are less likely to get breast cancer	450 Healthy women and 220 women with breast cancer	Case-control	Traditional dietary pattern of South America is linked to breast cancer: an ongoing case-control study in Argentina	2014- Argentina	Tumas& et al
Consumption of vegetables, fruits, soy, curd, milk and fish is inversely related to breast cancer	22,333 Healthy women and 1885 women with breast cancer	Case-control	Dietary patterns and the risk of breast cancer in Japanese women	2007-Japan	Hirose& et al
Animal protein is positively associated with breast cancer when consumed in large amounts	1548 Healthy women and 820 women with breast cancer	Case-control	The association of fat and other macronutrients with breast cancer: a case-control study from Greece	2001- Greece	Katsouyanni& et al
There is no association between consumption of carbohydrates and protein with the incidence of breast cancer, but this cancer is associated with dietary fat	9 cohort and 13 case- control studies	A Review study	Aspects of the rationale for the woman's health trial	2000-Seattle	Prentice& et al
Solid fats are positively associated with breast cancer	12 cohort and 17 case- control studies	A Review study	Dietary fat and risk of breast cancer	2005- India	Binukumar& Mathew

There is a positive correlation between animal fat and breast cancer, and high intake of unsaturated fatty acids are protective factors for breast cancer	2588 Healthy women and 2569 women with breast cancer	Case-control	Energy sources and risk of cancer of the breast and colon-rectum in Italy	2000-Italy	Favero& et al
Omega 3 and 6 unsaturated fats found in vegetable oils prevent from breast cancer	218 Healthy women and 191 women with breast cancer	Case-control	Association of p53 genetic polymorphism (Arg72Pro) with estrogen receptor positive breast cancer risk in Japanese women	2004-Japan	Noma& et al
There is no association between breast cancer and fat consumption	220 women with malignant breast cancer and 179 women with benign breast cancer and 1178 healthy women	Case-control	Case-control study of breast cancer in south east England: nutritional factors	2001- England	Cade& et al
There is no relationship between the disease and dietary patterns, including animal fat intake	3 cohort and 8 case-control studies	Meta-analysis	Nutrition and primary prevention of breast cancer: foods, nutrients and breast cancer risk	2005-Ireland	Hanf &Gonder
Fiber and diet containing vitamins B1, B2, B6 and folate are a protective factor against breast cancer	154 Healthy women and 151 women with breast cancer	Case-control	Association between Vitamin D Intake and Risk of Breast Cancer in Iranian Women: A Case-control Study	2017-Iran	Jamshidi Naeini& et al
Reducing the intake of fat intake, is not associated with a reduced risk of breast cancer	A total of 88,795 women free of cancer and followed up for 14 years	Cohort	Association of dietary intake of fat and fatty acids with risk of breast cancer	2000-USA	Holmes& et al
A healthy lifestyle combined with exercise and a balanced weight reduced the risk of breast cancer, but alcohol consumption increased the risk of breast cancer	Reviewed 27 studies(14 case-control and 13 cohort studies) from 2007 to 2010	A systematic review	Risk and protective factors for breast cancer: a systematic review	2011-Brazil	Inumarú& et al
tobacco and alcohol consumption, increased the risk of breast cancer	14 cohort and 18 case- control studies	A review study	Breast Cancer: A preventable disease	2014-Iran	Tahergerabi& et al



The ratio of breast cancer to the consumption of alcoholic beverages increases	1,280,296 middle-aged women and followed up for 7.2 years	Cohort	Moderate alcohol intake and cancer incidence in women	2009-UK	Allen& et al
Women with a higher risk of breast cancer observed among smokers than non-smokers	116,544 of California Women	Cohort	Active smoking, household passive smoking, and breast cancer: evidence from the California teachers study	2004-California	Reynolds& et al
Incidence of breast cancer is almost 30 % higher among women who smoke than those who have never smoked	11140 smoker women and 36017 non-smokers	Cohort	Cigarette smoking and the incidence of breast cancer	2011-USA	Xue& et all
Breast cancer is twice as common in women who smoke as in non-smokers, and if they start smoking before the age of 12, their chances of developing cancer increase to 7.5	765 Healthy women and 334 women with breast cancer	Case-control	Active and passive cigarette smoking and the occurrence of breast cancer	2000-USA	Lash & Aschengrau
Smoking is associated with breast cancer and this relationship is affected by the duration and amount of that	89,835 Canadian women between the ages of 40 and 59	Cohort	Active cigarette smoking and risk of breast cancer	2015-Canada	Catsburg& et al
Smoking has the protective effect on the risk of breast cancer	9,529 Healthy women and 6,888 women with breast cancer	Case-control	Cigarette smoking and breast cancer	2000-Wisconsin	Baron JA& Longnecker
Getting plenty of calories that lead to overweight and obesity along with low physical activity, are associated with breast cancer. The association of these factors with breast cancer	1556 Healthy women and 1459 women with breast cancer	Case-control	Energy balance and breast cancer risk	2006-Canada	Malin& et al

is more severe after menopause than before menopause					
Bad habits, such as sedentary lifestyle, are associated with breast cancer	413 women with breast cancer from Germany (195), Japan (112) and Korea (106)	Cross-sectional	Health-related quality of life in breast cancer: A cross-cultural survey of German, Japanese, and South Korean patients	2006-Germany	Shim& et al
Having physical activity at least once a week and women with the history of breast feeding had lower risk of breast cancer but women with the stress history had higher risk of breast cancer	170 Healthy women and 170 women with breast cancer	Case-control	Risk factors of breast cancer in Dezful city of Iran: a case-control study	2016-Iran	Jafarina& et al
There is a correlation between physical activity and a reduction in breast cancer	Two groups included 628 women who were under 40 years old	Case-control	Evaluating the Risk Factors of Breast Cancer Using the Analysis of Tree Models	2011-Iran	Saki& et al
There is a correlation between physical activity and a reduction in breast cancer but high body mass is directly related to breast cancer	950 of Iranian women	Cohort	Generalities of the National breast Cancer Control Program of the Islamic Republic of Iran	2012-Iran	Entezarmahdi
There is a positive and significant relationship between obesity and breast cancer and in obese women, the risk of breast cancer is more than 31%	73,542 premenopausal and 103,344 postmenopausal women (aged 18–80 years) from 9 European countries	Cohort	Body size and breast cancer risk: findings from the European Prospective Investigation into Cancer And Nutrition (EPIC)	2004-Germany	Lahmann& et al
The risk of postmenopausal breast cancer is 1.5 times higher in overweight women and about 2 times	9 case-control and 15 cohort studies	Meta-analysis	Overweight, obesity, diabetes, and risk of breast cancer: interlocking pieces of the puzzle	2011-Italy	La Vecchia& et al



higher in obese women than lean women					
Weight gain during adult life, specifically since menopause, increases the risk of breast cancer among postmenopausal women	87,143 postmenopausal women, aged 30 to 55 years and free of cancer, were followed up for up to 26 years to assess weight change since age 18 years. Weight change since menopause was assessed among 49,514 women who were followed up for up to 24 years	Cohort	Adult weight change and risk of postmenopausal breast cancer	2006-USA	Eliassen& et al
Obesity protects against developing premenopausal breast cancer. The risk of developing breast cancer was 14% in overweight women and 26% in obese women that were lower than normal weight women	66 English-language studies	A systematic review and meta-analysis	Risk factors for breast cancer for women aged 40 to 49 years: a systematic review and meta-analysis	2012-USA	Nelson& et al
Women who experience stress during the five years prior to the first test are twice as likely to develop breast cancer as women who do not experience stress	1462 Swedish women 38-60 years old	Cohort	Self-reported stress levels predict subsequent breast cancer in a cohort of Swedish women	2003- Sweden	Helgesson& et al
There is a significant relationship between stress and breast cancer	2163 Women referred to the Breast Cancer Clinic	Cohort	Psychosocial stress and breast cancer: the inter-relationship between stress events, coping strategies and personality	2009-London	Cooper& et al
The risk ratio of breast cancer due to a stressful event increases by 1.07 and this ratio reaches to 1.35 when there is more than one stressors. The relationship between stress and breast	10808 Finnish woman	Cohort	Stressful life events and risk of breast cancer in 10808 women: A cohort study	2003-Finland	Lillberg& et al

cancer is due to hormonal changes					
Chronic stress has a significant positive relationship with breast cancer	114 cases of breast cancer and 196 controls	Case-control	Risk factors of breast cancer in kyzylorda oblast of Kazakhstan: a case control study	2013-Kazakhstan	Toleutay& et al
Change in lifestyle increase the risk of breast cancer	1976 women with breast cancer	Retrospective historical cohort	Investigate frequency of breast cancer among women in Kermanshah during 2004-2013	2016-Iran	Khasi& et al
Sedentary lifestyle, obesity and type 2 diabetes increase the risk of breast cancer	13 cohort and 16 case-control studies	A review study	Obesity, insulin resistance and type 2 diabetes: risk factors for breast cancer	2011- France	Scheen& et al
Sedentary, smoking and obesity, lead to breast cancer	13781 women 20-69 years old	Cross-sectional	Prevalence of risk factors for breast cancer in women (20 to 69 Years old) in Isfahan 2012-2013	2014-Iran	Roohparvarzade
The Mediterranean diet (high consumption of fruits, vegetables, beans, olive oil and vegetable oils) reduces the risk of breast cancer	1071 cases of breast cancer and 1071 controls of similar age (± 5 years)	Case-control	Spanish Mediterranean diet and other dietary patterns and breast cancer risk: case-control EpiGEICAM study	2014-Spain	Castello& et al
Dietary fat consumed during adolescence associated with increasing the risk of breast cancer among premenopausal women	39,268 premenopausal women	Cohort	Adolescent diet in relation to breast cancer risk among premenopausal women	2010-USA	Linos& et al
smokers are 12 percent more likely to develop breast, and the risk is higher for women who start smoking before the birth of their first child	73 388 women and follow-up for 13.8 years. 14 cohort studies	Cohort and meta-analysis	Active smoking and breast cancer risk: original cohort data and meta-analysis	2013-America	Gaudet& et al