





# The Role of Nutrition in Women with Benign Cyclic Mastalgia: A Case-Control Study

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## ABSTRACT

**Objective:** Smoking, caffeine, oral contraception, and exercise are the most cited factors for premenstrual mastalgia in the literature, but remain controversial. In this study, we aimed to investigate the most often proposed nutritional factors for cyclic breast pain.

**Materials and Methods:** Patients who met the criteria for participation in the mastalgia or control group were included in this case-control study. The age, body mass index, educational status, duration of breast pain, visual analog scale (VAS) pain score (0 to 10), number of births, use of oral contraception, exercise habits, drinking coffee, tea, alcohol and water, smoking history, and eating fast food and dessert were examined using a questionnaire.

**Results:** The mean age of mastalgia (n=256) and control (n=200) patients were 35.9±11.0 and 36.6±10.6 years, respectively. In the mastalgia group, the mean duration of cyclic breast pain time was 22.8±33.0 months and mean the VAS score 4.0±2.1. Body mass index and the mean number of births were higher in the mastalgia group than control group (p<0.005). There were no differences in smoking, oral contraceptive use, and drinking alcohol and tea (p>0.005). Compared to the mastalgia group, the control group ate more fast food and desserts, drank more water and coffee, and exercised less (p<0.005).

**Conclusion:** The causes of mastalgia remain controversial. Our data supports some of the published studies, but not others. We propose that nutritional factors contribute less to the risk of mastalgia than is generally thought.

**Keywords:** Cyclic mastalgia, caffeine, smoking, breast pain, nutrition

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## Introduction

Mastalgia is a common complaint in women (1). Mastalgia can be caused by benign or malign diseases. Also, mastalgia can be categorized as cyclic or non-cyclic depending on its relationship with the menstrual cycle. Mastalgia pain is mostly mild, but some patients describe moderate or severe pain (2). The most affected ages are between 30–50 years (3).

The most common form of mastalgia is cyclic mastalgia (4). Cyclic mastalgia is related to the hormonal changes of the menstrual cycle. The pain pattern of cyclic mastalgia is classically bilateral, not localized, and can radiate to the axilla or arms (1, 5). The pain changes during the periods of the menstrual cycle (4). Cyclic mastalgia can affect women's sexual, physical, social, and work-related activities (6).

Some literature studies have report possible risk factors for cyclic breast pain (1, 2, 6, 7). Some of the authors claim that nutritional factors, such as tea and coffee, as well as smoking or psychosomatic, contribute to mastalgia (7, 8); however, these factors are controversial. Some studies have suggested that the above factors are not relevant to cyclic mastalgia (9, 10).

To address this, here we aimed to investigate the mostly claimed nutritional factors for cyclic breast pain using a large series of participants.

## Materials and Method

This case-control study was approved by the local human ethics committee. The mastalgia group was selected from women admitted to the breast surgery outpatient clinic with mastalgia, and the control group was selected from the women who were admitted to the general surgery outpatients without breast pain between December 2015 and May 2017. Cyclic breast pain was diagnosed in those patients who reported having bilateral breast pain and feeling dull, heavy or aching breasts, lasting longer than seven days, monthly around the time of menstruation.

The inclusion criteria were premenopausal patients, 18–65-years-old, cyclic breast pain complaints for at least three months (for the mastalgia group), and not having breast pain (for the control group). Exclusion criteria included pregnancy, breastfeeding, breast surgery history, breast cancer history, cystic or solid multiple lesions greater than 1 cm in mammography or ultrasonography (USG) or suspected breast cancer. Mastalgia and control patients were included in the study according to the exclusion and inclusion criteria and according to their administration to the outpatient clinic. Mammography, breast USG, or both, were performed on all the mastalgia patients. Informed consent was obtained from all patients included in the study. Mastalgia and control groups were numbered as group 1 and 2, respectively.

The age, body mass index, educational status, duration of breast pain, visual analog scale (VAS) pain score (0 to 10), number of births, the use of oral contraception, exercise habits, drinking coffee, black tea (not any herbal or green tea), alcohol, and water, smoking history, and eating of fast food and desserts were examined using a questionnaire (Table 1).

**Statistical analysis**

SPSS 22.0 (IBM, Armonk, NY, USA) was used for statistical analysis. Descriptive statistics included the mean, standard deviation, median, minimum-maximum, and rate for numerical variables. Kolmogorov-Smirnov tests were used to confirm a normal distribution condition, and the Mann-Whitney U test and Chi-Square test was used for independent variables. The statistical significance level was set at  $p < 0.05$ .

**Results**

The mean age of mastalgia ( $n=256$ ) and control ( $n=200$ ) patients were  $35.9 \pm 11.0$  and  $36.6 \pm 10.6$  years, respectively. In the mastalgia group, the mean duration of cyclic breast pain duration was  $22.8 \pm 33.0$  months, and the mean VAS score was  $4.0 \pm 2.1$ .

Compared to the control group, the body mass index ( $p < 0.001$ ) and mean number of births ( $p < 0.001$ ) were higher in the mastalgia group (Table 2).

**Table 1. The questionnaire which is performed to the patients**

Age											
Body mass index											
Educational status	Illiterate	Primary school			Middle school			High school and above			
The number of births											
Duration of breast pain											
VAS breast pain score	0	1	2	3	4	5	6	7	8	9	10
Using of oral contraception	Yes						No				
At least 30 minutes daily exercise	Yes						No				
How many packets of cigarette do you smoke in a week?	0	1	2	3	4	5	6	7	8	9	10 or more
How many cups of coffee do you have in a week?	0	1	2	3	4	5	6	7	8	9	10 or more
How many glasses of black tea do you have in a day?	0	1	2	3	4	5	6	7	8	9	10 or more
How many times do you have a glass of alcohol in a month?	0	1	2	3	4	5	6	7	8	9	10 or more
How many times do you eat fast-food in a week?	0	1	2	3	4	5	6	7	8	9	10 or more
How many portions of dessert do you eat in a week?	0	1	2	3	4	5	6	7	8	9	10 or more

**Table 2. The numerical variables of the groups (SD: standard deviation)**

	Group 1 (mean±SD)	Group 2 (mean±SD)	p
Body mass index	26.0±5.3	24.3±5.3	0.000
Number of births	2.1±1.9	1.2±1.8	0.000
Weekly smoking (pocket)	1.1±2.1	0.9±2.2	0.242
Daily coffee intake (cup)	3.3±3.6	4.5±3.6	0.000
Daily tea intake (glass)	4.9±3.4	4.6±3.3	0.323
Monthly alcohol intake (glass)	0.3±1.1	0.4±1.5	0.850
Daily water intake (glass)	5.9±3.2	6.7±2.7	0.004
Weekly fast food intake (portion)	1.3±1.5	2.6±2.3	0.000
Weekly dessert intake (portion)	3.6±2.9	4.5±2.7	0.001

Table 3. The distribution of the patients due to survey

		Group 1 (n-%)	Group 2 (n-%)	p
Educational Status	Illiterate	17-6.6%	6-3%	0.000
		161-62.9%	57-28.5%	
	Primary school	43-16.8%	68-34.0%	
	Middle school	34-13.3%	69-34.5%	
	High school and above	1-0.4%	0-0%	
Oral contraceptive (pills) usage	Yes	2-0.8%	0-0.0%	0.210
	No	254-99.2%	200-100%	
At least 30 minutes daily exercise	Yes	104-40.6%	50-25.0%	0.000
	No	152-59.4%	150-75.0%	
Smoking	Yes	70-27.3%	44-22%	0.191
	No	186-72.7%	156-78%	
Coffee Intake	Yes	167-65.2%	165-82.5%	0.000
	No	89-34.8%	35-17.5%	
Tea Intake	Yes	238-93.0%	183-91.5%	0.559
	No	18-7.0%	17-8.5%	
Alcohol Intake	Yes	21-8.2%	17-8.5%	0.909
	No	135-91.8%	183-91.5%	
Eating Fast-food	Yes	175-68.4%	167-83.5%	0.000
	No	81-31.6%	33-16.5%	
Eating Dessert	Yes	202-78.9%	189-94.5%	0.000
	No	54-20.1%	11-5.5%	

Smoking habits, alcohol and black tea consumption, and oral contraceptive use were similar between the groups (Table 2, 3).

The mastalgia group had a lower educational status than the control group. The mastalgia group had lower fast food ( $p < 0.001$ ) and dessert eating ( $p < 0.001$ ) rates than the control group. Also, the mastalgia group drank less water ( $p = 0.004$ ) and coffee ( $p < 0.001$ ), and exercised more ( $p < 0.001$ ) than the control group (Table 2, 3).

## Discussion and Conclusion

Cyclic mastalgia is the main cause of breast pain, accounting for 60–70% of patients who have complaints of breast pain (4). Cyclic mastalgia is usually mild, but it is reported that 11% of the patients experience moderate to severe breast pain (6).

Coffee is the most often cited nutritional factor for cyclic mastalgia. Smoking has also been associated with mastalgia. In a study by Ader et al. (7) with 874 patients, caffeine and smoking were associated with cyclic mastalgia; however, other nutritional factors (e.g., high-fat diet), physical activity, and alcohol consumption were not related with cyclic mastalgia. Caffeine and heavy smoking were also related to mastalgia in another study with 700 participants and including all of the mastalgia types (1). Yilmaz et al. (9) investigated smoking and coffee habits among 70 mastalgia and 70 control cases and detected no association with mastalgia. In another study, 105 mastalgia patients were examined, and caffeine and high-fat

food intake were not related to mastalgia (11). However, Boyd et al. (12) suggested that a low-fat diet prevents breast pain as part of the premenstrual syndrome. In our study, smoking, tea intake, and alcohol consumption were not different between the mastalgia and control groups. Interestingly, we found that coffee intake and fast-food diet were significantly higher in the control group. However, our mastalgia patients had higher body mass index values than the controls.

The other factors possibly related to mastalgia are educational status, number of births, oral contraception usage, and exercise. Shobeiri et al. (13) reported that educational level, number of birth, and exercise are not related to cyclic mastalgia, but that oral contraception usage was more common in the control group. In some other studies, oral contraception (pills) usage was suggested as a protective agent for premenstrual breast pain (7, 14). Exercise is related to mastalgia due to increased breast movements. However, using a breast-supporting sports bra could reduce this effect (15). Also, in a randomised controlled trial, some exercises were recommended for mastalgia patients as a way of reducing breast pain. Exercise has been investigated in a prospective study of mastalgia patients, in which one group exercised and the other did not. At the end of the study, the sensory component and the VAS score significantly improved due to exercise (16). In a cohort study, 234 random and 234 female runner participants were compared, and active females had a significantly lower prevalence of breast pain (17).

We detected no differences in oral contraception use between the mastalgia and control groups. However, in our study, the control group were relatively well-educated but exercised less than the mastalgia group.

To our knowledge, no study had previously investigated the relationship between water drinking or dessert eating and mastalgia. According to our study, the control group drank more water and ate more dessert. However, how drinking water or eating dessert might prevent cyclic mastalgia is unclear, and whether these factors prevent the development of cyclic mastalgia should be investigated.

A limitation of this study is that we did not compare the breast size of the mastalgia and the control groups. However, this study was planned as a survey study and the nutritional factors associated with mastalgia were the focus of our research.

Contradictory reports have been published about the links between exercise, smoking, caffeine, oral contraception use, and premenstrual mastalgia (7, 9, 11-15). In most of these factors, there is no consensus about the relationship with mastalgia. In our study, we detected no differences between the groups for smoking, drinking tea and alcohol, and oral contraception use. However, the control group drank more coffee and ate more fast food than the mastalgia group. Also, the control group drank more water and ate more dessert. Based on our findings, together with the contradictory reports in the literature, we propose that nutritional factors contribute less to the risk of mastalgia than is generally thought.

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**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of İstanbul Training and Research Hospital Clinical Research ( 11.03.2016/799)

**Informed Consent:** Written informed consent was obtained from patients who participated in this study.

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## References

- Eren T, Aslan A, Ozemir IA, Baysal H, Sagioglu J, Ekinci O, Alimoglu O. Factors Effecting Mastalgia. *Breast Care (Basel)* 2016; 11: 188-193. (PMID: 27493619) [\[CrossRef\]](#)
- Ader DN, Shriver CD. Cyclical mastalgia: prevalence and impact in an outpatient breast clinic sample. *J Am Coll Surg* 1997; 185: 466-470. (PMID: 9358091) [\[CrossRef\]](#)
- Goyal A, Mansel RE. Mastalgia. Jatoi I, Kaufmann M. Management of breast disease. Berlin: Springer-Verlag 2010: 69-76. [\[CrossRef\]](#)
- Smith RL, Pruthi S, Fitzpatrick LA. Evaluation and management of breast pain. *Mayo Clin Proc* 2004; 79: 353-372. (PMID: 15008609) [\[CrossRef\]](#)
- Morrow M. The evaluation of common breast problems. *Am Fam Physician* 2000; 61: 2371-2378. (PMID: 10794579)
- Ader DN, Browne MW. Prevalence and impact of cyclic mastalgia in a United States clinic-based sample. *Am J Obstet Gynecol* 1997; 177: 126-132. (PMID: 9240595) [\[CrossRef\]](#)
- Ader DN, South-Paul J, Adera T, Deuster PA. Cyclical mastalgia: Prevalence and associated health and behavioral factors. *J Psychosom Obstet Gynaecol* 2001; 22: 71-76. (PMID: 11446156) [\[CrossRef\]](#)
- Aksu G, Hocaoglu Ç. The study of alexithymia, anxiety, worry and depression levels of the patients who suffered by mastalgia and underwent to radiodiagnostic assay. *Klinik Psikiyatri* 2004; 2: 95-102.
- Yılmaz EM, Çelik S, Arslan H, Değer D. Relation between mastalgia and anxiety in a region with high frequency of posttraumatic stress disorder. *J Breast Health* 2015; 11:72-75. (PMID: 28331695) [\[CrossRef\]](#)
- Coşar S, Coşar B, Candansayar S, Özdemir A. Hostility, alexithymia and depression levels in patients experiencing mastalgia. *Yeni Symposium* 2001; 39: 181-184.
- Songtish D, Akranurakkul P. Mastalgia: characteristics and associated factors in Thai women. *J Med Assoc Thai* 2015; 98 Suppl 9: S9-15. (PMID: 26817204)
- Boyd NF, McGuire V, Shannon P, Cousins M, Kriukov V, Mahoney L, Fish E, Lickley L, Lockwood G, Tritchler D. Effect of a low-fat high-carbohydrate diet on symptoms of cyclical mastopathy. *Lancet* 1988; 16: 2128-2132. (PMID: 2899188) [\[CrossRef\]](#)
- Shobeiri F, Oshvandi K, Nazari M. Cyclical mastalgia: Prevalence and associated determinants in Hamadan City, Iran. *Asian Pac J Trop Biomed* 2016; 6: 275-278 [\[CrossRef\]](#)
- Graham CA, Sherwin BB. A prospective treatment study of premenstrual symptoms using a triphasic oral contraceptive. *J Psychosom Res* 1992; 36:257-266. (PMID: 1564678) [\[CrossRef\]](#)
- Burnett E, White J, Scurr J. The influence of the breast on physical activity participation in females. *J Phys Act Health* 2015; 12: 588-594. (PMID: 24905581) [\[CrossRef\]](#)
- Genç A, Çelebi MM, Çelik SU, Atman ED, Kocaay AF, Zergeroğlu AM, Elhan AH, Ggenç V. The effects of exercise on mastalgia. *Phys Sportsmed* 2017; 45: 17-21. (PMID: 27776458) [\[CrossRef\]](#)
- Brown N, Burnett E, Scurr J. Is breast pain greater in active females compared to the general population in the UK?. *Breast J* 2016; 22:194-201. (PMID: 26661830) [\[CrossRef\]](#)