

# ANXIETY AND PAIN ASSOCIATED WITH PROCESS MAMMOGRAPHY: INFLUENCE OF PROCESS INFORMATION BEFORE

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## ABSTRACT

**Introduction:** This study was carried out with the aim of determining the effect of information given in a leaflet to women who are about have a mammography on levels of anxiety before the procedure and pain levels after the procedure

**Materials and Methods:** This study consisted of 63 women. The data was "state anxiety scale" and "verbal category scale" before the experimental group went to the mammography unit, they were given information in a written leaflet, the control group was not. Before the procedures in the breast clinic and mammography unit anxiety was measured twice and pain levels were measured after the procedure in both group.

**Results:** There was no difference ( $p>0.05$ ) between the anxiety levels of the experimental ( $46.19\pm 11.88$ ) and control ( $46.41\pm 12.73$ ) groups in the breast clinic before their mammography's ( $p>0.05$ ), however in mammography unit the experimental group ( $35.35\pm 10.30$ ) was found ( $p= 0.00$ ) to have lower anxiety levels than the control group ( $51.41\pm 10.59$ ). After the mammography in terms of pain, the difference between the groups was not found ( $p>0.05$ ).

**Discussion:** It was determined that giving information using written leaflets to women who will have a mammography decreased anxiety levels, however, it did not affect pain levels.

**Key words:** mammography, giving information, pain, anxiety

## MAMOGRAFI İŐLEMİ İLE İLİŐKİLİ ANKSİYETE VE AĐRI: İŐLEM ÖNCESİ BİLGİLENDİRMEİNİN ETKİSİ

### ÖZET

**Giriş:** Araştırma, mamografi çekilecek kadınlara yazılı kitapçıkla verilen bilginin işlem öncesi anksiyete ve işlem sonrası ağrı düzeyi üzerindeki etkisinin belirlenmesi amacı ile yapıldı.

**Yöntem ve Gereçler:** Deneysel olarak yapılan çalışmanın örneklemini 63 kadın oluşturdu. Veriler 'Kişisel Bilgi Formu', 'Durumluk Kaygı Envanteri' ve 'Sözel Kategori Ölçeđi' kullanılarak toplandı. Deney grubuna mamografi ünitesine gitmeden önce yazılı broşür ile bilgi verildi, kontrol grubuna verilmedi. Her iki grubun meme polikliniđinde ve mamografi ünitesinde olmak üzere işlemden önce iki kez anksiyete, işlemden sonra ağrı düzeyleri ölçüldü.

**Bulgular:** Mamografi işleminden önce meme polikliniđinde deney ( $46.19\pm 11.88$ ) ve kontrol ( $46.41\pm 12.73$ ) grubunun anksiyete düzeyi arasında fark olmadığı ( $p>0.05$ ), ancak mamografi ünitesinde deney grubunun ( $35.35\pm 10.30$ ) kontrol grubuna ( $51.41\pm 10.59$ ) göre anksiyete düzeyi düşük bulundu ( $p=0.00$ ). Mamografi işlemi sonrası ağrı yönünden gruplar arasında farkın anlamlı olmadığı bulundu ( $p>0.05$ ).

**Tartışma:** Mamografi işleminin yapılacağı kadınlara yazılı kitapçık kullanılarak bilgi vermenin anksiyete düzeyini azalttığı ancak ağrı düzeyini etkilemediđi saptandı.

**Anahtar sözcükler:** mamografi, bilgi verme, ağrı, anksiyete

## Introduction and purpose

Existing data in Turkey and as well in the world shows that among all cancer cases that seen in women breast cancer is number one and increasing each year. In Turkey, according to data of the Ministry of Health, cancer statistics while breast cancer in women was 33.93% in 2003, it has raised 35.47% in 2005 (1). However, breast cancer is a type of cancer whose early diagnosis can provide a cure for the disease.

Since breast cancer cannot be prevented, the most appropriate way to decrease mortality from breast cancer is to diagnose the disease early (2). The American Cancer Society (ACS) recommends

breast self-examination (BSE), mammography, and clinical breast examination for early diagnosis of breast cancer (3). Researchers have noted that yearly mammography and clinical breast examination decrease mortality by 20-30% in women aged 50-65 years (4,5). It has been reported that yearly mammography or mammographic screening is the most appropriate and the most effective method for early diagnosis of breast cancer (3,6).

Studies from Turkey (7,8,9) have revealed that most of the women do not have a mammography which is congruent with the studies from other countries (10,11,12).

The reason why women were not willing to undergo mammography is the belief that breast tissue is exposed to high doses of radiation (13), pain due to compression of breast tissue between the pressure plates of the mammography apparatus (14,15,16,17,18,19,20), destruction of privacy, and fear of cancer (19,21,22). All these factors cause anxiety in women (17,19,23) It has also been reported that the women who undergo mammography for the first time have higher anxiety levels (17,23).

Offering information to women may decrease the severity of their pain and anxiety due to mammography. It is one of the most important responsibilities and independent roles of nurses. It has been noted in the literature that when women are provided information about mammography by a nurse equipped with relevant knowledge, they feel less pain and less anxiety (21). However, there have been few studies on this issue in Turkey.

The patients presenting to the mammography unit in the hospital where this study was conducted are offered information about mammography. However, they are not given information about anxiety and pain concerning mammography. Therefore, the aim of this study was to investigate whether written information about mammography would decrease anxiety during the procedure and pain after the procedure.

## Materials and Methods

This is an experimental study and was conducted in Breast Diseases Outpatient Clinic and Mammography Unit of Cumhuriyet University Hospital. The outpatient clinic and the unit are open between 8 am and 5 pm. There was one physician, one nurse, one secretary, and one auxiliary staff in the outpatient clinic and there were three professors, one radiologist, and one radiology technician in the mammography unit.

Women are examined consecutively as they present. After they are registered, they wear a robe appropriate for breast examination. The physician records patient history and performs breast examination. When the physician decides that mammography should be performed, the radiology technician performs mammography. The results of mammography are evaluated by the physicians specializing in mammography.

The study population included 879 women presenting to General Surgery and Breast Outpatient Clinics of Cumhuriyet University and underwent mammography after breast examination between 2005 and 2006. The study population included the women who were aged 35-60 years and literate, who had no mammography before and no problems with vision, hearing, or perception and who accepted to participate in the study. They were assigned into experimental and control groups.

A total of 63 women were enrolled in the study, of which 32 fulfilling the abovementioned criteria and getting prepared for mammography were assigned into the control group and 31

others fulfilling the above criteria and offered written information through pamphlets prepared by the investigator in the light of the literature. The first woman presenting to the breast outpatient clinic was assigned into the control group and the second woman presenting to the outpatient clinic was assigned into the experimental group and this procedure continued until an appropriate sample size was obtained. The following hypotheses were tested:

**H<sub>1</sub>:** Information about mammography offered through visual-written material before the procedure will decrease anxiety experienced before the procedure.

**H<sub>2</sub>:** Information about mammography offered through visual-written material before the procedure will decrease pain experienced during the procedure.

## Data collection Tools and Procedures

Data was collected with Personal Characteristics Form, State-Trait Anxiety Scale, and Verbal Category Scale.

## Personal Characteristics Form

The form was prepared by the investigator in the light of the literature and was composed of two parts. The first part included 13 questions about descriptive characteristics, the reason why women underwent mammography, and information the women had about mammography and the second part included 3 questions what the women remembered about mammography, whether they would have mammography for a second time, and why they did not want to have mammography.

## State-Trait Anxiety Questionnaire

The questionnaire was developed by Spielberger et al. in 1970 to determine state anxiety levels of individuals and is based on Spielberger's anxiety theory. It is a self-reported scale composed of short statements and includes two scales and a total of 40 items. Each scale has 20 items on each page. The questionnaire requires that individuals should describe how they feel under certain conditions at a certain time and respond to the statements considering their feelings. Participants are requested to mark the most appropriate choice – almost never, sometimes, mostly, or almost always. Responses to items 3, 4, 6, 7, 9, 12, 13, 14, 17 and 18 are assigned positive scores (scores which increase the total anxiety score) and responses to the rest of the items are assigned negative scores (scores which decrease the total anxiety score). Responses to each item are scored between 1 (or -1) and 4 (or -4) and the total score is added 50. The highest total score is 80 and the lowest total score is 20. The higher the total score is, the higher the anxiety levels are. Scores above 35 indicates presence of anxiety and scores below 35 indicates absence of anxiety. The questionnaire was translated into Turkish by Öner and Lecompte and tested for its validity and reliability (24).

#### Verbal Category Scale (VRS)

The scale was developed by Melzack and Katz in 1992 and its validity and reliability for Turkish population were tested by Yazıcı, Eti- Aslan, and Olgun in 1998 (Figure 1). It is a simple, descriptive scale and requires that patients should select the most appropriate word to describe their pain severity. Pain severity ranges from mild to unbearable. The advantage of this scale is that it is easy to apply and simple. It is also more sensitive in description of moderate pain than Visual Analogue Scale. However, the scale has also disadvantages. In fact, patients have to keep the words used to describe pain severity in their minds and are dependent on the words available in the scale. In addition, it has been reported in the literature that patients tend to select the words in the middle rather than the ones towards the margins (25).

#### Preparation of the Pamphlet Including Written Information

It is thought that information transmitted orally can be affected by individual characteristics and that written information will be more effective.

The pamphlet was prepared in conjunction with the relevant literature. It was given to the women whose clinical examinations were made by the doctor and who would undergo mammography in the breast outpatient clinic 15 minutes before they went to the mammography unit. The pamphlet included information about what mammography is, how often it should be performed, patients' position during the procedure, pain likely to be felt by patients, radiation received, and the mammography apparatus. It is in Appendix 4.

#### Procedure

Data collection tools were completed at face to face interviews with both the control and experimental groups both before and after mammography between April 2007 and December 2007. The control group did not have any intervention, but the experimental group was asked to read the pamphlets prepared by the investigator.

The women who presented to the breast outpatient clinic, who would undergo mammography, and who fulfilled the inclusion criteria were included in the study. After all the women gave oral informed consent, the Personal Characteristics Form and State-Trait Anxiety Questionnaire were completed at face to face interviews lasting for 10 min.

The control group did not receive information about mammography. They completed State-Trait Anxiety Questionnaire at face to face interviews lasting for five minutes in the mammography unit before mammography. The experimental group completed Personal Characteristics Form and State-Trait Anxiety in a room in the outpatient clinic and then they were offered written information. Subsequently, the women went to the mammography unit and completed the State-Trait Anxiety Questionnaire at face to face interviews in five minutes for the second time.

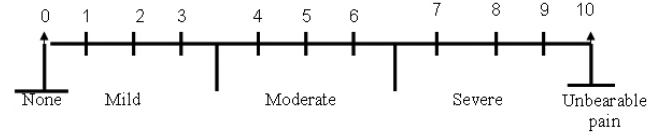
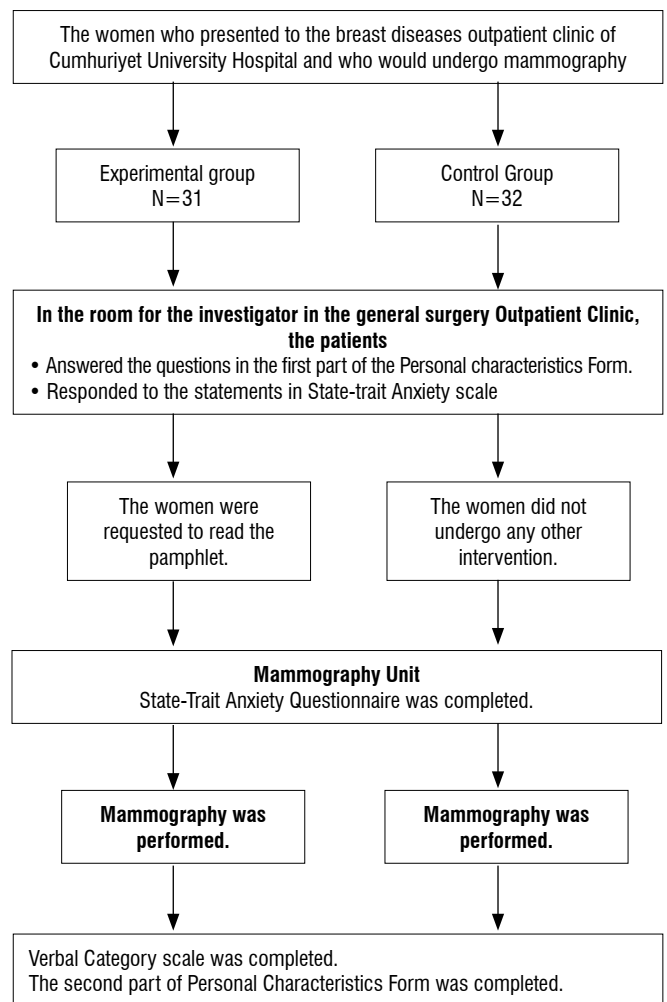


Figure 1. Verbal rating scale / verbal category scale (Melzack ve Katz 1992)

After mammography, both the control and experimental groups completed Verbal Category Scale in face to face interviews in 2-5 minutes and perceived pain severity during mammography was measured. Following completion of Verbal Category Scale, three questions in the second part of Personal Characteristics Form were asked: i.e. what they remembered about the procedure, whether they wanted to have mammography again, and why they did not have mammography again (Flow chart 1).

#### Flow chart 1. Practice Plan



Obtained data were evaluated with SPSS and analyzed with unpaired t-test, Chi-square test, Kruskal Wallis test and Mann Whitney U. data was expressed in means, standard deviations, numbers, and percentages and  $p < 0.05$  was considered significant.

#### Limitations to the study

The number of patients enrolled in the study and the duration was limited since this study was planned as a master thesis and the thesis should be completed in certain time, also people who live in that place prefer to go to bigger cities where they can get service from bigger health centers. Although this limitations, we believe the data from the study will be helpful for the future studies.

#### Results

As shown in Table 1, most of the women included in the study were aged 35-39 years (67.7% of the control group and 65.6% of the experimental group), had low education levels (71% of the control group and 81.3% of the experimental group), were married (83.9% of the control group and 90.6% of the experimental group), and were unemployed (64.5% of the control group and 81.2% of the experimental group). Twelve point five percent of the women in the experimental group and 12.9% of the control group had a family member with breast cancer. Both groups were similar in their characteristics.

As presented in Table 2, 28.1% of the control group had nipple discharge, 25% had a palpable mass in breast self examination (BSE), 21.9% had pain in their breast, 21.9% presented for breast

screening, and 3.1% presented for orange skin. Forty-one point nine percent of the experimental group had a palpable mass during BSE, 32.3% had breast pain, 16.1% had nipple discharge and 6.5% presented for breast screening, and 3.2% presented for orange skin. Eighty-seven point six percent and 12.4% of the control group had mammography for a mass and screening respectively. Ninety point three percent and 9.7% of the experimental group had mammography for a mass and screening respectively. Ninety-three point seven percent of the control group and 74.2% of the experimental group did not know why mammography is performed and 50% of the control group (n:1) and 62.5% of the experimental group learned why mammography is performed from health staff. Ninety-three point seven percent of the control group and 87.3% of the experimental group did not know how mammography is performed.

There was no significant difference in the mean anxiety scores in the outpatient clinic between the experimental (46.19±11.88)

**Table 1. Characteristics of the Women**

characteristics	Control group		Experimental group		P
	n	%	n	%	
<b>Age</b>					
40>	21	65.6	21	67.7	$\chi^2=.032$ $p=.859$
40≤	11	31.3	10	32.3	
<b>Education*</b>					
High education levels	26	81.3	22	71	$\chi^2=.918$ $p=.338$
Low education levels	6	18.7	9	29	
<b>Martial status</b>					
Married	29	90.6	26	83.9	$\chi^2=.684$ $p=.421$
Single	3	9.4	5	16.1	
<b>Employment</b>					
Employed	6	18.8	11	35.5	$\chi^2=2.238$ $p=.135$
Unemployed**	26	81.2	20	64.5	
<b>Family history of breast cancer</b>					
Yes	4	12.5	4	12.9	$\chi^2=.02$ $p=.962$
No	28	87.5	27	87.1	

\*low education levels: literate and primary school graduates, high education levels: High school graduates and university graduates \*\* Housewife

**Table 2. Reasons for Presentation to the Outpatient Clinic and Having Mammography and Information about Mammography**

Characteristics	Control group		Experimental group		P
	n	%	n	%	
<b>Reasons presentation to the outpatient clinic</b>					
A palpable mass found during BSE	8	25.0	13	41.9	$\chi^2=5.134$ $p=0.274$
Nipple discharge	9	28.1	5	16.1	
Pain in the breast	7	21.9	10	32.3	
Orange skin	1	3.1	1	3.2	
Screening	7	21.9	2	6.5	
<b>Reasons for having mammography</b>					
A mass	28	87.6	28	90.3	$\chi^2=0.127$ $p=0.722$
Screening	4	12.4	3	9.7	
<b>Knowing why mammography is performed</b>					
Yes	2	6.3	8	25.8	$\chi^2=4.510$ $p=0.034$
No	30	93.7	23	74.2	
<b>Sources of information about mammography</b>					
Health staff	1	50.0	5	62.5	$\chi^2=0.104$ $p=0.747$
Women with prior experience with mammography	1	50.0	3	37.5	
<b>Knowing how mammography is performed</b>					
Yes	2	6.3	4	12.7	$\chi^2=0.809$ $p=0.368$
No	30	93.7	27	87.3	

**Table 3.** Mean Anxiety Scores in the Outpatient clinic and mammography unit before mammography

<b>Anxiety levels</b>							
<b>Where anxiety was measured</b>	<b>Control group</b>			<b>Experimental group</b>			<b>P</b>
	<b>Min</b>	<b>Max</b>	<b>X±S</b>	<b>Min</b>	<b>Max</b>	<b>X±S</b>	
Outpatient clinic	23.0	76.0	46,41±12.73	26.0	72.0	46,19 ±11,88	t: 0.06 p= 0.094
Mammography unit	32.0	77.0	51.41±10.59	24.0	62.0	35,35±10,30	t:6.09 p= 0.00
			t: 4.11 p=0.00				

**Table 4.** Comparison of Pain Severity between the Control and Experimental Groups

<b>Pain severity during mammography</b>	<b>Control group</b>		<b>Experimental group</b>		<b>p=0.561</b>
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
Mild	13	40.5	16	51.6	
Moderate	12	37.5	11	35.5	
Severe	7	22.0	4	12.9	

and control (46.41±12.73) groups before mammography (p>0.05), but there was a significant difference in the mean anxiety scores in the mammography unit between the experimental (35.35±10.30) and the control (51.41±10.59) groups (p=0.00). In fact, anxiety levels measured in the mammography unit increased in the control group, but decreased in the experimental group (Table 3).

The women were found to experience mild pain during mammography and there was no significant difference in pain severity between the groups (p>0.05) (Table 4).

Eighteen point seven percent of the control group and 3.2% of the experimental group did not want to undergo mammography again and 83.3% of the control group (n:5) and one woman in the experimental group did not want to have mammography again due to pain. Fifty percent of the control group and 29% of the experimental group found mammography painful without a significant difference between the groups (p>0.05) (Table 5).

### Discussion

The most effective way to decrease mortality from breast cancer is early diagnosis. Mammography is not the most successful imaging technique for early diagnosis of breast cancer but is cheap,

**Table 5.** Women's Decision to Have Mammography again and their reasons for not having Mammography

	<b>Control group</b>		<b>Experimental group</b>		
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Having mammography again</b>					
Yes	26	81.3	30	96.8	x <sup>2</sup> =3.842 p=0.50
No	6	18.7	1	3.2	
<b>Reasons for not having mammography again (n=6)</b>					
Pain	5	83.3	1	100.0	x <sup>2</sup> =5.64 p=0.53
Privacy	1	16.7	-	-	
<b>What the procedure was like</b>					
Painful	16	50.0	9	29.0	x <sup>2</sup> =4.078 p=0.130
Created discomfort	14	43.8	16	51.6	
Comfortable	2	6.3	6	19.4	

easy to perform, and readily available. However, several studies from Turkey have revealed that rates of the women having mammography are low (7,8,9). In the present study, 87.6% of the control group had mammography for a mass and 12.4% for screening and 90.3% of the experimental group had mammography for a mass and 9.7% for screening. This finding shows that the women presented to health centers after breast cancer progressed. In a study in Turkey (26), the time from recognition of a breast problem to presentation to a health center was found to be 5.05 ± 9.3 months.

It has been reported in the literature that women feel anxiety about mammography due to fear of cancer and pain experienced during the procedure. It has been emphasized that a warm envi-

ronment with music, paintings, and magazines should be created and that women should be given information through pamphlets to decrease anxiety (17). Many authors (11,17,18,19,23) have claimed that anxiety prevented women from having mammography. In a study in Turkey (19) and many studies in other countries (17,23), anxiety felt before mammography was associated with the procedure itself and anxiety felt after mammography was associated with fear of cancer.

In this study, there was no significant difference in anxiety levels before the experimental group was offered information between the groups; however, the experimental group had lower anxiety levels after they were offered information. Lack of difference in anxiety levels between the groups before information was offered indicates that women are anxious about mammography and that offering information decreases anxiety (Table 3). This finding confirmed Hypothesis 1. However, another study in Turkey showed no effect of offering information on anxiety levels (19).

It has been reported in the literature that mammography was found to create discomfort and pain and that women did not want to undergo mammography (18,19,23). This study showed that most of the women had mild pain and that there was no difference in pain between the groups ( $p>0.05$ ). This finding refuted Hypothesis 2.

Literature has reported that 0.2% - 90% of the women may feel pain during the procedure. In a study (12) 77% of the women found mammography painful, 31% had moderate pain, and 34% had severe pain. In a study by Alimođlu et al. it was found that providing advance information to women about pain that can

experience during mammography reduce severity of pain during the procedure and the cause of anxiety is not pain but is fear of being cancer.

In another study on this subject found similar results (20). Pain is the feeling causing discomfort and affected by cultural features. Pain is also an individual reaction and pain threshold varies from person to person. It has been noted in the literature that pain felt during mammography can be affected by cultural features and that some people may feel mild pain while others may feel severe pain (27). It has also been reported that pain felt during mammography was associated with breast thickness and that women with thick breasts felt more severe pain (17). It has been claimed that masses in the breast and fear of cancer may cause pain (20). In one study (28), women were allowed to control compression of their breast during mammography and felt less pain. It has been emphasized that self-control over a painful procedure helped women to adapt to pain more easily and felt less pain.

Women are not willing to undergo mammography again since they experience pain and anxiety in their first mammography (22). In the present study, most of the experimental and control groups noted that they would have mammography again and the rest did not want to have mammography due to pain.

Conclusions: It can be concluded that women feel anxiety and mild pain concerning mammography and that pamphlets including information about mammography can decrease anxiety but has no effect on pain. It can be recommended that the pamphlet used in this study could be used to give information about mammography in breast diseases outpatient clinics.

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