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RESEARCH ARTICLE

KNOWLEDGE OF BREAST CANCER: A STUDY OF THE PRIMARY HEALTH CARE (PHC) NURSES OF THE CARIBBEAN ISLAND OF ST VINCENT AND THE GRENADINES

***Philip Chimee Onuoha, PhD, RN and Oneikah Sergeant Richards, MSN, RN**

The UWI School of Nursing, Faculty of Medical Sciences, University of the West Indies, St Augustine, Trinidad and Tobago

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ABSTRACT

Purpose: To determine the knowledge, self-efficacy and breast cancer screening practices of Primary Health Care Nurses (PHCNs)in SVG. The effects of interpersonal and situational influences on PHCNs' participation in breast screening activities were also examined.
Methods: This study utilized a non-experimental, descriptive survey design. Quota proportionate sampling was used to select 62 PHC Nurses working in the 9 health districts of SVG. The instrument consisted of researchers'-developed questionnaire consisting primarily of objective-type items which assessed knowledge of breast cancer, self-efficacy and breast cancer screening practices. Microsoft Excel 2007 and IBM PASW (SPSS) Version 22 were used to determine and confirm the results of this study.
Findings: With 62 of the targeted 70 nurses responding, PHC nurses had poor knowledge of breast cancer. There was no statistically significant relationship between levels of awareness of breast cancer and respondents' age, experience or professional qualification.
Implications for practice: Continuous education and training are required to increase nurses' levels of awareness of breast cancer. Organizational support and policies are essential in ensuring consistency and standardization of breast cancer screening practices. Replication of this study will provide greater insight into the phenomenon.

INTRODUCTION

Within recent times mortality rates associated with breast cancer have increased tremendously, ranking this disease the 5th leading cause of death, as well as the most common cancer among women worldwide (GLOBOCAN, 2012). Notably, at least 1:8 women will be diagnosed with breast cancer during their lifetime (National Institute of Health, 2014). In 2012, a total of 1.7 million new cases of breast cancer were identified across the globe, which represented about 12% of all new cancer cases and 25% of all cancers in women. Furthermore, there were 6.3 million women alive who had been diagnosed with breast cancer in the previous five years (World Cancer Research Fund International: WCRFI, 2013; GLOBOCAN, 2012). St. Vincent and the Grenadines (SVG) is a multi-island state in the Lesser Antilles located along the Windward Island chain (Ministry of Health Wellness and the Environment: MOHWE, 2007).Consisting of thirty-two (32) islands, inlets and cays, SVG spans a total land area of only 389km2, with a population of approximately 109, 903 inhabitants (2011 census, SVG Statistical Office, 2012; PAHO, 2012; MOHWE, 2007).

**Corresponding author: Philip Chimee Onuoha, PhD, RN.*
The UWI School of Nursing, Faculty of Medical Sciences, University of the West Indies, St Augustine, Trinidad and Tobago.

The gender distribution of the population in 2011 was almost equal, with males accounting for 50.5% (55, 473) and females for 49.5% (54. 430) (SVG, Statistical Office, 2012).

In SVG, Primary Health Care (PHC) services are offered through a network consisting of 39 health centres and five (5) district hospitals which are dispersed throughout nine (9) health districts (Health Information Unit: HIU, 2013). These PHC services include emergency care, medical care, maternal child health and family planning inclusive of immunizations and management and control of communicable and non-communicable diseases (HIU, 2013). On an average, each Health Centre is equipped to cater to a population of 2,900 with no one required to travel more than three (3) miles to access care (MOHWE, 2007).The composition of the health team within the majority of primary health care centres consist of a full-time District Nurse, a Nursing Assistant and a Community Health Aide as well as other district health team members such as District Medical Officer, Pharmacist, Nursing Supervisor, Family Nurse Practitioner and Environmental Health Officer. The Family Life Educator, Social worker, Nutrition Officer and other visiting staff provide support. The majority of health centres is staffed by a residing primary health care nurse (lives on site), who not only

provides services between 8am to 4pm on a daily basis, but also facilitates emergency coverage after 4pm (MOHWE, 2007).

During the period 2007-2011 one hundred and ten (110) new cases of breast cancer were identified here in SVG. Of this, females constituted 106 (96.3%), while a minute number of men (4 = 3.7%) were diagnosed within this time frame (HIU, 2012 & 2013). Throughout the duration of 2008-2012 there were a cumulative total of 4,197 deaths in SVG (HIU, 2013). The proportion of death among males was predominantly higher over this period, ranging from 52-55%, while female deaths constituted 45-48% of the cumulative deaths (HIU, 2013). Malignant neoplasm was the leading cause of death in the general population within this period, accounting for 15.3% (645) of the total deaths (HIU, 2013). This category was also the leading cause of death in males; the fourth leading cause of death among the total female population, and the leading cause of death in persons 45-64 years (HIU, 2013). Breast Cancer was the leading cause of death among females in this mortality group, accounting for 62 deaths (9.6%). There were no deaths among males due to breast cancer within this time frame.

Mammogram screening is offered at private as well as public facilities in SVG. A review of records at the radiology department of the Milton Cato Memorial Hospital, for the period May-September 2013 revealed that a total of 150 mammograms were performed. The majority of screening occurred in the 45-60 age range (55%), 36% among females 25-44 and 30% of mammograms in women above 60 years (MCMH, 2013).

Researchers found that those who were above 50, married and had a family history of disease more frequently engaged in screening activities than their counterparts (Chong *et al*., 2002; Ibrahim and Odunsanya 2009). In contrast, Mandanat and Merrill (2002) found that age was inversely related to breast cancer screening practices among Jordanian nurses, which they attributed to the fact that the younger nurses were more currently updated as continuing education is not required in Jordan. The practice of breast cancer screening is inconsistent and widely varied among nurses. A study conducted by Lawvere *et al*. (2004) in western New York found that while nurse practitioners (NPs) engage in breast screening, a notable variation existed with the approaches used. It was also discovered that while NPs utilize these methods, the age at which screening should commence was not agreed upon among respondents. It indicated that 80% of the 175 NPs reported that a CBE should begin at age 20, while about half reported baseline mammograms in average risk women should begin at age 35 (Lawvere *et al*., 2004).

Similar findings were discovered by McDonald, Saslow and Alciati (2004) in a review of literature on the performance and reporting of CBE among health professionals. It was noted that methods utilized by health professionals in the performance of CBE are not standardized and therate at which such practice was done varied among nurses. (Odusanya and Olumuyiwa, 2001, Tessaro *et al*. (1996)

Many nurses fail to teach BSE to their female clients and fewer regularly perform self-breast examination (Budden, 1998; Han *et al*., 1996). This trend was reported in Australia, (Ellis *et al*., 1990), and in USA (Hans *et al*., 1996)

Primary health care nurses can promote breast cancer screening among clients by modelling breast screening behaviours (Katapodi *et al*., 2002). While some studies show that BSE is performed to some extent by nurses (Chon *et al*., 2002; Alkhasawneh, 2007), other studies confirm that nur**ses,** who are role models for health promoting behaviours, often fail to adequately perform periodic BSE and mammography (Lee *et al*., 2010; Ibrahim and Odusanya, 2009).

The general consensus indicates that the practice of breast screening among nurses is not influenced by age (Ghanem *et al*., 2011; Lee *et al*., 2010; Ibrahim and Odusanya, 2009; Alkhasawneh, 2007). However, Chon *et al*. (2002), found that nurses who are older, particularly over 50 years, married or had a family history of breast cancer, more regularly engaged in breast cancer screening than their counterparts. Odusanya and Tayo, (2001) also confirm the practice of screening behaviours by nurses as more common among those who are older. In contrast Mandanat *et al*. (2002) found that such practices were more common among younger nurses. Professional qualification has also been identified as a barrier to breast cancer screening in several studies. Findings indicate that nurses who are trained in breast cancer screening are more likely to engage in such behaviours as well as those who are more advanced professionally (Soyer *et al*., 2007; Chong *et al*., 2002; Tessaro and Herman, 2000). On the other hand other studies show that screening practices are not influenced by professional qualifications (Ghanem *et al*., 2011; Lee *et al*., 2010; Ibrahim and Odusanya, 2009; Alkhasawneh, 2007).

Silva *et al*. (2009) found that nurses are more likely to perform BSE if they receive social and emotional support as well information on doing so. While, knowledge was not found to influence practice of BSE, it was identified as a principal barrier to breast cancer screening in a number of studies, in that nurses who are more aware of the risk factors as well as the procedures involved are more likely to engage in such practices (Ghanem *et al*., 2011; Ibrahim and Odusanya, 2009; Soyer *et al*., 2007; Chong *et al*., 2002; Odusanya and Tayo, 2001; Tessaro and Herman, 2000). Age and gender are considered primary risk factors in the development of breast cancer (NCI, 2014; ACS, 2013). According to statistics retrieved from the 2011 census, 49.5% of the cumulative population in SVG are females and of this, 29.5% (15, 034) are 40 years and above (SVG Statistical Office, 2012). This clearly shows that a significant proportion of the population is at risk for breast cancer if the known causative factors are applied.Moreover, the mortality of breast cancer in SVG has increased by at least 72.2% within the last five years (HIU, 2013).

Although empirical evidence indicates that early detection of breast cancer significantly reduces mortality (PAHO, 2014) many women do not receive breast cancer screening (ACS, 2014). Furthermore, many health professionals do not include the CBE as part of breast cancer screening practices (Grady

et al., 1996; Rimer *et al*., 1991) and methods of doing so are inconsistent (McDonald and Saslow, 2004).

The current burden of breast cancer in SVG signals the need for health promotion strategies for breast cancer screening practices; particularly as primary prevention measures are effective means of reducing the incidence, morbidity, and mortality of the disease(PAHO, 2014; Vogel, 2003). Primary care nurses because of their educational preparation, professional practice and ideal location as gate keepers in the health care system can promote breast cancer screening behaviours among their clients (Vogel, 2003; Houfek *et al*., 1999). This is necessary in order to increase their knowledge of breast cancer and early detection as well as to decrease their fears about screening and the threat of being diagnosed with cancer (Alkhasawneh, 2007; Vogel, 2003; Houfek *et al*., 1999). In light of all this, if PHC nurses are to fully maximize their roles in the drive toward breast cancer management and prevention;then assessment of their current screening practices is paramount. This is also necessary in order to ensure methods of screening are standardized across the country and that appropriate training is provided to nurses in order to sufficiently equip them to perform their roles in breast cancer screening (McDonald and Saslow, 2004).

This study therefore sought to assess the breast cancer screening practices of Primary Health Care Nurses (PHCNs) for female clients 40 years and older in St.Vincent and the Grenadines (SVG).

MATERIALS AND METHODS

Research Design

This study utilized a non-experimental, descriptive survey. Self-administered surveys were used to investigate PHCNs personal and professional screening practices as well as the barriers, interpersonal and situational influences which impacted on breast screening activities.

Population and Sample Selection

The population of interest for this study consisted of seventy (70) Registered Nurses (RNs) who wereat the time employed in Primary Health Care settings throughout the nine (9) health districts in SVG. As an inclusion criterion, only RNs who had been working within a primary health care setting for at least three months prior to the study were eligible to participate.

The following equation was used to determine the sample size: where Z = Z value, 1.96 for 95% confidence level; p = percentage picking a choice, expressed as decimal, in this case 0.5 used for sample size needed; and c = confidence interval, expressed as decimal 0.05) (http://www.surveysystem.com/ sample-size-formula.htm, 2012).

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

A sample of 59 was determined as necessary to achieve a 95% confidence level or a .05 margin of error, which required a response rate of 84.2%. Accordingly, participants were recruited from the proportionally throughout the nine health districts of SVG.

Data Collection Instrument

A four (4) partresearchers-developed questionnaire was utilized in this study. Participants' demographics were assessed in section one (1), knowledge of the risk factors and signs and symptoms in section 2; and the breast cancer screening frequency in section 3. The remaining areas of the questionnaire investigated participant's knowledge and self-efficacy regarding breast cancer screening. The number of items that make up each section ranges from 6 to 14. Pilot testing was done among eight (8) RNs who had recently been transferred from primary care settings. All eight pretest participants expressed full understanding of the concept of interest and indicated that the survey instructions were clear and questions easy to read. A few amendments were made following the piloting, specifically some grammatical corrections. They were not engaged in the main study.

Data Collection and Analysis

Data was collected over a two (2) week period between June to July (2014). Prior to the commencement of data collection, nurses were sensitized about the study at the monthly District Nurse's meeting during which invitation letters and consent forms were distributed. Nurses who chose to participate returned signed consent forms one week after receipt. The views of the PHCNs were analysed using t-test and ANOVA. The data were presented in percentages. A p-value less than 0.05 was considered statistically significant.

Ethical dimensions

This study was regarded risk free to participants. Permission to conduct the study was sought and obtained from the ethics committee, University of the West Indies, St. Augustine as well as the Institutional Review Board in SVG. Confidentiality and anonymity were assured by the use of a coded system on questionnaires and also during data analysis and by having participants deposit responses in sealed envelopes directly into a locked box accessible only by the researcher.

RESULTS

Demographics

The demographical characteristics of the study participants are summarized in Table 1. As can be noted in this Table, 93.5 percent of the respondents were females (*n= 58*) The age of participants ranged from 30-59 years, with the largest percentage of the respondents, 69.4% (n= 38) being thirty-nine (39) years or younger. Of the 62 registered nurses (54.8%) were single trained Registered Nurses, while the remaining 45.2% (*n*= 28) were also Certified Midwives.

Table 1. Professional Qualification of Respondents by Age Group and Sex (N=62)

GENDER	AGE GROUP	PROFESSIONAL QUALIFICATION				TOTAL	
		Registered Nurse		Midwife			
		n	%	*n*	%	*n*	%
Male	Less than 30	1	1.6	0	0.0	1	1.6
	30 - 39	1	1.6	1	1.6	2	3.2
	40 - 49	1	1.6	0	0.0	1	1.6
	Total	**3**	**4.8**	**1**	**1.6**	**4**	**6.5**
Female	Less than 30	3	4.8	1	1.6	4	6.5
	30 - 39	23	37.1	13	21.0	36	58.1
	40 - 49	4	6.5	12	19.4	16	25.8
	50 - 59	1	1.6	1	1.6	2	3.2
	Total	**31**	**50**	**27**	**43.5**	**58**	**93.5**
Total	Less than 30	4	6.5	1	1.6	5	8.1
	30 - 39	24	38.7	14	22.6	38	61.3
	40 - 49	5	8.1	12	19.4	17	27.4
	50 - 59	1	1.6	1	1.6	2	3.2
	Total	**34**	**54.8**	**28**	**45.2**	**62**	**100**

Table 2. Knowledge of Breast Cancer Risk Factors and Signs and Symptoms (N=62)

RISK FACTORS	Correct		Incorrect		Not Sure	
	n	%	n	%	n	%
Increasing Age is the primary risk factor for breast cancer	38	61	18	29	6	10
Breast cancer risk is higher among women with a family history of this disease	61	98	1	2	0	0
Breastfeeding may slightly lower breast cancer risk	44	71	10	16	8	13
Alcohol consumption may increase a person's chances of breast caner	33	53	19	30	10	16
Being overweight or obese after menopause increases breast cancer risk	36	58	15	24	11	17
Antiperspirants increase the risk of breast cancer	28	45	18	29	16	26
Bras cause breast cancer by obstructing lymph flow	35	56	8	12	19	30
Breast implants increase the risk of breast cancer	7	11	41	66	14	23
Nurses on a night shift may have an increased risk of developing breast cancer	4	6	45	73	13	21
Early menarche or late onset of menopause increase risk of breast cancer	24	39	23	37	15	24
Black women are slightly more likely to develop breast cancer than whites	32	52	17	27	13	21
Injury to the breast increases a woman's chances of breast cancer	45	72	11	18	6	10
Advancing age of first child birth increases risk for breast cancer	25	40	21	34	16	26
Smoking increases risk of breast cancer	55	89	6	10	1	1
SIGNS & SYMPTOMS						
The most common sign/symptom of breast cancer is a painless lump or mass	60	97	0	0	2	3
The edges of the lump or mass in breast Cancer is usually with irregular	44	55	6	24	12	21
Swelling of all or part of the breast with or without a lump	34	57	15	32	13	11
Pain to the nipple with or without a discharge	35	57	20	32	7	11
Discharge from the nipple other than breast milk	53	85	6	10	3	5
Discoloration of the breasts	52	75	8	10	2	15
Scaliness or thickening of the nipples	46	84	6	13	9	3

The highest level of educational preparation was the bachelor's degree which was attained by 3.2% of respondents; the majority of participants (95.2%) received educational preparation at the certificate level. Regarding clinical experience, 14.5% (*n*=9) had five (5) years or less; 32.3% and 30.6% had 6-10 and 11-15 years respectively, while 22.6% of respondents had 15 years or more. A large number of respondents (*n*= 24) had been employed within their current primary healthcare setting for 4-6 years (38.7%), 25.8% (*n*= 16) worked for more than 10 years, while the minority of respondents (*n*= 8) had less than a year in their current posts.

Knowledge of Breast Cancer

Knowledge of Risk Factors

Table 2 summarizes participants' responses to questions which assessed knowledge of risk factors. As noted in this display, thirty eight (*n*=38) participants (61%) identified increasing age as a risk factor, and 98 (78%) recognized that familial history is associated with a higher risk of the disease. Likewise, 55 respondents (89 %) knew that smoking has been shown to contribute to the onset of the disease, however only 6% recognized that nurses who work on night shift are at an increased risk for the disease.

Conversely, more than half of the respondents (66%) acknowledged the use of breast implants as a predisposing factor to the disease. Similarly, 72% assumed that injury to the breast increases one's risk, while 52% believe that black women have a higher risk than whites. The least recognized risk factors were early menarche or late onset of menopause and advanced age at first childbirth. Only 39% and 40% of participants respectively, were able to identify these as risks.

Knowledge of Signs and Symptoms

As shown in Table 2, in regards to the Signs and Symptoms of the disease the majority of respondents recognized a painless lump or mass as the most common manifestation of breast cancer. Two symptoms were acknowledged by just over 50% of the population, specifically swelling of all or part of the breast with or without lump (55%) and nipple pain with or without discharge (57%).

Knowledge Regarding Breast Cancer Screening

Respondents were asked to indicate the age at which breast cancer screening will be recommended for clients. As can be seen in Table 3, the majority of respondents (61.3%) identified age 20 as the point at which the use of the Clinical Breast Exam (CBE) as a screening method should begin; while just under a quarter of respondents (24.2%) identified age 30. Similarly, as most respondents (90.3%) believed that the Breast Self-Examination (BSE) should commence at age 20, while the majority (87.1%) identified age 40 as the average age to begin mammogram screening.

knowledge is noted to (a) age (F=1.254, p-value=0.299), (b) professional experience (F=0.420, p-value=0.739) and (c) the nurses' qualification (t=0.225, p-value=0.823).

DISCUSSION

Results indicate that PHCNs in SVG have poor knowledge as it relates to all aspects of breast cancer assessed; specifically the risk factors, signs and symptoms and screening recommendations. The low knowledge scores may be related to the structure of the questionnaire which included 'not sure' as an option. In the absence of this option, participants may have been forced to select one of the other two responses being 'Yes or No' which may have had a positive impact on the results. Nevertheless, the low knowledge scores identified in this study are consistent with those of other studies that discovered that nurses had limited knowledge of breast cancer. In the review of literature, while some studies conducted among nurses showed satisfactory levels of knowledge as it relates to breast cancer (Oluwatosin, 2012; Lawvere, *et al*., 2004; Odusanya and Olumuyiwa, 2001; Tessaro *et al*., 1996), other reports, particularly from developing countries indicate

Table 3. Recommended Age for Breast Cancer Screening (N=62)

METHOD OF SCREENING	20 yrs		30 yrs		40 yrs		50 yrs		> 50 yrs	
	n	%	n	%	n	%	n	%	n	%
CBE	38	61.3	15	24.2	8	12.9	1	1.6	0	0
BSE	57	91.9	2	3.2	3	4.8	0	0	0	0
Mammogram	0	0	2	3.2	56	90.3	4	6.5	0	0

Table 4. Frequency of Performance for CBE and BSE (N=62)

Frequency of Breast Examination	How often should a BSE be performed?		How often should a CBE be performed?	
	n	Percent (%)	*n*	Percent (%)
Daily	11	18	2	3
Weekly	6	10	2	3
Monthly	42	68	15	24
Annually	1	2	22	36
Biannually	0	0	6	10
Every 2 Years	0	0	3	5
As necessary	1	2	12	19
Not Sure	1	2	0	0
Total	62	100	62	100

Respondents Knowledge of Breast Cancer screening frequency

Table 4 depicts participants' responses to questions asked about the frequency of Clinical Breast Examination (CBE) and BSE performance. Forty-two (42) respondents (68%) knew that BSE is performed monthly and 69.4% knew the correct timing which is a few days to a week after menstruation.

For frequency of CBE, as seen in Table 4 above, 22 respondents (36%) indicated annually while 15 (24%) suggested the CBE be done on a monthly basis. Another six respondents (10%) also suggested twice per year, while 12 individuals (19%) stated a CBE should be done as necessary. One-way ANOVA and independent samples t-test were done to examine whether the PHCNs' knowledge about breast cancer among PHCNs differ by age, professional experience and qualification. These two statistical tests, revealed that

inadequate knowledge and awareness of this disease among nurses (Ghanem *et al*., 2011; Ibrahim and Odusanya, 2009; Ahmed *et al*., 2006). Ibrahim and Odusanya (2009) in a similar study reported that only 43% of 144 nurses had good knowledge scores of breast cancer and associated risks. Likewise, low levels of knowledge regarding breast cancer was found by Ahmed *et al*. (2006) in a cross sectional survey among 609 RNs within various public and private hospitals in Pakistan. Only 35% of respondents demonstrated good knowledge scores (Ahmed *et al*., 2006). These findings are congruent with that found by Alkhasawneh (2007) in a study among Jordanian nurses (*n*=395). The researcher found that nurses in Jordan have low means of knowledge about early detection of breast cancer (Alkhasawneh, 2007). The findings of this study also show that there is no statistically significant relationship between levels of knowledge/awareness of breast cancer and respondents' age, professional experience or qualification. Notwithstanding previous studies have

established that rates at which nurses instruct clients about BSE or perform CBE are influenced by age, as the older women more frequently engaged in such activities; and professional qualifications, in that nurses who are more professionally advanced tend to participate more in breast screening activities than their younger counterparts (Ibrahim and Odusanya, 2009). In contrast, Mandanat and Merrill (2002) found that age was inversely related to breast cancer screening practices among Jordanian nurses, which they attributed to the fact that the younger nurses were more currently updated as continuing education is not required in Jordan.

Conclusion

This study sought to explore the knowledge, self-efficacy and breast cancer screening practices of PHCNs for female clients 40 years and older in St. Vincent and the Grenadines. Data obtained via self- reported surveys and responses from 62 respondents were analysed. Results indicate that PHCNs in SVG have poor knowledge as it relates to the aspects of breast cancer assessed; specifically the risk factors, signs and symptoms and screening recommendations. There was no statistically significant relationship between levels of knowledge/awareness of breast cancer and respondents' age, professional experience or qualification.

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