



MAIN RISK FACTORS INFLUENCING BREAST CANCER IN WOMEN IN COMMUNE IV OF VALLEDUPAR - COLOMBIA

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Abstract

Objective: To evaluate the different risk factors associated with breast cancer that affect commune IV of Valledupar/Cesar and to group them in order to determine the factors that have the highest incidence.

Material and Methods: A survey was applied to 120 women from the IV commune of Valledupar/Cesar, Colombia; after the survey, they were provided with information on risk factors, what to do if they present one or more of these factors, and the importance of mammographic control and self-examination was explained to them.

Results: A total of 120 female respondents were included, the median age was 47 years (19-73 years). Excluding female sex (a risk factor present in all respondents), 100% of the respondents had one or more risk factors associated with breast cancer, the most common being heredity, sedentary lifestyle (overweight, lack of exercise), alcoholism and use of hormones as a planning method. **Conclusions:** Hereditary factors, sedentary lifestyle, alcoholism and the use of hormones as a planning method are the most recurrent risk factors in commune IV of the city of Valledupar/Cesar, Colombia. It is necessary to instill a collective responsibility, aimed at changing bad habits in order to reduce the risk factors for breast cancer in this community. In addition, distinguishing these factors plays an important role in the prevention and treatment of the disease.

Keywords: Breast cancer, epidemiology, public health, risk factors, treatment, prevention.

RESUMEN

Objetivo: Evaluar los diferentes factores de riesgos asociados al cáncer de mama que afectan a la comuna IV de Valledupar/Cesar y agruparlos para determinar los factores que más tienen incidencia.

Material y Métodos: Se aplicó una encuesta a 120 mujeres de la comuna IV de Valledupar/ Cesar, Colombia; luego de realizada, se les brindó información sobre los factores de riesgo, de qué hacer si presentan uno o varios de estos, además se les explicó sobre la importancia de realizar el control y autoexamen mamográfico.

Resultados: Se incluyeron 120 mujeres encuestadas, la mediana de edad fue 47 años (19-73 años). Excluyendo el sexo femenino (factor de riesgo presente en todas las encuestadas), el 100% de las encuestadas presentaban uno o más factores de riesgo asociados al CA de mama, siendo los más incidentes el factor hereditario, el estilo de vida sedentario (sobrepeso, falta de ejercicio), el alcoholismo y consumir hormonas como método de planificación.

Conclusiones: Los factores hereditarios, el estilo de vida sedentario, el alcoholismo y el consumo de hormonas como método de planificación son los factores de riesgo más recurrentes en la comuna IV de la ciudad de Valledupar/Cesar, Colombia. Se hace necesario inculcar una responsabilidad colectiva, direccionada al cambio de malos hábitos para así lograr disminuir los factores de riesgo del cáncer de mama en esta comunidad; además, distinguir estos factores cumple un papel importante en la prevención y tratamiento de la enfermedad.

Palabras clave: Cáncer de mama, epidemiología, salud pública, factores de riesgo, tratamiento, prevención.

INTRODUCTION

Knowledge of breast cancer is a necessity and a must in a health care worker's clinical practice for primary care. More than half of the patients with this type of cancer are women, and a large proportion of them will be at risk for this disease. Breast cancer continues to be one of the most common malignancies in the world, and worldwide early detection programs have helped diagnose stage I and stage II cases with a greater chance of prolonging life.

Breast cancer ranks first among the top ten cancer sites in women and accounts for 18.6% of all malignant tumors. Each year, worldwide statistics show more than one million new cases, one in eight women face a lifetime risk of breast cancer (12.2%) and one in 28 women die from the disease (1-3). Breast cancer is the most common malignant neoplasm in women. For example, in Spain, 1 in 13 women, or 7% of the female population, will have it during their lifetime; it is also the most common tumor in women and about 373,000 die each year, representing 14% of all cancer deaths worldwide (4,5).

In Colombia, the highest risk of breast cancer is concentrated in the capital cities, due to the fact that urbanization determines risk factors such as: high-fat diet, obesity, smoking, age in the third trimester of the first pregnancy, and low parity, among others (4,8,9).

Early detection is ideal to discover and treat conditions that have serious consequences for the health of people, ideally breast cancer is detected without showing visible signs or symptoms of the condition. In the particular case of breast cancer, there are several mechanisms to detect the disease; primarily is knowing the risk factors that affect your life then performing self-examination, Clinical Breast Examination and Preliminary Evaluation. Several studies recommend developing screening programs through mammography to significantly reduce morbidity and mortality from breast cancer. In addition, it is important to understand the dynamics of better socioeconomic conditions, as well as faster diagnosis and treatment of women with higher levels of education. On the other hand, there are great inequalities in access to services, waiting times should be reduced for women with suspected breast cancer (10-11). The objective of this article is to identify the different risk factors associated with breast cancer that affect commune IV of Valledupar/Cesar and to group them in order to determine the factors that have the greatest incidence in this community.

MATERIAL AND METHODS

To determine the frequency and distribution of risk factors associated with breast cancer in the referenced commune, a survey was created that addresses the main risk factors for developing the disease. The survey was designed to be easily understandable as shown in Figure 1.

Número de hijos *	Edad de su última menstruación. Si aún menstrua, favor responder N/A *
Tu respuesta	Tu respuesta
Edad de su primer menstruación *	Grupo sanguíneo *
Tu respuesta	Tu respuesta
Edad actual *	¿Ha estado expuesta a radiación en el pecho? *
Tu respuesta	<input type="radio"/> Sí
	<input type="radio"/> No
¿Tiene o tuvo familiares diagnosticados con Cáncer de mama? *	¿Está en sobrepeso? *
<input type="radio"/> Sí	<input type="radio"/> Sí
<input type="radio"/> No	<input type="radio"/> No

Figure 1 Questionnaire on risk factors and early detection of breast cancer.

The questionnaire was designed in Google Form, taking into account modifiable and non-modifiable risk factors when asking the questions and consisted of 6 questions with multiple alternatives and 9 dichotomous questions for a total of 15; the questions are intended to know the behavior of the population in relation to risk factors for breast cancer and detect which are the main ones in this community.

In its design and execution, the ethical standards established in the Declaration of Helsinki of the World Medical Association were considered, according to its last amendment of October 2013 (24).

Effective Breast Cancer Prevention

To reduce the incidence of breast cancer, population-based approaches are needed in order to reduce exposure to modifiable risk factors and thus develop an accurate preventive approach (23).

Factors Associated with Breast Cancer

Knowing the distribution of risk factors is essential for implementing health promotion interventions at the community level to promote women's well-being and health. These factors can be divided into modifiable and non-modifiable factors

¿Ha planificado con pastillas por más de cinco (5) años? *	¿Ingiere frecuentemente bebidas alcohólicas? *
<input type="radio"/> Sí	<input type="radio"/> Sí
<input type="radio"/> No	<input type="radio"/> No
¿Es fumadora activa? *	¿Hace ejercicios? *
<input type="radio"/> Sí	<input type="radio"/> Sí
<input type="radio"/> No	<input type="radio"/> No
¿Ha recibido soporte hormonal? *	¿A sufrido abortos? Ya sea inducido o espontáneo
<input type="radio"/> Sí	<input type="radio"/> Sí
<input type="radio"/> No	<input type="radio"/> No
¿a que edad tuvo su primer hijo? Si no aplica poner N/A *	
Tu respuesta	

The risk of breast cancer increases with age. The risk of developing breast cancer increases with age: it is rare before the age of 20, rare before the age of 30, and 75% of these cancers occur in women over the age of 50. In addition, there is no consensus to establish a treatment pathway for breast cancer in this type of patient and creates a problem in the management of these cases, leading to under treatment in most cases (5,13,14-16). Women who have had breast cancer are more likely to have breast cancer a second time. Some non-cancerous breast diseases, such as atypical hyperplasia or lobular carcinoma in situ, are associated with an increased risk of breast cancer (8,9,12,17,18).

The correlation between reproductive factors and breast cancer is related to the effect of ovarian hormones that begin at puberty and continue during monthly cycles, and these hormones are also affected by the number of pregnancies and finally decrease at menopause. Younger age during menarche increases the risk of breast cancer twice (20,21). There is evidence that estrogen and other

hormones such as prolactin and progesterone are involved in the pathogenesis of breast cancer. Endogenous factors such as early menstruation (before the age of 12) or late menopause (after the age of 50) are important risk factors. Also women who have never had children or who had their first pregnancy after the age of 30 are at higher risk than women who have children or who had their first pregnancy at an average age.

About 25% of women have a family history of breast cancer. However, only 10% of cases are due to monogenic inheritance with autosomal dominant inheritance and high penetrance. Two main susceptibility genes are known, called BRCA1 and BRCA2. Carriers with a genetic mutation in one of these genes have a cumulative risk of developing this type of cancer of 0-85%, significantly higher than 10-12% of non-carriers. In the general population, the increased risk is related to the number of affected relatives, age at diagnosis and degree of consanguinity (25). High breast density is an independent risk factor for developing this disease. Breast density is defined as the amount of fibroglandular tissue (glandular epithelial and stromal components) in relation to adipose tissue. The risk of developing breast cancer is 4 to 6 times higher in women with dense breasts than in women with smaller breasts. Women who have received radiation therapy to the chest or breasts before the age of 30, for example, for the treatment of Hodgkin's lymphoma, have an increased risk of developing breast cancer later in life (12,19).

Modifiable risk factors

Being overweight or obese after menopause increases the risk of breast cancer. Before menopause, the ovaries produce the most estrogen, and fat tissue accounts for a small portion of the total. After menopause (when the ovaries stop producing estrogen), most of a woman's estrogen comes from fat tissue. Excess adipose tissue after menopause increases estrogen and increases the risk of breast cancer (22–38).

Epidemiological studies have shown a small but significant association between breast cancer and alcohol consumption. There is a relationship between the dose of alcohol consumed and the risk of developing the disease; the risk increases with the consumption of alcoholic beverages three or more times a week and is independent of the type of alcohol consumed. Some forms of hormone replacement therapy (those that include both estrogen and progesterone) taken during menopause may increase the risk of breast cancer if taken for more than five years. Certain oral contraceptives (birth control pills) increase the risk for breast cancer as well (Table 1).

Table 1. Risk factors related to breast cancer in the world taken from Momenimovahed (2019) (21)

	Risk Factors	Protector	predisposing	Controversial
Demographic	Female gender		X	
	Years		X	
	Blood group			X
	Age at menarche			X
Reproductive	Late age at menopause		X	
	Pregnancy at term	X		
	Abortion			X
	Ovulatory menstrual cycle	X		
Hormonal	Pregnancy characteristics	X	X	
	Hormonal contraceptive methods		X	
	Ovulation-stimulating drugs			X
Hereditary	Postmenopausal hormone therapy		X	
	Genetic factors		X	
Breast-related	Positive family history of breast cancer		X	
	Shorter duration of lactation	X		
	Increased breast density			X
Lifestyle	Benign breast disorders		X	
	Obesity and overweight		X	
	Alcohol consumption		X	
	Smoking		X	
	Coffee			X
	Diet		X	

	More physical activity	X	
	Vitamin D	X	
Other	Sleep duration		X
	Air pollution	X	
	Night work	X	
	Socioeconomic status	X	
	Diabetes	X	
	Radiation	X	

RESULTS

A total of 120 women were surveyed in commune IV of the city of Valledupar/ Cesar, Colombia; the average age was 47.7; 57 of the 120 women surveyed were over 50 years of age, which indicates that 47.5% have the risk factor of advanced age, which is where 75% of breast cancer occurs (5,13,14–16).

In this community, all blood groups were found, the most prevalent being O+ with 44 (36.7%); then in descending order O- with 22 (18.3%); A+ with 15 (12.5%); A- with 14 (11.7%); AB+ with 11 (9.1%); B+ with 6 (5%); B- with 5 (4.2%) and finally, AB- with 3 (2.5%). For a total of 100% (Figure 1).

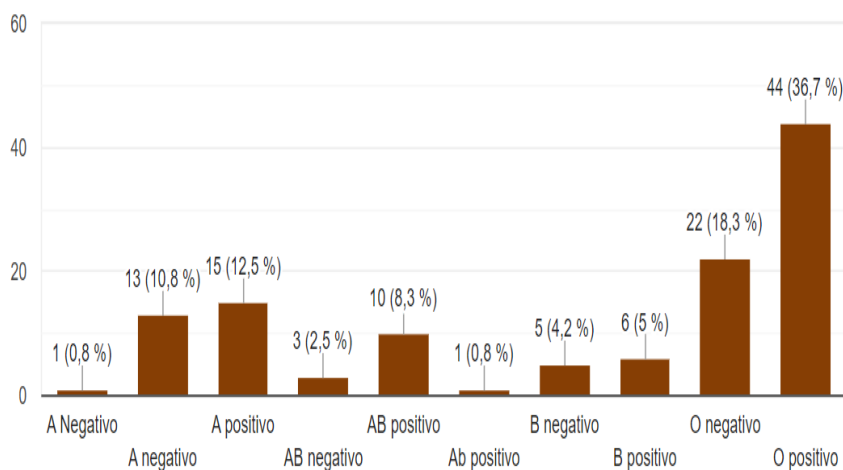


Figure 1

Among the reproductive risk factors, the earlier the age of menarche, the higher the risk of breast cancer (20,21). It was determined that in this community 55 of the 120 women surveyed, that is, 46% of the population presents this risk factor since their menarche was between 9 and 12 years of age and 65 of the 120 (54%) were between the normal intervals of their first menstruation between 13 and 19 years of age. In addition, another important risk factor is late menopause where 38 women of the surveyed population presented it since the age of 50 years. This is equivalent to 32% of the total surveyed, 73 (64%) still menstruate and 10 (4%) were within the normal intervals of menopause between the ages of 47 and 49 years.

Other important risk factors to mention are nulliparity or having the first pregnancy after the age of 30; of the total number of women surveyed only 17 (14%) have not had a child and 103 (86%) have had 1 or more children and only 3 (2%) of the 120 women surveyed had their first child after the age of 30.

The risk factors for exposure to radiation, whether from radiation therapy or other exposure to radiation, were found; only 23% (28) of the respondents answered that they had been exposed to radiation and 77% (92) said that they had never been exposed to radiation (Figure 2)

¿Ha estado expuesta a radiación en el pecho?

120 respuestas

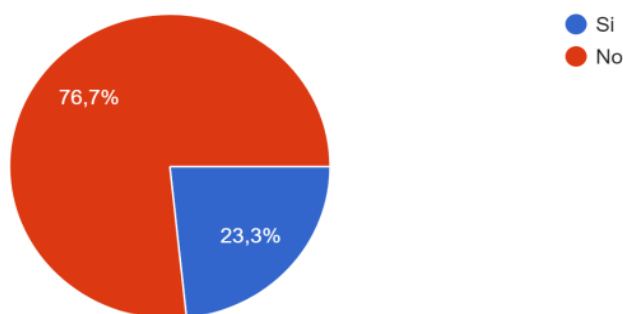


Figure 2

Having a family history of breast cancer is also usually a hereditary risk factor for breast cancer. However, only 10% of the cases are due to monogenic inheritance with autosomal dominant inheritance and high penetrance. In the population studied, 70% (84) said that they have or had relatives diagnosed with this type of CA and the remaining 30% (36) said they have not had any link with this type of cancer (Figure 3).

¿Tiene o tuvo familiares diagnosticados con Cáncer de mama?

120 respuestas

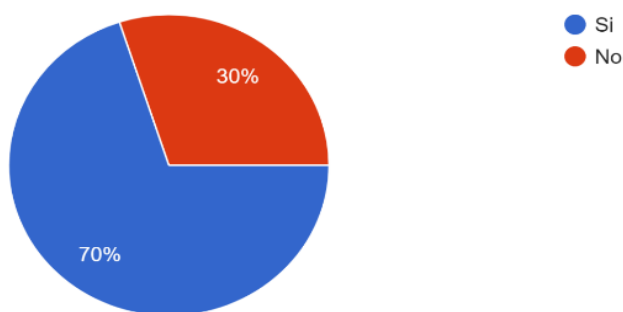
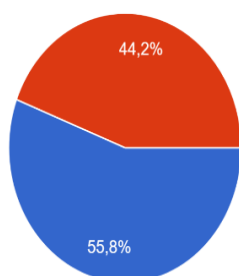


Figure 3

Modifiable risk factors are those that we live with in our daily lives and which, as their name indicates, can be modified if a healthier lifestyle is adopted. Among these, obesity, being overweight or obese and also leading a sedentary life after menopause increases the risk of breast cancer in the surveyed population showed that 56% (67) are overweight and 68% (81) do not do any type of exercise (Figure 4,5).

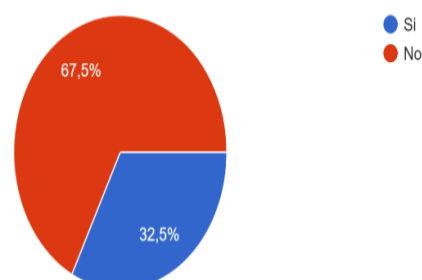
¿Está en sobrepeso?

120 respuestas

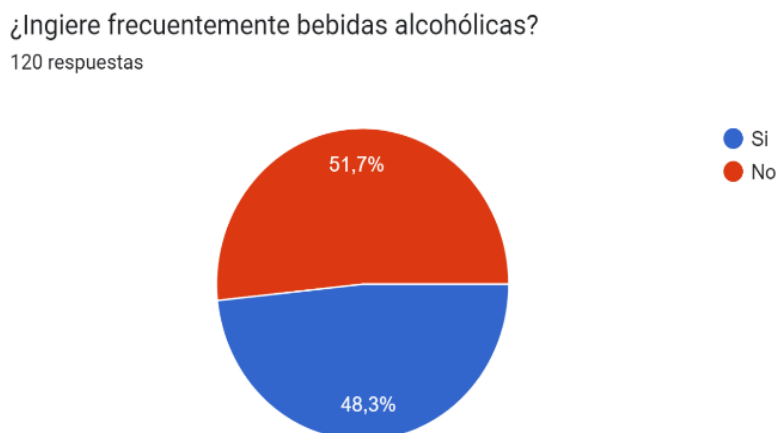


¿Hace ejercicios?

120 respuestas

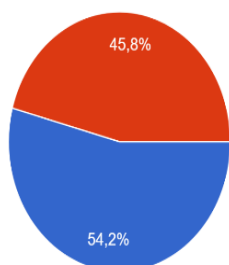


Among the modifiable factors, smoking and drinking alcoholic beverages are also influential, as they weaken the lymphatic system of the body. In the surveyed population, 53% (63) were active smokers and 48% (58) frequently consumed alcoholic beverages (*Figure 6,7*

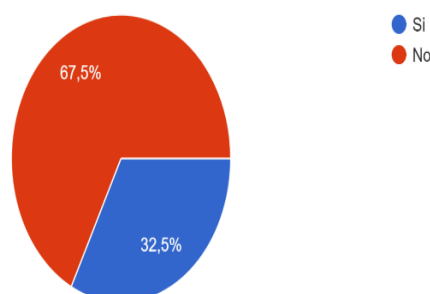


Having consumed hormonal support are also risk factors and the risk becomes stronger if the time is prolonged, in the surveyed population 54% (65) of the women say that they have consumed some hormonal support throughout their lives and among these only 32% (39) have done so for more than 5 years. On the other hand, the remaining 46% (55) have never consumed hormonal support (*Figure 8, 9*).

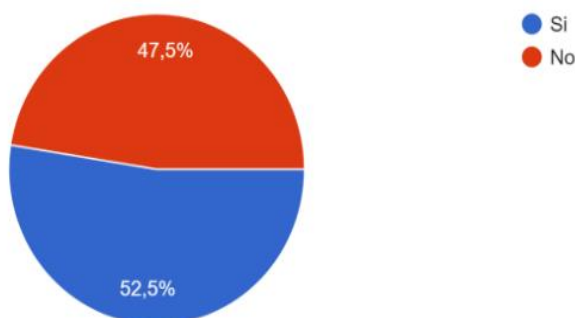
¿Ha recibido soporte hormonal?
120 respuestas



¿Ha planificado con pastillas por más de cinco (5) años?
120 respuestas



¿Es fumadora activa?
120 respuestas



DISCUSSION

In this study, the different risk factors associated with breast cancer affecting commune IV of Valledupar/Cesar, Colombia, were evaluated. The results showed that, excluding the female sex, 100% of the respondents had one or more risk factors associated with breast cancer, the most common being heredity, sedentary lifestyle (overweight, lack of exercise), alcoholism and the use of hormones as a planning method.

The high prevalence of risk factors identified in this study suggests that measures are needed to reduce the incidence of breast cancer in commune IV of Valledupar/Cesar. In particular, hereditary factors, sedentary lifestyle, alcoholism and the use of hormones as a planning method should be addressed in prevention and health education programs.

It is important to note that although these risk factors are common in commune IV of Valledupar/Cesar, they are not exclusive to this population. Therefore, preventive and educational measures should be directed to all women in order to reduce the incidence of breast cancer in the region.

In conclusion, this study provides valuable information on risk factors associated with breast cancer in commune IV of Valledupar/Cesar. The results suggest that preventive and educational measures are needed to address hereditary factors, sedentary lifestyle, alcoholism, and hormone use as a planning method in this population.

CONCLUSION

The findings of this research allowed the identification of the risk factors that are most present in the women of commune IV of the city of Valledupar/Cesar, Colombia. In a considerable percentage of respondents, it was established that hereditary factors, sedentary lifestyle, alcoholism and consuming hormones as a planning method are the risk factors that could increase the probability of developing breast cancer in the area. However, in order to prove this, a follow-up should be done to demonstrate that this variable influences the development of this cancer. In relation to the other risk factors studied, they were identified in minimal percentages; however, a latent risk factor is overweight and obesity. Therefore, it is necessary to instill a culture of awareness and collective responsibility in the community aimed at maintaining a more active life, as well as disseminating the risk factors to which they are exposed so that the same community can make an early detection of any symptom that indicates a risk of developing breast cancer, which helps to increase the quality of life of this population.

REFERENCES

1. De la Salud AM. Aplicación de la Agenda 2030 para el Desarrollo Sostenible: informe del Director General. Organización Mundial de la Salud; 2019.
2. Jiménez Ayala KJ, Vargas Ortiz N, Caro Romero S, Baquero Martínez WS, Jaramillo Díaz YL. Contextualización general de la salud pública. 2019;
3. Bosch FX, Coleman MP. Descriptive epidemiology. En: Manual of Clinical Oncology. Springer; 1982. p. 31-42.
4. Brunello A, Jirillo A, Falci C, Lonardi S, Basso U, Monfardini S. Treatment of advanced breast cancer in elderly women: medical approach. 2008;
5. Ordiales Cuesta O. Análisis de detección temprana del cáncer de mama. 2019;
6. Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast Cancer Targets Ther.* 2019; 11:151.
7. Piñeros M, Sánchez R, Perry F, García OA, Ocampo R, Cendales R. Delay for diagnosis and treatment of breast cancer in Bogota, Colombia. *Salud Publica Mex.* 2011;53(6):478-85.
8. de Vries E, Arroyave I, Pardo C, Wiesner C, Murillo R, Forman D, et al. Trends in inequalities in premature cancer mortality by educational level in Colombia, 1998–2007. *J Epidemiol Community Health.* 2015;69(5):408-15.
9. Alcocer BS, Gutiérrez TJL, Rodríguez PGC, Canché BA, Caamal MEL, de Chavez-Figueroa MCR, et al. Cáncer de mama: factores de riesgo en mujeres: Breast cancer: risk factors in women.

- South Fla J Dev. 2022;3(4):4685-95.
10. Maffuz-Aziz A, Labastida-Almendaro S, Sherwell-Cabello S, Ruvalcaba-Limón E, Domínguez-Reyes CA, Tenorio-Torres JA, et al. Supervivencia de pacientes con cáncer de mama. Análisis por factores pronóstico, clínicos y patológicos. *Ginecol Obstet México*. 2017;84(08):498-506.
 11. Wang F, Shu X, Meszoely I, Pal T, Mayer IA, Yu Z, et al. Overall mortality after diagnosis of breast cancer in men vs women. *JAMA Oncol*. 2019;5(11):1589-96.
 12. Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast Cancer Targets Ther*. 2019; 11:151.
 13. García Penedo A. Tratamiento del cáncer de mama en pacientes de edad avanzada. 2022;
 14. Manahan ER, Kuerer HM, Sebastian M, Hughes KS, Boughey JC, Euhus DM, et al. Consensus guidelines on genetic testing for hereditary breast cancer from the American Society of Breast Surgeons. *Ann Surg Oncol*. 2019;26(10):3025-31.
 15. Kheira DD, Abdessamad DA, Fatima A, Fatima H, Amina C, Narimane H, et al. Epidemiological, Familial, and Biological Profile of Breast Cancer in a Population of Women in Oran. *Egypt Acad J Biol Sci C Physiol Mol Biol*. 2022;14(1):435-49.
 16. Cardoso F, Kyriakides S, Ohno S, Penault-Llorca F, Poortmans P, Rubio IT, et al. Early breast cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Ann Oncol*. 2019;30(8):1194-220.
 17. Thakur P, Seam RK, Gupta MK, Gupta M, Sharma M, Fotedar V. Breast cancer risk factor evaluation in a Western Himalayan state: A case-control study and comparison with the Western World. *South Asian J Cancer*. 2017;6(3):106-9.
 18. Momenimovahed Z, Salehiniya H. Epidemiological characteristics of and risk factors for breast cancer in the world. *Breast Cancer Targets Ther*. 2019; 11:151-64.
 19. Lohmann AE, Soldera SV, Pimentel I, Ribnikar D, Ennis M, Amir E, et al. Association of obesity with breast cancer outcome in relation to cancer subtypes: a meta-analysis. *JNCI J Natl Cancer Inst*. 2021;113(11):1465-75.
 20. Britt KL, Cuzick J, Phillips KA. Key steps for effective breast cancer prevention. *Nat Rev Cancer*. 2020;20(8):417-36.
 21. Asamblea Médica Mundial (Helsinki,1964), revisada por la 29na. Asamblea Médica Mundial (Tokio, 1975) y enmendada por la 35ta. Asamblea Médica Mundial (Venecia, 1983) y la 41era. Asamblea Médica Mundial (Hong Kong, 1989).
 22. Benítez DB, Vigué J. Cáncer de mama (p. 31). Asklepios. 2012.
 23. Farhat GN, Cummings SR, Chlebowski RT, Parimi N, Cauley JA., Rohan TE et al. Sex hormone levels and risks of estrogen receptor-negative and estrogen receptor-positive breast cancers. *J Natl Cancer Inst* 2011; 103:562.