¹General Hospital, Doboj, Republic of Srpska

²Health Insurance Fund RS, Banja Luka, Republic of Srpska

³General Hospital, Prijedor, Republic of Srpska

⁴Public Health Institution Health Care Center, Teslić, Republic of Srpska

ANALYSIS OF THE IMPACT OF EDUCATIONAL LEVEL ON EARLY DIAGNOSIS OF BREAST CARCINOMA IN WOMEN

ANALIZA UTICAJA STEPENA OBRAZOVANJA NA PRAVOVREMENU DIJAGNOZU KARCINOMA DOJKE KOD ŽENA

Predrag Lazić¹, Darko Lukić², Spomenka Paurević³, Duško Ivić⁴, Nenad Babić²

Summary

The prospective study, which ran from January 2010 to January 2015, included the respondents treated for breast carcinoma. The respondents were divided into 3 groups. The first, the A group (63 respondents), consists of women with (not) completed elementary school. The second, group B (60 respondents), consists of women who have secondary education, while the third, group C (33 respondents) make women with college or university degrees.

The aim is to analyze the impact of the level of education on early diagnosis of breast carcinoma in women.

The observed parameters are the age of respondents and the primary risk factors. Parameters for the comparison of the results were: the attitude of the respondents to breast tumors, history of the breast self-examination, breast ultrasound examinations, data on mammography, as well as information on the diameter of the tumor at the moment of the discovery.

There was no statistical difference in attitude of respondents about breast tumors when it comes to fear and / or phobia of breast carcinoma. It is almost identical to the number of respondents who have no opinion on breast tumors.

Concerning the attitude of respondents that there is no risk of breast carcinoma, if nobody in the family previously had breast carcinoma, then in terms of the attitude that they do not want „their breasts to be explored“, as well as the attitude that „any breast examination does not help much“, a statistical difference between the studied groups was found.

It was found that breast self-examination is performed by most of the respondents, but that patients in group C do it more often. It has been shown that ultrasound and mammography are more often performed by patients in group C and this characteristic makes a significant statistical difference.

In Group C, the tumor was detected in diameter to 2 cm which proved statistically different. One of the reasons for early detection of tumors (diameter to 2 cm) in group C may be better enlightenment or a higher level of education of this group.

Keywords: breast, cancer, diagnosis

Sažetak

Prospektivnom studijom, koja je trajala od januara 2010.godine do januara 2015. godine, obuhvaćene su pacijentkinje liječene od karcinoma dojke. Pacijentkinje su podijeljene u 3 grupe. Prvu, grupu A (63 pacijentkinje), čine pacijentkinje sa (ne)završenom osnovnom školom. Drugu, grupu B (60 pacijentkinja), čine pacijentkinje koje imaju srednje obrazovanje dok treću, grupu C (33 pacijentkinje) čine pacijentkinje sa višom ili visokom stručnom spremom.

Cilj rada je analiza uticaja stepena obrazovanja na pravovremenu dijagnozu karcinoma dojke kod žene.

Posmatrani parametri su satrost pacijentkinja i primarni faktori rizika. Parametri za poređenje rezultata bili su: stav pacijentkinja o tumorima dojke, anamnestički podaci o samopregledu dojki, pregledima dojki ultrazvukom, podaci o mamografskim pregledima, kao i podaci o dijimetru tumora u trenutku otkrivanja.

Nije utvrđena statistička razlika u pogledu stava pacijentkinja o tumorima dojke kada je u pitanju strah i/ili fobija od karcinoma dojke. Gotovo je identičan broj pacijentkinja koje nemaju nikakav stav o tumorima dojke.

U pogledu stava pacijentkinja da nema opasnosti od karcinoma dojki, ako niko u porodici prethodno nije imao tumor dojke, zatim u pogledu stava da se ne želi «istraživati po dojkama», kao i u oportunom stavu da «bilo kakvi pregledi dojki ne pomažu puno» pronađena je statistička razlika među ispitivanim grupama.

Utvrđeno je da samopregled dojki izvodi većina pacijentkinja, ali da to redovno češće rade pacijentkinje grupe C. Pokazalo se da ultrazvučni i mamografski pregled dojki češće izvode pacijentkinje grupe C i po ovom obilježju postoji značajna statistička razlika.

U grupi C tumor je dominantno otkriven pri dijimetru do 2 cm što se pokazalo statistički različitim. Kao jedan od razloga za raniju detekciju tumora (dijametra do 2 cm) u grupi C može biti bolja prosvetčenost odnosno, viši stepen obrazovanja ove grupe.

Ključne reči: dojka, tumori, dijagnoza

INTRODUCTION

Breast carcinoma is the most common malignant tumor of the female population. The incidence of breast cancer in our country is increasing as well as in other parts of Europe. In EU countries, the number of newly discovered patients with this tumor is around 140,000 annually, which is about a quarter of all types of malignant tumors.

Breast carcinoma is still the most common cause of mortality in women. According to EU data, in their territory, that number is about 60,000 a year (1).

Breast tumors are responsible for great anxiety and trouble of the majority of women who have experienced this appearance on their breasts. Benign breast tumors can look like the signs and the symptoms of breast carcinoma. Awareness of women on a possible breast tumor is focused on the symptoms of pain and painful sensitivity due to the change that is physically located as „a nodule or a lump in the breast,“ which is the most common description by the woman who are concerned (1).

It is often enough to touch any breast change, to cause concern or even panic in girls or women in any age. This anxiety was stimulated by the general publicity focusing on the high incidence of breast carcinoma in women. At a time when breast tumors are more common but also enlightenment regarding breast carcinoma better, the need of further education and learning does not stop. Probably every average woman is afraid when she comes to breast examinations. Fortunately, each palpable formation in the breast is not a tumor, and every tumor is not malignant.

Prevention of breast cancer has not been possible, but the early detection of tumors is possible. In the broad spectrum of women with different education and occupation it may be possible to single out a group that is often a victim of breast cancer and vice versa.

THE AIM

The aim is to analyze the impact of the educational level of women to early diagnosis of breast carcinoma.

MATERIAL AND METHODS

The prospective study, which ran from January 2010 to January 2015, covered the respondents treated for breast carcinoma. The subjects were divided into 3 groups. The first, the A group (63 respondents), consists of women with (not) completed elementary school. Second, group B (60 respondents), consists of women who have secondary education, while the third, group C (33 respondents) make women with college or university degrees.

The observed parameters are the age of respondents and the primary risk factors (Table 1 and Table 2). Parameters for the comparison of the results were: the attitude of the respondents to breast tumors, history of the breast self-examination, breast ultrasound examinations, data on mammography, as well as information on the diameter of the tumor at the moment of discovery.

Table 1. Respondents age

Age of the respondents	Group A	Group B	Group C
30-40	2(3,2 %)	7(11,6 %)	3(9,1%)
41-50	5(7,9 %)	9(15%)	6(18,1%)
51-60	15(23,8 %)	18(30%)	12(36,3%)
61-70	23(36,6 %)	15(25%)	10(30,3%)
71-80	15(23,8 %)	9(15%)	1(3,1%)
81-90	3(4,7 %)	2(3,4%)	1(3,1%)
Total	63 (100%)	60(100%)	33(100%)

Table 2. Primary risk factors

Primary risk factors	Group A	Group B	Group C
Family and genetic risk factors			
Yes	3(4,7%)	4(6,6%)	2(6,1%)
No	60(95,3%)	56(93,4%)	31(93,9%)
Previous breast cancer			
Yes	0(0%)	0(0%)	0(0%)
No	63(100%)	60(100%)	33(100%)
Sexual maturity and pregnancy (early menarche, late menopause)			
Yes	11(17,5%)	5(8,4 %)	4(12,1%)
No	52(82,5%)	55(91,6%)	29(87,9%)
Mastopathy			
Yes	3(4,7%)	4(6,6%)	1(3,1%)
No	60(95,3%)	56(93,4%)	32(96,9%)
Total	63(100%)	60(100%)	33(100%)

THE RESULTS

The research results are shown in Table 3, Table 4 and Table 5 with Graph 1. The parameters for comparison were: history of the breast self-examination of respondents, breast ultrasound examinations, data on mammography and tumor diameters which were discovered in women.

Table 3. Attitude to breast tumors

Attitude to breast tumors	Group A	Group B	Group C
No attitude to breast tumors	3 (4,7 %)	1(1,6 %)	2(6,1 %)
Breast cancer phobia	15(23,9 %)	10(16,6 %)	18(54,5 %)
Not affraid of breast tumors	5(7,9 %)	4(2,4 %)	3(9,1 %)
Nobody in the family had breast tumor, so there is no reason to be concerned	22(34,9 %)	13(21,6 %)	5(15,1 %)
Does not want to investigate the breasts	15(23,9 %)	22(36,6 %)	3(9,1 %)
Any examination of the breasts does not help much	3(4,7 %)	10(16,6 %)	2(6,1 %)
Total	63(100%)	60(100%)	33(100%)

Table 4. Previous breast examinations

Breast self-examination	Group A	Group B	Group C
No	15(23,8 %)	12(20,1 %)	3(9,1 %)
Occasionally	33(52,4 %)	31(51,6%)	2(6,1 %)
Regularly	15(23,8 %)	17(28,3 %)	28(84,8 %)
Ultrasound breast examination	Group A	Group B	Group C
No	54(85,7 %)	44(73,3 %)	10(30,3 %)
Occasionally	6 (9,6 %)	11(18,3 %)	13(39,4 %)
Regularly	3(4,7%)	5(8,4 %)	10(30,3 %)
Mammography	Group A	Group B	Group C
No	51(80,9 %)	40(66,6 %)	13(39,4 %)
Occasionally	11(17,5 %)	14(23,3 %)	6(18,2 %)
Regularly	1(1,6 %)	6(10,1 %)	14(42,4 %)
Total	63(100 %)	60(100 %)	33(100%)

Table 5. Tumor diameter

Tumor diameter	Group A	Group B	Group C
To 2cm	23(36,5 %)	20(33,4 %)	25(75,7 %)
Over 2 cm	40(63,5 %)	40(66,6 %)	8(24,3 %)
Total	63(100 %)	60(100%)	33(100%)

Graph 1. Tumor diameter

Statistical analysis between the groups A, B and C shows:

- Between groups A and C in terms of features, *personal attitude – no one in the family had breast cancer*, so there is no reason to worry there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.16324$
- Between groups B and C in terms of features, *personal attitude – does not want to investigate the breast*, there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.32131$
- Between groups B and C in terms of features, *personal attitude – any breast examination does not help much*, there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.71153$
- Between groups B and C in terms of features *breast self-examination-occasionally*, there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.053962$
- Between groups A and C in terms of features *ultrasound examination of breast-regularly*, there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.97401$
- Between groups A and C in terms of features *mammography – regularly* there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.634423$
- Between groups B and C (A and C) in terms of features *tumor diameter over 2 cm*-there is a statistically significant difference ($p < 0.01$, 99% confidence), $Z = 2.076343$

DISCUSSION

The analysis included 156 women who have been treated for breast carcinoma. The youngest respondent was 36 years old and the oldest was 85. Our research has shown that breast cancer is the most common in the age group of 51-70 years of age which is 59,6 %.

A small number of respondents, a total of 6 (3,8%) has no personal attitude to breast tumors. The number of women who have no fear of breast carcinoma is 12 (7,6%), while almost three times as many women have a breast carcinoma phobia, 43 (27,5%).

Analysis of the personal attitude of respondents about breast tumors showed that in group A dominates opinion that a woman is safe of breast tumor if no one in the family had previously had breast cancer. By this feature, there is a statistical difference between groups A and C. Compared to group C patients in group A and B did not want to „explore their breasts“ regularly so there is a statistical difference in this case, too. Patients in group B were significantly different from patients in groups A and C in the attitude that „any breast examination does not help a lot“ when it comes to breast tumors.

Most of the women who were diagnosed with breast carcinoma (over 70%), have no history of risk factors for the breast cancer (2,3). Breast carcinoma does not give any specially characteristic clinical picture and is not palpable for years.

Most of our respondents had no primary risk factors for breast carcinoma such as family and genetic factors, previous breast cancer, early menarche and late menopause. According to these parameters there was no statistically significant difference among the analyzed groups.

Mass education on breast self-examination is mostly important in young women. When educated, this population will certainly have lower percentage of self-examination refusal, for fear of finding some changes. In this manner, a young female population acquires „base feeling“ for the touch of the breast and perceives the difference in the breast structure relative to the menstrual cycle and later compared to the eventual initial palpable breast formation, regardless of their nature.

Recommended breast self-examination for women in reproductive period is once a month (from 5th to 10th day of the menstrual cycle) and should be accepted as a full „ritual“ of inspection and self-palpation of the breasts.

Most women with breast carcinoma (75-80%) came to examination for indicated palpable tumor. Characteristic findings of breast cancer is generally described as a palpable tumor of rigid consistency, mainly fixed in the breast and usually unclear boundaries (4).

Most of our respondents came to the breast examination because of palpable tumefaction, which is consistent with the literature data.

Our respondents from Group A generally did the breast self-examination but only 15 of them did it regularly. Regular self-examination was most frequently performed by patients in group C. Respondents who do not perform breast self-examination or do it just occasionally dominate in groups A and B. By this characteristic, there is a significant statistical difference among the tested groups. By this feature, there was no particular difference between groups A and B.

Ultrasound examination of the breast does not involve any harmful effect on tissues that are the subject of the review. It can be repeated frequently, as much as necessary and in any age of the patient. The examination is non-invasive, fast and not expensive. At the same time the anatomically correct and possibly pathologically changed structures in the breast are examined. Generally, breast ultrasound examinations may be screening and diagnostic (5).

Ultrasound examination of the breast preceded mammography, with the advantage to be performed in young

girls and women. As it implies the absence of radiation of the breast tissue, breast ultrasound is practically the leading diagnostic method in the early detection of breast cancer.

On the contrary, in the primary screening in women older than 40 years, the ultrasound is not the method of choice. It is mammography. Finally, in patients with exceptionally emphasised fibroglandular component of glandular tissue, where mammography is limited as a method of screening, ultrasound has a great significance in the area of secondary screening, ie. in the detection of change which due to the superposition of the surrounding glandular tissue, are not possible to spot mammographically (6,7).

The basic indications for breast ultrasound are suspicious tumefactions in the breast but also basic and periodical inspections of girls and women younger than 30, then the standard checks for pregnant women and new mothers. Then, location of the small movable palpable formations before the surgical extirpation and during interventional radiology, the differentiation of cystic from solid tumefactions, postoperative control after the surgery of cancer in one breast and at removing cancerophobia in women who are hypochondriacal (8).

The main objective of the ultrasound breast examination is the earliest possible detection of suspicious changes in the breast tissue. In the hands of an experienced and skilled radiology specialist, the ultrasound will provide many exact responses in the differentiation of malignant changes in the breast, compared to the benign tumors and non-tumor formations (9).

Our respondents from Group A mostly did not do the ultrasound breast examination. Only 3 respondents performed breast ultrasound regularly and 6 occasionally. Patients in group B performed periodic and regular breast ultrasound examinations more often compared to group A, but two times less compared to group C. Regular breast ultrasound examinations were most regularly performed by patients in group C. By this characteristic, there was a significant statistical difference between groups A and C.

Mammography is a radiological, non-invasive breast examination technique which uses X-ray machine (mammograph machine). This device consists of a specially shaped pipe which emits x-rays of low energy (between 20 – 30 KV) with simultaneously high intensity of radiation (200-400 mas), and high contrast. It produces high-resolution films, which enables the creation of image of internal structure of the breast tissue (10,11,12).

Mammography is more considered as the method of detection then the diagnostic method. That is, mammography is not specific enough in breast cancer diagnosis.

Mammography is a diagnostic version focused on the subclinical and clinical changes in the breast but in the wider diagnostic process. Mammography can not by itself rule out the possibility that a lesion is malignant, and it cannot always detect the present changes (13,14).

Our respondents from groups A and B mostly didn't have the mammogram. Only 1 respondent from group A regularly had the mammogram and 11 occasionally. Only 6 patients in group B had the mammogram regularly. On regular breast examinations by mammography usually went patients in group C with no statistically significant difference when compared to group B because $P > 0.1$.

Patients in group C, with tumors up to 2 cm in diameter, came to examination more often and were thus more likely to be in the group of those who had non-radical operation and a better prognosis. More frequent detection of tumors up to 2 cm in the group C can be explained by higher level of education of this group.

CONCLUSION

There was no statistical difference in attitude of respondents about breast tumors when it comes to fear and / or phobia of breast cancer. It is almost identical to the number of respondents who have no opinion on breast tumors.

Concerning the attitude of respondents that there is no risk of breast carcinoma, if nobody in the family previously had breast carcinoma, then in terms of the attitude that they do not want to „explore their breasts,“ as well as the attitude that „any breast examination does not help much“, a statistical difference between the studied groups was found.

It was found that breast self-examination is performed by most of the respondents, but patients in group C performed it more often. It has been shown that the ultrasound and mammography are more often performed by patients in group C and by this feature there is a significant statistical difference.

In Group C, the tumor was detected in diameter to 2 cm which proved statistically different. One of the reasons for early detection of tumors (diameter to 2 cm) in group C may be better enlightenment or a higher level of education of this group.

References

1. Lukic D, Lazic P. Hirurgija tumora dojke, Medicinski fakultet Banja Luka, 2013.
2. Jemal A, Siegel R, Ward E, et al. Cancer statistics 2010. *Ca Cancer j Clin*. 2010;60(5):277-300
3. Russo J, Russo I. Susceptibility of the mammary gland to carcinogenesis. II Pregnancy interruption as a risk factor in tumor incidence. *Am J Pathol*, 1980;100 (2):505-506
4. Watson M. Assessment of suspected cancer. *InnoAiT*, 2008;1(2):94-107
5. Helbich TH, Watzek W, Fuchsjager WH. Stereotactic and ultrasound guided breast biopsy. *Eur radiol*, 2004;14:383-393
6. Mesurole B, Helou T, El-Khoury M, Edwardes M, Sutton EJ, Kao E. Tissue harmonic imaging, frequency compound imaging and conventional imaging: use and benefit in breast sonography. *j Ultrasound Med*, 2007;(26):1041-1051
7. Berg Wa, Campassi CI, Ioffe OB. Cystic lesions of the breast: sonographic patologic correlation. *Radiology*, 2003; 227:183-191
8. Schueller G, Schueller Weidekamm C, Helbich TH. Accuracy of ultrasoundguided, large-core needle breast biopsy. *Eur radiol*, 2008;18:1761-1773
9. Schueller G, Schueller WC, Helbich TH. Accuracy of ultrasound guided, largecore needle breast biopsy. *Eur radiol*, 2008;18:1761-1773
10. Karsa LV. Mammography screening-what is going in Europe. *EBCC 7. EjC supplements*, 2010;8(3):189-190
11. Guideline QA, Snow V, Sherif K, Aronson M, Weiss KB, Owens DK. Screening mammography for women 40 to 49 years of age: a clinical practice guideline from the american College of Physicians. *Ann Intern Med*, 2007;146(7):511-5
12. Biesheuvel C, Weigel S, Heindel W. Mammography Screening: Evidence, History and Current Practice in Germany and Other European Countries.. *Breast care Basel, Switzerland*, 2011;6(2):104-109
13. Tonelli M, Gorber SC, Joffres M, Dickinson J, Singh H, et al. Recommendations on screening for breast cancer in average-risk womwn aged 40-74 years *CMAJ : Canadian Medical Association Journal*, 2011;183(17):1991-2001
14. Gotzsche PC, Nielsen M. Screening for breast cancer with mammography. *Cochrane Database Syst Rev*, 2011;(1):121-56