JBUON 2018; 23(3): 706-712
ISSN: 1107-0625, online ISSN: 2241-6293 • www.jbuon.com
E-mail: editorial_office@jbuon.com

ORIGINAL ARTICLE

Factors influencing participation in breast cancer opportunistic screening in Belgrade, Serbia

Ana Jovicevic[1], Svetlana Ristic[1,4], Vera Mandic[1], Dragana Jovicevic[1], Tatjana Rajovic[2], Suzana Stojanovic-Rundic[1,3], Tatjana Pekmezovic[3]

[1]Institute for Oncology and Radiology of Serbia, Department of Epidemiology and Prevention, Belgrade, Serbia; [2]Special Hospital for Rehabilitation Termal, Vrdnik, Serbia; [3]Faculty of Medicine, University of Belgrade, Belgrade, Serbia; [4]Faculty of Health, Legal and Business Studies, Singidunum University, Belgrade, Serbia

Summary

Purpose: *To assess the motivation and barrier factors influencing participation of women in opportunistic breast cancer screening in Belgrade, Serbia, and to detect changes in these factors over time.*

Methods: *A cross-sectional study has been carried out at the Institute for Oncology and Radiology of Serbia in 2009 and 2016 among women aged 40 to 69 years from Belgrade who came at the Institute for opportunistic breast cancer screening. The demographic characteristics, data regarding breast exams practices, screening motivators and barriers and sources of information on breast cancer were collected by self-administered questionnaire.*

Results: *The questionnaire was completed by 478 women in 2009 and 453 in 2016, with increase in women reporting regular mammograms or at least one previous mammogram (from 30.1% to 58.6%, p=0.000). In 2009, the most frequent motivating factors were health maintenance (36%), friend's advice, TV, cancer in the family or fear of breast cancer; in 2016, advice from gynecologist (significant increase from 10.9% to 37.7%, p=0.000), health maintenance, family cancer and fear of cancer. The most frequent reasons for not going to exams regularly were absence of breast problems, crowded doctor's offices and no family breast cancer.*

Conclusions: *These findings provide information on motivation and barrier factors that may influence women's decision to participate in opportunistic breast cancer screening. Those factors have changed over time and the role of physicians has increased significantly. Further exploration of motivating and barrier factors and the extent of their association with actual women's behavior would be helpful for the development of interventions to improve organized and opportunistic screening participation.*

Key words: *barriers, breast cancer, motivation, screening*

Introduction

Breast cancer is the most common malignancy in women, with incidence rates generally increasing throughout the world and this increase being attributed to socio-economic and demographic changes [1,2]. In Serbia, the age-standardized breast cancer incidence rate (69.0 per 100,000 women) is close to the average European rate (69.9), i.e. belongs to median rates in Europe and the average annual increase is about 1% [1,2].

However, breast cancer mortality rate in Serbia is very high – the age-standardized rate is estimated to be the second highest in Europe, after the FYROMacedonian rate [1]. Furthermore, this rate has been constantly increasing, contrary to the

Correspondence to: Ana Jovicevic, MD, MSc. Institute for Oncology and Radiology of Serbia, Pasterova 14, Belgrade 11000, Serbia.
Tel: +381 11 2067232, E-mail: dranajovicevic@gmail.com
Received: 28/12/2017; Accepted: 14/01/2018

favorable decreasing trend in breast cancer mortality rates observed in the majority of European countries [3,2].

Breast cancer is also one of the leading causes of premature death in women in Serbia. Measured by years of life lost, it is the third cause of death in women aged 45-64 years, after cerebrovascular diseases and ischemic heart disease [4].

In 2006, the Ministry of Health of the Republic of Serbia established the National Expert Committee for Breast Cancer (ECBC) in order to perform the analysis of the breast cancer control situation in Serbia, identify main problems and develop the strategy for improvement.

Late stage at diagnosis has been identified as one of the most important problems, contributing to the breast cancer high mortality and unfavorable trend. More than half breast cancer cases were diagnosed at advanced stage i.e. with locoregional tumor spread or distant metastases [5].

The ECBC developed the national breast cancer screening program that was adopted by the Government of Serbia in 2009 and updated in 2013 [5]. After diagnostic capabilities were strengthened and professional and public education organized, implementation of organized decentralized mammography screening program started in 10 municipalities in Serbia in 2013. Until the end of 2016, the program was introduced in about one quarter of the municipalities. Participation rate was 38% [7].

Opportunistic breast cancer screening has been going on as well, with mammograms provided on a woman's request or by physician's recommendation during routine health care. National guidelines for cancer prevention for primary health care doctors [8] provide recommendations for opportunistic breast cancer screening with screening mammography every two years for women aged 50 to 69 and on individual decision for women aged 40 to 49 and high-risk women.

Interventions for raising breast cancer awareness were organized by the Ministry of Health, healthcare institutions, nongovernmental or charitable organizations such as media campaigns, events, information material etc. Two mobile mammography units provided screening mammography on various locations throughout Serbia. As a result, the number of opportunistic screening mammography examinations increased [9].

However, the number of women having regular mammograms through either opportunistic or organized screening is still low and many breast cancers are still diagnosed at late stage.

The aim of this study was to assess the motivation and barrier factors influencing the participation of women in breast cancer screening in Belgrade, Serbia, and to detect changes in these factors over time.

Methods

A cross-sectional study has been carried out at the Institute for Oncology and Radiology of Serbia in the period March-June 2009 and in the same period in 2016 among women aged 40 to 69 years from Belgrade that came for opportunistic breast cancer screening. Screening consisted of clinical breast exams and further imaging according to clinical findings and guidelines.

Participation in the survey was voluntary and anonymous. A self-administered questionnaire assessed demographics, breast exams practices, screening motivators and barriers and sources of information on breast cancer.

Ethical clearance for this study was provided by the Ethics Committee of the Institute for Oncology and Radiology of Serbia.

Statistics

Statistical analyses were performed using program R version 3.3.2 (2016-10-31) "Sincere Pumpkin Patch". The statistical significance level was set at $p<0.05$. Data were summarized using descriptive statistics (frequencies, n; percentages, %). Pearson chi-square test (x^2) and Fisher Exact Test were used for comparisons between study groups.

Results

Demographics and breast exam practices

The survey was completed by 478 women aged 40 to 69 in 2009 (Group 2009) and 453 women in 2016 (Group 2016). There were no significant differences between groups in terms of age (p=0.076) or educational level (p=0.068) (Table 1).

The percentage of women that have never had clinical breast exam before this contact decreased from 27.8% in 2009 to 12.4% in 2016 (p=0.000). Among women that belonged to the breast cancer screening target group (aged 50 to 69 years), 32% never had mammography in 2009 and 25% in 2016; the share of women having mammograms regularly increased from 13% to 21% (p=0.000) (Table 2).

Motivation factors

In 2009, the factor that mostly motivated participants to have a breast exam was health maintenance (36%), followed by friend's advice (21.1%), TV (16.1%), cancer in the family (12.8%) or fear of breast cancer (12.5%). However, in 2016, the situation has changed significantly – most frequent motivators were advice from gynecologist (increased to 37.7%, p=0.006) and health maintenance (decreased to 28.5%, p=0.010), followed by cancer in

Table 1. Age distribution and educational level of study groups

	Group 2009 (n=478)	*Group 2016 (n=453)*	*Total (n=931)*	*p value**
Age group				0.076
40-49	178 (37.2%)	167 (36.9%)	345 (37.1%)	
50-59	178 (37.2%)	143 (31.6%)	321 (34.5%)	
60-69	122 (25.5%)	143 (31.6%)	265 (28.5%)	
Education level				0.068
Primary	21 (4.4%)	30 (6.6%)	51 (5.5%)	
Secondary	255 (53.4%)	188 (41.5%)	443 (47.6%)	
Higher secondary	58 (12.1%)	54 (11.9%)	112 (12.0%)	
High school	140 (29.3%)	94 (20.8%)	234 (25.1%)	
NA	4 (0.8%)	87 (19.2%)	91 (9.8%)	

*Pearson x^2 test for the difference between Group 2009 and Group 2016. NA: not available

Table 2. Previous clinical breast exam and mammography among participants

	Group 2009	*Group 2016*	*Total*	*p value**
Clinical breast exam (age 40-69)	n=478 n (%)	n=453 n (%)	n=931 n (%)	0.000
Never	133 (27.8)	56 (12.4)	189 (20.3)	
Once or rarely	182 (38.1)	233 (51.4)	415 (44.6)	
Regular	136 (28. 5)	164 (36.2)	300 (32.2)	
NA	27 (5.7)	0 (0.0)	27 (2.9)	
Mammography (age 50-69)	n=300 n (%)	n=286 n (%)	n=586 n (%)	0.000
Never	97 (32.3)	72 (25.2)	169 (28.8)	
Once or rarely	67 (22.3)	145 (50.7)	212 (36.2)	
Regular	38 (12. 7)	59 (20.6)	97 (16.6)	
NA	98 (32. 7)	10 (3.5)	108 (18.4)	

*Pearson x^2 test for the difference between Group 2009 and Group 2016. NA: not available

Table 3. Motivating factors

Motivating factors	*Proportion of women (%) endorsing this factor*		*Significant change*
	Group 2009 (n=478)	*Group 2016 (n=453)*	*p value**
Advice from a GP	3.6	7.7	0.006
Advice from a gynecologist	10.9	37.8	0.000
Friends' advice	21.1	2.7	0.000
Advice from husband or boyfriend	2.1	1.6	0.533
Advice from my mother	2.7	0.9	0.048
Advice from my daughter	10. 7	2.4	0.000
Somebody I know got cancer	6.5	5.5	0.535
Cancer in my family	12.8	17.9	0.030
I heard about it on TV	16.1	8.4	0.000
I heard about it on radio	5.7	2.4	0.013
I read about it in newspapers	11.5	5.1	0.000
I read about it on internet	1.7	3.5	0.073
Fear of breast cancer	12.6	10.2	0.250
I use hormones	1.5	2.9	0.139
I take care of my own health	36.0	28.5	0.010

*Pearson x^2 test for the difference between Group 2009 and Group 2016. GP: general practitioner

the family (increased to 17.9%, p=0.030) and fear of cancer (10.1%, p=0.250). The advice from friends and family or media reports, with the exception of internet, were identified with significantly lower frequency (Tables 3 and 4).

Barriers

Among women that did not go regularly to breast exams, the most widely endorsed reasons for not doing so were the absence of breast problems (52% in 2009, 45% in 2016, p=0.299), crowded doctor's offices with long waiting time (20% and 14%, p=0.044), no breast cancer in the family (16% and 16%, p=0.835) and being busy (9.5% and 5.9%, p=0.095).

In contrast to motivating factors, significant difference between groups was observed just for two barriers: crowded doctor's offices and fear of results (Table 5).

Talking about breast cancer

The number of women that discussed breast cancer with their general practitioner (GP), gynecologist or both, increased from 37.2% in 2009 to 49.7% in 2016 (p=0.000).

Women also talked about breast cancer with cancer patients or survivors - the majority of participants knew someone with breast cancer and has discussed breast cancer with that person (72% and 76%, p=0.415) (Table 6).

Table 4. Changes in motivating factors

Motivating factors	*Proportion of women (%) identifying these factors as motivation*		*Significant change*
	Group 2009 (n=478)	*Group 2016 (n=453)*	*p value*
Health maintenance	36.0	28.5	0.010*
Advice from others (4 questions)	33. 9	6.0	0.000**
Media (4 questions)	20.1	9.7	0.000**
Doctor's advice (GP/gynecologist)	13.6	43.5	0.000**
Cancer in family	12.8	17.9	0.030*
Fear of breast cancer	12.6	10.2	0.250*

*Pearson x^2 test; **Fisher exact test for the difference between Group 2009 and Group 2016

Table 5. Reasons for not going regularly to breast exams

Reasons	*Number and proportion of women endorsing this factor*		*Significant change*
	Group 2009 (n=315) n (%)	*Group 2016 (n=289) n (%)*	*p value**
I had no breast problems	160 (50.8)	159 (55.0)	0.299
Crowded doctor's office and long wait times	63 (20.0)	40 (13.8)	0.044
No breast cancer in my family	51 (16.2)	45 (15.6)	0.835
Too busy, I didn't have time	30 (9.5)	17 (5.9)	0.095
I am worried that they might find something	25 (8.0)	11 (3.8)	0.032
I cannot go out of my work	17 (5.4)	12 (4.2)	0.475
I am afraid that the exam is uncomfortable or painful	13 (4.1)	15 (5.2)	0.535
Nobody told me I should go to exams	12 (3.8)	13 (4.5)	0.671
I didn't know where the exam could be done	6 (2.0)	2 (0.7)	0.289
I am afraid that mammography is harmful	4 (1.3)	6 (2.1)	0.531
I feel embarrassed about having my breast examined	2 (0.6)	0 (0.0)	0.500
I don't believe breast exam can help, cancer prognosis is always poor	0 (0.0)	1 (0.4)	0.478

*Pearson x^2 test for the difference between Group 2009 and Group 2016

Table 6. Information on breast cancer

Questions (answer "yes")	*Group 2009 (n=478) n (%)*	*Group 2016 (n=453) n (%)*	*p value**
Have you discussed breast cancer with your GP?	71 (14.9)	105 (23.2)	0.000
Have you discussed breast cancer with your gynecologist?	163 (34.1)	210 (46.4)	0.000
Do you know someone with breast cancer?	341 (71.3)	364 (80.4)	0.000
If yes, have you discussed her illness with her? (n=341/364)	249 (72.1)	281 (76.4)	0.402
	Group 2009 (n=478) n (%)	*Group 2016 (n=453) n (%)*	*p value**
Do you think you know enough about breast cancer?			0.000
Enough	107 (22.4)	102 (22.5)	
Somewhat	300 (62.8)	333 (73.5)	
Nothing	33 (6.9)	8 (1.8)	
NA	38 (8.0)	10 (2.2)	
Would you like to have more information on breast cancer?			0.000
Yes	326 (68.2)	346 (76.4)	
No	33 (6.9)	30 (6.6)	
I don't know	31 (6.5)	49 (10.8)	
NA	88 (18.4)	28 (6.2)	
	Group 2009 (n=326) n (%)	*Group 2016 (n=346) n (%)*	*p value**
If you would like more information, what way do you prefer?			
Talking to an expert	211 (64.7)	271 (78.3)	0.000
Lectures	115 (35.3)	113 (32.7)	0.7683
Booklets and other printed material	152 (46.6)	114 (33.0)	0.0013
TV, radio	117 (35. 9)	94 (27.2)	0.0502
Articles in newspaper, magazines	99 (30.4)	86 (24.9)	0.2406

*Pearson x^2 test for the difference between Group 2009 and Group 2016

When asked to assess their knowledge on breast cancer, only 22% of women said they knew enough about it. The majority of participants wanted more information on breast cancer, mostly by talking to an expert. Interest in other ways of obtaining information, particularly by printed material, has decreased in 2016 (p=0.001) (Table 6).

Discussion

In 2009, taking care of their own health was the most frequent (36%) motivating factor for going to the breast exam in all age groups, particularly in younger women. Advice from friends and relatives was also highly rated (33.9%), particularly from a friend or daughter and only sporadically (2%) from a husband or boyfriend. Health maintenance and advice from a friend or family exceeded by far doctors' advice (13.6%); even the influence of media was more important, particularly TV or newspaper.

However, in 2016, factors identified as a motive have changed significantly. Over 43% of women endorsed doctor's advice as a motive. In the majority of cases that was gynecologist's advice – this could be explained by the fact that the National Breast Cancer Screening Program in Serbia has defined gynecologists as responsible for initiating both breast and cervical cancer screening [6]. Although only a fraction of gynecologists has become involved in the organized breast cancer screening program so far, it was probably the professional education and raised public awareness that led to a more active role of gynecologists in breast health management.

The number of women that reported discussing breast cancer with their doctors was also significantly higher in 2016 than in 2009 (p=0.000). However, these numbers differed from motivation for screening. In 2016, 23% of women discussed breast cancer with their GPs but less than 8% was

motivated for screening by GP's advice; over 43% of women discussed breast cancer with gynecologist while 38% was motivated by gynecologist's advice for the exam.

According to the findings of the current study, primary healthcare doctors have become more active and assumed an important role in the prevention of breast cancer. The findings imply that further improvement could be achieved by strengthening the role of GPs and by developing interventions, including training programs, which would better equip doctors for counselling their patients on breast cancer screening [10].

Health professionals were also recognized as the most valid source of information on breast cancer for those participants that were interested in learning more about breast cancer. In our study, there was a significant decrease in interest in conventional mass media (TV, radio, newspaper) as a source of information or a motive for breast exam. Internet was reported as a motivating factor only by a small fraction of participants but with increasing trend. According to a study performed in Serbia in 2013, sites dedicated to health and sites of medical institutions were valuable sources of information about preventive measures [11].

Study results recorded a difference between talking to someone with breast cancer and being motivated for breast screening. Although the majority of women reported having a friend or a relative with breast cancer and talking to her about it, only a few were motivated by that to go for a breast exam. In Serbia, the number of cancer patients' associations, survivorship and support groups is increasing. Their main role is support to cancer patients but they can also be valuable partners in the promotion of cancer prevention in the community [12] and their members trained to promote and advocate cancer prevention at every opportunity.

It has been shown that barriers have a direct and indirect (via intention) negative effect on the behavior over mammography [13]. Potential barriers depend on individual's knowledge, perception and feelings regarding breast cancer, screening, healthcare system etc.

In our study, having no problems with breasts was the reason identified by more than half of women not going regularly to exams in both groups. No breast cancer in the family was another frequent answer in both groups. Both reasons are misconceptions – absence of symptoms does not mean absence of disease; screening mammograms are intended to detect early asymptomatic disease. As for breast cancer in the family, only a small fraction of breast cancer cases is thought to be hereditary while 80% of women diagnosed have no family history of the disease. Therefore, women (wrongly) believe that they are not at risk since studies have shown that perceived susceptibility is one of the main reasons for having mammography. If women believe that they are not at risk, they are less likely to engage in a positive healthy behavior [14]. These factors are important to be taken into consideration when designing future breast cancer awareness campaigns and promotion of screening in order to focus more on those specific patterns of motivation.

Among service-related barriers, crowded doctor's offices with long wait times was the most important one but with significant decrease over time. Women saying that they were not able to go to a doctor during working hours might also be an important issue to take into account when organizing screening services. However, being busy and not having time for screening (10% and 6%), might be related not only to the organization of screening services but also to intrinsic motivation factors such as perceived importance and usefulness of screening [15]. Very few women said that they didn't know where to go for the breas exam.

Among emotional barriers, fear of results was the most frequent one but with significant decrease (from 8 to 4%). In Serbia, there is well known saying: "do not go to the doctor because he will find you something". Some women were worried that mammography is uncomfortable or painful but almost none was embarrassed about having breast exam.

In conclusion, these findings provide information on motivation and barrier factors that may influence women's decision to participate in opportunistic breast cancer screening.

Comparison between two groups, one in 2009 and one in 2016, shows that these factors are changing over time and that the role of physicians in motivating women for screening has increased significantly. The study results imply that further improvement could be achieved by strengthening the role of GPs and by developing interventions, including training programs, which would better equip doctors for counselling their patients on breast screening.

As reasons for not going regularly to breast exams, women most often state the absence of breast problems or breast cancer family history, indicating that future activities should specifically target public knowledge on basic principles of screening and breast cancer risks. Although their frequency is decreasing, service barriers are still among the most important ones.

Further exploration of motivating and barrier factors and understanding the extent to which these factors are associated with actual women's behavior would be helpful for the development of interventions to improve both organized and opportunistic screening participation.

Acknowledgements

We thank Dusica Gavrilovic, MSc Math, statistician at the Institute of Oncology and Radiology of Serbia, for her valuable contribution to our work.

Tatjana Pekmezovic was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (grant no. 175087).

Conflict of interests

The authors declare no conflict of interests.

References

1. Ferlay J, Soerjomataram I, Ervik M et al. GLOBOCAN 2012 v1.0. Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr(link is external), accessed February 2017.
2. Dimitrova N, Znaor A, Agius D et al. Breast cancer in South-Eastern European countries since 2000: Rising incidence and decreasing mortality at young and middle ages. Eur J Cancer 2017;83:43-55.
3. Miljus D, Zivkovic S, Bozic Z. Cancer incidence and mortality in central Serbia 2014. Report No 16. Cancer Registry of Central Serbia, Institute of Public Health of Serbia, Belgrade, 2016.
4. Atanaskovic-Markovic Z, Bjegovic V, Jankovic S et al. The Burden of Disease and Injury in Serbia. Ministry of Health of the Republic of Serbia, Belgrade, 2003.
5. Jovicević-Bekic A. Epidemiology and prevention of breast cancer. In: Neskovic-Konstantinovic Z, Borojevic N, Vuckovic-Dekic Lj (Eds): Diagnostics and treatment of breast cancer. Academy of Medical Sciencies of the Serbian Medical Association and Institute for Oncology and Radiology of Serbia, Belgrade, 2008.
6. Regulation on the National program for early detection of breast cancer, Official Gazette of the Republic of Serbia, No. 05/13.
7. National Cancer Screening Office. Available from:www.skriningsrbija.rs/eng/breast-cancer-screening accessed April 2017.
8. Prevention of malignant diseases. National guidellines for physicians in primary health care. Workgroup for guidellines development, Ministry of Health of the Republic of Serbia, Belgrade, 2005.
9. Ciraj-Bjelac O, Faj D, Stimac D et al. Good reasons to implement quality assurance in nationwide breast cancer screening programs in Croatia and Serbia: results from a pilot study. Eur J Radiol 2011;78:122-8.
10. Kiyang L, LabrecqueM, DouallaBell F et al. Family physicians' intention to support women in making informed decisions about breast cancer screening with mammography: a cross sectional survey. BMC Res Notes 2015;8:663.
11. Cvijovic J, Kostic-Stankovic M, Krstic G et al. Marketing communication in the area of breast and cervical cancer. Vojnosanit Pregl 2016;73:544-52.
12. Centers for Disease Control and Prevention. The Road to Better Health: A Guide to Promoting Cancer Prevention in Your Community. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2012.
13. Murphy C, Vernon S, Diamond P, Tiro J. Competitive testing of health behavior theories: how do benefits, barriers, subjective norm, and intention influence mammography behavior? Ann Behav Med 2014;47:120-9.
14. Akpinar YY, Baykan Z, Nacar M et al. Knowledge,attitude about breast cancer and practice of breast cancer screening among female health care professionals: a study from Turkey. Asian Pac J Cancer Prev 2011;12:3063-8.
15. Jung SM, Jo HS. Intrinsic Motivation Factors Based on the Self-Determinant Theory for Regular Breast Cancer Screening. Asian Pac J Cancer Prev 2014;15:10101-06.