# The Interaction of Mastalgia with Depression and Quality of Life in Turkish Women

## Türk Kadınlarında Yaşam Kalitesi ve Depresyon ile Mastaljinin Etkileşimi

Mastaljinin Türk Kadınlarında Yaşam Kalitesi Üzerine Etkisi / Mastalgia, Quality of Life in Turkish Women

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**Özet**

Amaç: Yaşam kalitesi ve depreyonun şiddeti ile mastaljinin etkileşimini değerlendirmeyi amaçladık. Gereç ve Yöntem: Bu çalışma, Ekim 2007 ile Haziran 2008 tarihleri arasında Konya KETEM' e başvuran, mastalji etyolojisi olabilecek organik bir patolojisi olmayan, meme kanseri taraması yapılan 105 kadın üzerinde yapıldı. Ağrının şiddeti, depresyon ve yaşam kalitesi sırasıyla Vizüe Analog Skala (VAS), Beck Depresyon Ölçeği (BDÖ) ve Short Form-36 (SF-36) testleriyle değerlendirildi. Bulgular: VAS ortalaması 5 (1-10), BDÖ ortalaması 17 (2-41) idi. Hastaların 51 (%49)'i Psikiyatri Kliniğine gönderildi. Buna göre hastaların %58' i depressif, %30' u anksiyeteli ve %4' ü hem depressif hem de anksiyeteli idi. Fiziksel ve sosyal uğraşıları olanlar SF-36 ölçeğinden en yüksek puanı aldı. Yaş ile fiziksel uğraşı arasında ılımlı bir negatif ilişki (r=-0.235, P=0.019 varken, yaş ile yaşam enerjisi arasında zayıf bir pozitif ilişki (r=0.198, P=0.04) vardı. BDÖ ile fiziksel aktivite arasında zayıf bir negatif ilişki (r=-0.146) varken, BDÖ ile mental sağlık ve mental sağlık puanı arasında iyi bir pozitif ilişki (r=-0.563, r=-0.559) vardı. VAS ile SF-36' nın arasında ılımlı bir negatif ilişki vardı. Tartışma: Mastalji, kadınların yaşam kalitesini negatif etkileyen psikolojik faktörler arasında göz önünde bulundurulmalıdır.

**Anahtar Kelimeler**

Depresyon; Mastalji; Yaşam Kalitesi; Türk Kadınları

**Abstract**

Aim: The interaction of mastalgia with the severity of depression and quality of life is examined. Material and Method: This study was performed on 105 women screened for breast cancer having no organic pathology causing mastalgia. The severity of pain, depression, and quality of life were evaluated through Visual Analogue Scale (VAS), Beck Depression Inventory (BDI), and Short Form-36 Health Survey (SF-36). Results: The mean VAS and BDI scores were 5 (1-10) and 17 (2-41), respectively. Of the patients, 49% (n=51) were referred to psychiatry polyclinics. Accordingly, 58% were depressive, 30% were anxious and 4% were depressive and anxious. The patients obtained the highest scores from physical and social functioning domains of SF-36. A moderate negative association was detected between age and physical function (PF) (r=-0.235, p=0.01), while there was a mild positive association between age and vitality energy (r=0.198, p=0.04). There was a mild negative association between BDI and PF (r=-0.146), while there were good positive associations between BDI and mental health and mental component summary scores (r=-0.563, r=-0.559). Moderate negative associations were detected between VAS and eight domains and 2 summary scores of SF-36. Discussion: Mastalgia negatively effected the life quality of women, psychological factors should be considered.

**Keywords**

Depression; Mastalgia; Quality Of Life; Turkish Women

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## Introduction

Mastalgia (breast pain, mastodynia) defines the pain and/or sensitivity of breast tissue [1]. Mastalgia is among the most common of women applying to breast disease policlinics [2-4]. The prevalence of mastalgia is 41-79% [5-9]. Mastalgia is generally divided into two groups; cyclic (typically its severity increases with premenstrual period, relieves with the menstruation within 7 days, monthly moderate pain) and non-cyclic (the pain which is not related to menstruation and severe pain). Cyclic mastalgia is the most common type and it affects bilateral and upper outer quadrant [5-9]. Ader et al, [9]. from the population-based study found that 68% of 18-44 aged women experienced a moderate cyclic mastalgia. Non-cyclic mastalgia is the scarce type and is localized to a merely tissue, bilaterally and refers to the pain of thorax wall rather than the breast itself. Non-cyclic mastalgia effecting the women's life may be continious or intermittent [5].

Although its etiology is not fully understood, besides caffeine consumption and smoking, increased plasma fatty acid levels, increased hormone levels, acute stress and increased prolactin levels are responsible for mastalgia [9-11]. The deficiencies in endocrinologic or histologic factors directed researchers to sought psychological factors, and psychogenic factors are supported [12].

Quality of life (QOL), which can be defined as a person's perception of his/her physical and mental health, covers broad domains, including physical, psychological, economic, spiritual and social well-being [13]. The World Health Organization defines health as a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity. Being a generic criteria for measuring QOL, Short Form-36 Health Survey (SF-36) was developed by Rand Corporation in 1992 [14]. To the best of our knowledge, there are scarce studies on the evaluation of SF-36 QOL in mastalgia patients and the current study is the first one from Turkey [15]. We aimed to determine the interaction of mastalgia with sociodemographic variables, as well as the severity of pain, depression and QOL in females complaining from mastalgia with no other organic pathologies.

## Material and Method

This study was conducted between December 2007 to June 2008 in Early Diagnosis Screen and Education Center in Konya Education and Research Hospital on 105 women applied to the center for breast cancer screen with complaints of mastalgia.

Patient characteristics

After taking patient history and family history and physical examination, breast ultrasonography, mammographia, or both were performed. The patients without an organic pathology causing mastalgia after physical examination, breast ultrasonography and/or mammography were included. The patients were informed about the non-organic causes of mastalgia, their informed consents were taken and they were interviewed in a private room. The authors constructed a Mastalgia Patient Data Obtaining and Follow-up Form as follows: Age, below and above 35 years; education, primary school, secondary school, high school and university; body mass index (BMI), 30 and above obese; stressed life style, yes/no; the duration of mastalgia, 12 month and above; menstruation cycle, cyclic/non-cyclic; localization, right and left/bilateral retroareolar, upper outer quadrant, upper inner quadrant, and widespread lower quadrant; smoking habit, yes/no; daily amount of tea and coffee consumption, 0-4 glasses, 5-9 glasses, 10 glasses and above; daily chocolate and cola drink consumption, yes/no, regular physical activity, yes/no; menopausal status, premenopausal/ postmenopausal; wearing proper clothes and bra, yes/no. The patients were screened through their status (Bilaretal mammary USG examination was done to patients under the of 40 and bilateral MG besides bilateral mammary USG examination was done to patients over the age of 40).

*Short Form 36 Health Survey (SF-36)*

SF-36 was constructed to survey the health status in the Medical Outcomes Study. The SF-36 was designed for use in clinical practice and research, health policy evaluations, and general population surveys. Its conceptual model was originally established in the United States, but the International Quality of Life Assessment (IQOLA) project has demonstrated its validity for the European population [16]. The reliability and the validity for the Turkish population of the scale was carried out by Pinar [17]. SF-36 Health Survey contains 36 items that are scored in eight scales: physical functioning (PF), role limitations due to physical health problems (RP), general health (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE), and mental health (MH). It also includes a single item that provides an indication of perceived change in health. For each scale, a score ranging from 0 (the worst measured health) to 100 (the best measured health[14]. Additionally, scores were calculated for the physical health (PCS) and mental health (MCS) components of health-related quality of life. A standardized algorithm was used to calculate the scores for eight domains and two dimensions of the SF-36 were transformed to norm-based scores with a mean of 50 and a Standard deviation of 10. Chronbach's α was computed to assess internal consistency reliability, 0.64-0.85 in patients for all eight domains.

*Beck Depression Inventory (BDI)*

In the current study, BDI prepared by Beck et al [18]. was used. BDI measures the physical, emotional, cognitive and motivational symptoms. The aim of the inventory is not to diagnose depression, but to determine the objective symptoms of depression. Its validity and reliability for Turkish population have been tested by Hisli [19]. The BDI includes 21 descriptive statements regarding depressive symptoms frequently reported by individuals. Each of the items contain a 4-point severity rating scale. The scoring algorithm defines scores of 0-17 points as indicating no-to mild depression; 18-24 points as indicating moderate depression; and 25-63 points as indicating major depression [34]. The patients having scores 18 and above were referred to the psychiatry clinics in the current study. Their diagnosis in the psychiatry clinics were recorded.

Two groups were constructed according to the referrence to psychiatry clinics (BDI scores ≥18 and ≤17) and they were compared for patient characteristics, SF-36 QOL with 8 dimensions and VAS.

*Visual Analogue Scale (VAS)*

VAS is a simple and frequently used method for the assessment of variations in intensity of pain. When responding to a VAS item, respondents specify their level of agreement to a statement by indicating a position along a continuous line (analogue) between two end-points. VAS was used to assess the severity of pain for the last 4 weeks. Patients were requested to mark a point from a 10cm long vertical line. In the scale 0: no pain, as the severity of pain increases, the numbers also increase, and 10: worst pain imaginable.

*Anthropometric indices*

Weights were measured to 0.1 kg using a standard beam balance using a Tefal Ultraslim (France) accuracy in minimal (barefoot and light clothing) underclothes. Height was determined to the nearest 1mm with portable stadiometers. The portable scales and stadiometers were calibrated daily. The BMI was calculated according to the formula weight (kg)/ height (m)2.

Statistical analysis

The data were analysed using the SPSS statistical package program version 15.0 (SPSS Inc, Chicago, IL, USA). Descriptive statistics included percentages, standart deviations, means and median. Chi-square test was used to compare the qualitative variables. Depending on the type of the variables, t, r, and F analyses were performed if it did not apply to normal distribution, the Kruskal-Wallis test and Mann Whitney-U tests were also employed. Tukey (post-hoc), one of multi-comparative tests, and/or Dunn's test were applied in order to determine which group the difference originated from. Pearson correlation co-efficient was calculated in assessing the relationship between the variables. Multiple linear regression analysis was performed. The minimum acceptable level of significance was set at $p<0.05$.

## Results

The patient characteristics were given in Table 1. The median age was 36 (18-65) years. The most common characteristics were; 77% (n=87) were primary school graduates, 90% (n=94) were in postmenopausal period, 60% (n=63) have cyclic mastalgia, 79% (n=83) have a normal body size, 41% (n=43) have bilateral mastalgia, 32% (n=34) have mastalgia in the left breast, 28% (n=29) have mastalgia in upper outer quadrant, 82% (n=86) were non-smokers, 42% (n=44) were consuming 5-9 glasses of tea-coffee daily, 95% (n=100) regular cola drinkers, 83% (n=87) were irregular chocolate consumers, 87% (n=91) were performing irregular physical activity, and 77% (n=87) were wearing proper bras.

Of the 6 from 8 domains of SF-36 QOL scale were below 50 points (RF 49.29±38.02, pain 47.57±17.72, GH 45.58±19.53, VT 44.71±19.28, RE 43.17±35.12, MH 49.41±16.40), 2 were above 50 points (PF 60.14±21.27 and SF 59.29±21.92) and both of the summary scores were below 50 points (PCS 39.94±7.24 and MCS 39.14±9.12) (Table 2, Figure 1). Mean BDI scores were 18.13±8.10 (moderate depression) and VAS scores 4.77±1.85 (below 5 points), respectively (Table 2, Figure 1).

In Table 3, the interaction of SF-36 (with 8 domains and 2 summaries) with age, duration of mastalgia, BMI, BDI, and VAS is seen. There was a negative moderate correlation between age

Table 1. Patient characteristics

| Characteristics | | n (%) |
|---|---|---|
| Age (year) (median) | | 36 (18-65)* |
| Duration of mastalgia (month) (median) | | 12 (1-240)* |
| Education status | Primary school | 87 (77%) |
| | Secondary school | 7 (7%) |
| | High school | 13 (12%) |
| | University | 4 (4%) |
| Menopausal status | Premenopausal | 94 (90%) |
| | Postmenopausal | 11 (10%) |
| Menstruation cycle type | Cyclic | 63 (60%) |
| | Non-cyclic | 42 (40%) |
| Body size | Normal | 83 (79%) |
| | Obese | 22 (21%) |
| Stressed life-style | Yes | 81 (77%) |
| | No | 24 (23%) |
| Mastalgia | Left breast | 34 (32%) |
| | Right breast | 28 (27%) |
| | Left-right | 43 (41%) |
| Localization of mastalgia | Upper outer quadrant | 29 (28%) |
| | Lower inner quadrant | 4 (4%) |
| | Upper inner quadrant | 14 (13%) |
| | Lower outer quadrant | 22 (21%) |
| | Retroareolar | 7 (7%) |
| | Widespread | 21 (20%) |
| Smoking habit | Yes | 17 (16%) |
| | No | 86 (82%) |
| Daily tea-coffee consumption | 0-4 glasses | 35 (33%) |
| | 5-9 glasses | 44 (42%) |
| | 10 glasses | 26 (25%) |
| Daily cola drink consumption | Yes | 5 (5%) |
| | No | 100 (95%) |
| Daily chocolate consumption | Yes | 18 (17%) |
| | No | 87 (83%) |
| Regular physical activity | Yes | 14 (13%) |
| | No | 91 (87%) |
| Wearing proper clothes | Yes | 13 (12%) |
| | No | 92 (88%) |
| Wearing proper bra | Yes | 24 (23%) |
| | No | 81 (77%) |

* (Min-Max)

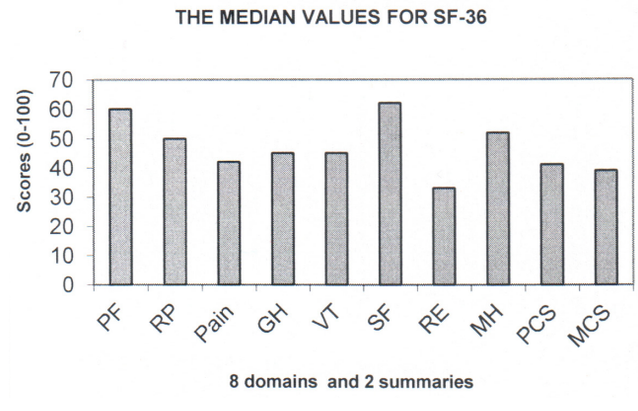


Figure 1. Eight domains and 2 summary scores of SF-36.

Table 2. Mean scores of patients from SF-36 (with 8 domains), BDI, and VAS

| Variables | Mean ± SD | Median (Min-Max) |
|---|---|---|
| Physical function (PF) | 60.14 ± 21.27 | 60 (15-100) |
| Role difficulty physical (RP) | 49.29 ± 38.02 | 50 (0-100) |
| Pain | 47.57± 17.72 | 42 (12-100) |
| General health (GH) | 45.58 ± 19.53 | 45 (0-92) |
| Vitality energy (VT) | 44.71 ± 19.28 | 45 (0-95) |
| Social function (SF) | 59.29± 21.92 | 62.5 (13-100) |
| Role difficulty emotional (RE) | 43.17 ± 35.12 | 33.3 (0-100) |
| Mental health (MH) | 49.41 ± 16.40 | 52 (8-80) |
| Physical Component Summary (PCS) | 39.94 ± 7.24 | 41 (23-53) |
| Mental Component Summary (MCS) | 39.14 ± 9.12 | 39 (17-57) |
| Beck Depression Inventory (BDI) | 18.13 ± 8.10 | 17 (2-41) |
| Visual Analogue Scale (VAS) | 4.77 ± 1.85 | 5 (1-10) |

and PF (r=-0.235, p=0.01). There was a positive mild correlation between age and VT (r=0.198, p=0.04). There was no correlation between the duration of mastalgia and SF-36 (with 8 domains and 2 summaries). There was a negative mild correlation between BDI and PF (r=-0.146). There were negative moderate correlations between BDI and RF, pain, GH, VT, SF, RE, PCS (r=-0.367, r=-0.309, r=-0.392, r=-0.439, r=-0.351, r=-0.304, r=-0.257, respectively). There were negative moderate correlations between VAS and PF, RF, pain, GH, VT, SF, RE, MH, PCS, MCS (r=-0.257, r=-0.349, r=-0.490, r=-0.319, r=-0.256, r=-0.249, r=-0.300, r=-0.330, r=-0.407 and r=-0.327, respectively).

Of the patients, 49% (n=51) (BDI scores ≥18) were referred to psychiatry polyclinics. According to psychiatric evaluation; 58% (n=31) of the patients were depressive, 30% (n=16) were anxious, 4% (n=4) were depressive and anxious, 4% (n=4) were depressive and somatoform disordered, 2% (n=1) were panic disordered and 2% (n=1) were obsessive compulsive disordered. According to 2 groups based on BDI scores (≥18 or ≤17) (n=51 or n=54); stressed life style and regular cola consumption were different among groups (p=0.004 and p=0.006, respectively) (Table 4). In addition to this result, GH (p=0.008), VT (p=0.001), MH (p=0.001), RF (p=0.01), pain (p=0.05), SF (p=0.01), MCS (p=0.001) and VAS (p=0.04) were significantly different among groups (Table 5).

A moderate positive correlation was detected between BDI and VAS (r=0.304, p=0.002).

Eight domains and 2 summary scores of SF-36 were demonstrated in Figure 1.

Table 3. The statistical analysis of the interaction between patient characteristics, SF-36, BDI, and VAS

| Characteristics | PF | RP | PAIN | GH | VT | SF | RE | MH | PCS | MCS |
|---|---|---|---|---|---|---|---|---|---|---|
| Age (year) | -0.235** | -0.039 | -0.039 | 0.033 | 0.198* | -0.065 | 0.025 | 0.145 | -0,173 | 0.143 |
| Duration of mastalgia (month) | -0.165 | -0.059 | -0.025 | -0.038 | 0.058 | 0.038 | 0.089 | -0.075 | -0.147 | 0.008 |
| BMI (kg/m2) | -0.177 | 0.036 | -0.053 | -0.144 | 0.051 | -0.081 | -0.012 | 0.065 | -0.168 | 0.083 |
| VAS | -0.257** | -0.349*** | -.490*** | -0.319*** | -0.256** | -0.249** | -0.300** | -0.330*** | -0.407*** | -0.327*** |
| BDI | -0.146 | -0.367*** | -0.309*** | -0.392*** | -0.439*** | -0.351*** | -0.304*** | -0.563*** | -0.257*** | -0.559*** |

*p<0.05, **p<0.01, ***p<0.00
PF: Physical Function, RP: Physical Role Difficulty, GH: General Health, VT: Vitality Energy, SF: Social Function, RE: Emotional Role Difficulty, MH: Mental Health, PCS: Physical Component Summary, MCS: Mental Component Summary, VAS: Visual Analogue Scale, BDI: Beck Depresyon Inventory.

## Discussion

Mastalgia may be prevalent (70%) among childbearing women. In 50% of the females referred to Breast Clinics having mastalgia complaint. Only 0.5% of the females with mastalgia have diagnosed with neoplasm. 85% of the females do not take a special treatment, while 15% were seriously affected and take medications. Of these patients, 2/3 have cyclic, and 1/3 have non-cyclic mastalgia [4-6;9;20]. In the current study, our results on 90% of the females were premenopausal, 60% have cyclic mastalgia, 41% have bilateral mastalgia, 28% have outer upper quadrant mastalgia, and median duration of mastalgia being 12 months is consistent with the literature. As it is not too long for follow-up, after 2 years, no neoplasm was detected.

In clinical practice decreasing the intake of foods containing methyl xanthine, mainly coffee, is recommended to patients with mastalgia. However, there are a few studies determining the relationship between mastalgia and methyl xanthine consumption[21-23]. Ader et al [9], found a weak correlation between the frequency of methyl xanthine consumption and mastalgia. Gül et al [24], found no correlation between the frequency of methyl xanthine consumption and mastalgia. In the current study, 67% of the patients consuming 5 glasses/d tea-coffee finding is consistent with the weak correlation studies; and also 95% of the patients not consuming cola drinks regularly, 83% of the patients not consuming chocolate regularly, and 82% of the patients not smoking findings are consistent with the literature. In groups constructed according to BDI scores, no association was detected, except consuming cola drinks from methyl xanthine containing foods.

Active breast movement on its weak suspensory ligament may contribute considerably to mastalgia. For women who exercise vigorously, a well-fitting support bra can provide substantial pain relief [25-26]. However, these results must be interpreted with caution because mastalgia shows a high rate (about 20%) of responding to placebo [27]. On the other hand, a sedentary lifestyle has been reported in up to 80% of women with mastalgia [28]. For these women, increasing physical activity levels may improve chronic pain via release of endorphins [29]. In the current study, for 77% of the women wearing unproper bras and 87% of them having irregular physical activity were the causes of mastalgia.

Psychosomatic causes of mastalgia is emphasized in studies and in the etiology of mastalgia psychogenic factors are also supported besides hormonal theories. In these cases, widespread anxiety disorder and major depression were more prevalent, while somatoform disorders and panic disorders were less prevalent [12].

Table 4. Comparison of patient characteristics according to BDI

| Characteristics | | Groups: BDI score ≥18 (n=51) | Groups: BDI score ≤17 (n=54) | Statistical assessment |
|---|---|---|---|---|
| | | n (%) | n (%) | p |
| BMI (kg/m2) | Normal | 40 (48%) | 43 (52%) | 0.880 |
| | Obese | 11 (50%) | 11 (50%) | |
| Stressed life style | Yes | 46 (57%) | 35 (43%) | 0.004 |
| | No | 5 (21%) | 19 (79%) | |
| Location of mastalgia | Unilateral (right/left) | 31 (50%) | 31 (50%) | 0.843 |
| | Bilateral | 20 (47%) | 23 (53%) | |
| Smoking habit | Yes | 5 (30%) | 12 (70%) | 0.080 |
| | No | 46 (52%) | 42 (48%) | |
| Daily tea-coffee consumption | ≥ 5 glasses | 16 (54%) | 19 (56%) | 0.812 |
| | < 5 glasses | 35 (50%) | 35 (50%) | |
| Daily cola drink consumption | Yes | 5 (100%) | 0 (0%) | 0.006 |
| | No | 46 (46%) | 54 (54%) | |
| Daily chocolate consumption | Yes | 6 (33%) | 12 (67%) | 0.245 |
| | No | 45 (52%) | 42 (48%) | |
| Wearing unproper (tight) clothes | Yes | 6 (46%) | 7 (54%) | 0.852 |
| | No | 45 (49%) | 47 (51%) | |
| Wearing unproper (tight) bras | Yes | 11 (46%) | 13 (54%) | 0.760 |
| | No | 40 (49%) | 41 (51%) | |
| Regular physical activity | Yes | 4 (29%) | 10 (71%) | 0.108 |
| | No | 47 (52%) | 44 (48%) | |
| Menstruation cycle type | Cyclic | 31 (49%) | 32 (51%) | 0.873 |
| | Non-cyclic | 20 (48%) | 22 (52%) | |
| Menopausal status | Premenopausal | 47 (50%) | 47 (50%) | 0.384 |
| | Postmenopausal | 4 (36%) | 7 (64%) | |
| Education status | < High school | 46 (52%) | 42 (48%) | 0.080 |
| | ≥ High school | 5 (29%) | 12 (71%) | |

Table 5. Comparison of groups according to BDI scores

| Characteristics | Groups: BDI score ≥18 | Groups: BDI score ≤17 | Statistical assessment |
|---|---|---|---|
| | Mean ± SD | Mean ± SD | p |
| Physical function (PF) | 59.31 ± 20.85 | 60.93 ± 21.82 | 0.700 |
| General health (GH) | 40.45 ± 17.35** | 50.43 ± 20.38 | 0.008 |
| Vitality energy (VT) | 38.63±19.82*** | 50.46 ± 17.02 | 0.001 |
| Mental health (MH) | 42.82±17.29*** | 55.63 ± 12.84 | 0.001 |
| Physical Component Summary (PCS) | 38.98 ± 6.92 | 40.85 ± 7.48 | 0.188 |
| Mental Component Summary (MCS) | 35.36 ± 8.93*** | 42.71 ± 7.82 | 0.001 |
| Age (year) | 37.04 ± 8.3 | 38.28 ± 9.05 | 0.468 |
| Body Mass Index (BMI) (kg/m2) | 26.47 ± 4.33 | 26.29 ± 4.39 | 0.838 |
| | Median (Min-Max) | Median (Min-Max) | |
| Role difficulty physical (RP) | 25 (0-100) | 75 (0-100) | 0.012 |
| Pain | 41 (12-84) | 51 (12-100) | 0.051 |
| Social function (SF) | 50 (13-100) | 63 (25-100) | 0.019 |
| Role difficulty emotional (RE) | 33 (0-100) | 33 (0-100) | 0.085 |
| Visual Analogue Scale (VAS) | 5 (2-10) | 4 (1-8) | 0.048 |
| Duration of mastalgia (month) | 12 (1-240) | 12 (1-180) | 0.221 |

*p<0.05, **p<0.01, ***p<0.001

Although being underestimated, mastalgia is a problem which limits daily activities, effects sexual activity, and have important costs [30-31]. In women with severe mastalgia, the negative reports were mostly on sexual activity (48%), physical activity (36%), social activity (13%), and work-school performances (6%) [31]. In other studies, the association of mastalgia with psychiatric disorders as depression, anxiety, and somatoform disorders were also demonstrated [32]. Johnson et al [5]. showed a strong correlation of mastalgia with psychiatric disorders and recommended the research of depression and anxiety in mastalgia patients. In a study, a positive significant association was demonstrated with the severity of mastalgia and the depression level of the patients and inspiration had a positive effect on declining the severity of mastalgia [33]. In the current study, among patients referred to psychiatry clinics, the most prevalent disorders were depression (66%) and anxiety (34%), while the less prevalent ones were somatoform (4%), and panic disorders (2%). Also, we found that the mean BDI scores (18 points) reflected moderate depression and 77% of Turkish women had stressed lifestyles. A negative significant correlation was detected between BDI and GH, VT, MH, RF, pain, SF, MSS and as the BDI scores increased (more depressed) the patients were less active in daily routine. In addition to these results, our positive significant association between BDI and VAS finding is consistent with the current literature. The severity of mastalgia was also related to the level of depression [33].

SF-36 QOL scale is a multi-dimensional and comprehensive instrument composed of 8 domains and 2 summary scores [14]. Velanovich et al [15], found low scores for 3 subdomains of 8 domains in fibrocystic/mastalgia patients besides other diseases. In the current study, as we detected 6 dimensions of 8 domains and 2 component summaries below 50 points (2 domains below 50 points while very near to 50 points), a positive significant association between BDI and VAS, while negative significant associations between VAS and 8 domains of SF-36 and 2 component summaries all pointed out that mastalgia negatively effected the QOL in Turkish women.

In conclusion, as the non-organic mastalgia effect the QOL in Turkish women negatively, it must not be underestimated and psychological factors should also be evaluated, and a multi-disciplinary approach may be adopted.

*Competing interests*

The authors declare that they have no competing interests.

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