The Breast 22 (2013) 780–786

Contents lists available at SciVerse ScienceDirect

The Breast

journal homepage: www.elsevier.com/brst

Original article

Online advertising by three commercial breast imaging services: Message takeout and effectiveness

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ARTICLE INFO

Article history:
Received 8 October 2012
Received in revised form
21 December 2012
Accepted 23 January 2013

Keywords:
Breast imaging
Advertising
Breast cancer
Mammography

ABSTRACT

Mammography is widely acknowledged to be the most cost-effective technique for population screening for breast cancer. Recently in Australia, imaging modalities other than mammography, including thermography, electrical impedance, and computerised breast imaging, have been increasingly promoted as alternative methods of breast cancer screening. This study assessed the impact of three commercial breast imaging companies' promotional material upon consumers' beliefs about the effectiveness of the companies' technology in detecting breast cancer, and consumers' intentions to seek more information or consider having their breasts imaged by these modalities. Results showed 90% of respondents agreed that the companies' promotional material promoted the message that the advertised breast imaging method was effective in detecting breast cancer, and 80% agreed that the material promoted the message that the imaging method was equally or more effective than a mammogram. These findings have implications for women's preference for and uptake of alternative breast imaging services over mammography.

Introduction

Breast cancer is the most common cancer occurring in women in Australia and a leading cause of cancer death in Australian women. In 2007, 12,567 women were diagnosed with breast cancer and it caused 2680 deaths.[1] Early breast cancer detection helps to maximise chances of successful treatment. A considerable amount of investment has been made into early breast cancer detection in Australia, particularly into establishing an effective and reliable mammographic screening program. Although screening mammography as a method for the early detection of breast cancer continues to be researched and debated in the scientific community, it is broadly considered to be the only practicable population screening test for breast cancer.[2]

Within the past five years in Australia, a number of commercial companies have started promoting non-mammographic breast cancer testing methods, specifically thermography, electrical impedance (EI) and computerised breast imaging (CBI).

EI measures how fast a small electric charge travels through the breast and is based on the theory that tumours conduct electricity differently from normal breast tissue. Thermography uses an infrared camera to detect warmer areas of skin and generate heat maps of each breast. It is based on the theory that tumours have increased blood flow which generates heat resulting in the warmer skin overlying a breast cancer. CBI measures the breast's response to physical pressure and is based on the idea that tumours have different physical properties, such as hardness and elasticity, to normal breast tissue.

There is little or no evidence published in peer reviewed scientific literature to show that these alternative methods are effective at detecting breast cancer in any age cohort.[3] Studies show that a tumour has to be large (several centimetres in diameter) to be detectable by thermography,[4,5] and the leading national federal cancer organisation, Cancer Australia concludes that no current scientific evidence supports the use of thermography in the early detection of breast cancer.[6] Likewise, the few small studies undertaken on EI are equivocal as to its efficacy in breast cancer detection, and indicate that more research and development of this technology is necessary.[3] There are no randomised controlled trials assessing CBI technology against other, validated breast imaging methods, and a number of the few published studies relating to CBI

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http://dx.doi.org/10.1016/j.breast.2013.01.013

Table 1
Sample demographics.

	Thermography $n = 100\%$	CBI $n = 100\%$	EI $n = 100\%$	Total sample $N = 300\%$
Age group				
25–34 years	33	35	33	34
35–44 years	36	34	33	34
45–54 years	31	31	34	32
Total	**100**	**100**	**100**	**100**
Highest level of education				
Primary school	1	0	2	1
Secondary school	32	37	39	36
Trade certificate	2	1	7	3
Certificate (non-trade)/diploma	23	26	16	22
Bachelor degree	29	31	31	30
Higher qualifications	13	5	5	8
Total	**100**	**100**	**100**	**100**
Occupation				
Working in a job, business or profession	78	62	77	73
Home duties	12	25	12	16
Student	7	7	4	6
Unemployed	0	3	4	2
Carer	1	3	2	2
Sickness/invalid beneficiary	1	0	1	1
Retired	1	0	0	<1
Total	**100**	**100**	**100**	**100**

and breast cancer detection were written by authors with commercial associations with the CBI technology.

A dominant form of promotion for these technologies is internet/web based marketing. Website advertisements for services offering the technologies often claim or imply that the methods can detect breast cancer. The advertisements also generally claim the methods are pain and discomfort-free and are suitable for younger women. There are concerns that the advertising may persuade women to forego mammography in favour of one of the unproven methods, which could potentially delay a cancer diagnosis.

The authors witnessed an increase in the number of business operators offering unproven breast cancer testing and an associated increase in the marketing of those services in Western Australia. The services particularly target their marketing activity towards women in their twenties and thirties who are not eligible to participate in the national breast screening program. The national breast screening program is available to women over the age of 40 and evidence of the benefit is strongest for women aged 50–69 years.[2,7]

We sought to explore and establish the interpretation of the marketing material by the target audience. This research therefore aimed to assess the impact of three commercial breast imaging companies' website advertising upon: (i) consumers' beliefs about the effectiveness of various imaging methods in the detection of breast cancer, and (ii) consumers' intentions to seek more information or consider having a breast imaging test.

Methods

Professional interviewers intercepted 300 females aged 25–54 in the Perth city centre shopping mall and invited them to participate in 'research on health'. This age range captures the target market for the imaging services' promotional material. The cohort was grouped into three age groups of approximately equal proportions: 25–34; 35–44; and 45–54 years. Respondents were randomly assigned to read one of three breast imaging companies' advertising from their websites – typically the homepage. Local, Western Australian, companies were chosen to represent each of the three imaging methods: thermography, electrical impedance (EI) and computerised breast imaging (CBI). In each case, the company was the provider of an imaging service rather than the manufacturer of the equipment.

After reading the advertisement, respondents completed an interviewer-administered questionnaire. The testing procedure and questionnaire items were based on standard commercial copy testing procedures,[8] adapted for pre-testing health communications.[9,10] Demographic data were collected, and only people who passed a simple literacy test and had never worked as a nurse, doctor, radiographer or in a medical clinic were interviewed.

Respondents were first asked two open questions: one on the thoughts, feelings and images that went through their mind as they read the advertisement; and one on their understanding of the advertisements' messages. Responses were grouped into common themes for analysis.

Respondents were also asked to rate on a Likert-type scale: the impact of the advertisement on their intentions to seek more information about the breast imaging being promoted; their perceptions of the effectiveness of that breast imaging in detecting

Table 2
Main reactions to the breast imaging advertisements.

	Thermography $n = 100\%$	CBI $n = 100\%$	EI $n = 100\%$	Total sample $N = 300\%$
Women should have (regular) breast checks	22	18	23	21
Positive comment about the breast imaging method in general (e.g., it is a good idea; it is simple and practical)	24	18	12	18
It is accessible to younger women	27	14	8	16
It is pain free, comfortable, less intrusive, non-invasive, easy (relative to a mammogram)/mammogram is uncomfortable, painful	21	16	10	16
Know someone who had or died of breast cancer	11	7	17	12
Queried aspects of the breast imaging method (e.g., how does it work, risks involved, cost)	9	11	6	9
Reject the breast imaging method/ad message (e.g., would not have one; prefer a mammogram; it is expensive)	6	15	4	8
Ad was informative/interesting	8	3	3	5
I get checked regularly	2	2	7	4
It detects breast cancer, problems/alternative to mammogram	4	6	3	4
It is better than a mammogram	4	3	3	3
Early detection can prevent breast cancer	6	0	2	3
Negative comments about the ad execution (e.g., not clearly written; too much info)	3	1	3	2
I don't want to get breast cancer	1	2	4	2