Sociocultural Deterrents to Mammographic Screening in Jamaica

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ABSTRACT

Objective: *Less than five per cent of eligible Jamaican women had mammograms in 2003. The sociocultural determinants and the perceptual barriers modulating screening behaviour in Jamaican women are unclear. We sought to investigate sociocultural effects, in particular, knowledge and fear of the procedure on mammographic screening behaviour in Jamaican women.*

Method: *One hundred and forty-seven women attending the breast imaging units at the University Hospital of the West Indies and 127 attending Radiology West were interviewed to determine the factors relating to participation in mammographic screening. Knowledge level, deterring factors as well as the experience during mammography were recorded.*

Results: *The mean age ± SD of participants was 51 ± 10.4 years. Eighty-eight of the 274 women (32%) were having a mammogram for the first time. Of these, the major determinants of the mammographic experience were the expectation that the procedure would be painful (OR = 0.08,* $p < 0.001$*) and the pain intensity (OR = 1.4,* $p < 0.030$*) experienced during mammography.*

There were 188 women who had repeat mammograms. Seventy-five of these women had delayed mammography for greater than one year. There was a significant association between being late for mammography and the perception that a doctor's referral was necessary ($p < 0.001$*). The factors associated with improved mammographic experience were pain intensity (OR = 0.84,* $p < 0.04$*), interval status of previous mammography (OR = 2.24,* $p = 0.059$*) and knowing someone with breast cancer (OR = 0.35,* $p < 0.04$*). Although 97% of all women found mammography painful, only seven (2.5%) said pain would prevent a repeat mammogram.*

Conclusions: *Fear, pain during mammography, subjective indifference, inertia and reliance on physician referrals were identified as barriers to complying with mammographic screening guidelines.*

Elementos Socioculturales de Disuasión en el Pesquisaje Mamográfico en Jamaica

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RESUMEN

Objetivo: *Menos del cinco por ciento de las mujeres jamaicanas elegibles recibieron mamogramas en 2003. No están claras las determinantes socioculturales y las barreras preceptuales que modulan el comportamiento de pesquisaje en la mujer jamaicana. Buscamos investigar los efectos socioculturales – en particular, el conocimiento y el miedo al procedimiento – sobre la conducta ante el pesquisaje mamográfico en las mujeres jamaicanas.*

Método: *Ciento cuarenta y siete mujeres que asistían a las unidades de imágenes de mamas en el Hospital Universitario de West Indies, y 127 que asistían a Radiology West, fueron entrevistadas a fin de determinar los factores relacionados con su participación en el pesquisaje mamográfico. Se registraron el nivel de conocimientos, los factores de disuasión así como la experiencia durante la mamografía.*

Resultados: *La edad promedio ± SD de los participantes fue 51 ± 10.4 años. Ochenta y ocho de las 274 mujeres (32%) recibían un mamograma por primera vez. De estas, las mayores determinantes de*

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la experiencia mamográfico fueron la expectativa de que el procedimiento sería doloroso (OR = 0.08, p < 0.001) y la intensidad del dolor (OR = 1.4, p *< 0.030) experimentado durante la mamografía. Hubo 188 mujeres que tuvieron mamografías repetidas. Setenta y siete de estas mujeres tuvieron sus mamografías retrasadas por más de un año. Hubo una asociación significativa entre estar tarde para la mamografía y la percepción de que era necesaria una remisión médica (*p *< 0.001). Los factores asociados con el mejoramiento de la experiencia mamográfica fueron: la intensidad del dolor (OR = 0.84,* p *< 0.04), el estatus del intervalo de la mamografía previa (OR = 2.24,* p *= 0.059), y el conocer a alguien con cáncer de mamas (OR = 0.35,* p *< 0.04). Aunque el 97% de todas las mujeres encontraron la mamografía dolorosa, sólo siete de ellas (2.5%) dijeron que el dolor sería un impedimento para hacerse una nueva mamografía.*

Conclusiones: *El miedo, el dolor durante la mamografía, la indiferencia subjetiva, la inercia, y la dependencia de las remisiones médicas, fueron identificadas como los obstáculos que impiden el cumplimiento de las guías para el pesquisaje mamográfico.*

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INTRODUCTION

Breast cancer is a leading cause of death and morbidity amongst Jamaican women (1). It is widely accepted that regular mammographic screening of women aged 50 – 74 years is associated with a decrease in mortality from breast cancer (2 – 4). However screening can only be effective if the at risk population avail themselves of the facility. We recently reported that less than five per cent of Jamaican women eligible for mammographic screening actually have mammograms (5) and this low utilization probably contributes to the high death rates and the late stage of diagnosis of breast cancer in Jamaican women (1, 6).

A major impediment for the successful implementation of a mammographic screening programme is the low motivation to participate. A significant barrier for participation is the breast pain associated with mammography (7 – 12).

Mammography requires that the breast be tightly compressed during exposure (13 – 15) in order to:

- equalize breast thickness from chest wall to nipple
- reduce motion artifacts
- spread the breast tissue allowing detection of tiny cancers
- reduce the dose of radiation given to the breast.
- compression is achieved by the use of plastic paddles which compresses the breast against the film cassette.

The intensity and severity of pain and discomfort reported by women undergoing mammography has been found to be variable. The clinical factors that modulate the experience include:

- breast density (16)
- menstrual cycle and breast sensitivity (17)
- breast size (14)
- mammographic technique
  a. rate and force of compression (14, 15)
  b. skill of mammographic technician (7, 18)

There also appears to be significant sociocultural effects such as education, socio-economic status as well as cognitive and behavioural state on the mammographic experience(10). However, the interaction of these factors and how they modulate the mammographic screening behaviour of Jamaican women is unknown. Therefore, we sought in this study to investigate sociocultural effects, in particular knowledge, as well as perceptual barriers to mammography in Jamaica.

SUBJECTS AND METHODS

This pilot study was conducted at the breast imaging units at the University Hospital of the West Indies (UHWI) and Radiology West (RadWest) in order to describe and compare the mammographic experience of clients between an academic affiliated public unit and a non-academic affiliated private unit. These two institutions were selected as it was thought that their clientele would be representative of the sociocultural diversity within Jamaica.

After obtaining written informed consent an interviewer-administered questionnaire was administered to clients attending both the UHWI and RadWest breast imaging units between July and August 2006. Information collected included age, indication for mammography, source of referral, perceived and actual knowledge about mammography, previous mammographic experience, perceptual barriers for mammography and amount of pain experienced during the mammographic procedure. The visual analogue scale (VAS; Melzack, 1987) was used for the subjective assessment of pain. Data were captured in EPIDATA and analysed using Stata statistical software version 9 (College Station, TX, 77845). The study was approved by the Ethics Committee, University Hospital of the West Indies/Faculty of Medical Sciences, The University of the West Indies.

Statistics

Values are expressed as frequencies, mean with standard deviations or median with interquartile ranges as appropriate. The main aim of this study was to determine the effects of knowledge and perception on the willingness of women to participate in mammographic screening, as well as on the mammographic experience. The sample was therefore categorized by mammographic status (first time patients *vs*

repeaters) and analyses performed independently for each category. For categorical outcome variables, differences between group variables were determined by logistic regression. For continuous outcome variables, differences between group variables were determined by ANOVA or Kruskal-Wallis. A stepwise multiple logistic regression analysis was performed to determine the significant predictors of the mammographic experience. The p value for entry in the model was $p < 0.05$ and for removal was p $ 0.1.

RESULTS

The sample consisted of 274 patients, 147 from UHWI and 127 from Radiology West. Eighty-eight of the 274 women (32%) were having a mammogram for the first time. The mean age, with standard deviation of the participants was 51 ± 10.4 years. There was no significant difference in mean age by mammographic status. However clients at RadWest (mean age ± SD, 48.1 ± 9.4) were significantly younger compared with clients at UHWI (mean age ± SD, 53.2 ± 10.7, $p < 0.01$). Similarly, there was no difference in median pain scores by mammographic status but a significant difference by location with clients at RadWest having a lower median score (median pain score with (interquartile range), UHWI 4(5) *vs* RadWest 2 (4), $p < 0.05$) [Table 1].

(Figure). There was a low positive correlation (rho = 0.3, $p < 0.05$) between fear and expectation that mammography would be painful. In contrast, there was no association between know-ledge of what a mammogram was and fear of the procedure.

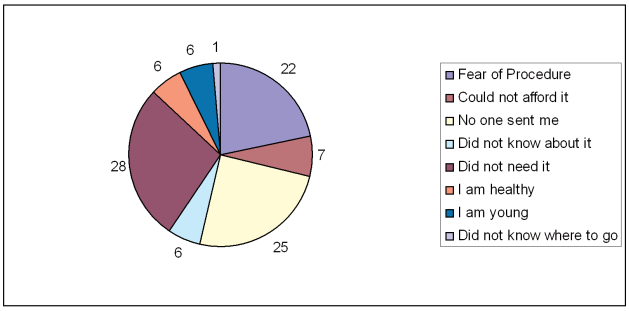

Figure: Reasons for delaying mammography in those having their first mammogram. Values are per cent of responses.

Stepwise logistic regression analysis was performed to identify the major determinant of the mammographic experience defined as a "*yes*" response to the question "*Was the procedure as you thought it would be?*" in women having their first mammogram.

Table 1: Age, pain score, knowledge and perception of mammographic procedure by location and mammogram frequency.

	First Mammogram n = 88		**Repeat Mammogram n = 88**		
	UHWI	Radwest	UHWI	Radwest	All
*Age	51.5 ± 10.2	45.6 ± 6.7	53.8 ± 10.8	50.3 ± 10.8	51.0 ± 10.4
# Pain score	4.0 (5.0)	3.0 (4.0)	4.0 (5.0)	2.0 (4.0)	3.0 (4.0)
Doctor referred					
No	4	5	75	14	98
Yes	27	46	36	50	159
Knowledge of someone with breast cancer					
No	13	17	24	20	74
Yes	16	35	87	43	181
Perceived knowledge of Mammography					
None	4	21	1	3	29
Yes	27	32	115	66	240
Correct knowledge of Mammography					
None	14	11	36	7	68
Yes	17	43	76	62	198
Perception of procedure					
Not as expected	11	39	20	20	90
As expected	13	15	89	40	157
Positive expectation that mammography is painful	13	28	59	30	130
Pain/discomfort would prevent you from having future mammograms	1	2	3	1	7

* Values are means ± SD; #Values are medians with interquartile ranges

Women having mammograms for the first time

The three main reasons offered for not having a mammogram by women who were having their first mammogram were "*did not need it*", "*No one sent me*" and "*fear of the procedure*", 28%, 25% and 22% of responses, respectively

The predictors offered were age, location (RadWest *vs* UHWI), knowing someone with breast cancer, fear of the procedure, being referred by a physician, knowledge of mammography, expectation that mammogram will be painful and pain experienced during mammography. The result of

this analysis showed that the major predictors were the expectation that the procedure would be painful (OR = 0.08, $p < 0.001$) and pain intensity (OR = 1.4, $p < 0.030$) experienced during mammography.

Women having repeat mammograms

Of the 188 women who had had a mammogram before, information on the date of the previous mammogram was available for 155 (82%). Seventy-five of these women were classified as being late for the current mammogram having had a previous mammogram more than one year previously, and 80 were classified as on time [in keeping with the suggestions of the American Cancer Society for regular mammographic screening] (19). There was no significant difference in the proportions of women who were late for mammography by location, knowledge and in the subjective rating of the mammographic experience. Additionally, there was no significant difference for age and pain score. A significantly greater proportion of women who were on time, did not believe that a doctor's referral was required to undergo mammography when compared with women who believed they needed a referral ($\chi^2 = 17.1$, df (1), $p < 0.001$ (Table 2).

Table 2: Age, pain score, knowledge and perception of mammographic procedure by on time status in those women having repeat mammograms

Variables	Repeat Mammogram		
	On time	Late	All
Location			
UHWI	53	53	106
RadWest	27	22	49
*Age	53.2 ± 11.8	52.2 ± 9.9	52.7 ± 10.9
# Pain score	3.0 (5.0)	4.0 (5.0)	4.0 (5.0)
Doctor referred			
No	53	27	80
Yes	21	45	66
Knowledge of someone with breast cancer			
No	20	15	35
Yes	56	57	113
Correct knowledge of mammography			
None	19	21	40
Yes	59	53	112
Rating of this mammogram compared to previous			
Improved	26	35	61
Same or worse	33	27	60
Pain/discomfort would prevent you from having future mammograms	2	2	4

Stepwise logistic regression analysis was performed to identify the major determinant of an improved mammographic experience compared to the previous imaging in women having a repeat mammogram. The predictors offered were age, location (RadWest *vs* UHWI), knowing someone with breast cancer, fear of the procedure, being referred by a physician, knowledge of mammography, having a previous mammogram within the year or not and pain experienced during mammography. The result of this analysis showed that the major predictors were pain intensity (OR = 0.84, $p < 0.04$) experienced during mammography, interval status of previous mammography (OR = 2.24, $p = 0.059$) and knowing someone with breast cancer (OR = 0.35, $p < 0.04$) (Table 3).

Table 3: Predictors of improved mammographic experience in women having repeat mammograms

Variables	Odds ratio	Lower 95%	CI	Upper 95% CI
Pain score	0.84	0.72		0.99
Knowledge of someone with breast cancer	0.35		0.12	0.99
Being late for current mammogram	2.24		0.97	5.19

A multivariate regression model was developed to determine the significant predictors of pain in this sample. The predictors offered to the model included knowledge of mammography, expectation of pain, perception of the procedure, mammographic status, location, whether they were referred by a physician and age. The most parsimonious model that accounted for the variation in pain scores were the expectation of pain and perception that the procedure was as expected. Clients who expected the procedure to be painful rated their pain experience a mean pain score of 1.3 units higher than those who did not expect the procedure to be painful. Similarly, clients who reported that the procedure was as expected rated their pain experience a mean pain score of 1.3 units higher than those who reported that the procedure was not as expected.

Ninety-seven per cent of women found mammography painful, however only 2.5% of women opined that the pain would prevent them from doing another mammogram (Table 1). Cost was found to be a contributing factor in only four per cent and seven per cent of patients at UHWI and Rad West respectively (Figure).

DISCUSSION

In the Canadian National Breast Screening Study (20) designed to explore the efficacy of mammographic screening and physical examination compared to physical examination only in Canadian women > 40 years of age, 36.2 % of women allocated to the mammography arm reported moderate discomfort during mammograms. More importantly, of the women from the mammographic arm who dropped out of this longitudinal study, 22% reported that mammography was too painful. Similarly, Poledenk *et al* (21) reported that 6.1% of their sample of 1164 women who had never had mammography indicated that fear of pain was a disincentive to participating in a mammographic screening programme. The data reported here corroborates these findings in that 52% of the sample expected mammography to be painful and the mean pain scores of this group was greater. In addition, our data intimate that lack of knowledge, reliance on physician referral and subjective indifference were significant barriers to following mammographic screening guidelines.

In this study, most women knew what a mammogram was, although the proportion of women attending RadWest were better informed. While fear caused delay in seeking mammography, ignorance of the need for a mammogram was more prevalent. Cost was not found to be a major deterrent.

In this sample, the subjective experience of pain was independent of mammographic status. However, pain experienced during mammography was found to be less at Radiology West than at UHWI. This could be due to differences in equipment, technique or client specific factors.

In women who were having repeat mammograms, knowing someone with breast cancer detracted from the mammographic experience. This may be related to a greater perceived risk of getting breast cancer, as well as the anxiety associated with knowing family members and/or friends having cancers (22).

Limitations of this study were small sample size, all women interviewed were awaiting mammography so they were not representative of the general population and the majority of patients had a previous mammogram

In summary, fear was found to be a deterrent to participation in mammographic screening. It was not, however, the most significant deterrent. The fact that the great majority of women experience discomfort/pain during mammography, as well as the fact that knowledge level was found to be a greater deterrent to participation suggests that intervention to reduce pain and increase knowledge and motivation may improve overall compliance with recommended mammographic guidelines and the mammographic experience.

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