



Knowledge, Attitudes, Behavior, and Practices of Self-Breast Examination in Jalisco, Mexico

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Abstract

The importance of self-breast examination to identify early signs of breast cancer has been widely discussed in scientific literature. We conducted a cross-sectional survey of women aged 18 years and over ($n = 547$) living in urban and rural areas in the State of Jalisco, Mexico. Survey questions included measures on knowledge, attitudes, behaviors, and practices related to self-breast examination. We compared these measures between women living in urban and rural areas and women aged 18–39 years and 40+ years. Using *t*-test, we tested the significance of these differentials. Our results indicate that there is no significant difference in knowledge, attitudes, behavior, and practices regarding self-breast examination between women living in urban and in rural areas of Jalisco. However, we found some difference in these measures between women in 18–39 years and 40+ years. While the State of Jalisco has taken significant steps toward promoting significance of cancer prevention, further attention to women in the older cohort is recommended.

Keywords Self-breast examination · Cancer screening · Knowledge · Attitudes · Behavior · Urban · Rural · Mexico

Introduction

In recent years, cancer has become a prevalent topic within health practice with research and prevention services ever more readily available worldwide. Mexico, a country unequally affected by cancer, continues developing new research and care strategies due to continual changes in rates and

accessibility throughout the country [1]. Among the various cancer types affecting individuals, breast cancer continues to increasingly affect thousands of women who live in Mexico and is rapidly becoming the leading cause of death [2]. In Mexico alone, the incidence of breast cancer mortality in 2016 was 11.2 age-adjusted per 100,000 females [3]. In addition, a study conducted in Mexico found that most women had little knowledge about breast cancer and self-breast exams, but were highly aware of the clinical signs, symptoms, and treatment [4]. These reports also indicate that Mexican women are heading in the right direction when it comes to being aware of breast cancer and its prevention practices [5].

Self-breast examinations (SBE) can help detect any mass or abnormality in the breast area and is the foremost preventative practice for women. It is also important to note that current evidence allows to affirm that breast cancer does not affect any specific age or race, and information is always available at the healthcare facilities [6]. Both SBE and annual mammograms are recommended to avoid any oversight of breast cancer and is widely accepted that screening programs using mammograms can reduce mortality rates due to breast cancer [7]. However, women's health services in Mexico typically are underutilized due to lack of knowledge, embarrassment, and cultural ideologies [8]. Since breast cancer is the leading cause of death from cancer among women in Mexico and the

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second leading cause of death among women between the ages of 30 and 54 years old [9], it is relevant to normalize the practice of SBE.

Early cancer detection using SBE along with bi-annual mammograms are the most effective methods of timely detection of new and recurrent breast cancer¹ [11]. In Mexico, breast cancer has been understood as a cancer that mostly affects the higher socioeconomic class, while cervical cancer is believed to primarily affect the lower socioeconomic class [2]. This is partly due to the idea that higher economic status citizens endure more stress and citizens from the lower socioeconomic status lack access to healthcare. This ideology, of course, has since changed with developments emerging within the healthcare system. In 2003, the Mexican government developed a healthcare coverage service known as *Seguro Popular*, which provides healthcare to those households which are financially unable to afford private healthcare or who lack state health services from formal jobs. A major part of this program, prior to its implementation, focused on women's health that later contributed to the reform of the new healthcare system. This included services offered in ambulatory units and third-level hospitals of the Ministry of Health, and a package of 57 costly interventions which includes treatment for all types of cancer in children, cervical and breast cancer for women, and human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) [12].

According to Knaul et al. [2], there were an estimated 6000 new cases of breast cancer in 1990, while 16,500 cases are projected to appear by 2020 in Mexico. With this information, there is also the notion that Mexican women have believed that cancer was fatal, and cancer prevention was useless [13]. This belief and ideology partly have been due to a various array of related barriers that pertain toward the individual and their current situations. Economic barriers, lack of knowledge, attitudes, and beliefs such as embarrassment, cultural beliefs toward breast cancer, lack of transportation, monetary resources, insufficient healthcare coverage, and lower education have prevented women from seeking resources to avoid breast cancer. Along with these barriers, urban and rural areas of Mexico, specifically within the State of Jalisco, play a role in breast cancer awareness and prevention. The urban areas of Jalisco have been known to be better equipped with medical facilities that have access to technology and information. Rural area residents, however, experience a lack in medical services due in part to the wide dispersion of rural localities in the territory and in general are considered to have a lower socioeconomic status in comparison to urban area residents. In addition, rural areas do not have easy access to mammograms due to lack of medical equipment and trained healthcare

personnel. The shortage of healthcare personnel and services also affect rural residents from accessing information on preventing any type of illnesses, including breast cancer. Furthermore, most women and families require transportation, financial assistance, and other contributing factors that prevent them from accessing care. Higher mortality rates can be avoided in rural areas if residents have access to medical technology and mobile mammogram units. Early-onset and effects of breast cancer can be detected with SBE and quality mammogram [14]; thus, increase in incidence of breast cancer is projected with upgrades to modern technology in Mexico within the private and public sectors.

The goal of this study was to measure and explore knowledge, attitudes, and beliefs about breast cancer and practices (KABP) of SBE through a survey applied to women aged 18 years and older living in the State of Jalisco, Mexico.

Methodology

We conducted a cross-sectional survey measuring different components of KABP among women aged 18 years and over who were living in urban and rural areas of Jalisco, Mexico. The survey was conducted in March–April, 2019. According to criteria from the National Institute of Statistics and Geography (INEGI) and the National Population Council (CONAPO), 11 municipalities (counties) from the socioeconomic regions of Lagunas and Valles in the State of Jalisco were selected for convenience, whose territorial and population extension shared similar characteristics. Municipalities were selected based on different socioeconomic regions of Jalisco with respondents of comparable socio-demographic characteristics.

The survey included a total of 132 questions grouped into 17 categories, aimed at capturing women's KABP regarding detection and SBE. The survey questions included in our study were indexes that have been validated in other studies [15–17]. In order to carry out the surveys at the selected municipalities, a group of medical interns were recruited who have the knowledge of the local communities for proper implementation of the survey. In addition, surveyors received training on purpose of the study, study location, and recruitment strategies, prior to the implementation of the study.

Inclusion criteria were women (a) aged 18+ years and older, (b) living in the selected municipalities, and (c) consented voluntary participation. However, in the selection process, women survivors from other forms of cancer were excluded in the present study. Selected women were invited to participate in the study at public spaces in each municipality, central squares, and streets adjacent to them. In total, the sample size collected resulted in 550 surveys.

Based on the 132 items of the survey, eight indexes were created in order to compare KABP about breast cancer and

¹ According to Secretaria de Salud, bi-annual mammograms are recommended for all healthy women aged 40–69 years and mammograms are not recommended for women below 40 years [10].

Table 1 Profile of all respondents

Characteristics	<i>n</i>	%
Age	547	
18–39	426	77.90
40+	121	22.10
Location of residence	547	
Rural	273	49.90
Urban	274	50.10
Education	542	
Illiterate	4	0.70
Primary	55	10.10
Secondary	168	30.70
Upper middle	194	35.30
Bachelor	114	20.80
Post-graduate	7	1.30
Occupation	543	
Housewife	204	37.30
Student	84	15.40
Dependent worker	184	33.60
Freelance worker	71	13
Marital status	545	
Single	182	33.30
Married	252	46.10
Free union	74	13.50
Divorced	21	3.80
Widow	16	2.90

SBE according to location of residence in either urban or rural areas and age of the respondent, 18–39 or 40+: knowledge about breast cancer (KBC), knowledge about breast cancer screening (KCS), frequency and timing of self-breast examination (F&T), reasons for self-breast examination (RfSBE), characteristics of women recommended highly for SBE attitudes (CoW), strategies or steps recommended for SBE (SoS), barriers to examination (BtE), and attitudes toward SBE (ASBE). Each index was calculated on an additive scale; higher value represents higher representation of the characteristic that represents the index. For example, a higher value in

BtE index shows more barriers and a higher CoW index reflects better understanding of the characteristics of respondents who are more likely to be performing SBE and so on. Thus, descriptive statistical analysis was performed to obtain frequencies and percentages in relation to the characteristics of the participants. Using *t*-test, we compared the 8 indexes between two stratified groups, area of residence (urban or rural), and age group (18–39 or 40+). The confidence level and significance was measured at 95% ($p < 0.05$). IBM SPSS® version 26 for Windows program was used for this analysis.

The study was evaluated and approved by the Research Ethics Committee and the Research Committee of Health Sciences University Center of the University of Guadalajara in collaboration with the University of Texas at San Antonio (IRB#: 19-071).

Results

Table 1 shows the background characteristics of the respondents. Approximately, over three-fourths of the respondents were in the age group 18–39 years with an average age of 32 years.

About half of the respondents lived in rural areas, upper middle-level of education was most commonly reported, and a higher percentage of the respondents were primarily engaged in household chores as compared to other occupational categories.

Descriptive analysis of KABP indicators shows mean scores and minimum and maximum values of these measures (see Table 2).

There were four indicators that showed higher mean values. These include attitudes toward SBE (ASBE), knowledge about breast cancer (KBC), reasons for SBE (RfSBEs), and frequency and timing of SBE (F&T).

Table 3 shows the mean values of all the indicators by age groups (18–39 vs. 40+) and by location of residence (urban vs. rural).

Overall, results from this table showed that there are no major significant differences in indicators between age groups

Table 2 Overall mean for indicators

Indicator	<i>n</i>	Mean	Range
Knowledge about breast cancer (KBC)	537	14.51	6.00–19.00
Knowledge about breast cancer screening (KCS)	542	2.76	0.00–5.00
Frequency and timing (F&T)	510	10.13	2.00–15.00
Reasons for SBEs (RfSBEs)	542	13.1	2.00–14.00
Characteristics of women (CoW)	543	6.64	1.00–9.00
Strategies or steps of self-breast exam (SoS)	544	4.85	0.00–6.00
Barriers to SBE (BtE)	542	9.46	0.00–14.00
Attitudes toward self-breast examination (ASBE)	546	16.88	0.00–24.00

Table 3 Mean of indicators by age and location of residence

	Location		<i>p</i> value	Age		<i>p</i> value
	Rural	Urban		18–39	40+	
Knowledge about breast cancer (KBC)	14.46	14.56	0.636	14.47	14.68	0.391
Knowledge about breast cancer screening (KCS)	2.74	2.8	0.443	2.75	2.82	0.44
Frequency and timing (F&T)	10.14	10.13	0.936	10.11	10.22	0.668
Reasons for SBEs (RfSBEs)	13.1	13.09	0.975	13.09	13.13	0.854
Characteristics of women (CoW)	6.55	6.73	0.266	6.64	6.65	0.927
Strategies or steps of self-breast exam (SoS)	4.81	4.89	0.312	4.89	4.69	0.033
Barriers to SBE (BtE)	9.37	9.54	0.479	9.56	9.07	0.096
Attitudes toward self-breast examination (ASBE)	16.83	16.93	0.767	16.92	16.72	0.595

and location of residence except for one indicator. Strategies or steps recommended for SBE by age group, younger women, reported higher knowledge regarding the recommendations on SBE compared to strategies on SBE among women who were in the older age groups ($p < 0.05$).

Discussion

Findings from our study showed that the State of Jalisco has made significant progress in reducing barriers and promoting strategies related to SBE. This is a positive stride for Mexico compared to previous research findings indicating a significant lack of knowledge about breast cancer and SBEs. The findings of the present study indicate that recent efforts from local and federal health authorities significantly impacted the younger population between the ages of 18 and 39 years old in promoting the importance of early screening. We also found that there are no significant differences in KABP between urban and rural women, which is encouraging as it reflects that the information and sensitization about breast cancer detection have reached all the areas of the State irrespective of the location of residence. With this information, it is hopeful that younger women will be better knowledgeable about breast cancer and SBE. These results also showed that there is higher understanding among women regarding breast cancer overall, in particular, the timing and frequency of examination, the purpose and reasons behind SBE, and the attitudes towards SBE.

In general, when it comes to knowledge, attitudes, and barriers toward SBE, we did not find any significance between 18–39 and 40+ subgroups of the population. Even though there are no significant differences for knowledge, attitudes, and barriers, the strategies regarding SBEs were found to be significantly different in the age groups. In particular, younger women reported having better skills and strategies in conducting SBEs compared to the 40+ group. One could attribute this advantage among younger cohorts to the wider

accessibility of social media messages on cancer prevention efforts in Mexico. This also indicates that for women who are 40+, efforts need to be more focused in improving skills and strategies for SBE given the fact that these women in this age group tend to be at a greater risk for breast cancer compared to their younger counterparts.

Our study results will help decision-makers consider what, if any, interventions may be needed to attain improvements in breast cancer knowledge and how women can best learn practices of SBE. In addition, continuation of health promotion and breast cancer education to women living in rural and urban areas must remain a priority. Overall, there are opportunities for developing interventions focused on the older population to improve their skills in SBE in Mexico.

Data Availability Data used for this study are available upon request.

Code Availability None

Declarations

Competing Interests The authors declare no competing interests.

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