

Knowledge, Attitudes, and Practices by Women in Cartagena Regarding Breast Self-Examination

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Abstract

Breast self-examination (BSE), especially when adopted by vulnerable populations, serves as a vital mechanism for the timely detection of breast abnormalities indicative of cancer. As a result, this decreases the public health burden associated with treatment at advanced stages. Therefore, assessing knowledge, attitudes, and practices (KAP) regarding this simple early detection method is a priority. This study examines the relationship between KAP concerning BSE among women in Cartagena, Colombia. A cross-sectional correlational study was conducted with 322 women attending a healthcare facility. Data were gathered using two tools: a sociodemographic profile and a KAP questionnaire. Results showed that most participants were aged 20–29 years (46.3%), cohabiting (66.1%), and had completed secondary education (44.4%). Concerning knowledge, 50.0% demonstrated inadequate levels. Attitudes were rated as fair (49.4%) or deficient (44.1%), and practices were insufficient in 59.9% of participants. Statistically significant correlations were recorded between knowledge and attitudes ($P < 0.01$), knowledge and practices ($P < 0.01$), and attitudes and practices ($P < 0.01$). The findings reveal significant gaps in KAP regarding BSE, heightening the risk of delayed diagnosis. The significant correlations confirm that knowledge is a crucial factor in enhancing preventive behaviors. We conclude that women's knowledge levels are suboptimal and that the domains of knowledge and practice are interconnected and linked to demographic factors. Consequently, nursing professionals should spearhead culturally tailored educational interventions to strengthen early detection and decrease breast cancer morbidity. Recommendations include implementing educational programs, training healthcare personnel, and integrating primary care services with screening initiatives.

Keywords: attitudes and practice in health, breast self-examination (BSE), knowledge, primary health care

Abstrak

Pengetahuan, Sikap, dan Perilaku Wanita di Cartagena Terkait Pemeriksaan Payudara Sendiri (SADARI). Pemeriksaan Payudara Sendiri (SADARI), khususnya jika diterapkan oleh kelompok rentan, berperan sebagai mekanisme penting untuk deteksi dini abnormalitas payudara yang mengindikasikan kanker. Upaya ini dapat menurunkan beban kesehatan masyarakat yang berkaitan dengan pengobatan pada stadium lanjut. Oleh karena itu, penilaian terhadap Pengetahuan, Sikap, dan Perilaku (PSP) mengenai metode deteksi dini yang sederhana ini merupakan sebuah prioritas. Penelitian ini bertujuan untuk menganalisis hubungan antara PSP terkait SADARI pada wanita di Cartagena, Kolombia. Desain penelitian yang digunakan adalah cross-sectional correlational yang melibatkan 322 wanita di sebuah fasilitas pelayanan kesehatan. Pengumpulan data dilakukan menggunakan dua instrumen: kuesioner profil sosiodemografi dan kuesioner PSP. Hasil penelitian menunjukkan mayoritas partisipan berusia 20–29 tahun (46,3%), berstatus tinggal bersama (66,1%), dan berpendidikan sekolah menengah (44,4%). Pada tingkat PSP, sebanyak 50,0% partisipan menunjukkan tingkat pengetahuan yang tidak adekuat, 44,1% sikap yang kurang, serta 59,9% perilaku yang tidak memadai. Korelasi yang signifikan secara statistik ditemukan antara pengetahuan dan sikap ($P < 0,01$), pengetahuan dan perilaku ($P < 0,01$), serta sikap dan perilaku ($P < 0,01$). Temuan ini menunjukkan adanya kesenjangan yang signifikan pada PSP terkait SADARI, yang dapat meningkatkan risiko keterlambatan diagnosis. Korelasi signifikan tersebut menegaskan bahwa pengetahuan merupakan faktor krusial dalam meningkatkan perilaku preventif. Disimpulkan bahwa tingkat pengetahuan wanita masih suboptimal, serta domain pengetahuan dan perilaku saling berhubungan satu sama lain dan berkaitan dengan faktor demografi. Oleh karena itu, tenaga keperawatan perlu menginisiasi intervensi edukasi yang disesuaikan dengan budaya setempat guna memperkuat upaya deteksi dini dan menurunkan morbiditas kanker payudara. Rekomendasi penelitian ini meliputi implementasi program edukasi, pelatihan bagi tenaga kesehatan, serta integrasi layanan kesehatan primer dengan inisiatif skrining kesehatan.

Kata Kunci: pelayanan kesehatan primer, pemeriksaan payudara sendiri (SADARI), pengetahuan, sikap dan perilaku kesehatan

Introduction

Breast cancer is a chronic illness that presents significant political, economic, and healthcare challenges, greatly affecting public health due to its links with women's reproductive patterns (e.g., menarche, parity, childbirth) and associated risk factors (Pastuña & Sanhueza, 2021). Nonetheless, diagnosis, detection, and treatment are shaped by an individual's knowledge interacting with social factors, such as attitudes, practices, previous experiences, and the emotional aspects of those affected or at risk of the disease (Vargas & Font-Guiteras, 2022).

Breast cancer is characterized by the rapid proliferation of breast cells, particularly in the glandular tissue and milk ducts. Common histological types include ductal carcinoma in situ, invasive ductal carcinoma, invasive lobular carcinoma, and inflammatory breast cancer (American Cancer Society, 2022). Primary risk factors include age over 50 years, family history of cancer, radiation exposure, BRCA1 and BRCA2 gene mutations, early menarche, late menopause, obesity, and a sedentary lifestyle (Méndez et al., 2024).

Globally, breast cancer claimed 41,681 lives in 2020, making it a leading cause of cancer death. In South America, 150,288 new cases were reported; Argentina experienced a 14.7% increase in incidence, followed by Colombia with a 10.3% rise (Wiesner-Ceballos et al., 2020; Merino et al., 2020). In Colombia, breast cancer is the most common recurrent neoplasm (Merino et al., 2020). According to the High-Cost Account (Cuenta de Alto Costo [CAC]), by August 2023, there were 107,181 prevalent cases and 9,716 new cases. Of these, 91.67% were invasive, and 37.51% were diagnosed at stage II. Demographically, 15.55% of cases affected older adults, and 1.32% were recorded in Afro-Colombian or Indigenous populations (Solano-Dazzarola et al., 2023).

Breast cancer is a complex, multi-causal pathology that profoundly impacts daily life, often causing anxiety, fear, depression, and impaired self-image (Picazo et al., 2021). Timely detection through breast self-examination (BSE) facilitates early diagnosis and primary clinical intervention. For BSE to be effective, women must know their own bodies (familiarity with normal breast texture and shape), understand proper examination technique, and recognize disease indicators. This knowledge is intrinsically linked to the attitudes women develop toward performing self-examinations (Reyes-Chacón & López-Arellanez, 2021).

Documented barriers to regular BSE include disorientation regarding the exam's importance, lack of knowledge on correct technique, and psychological factors such as fear, anxiety, and negative attitudes. Evidence suggests that greater information availability is associated with a higher propensity for correct and consistent practice (Lera et al., 2020). Various studies indicate that regular BSE is associated with earlier tumor detection and improved survival rates, particularly in populations with limited healthcare access. In India, 59.4% of women were aware of BSE, but only 21% practiced it regularly; barriers included lack of knowledge, asymptomatic perception, shame, and discomfort (Gore et al., 2022). Similarly, in Indonesia, while 72.5% of women intended to perform BSE, only 7.8% practiced it weekly, hindered by lack of knowledge, negative attitudes, and low confidence in the technique (Dewi et al., 2022).

These findings highlight the need to emphasize BSE benefits. Factors such as empowerment and health education enable women to play an active role in detecting abnormal changes. Acceptance of cultural and social factors significantly influences self-care; breaking taboos helps raise awareness and encourages timely health-care seeking, thereby

reducing breast cancer mortality (Zapata, 2021).

There is a close relationship among knowledge, attitudes, and practices regarding BSE, though this relationship is multifaceted and influenced by geographical context. Geographical location affects information accessibility and cultural predisposition. In urban areas, women typically have better access to educational resources and awareness campaigns. Conversely, in rural areas, limited healthcare and educational infrastructure restrict BSE knowledge. For example, in certain African countries, awareness of breast cancer exists, yet practice rates remain low due to inadequate knowledge of technique and adverse attitudes. Consequently, medical attention is often sought at late stages when treatment options are limited (Apatić & Lovrić, 2023).

Despite existing literature, specific data revealing the relationship among these variables in Cartagena, Colombia, remains underexplored (Mekonnen, 2020). Addressing this gap enables healthcare personnel to design measures to improve the knowledge, awareness, and attitudes toward BSE. When combined with other detection methods, improved BSE practices can aid timely pathology detection, alleviate disease burden, and preserve quality of life.

At the level of science and health practices, this research supports the integration of continuous community education on preventive practices to reduce inequality gaps and ensure equitable access to evidence-based information. This includes implementing digital or multilingual resources for cancer prevention. Ultimately, scientific research and inter-sectoral collaboration facilitate the formulation of health programs and public policies. The objective of this study is to analyze the relationship between knowledge, attitudes, and practices regarding breast self-examination among women attending a primary care health institution in Cartagena, Colombia.

Methods

A cross-sectional correlational study was conducted with 322 women using non-probabilistic con-

venience sampling from January to October 2022. Participants met the inclusion criteria: being women attending the selected healthcare institution, aged 20 years or older, and without a diagnosis of breast cancer. The exclusion criteria included women with physical or mental limitations that prevented them from participating in the study. Two research instruments were used: 1) A socio-demographic form composed of 8 items related to aspects such as age, marital status, educational level, and socioeconomic stratum, with a Cronbach's alpha of 0.85. 2) The KAP (Knowledge, Attitudes, and Practices) questionnaire, which evaluates three aspects, with cohort score ranges per dimension defined as follows: Knowledge: Bad knowledge: 0-2 answers; Regular knowledge: 3-4 answers; Good knowledge: 5-6 answers. Attitudes: Bad attitudes: 0-5 answers; Regular attitudes: 6-9 answers; Good attitudes: 10-13 answers. Practices: Bad practices: 0-3 answers; Regular practices: 4-6 answers; Good Practices: 7-9 answers. Cronbach's alpha for the KAP instrument ranges between 0.59 and 0.68 (Castillo et al., 2016). For the purposes of the present study in Cartagena, Cronbach's alpha was 0.88 (Ueki-Carrasco, 2023).

The data analysis was conducted using frequency and percentage distributions to describe the sociodemographic variables. To evaluate associations between variables, Kendall's Tau-b and Spearman's Rho correlation coefficients were calculated, considering a p value < 0.05 as statistically significant. The combined application of both correlation measures was justified by the ordinal nature of the variables analyzed and the non-normal distribution of the data. The dimensions of knowledge, attitudes, and practices, as well as most sociodemographic variables, were measured using ordinal scales with limited categories and unequal group sizes, which violates the assumptions required for parametric analyses. In this context, Spearman's Rho coefficient allowed the estimation of monotonic associations between ordinal variables without assuming normality or linearity, providing a robust measure of the strength and direction of the relationships among the dimensions of the KAP

model. Complementarily, Kendall's Tau-b coefficient was used due to the high presence of tied ranks, offering a more conservative and stable estimation by adjusting for ties and asymmetric distributions. Additionally, the Kruskal-Wallis test was required to compare the statistical differences observed in the sociodemographic variables (age, marital status, socioeconomic status) in relation to the KAP scores. Ethically, the study was based on Resolution 8430 of 1993 and classified as minimal risk research. The project was approved by the Research Committee of the Faculty of Nursing under record No. 02-CIFE-2021.

Results

Table 1 shows the sociodemographic profile of the participants indicates that the majority were aged 20 to 29 years (46.3%). Most participants were cohabiting (66.1%), completed secondary education (44.4%), and were affiliated with the subsidized health security system (82.6%). Socioeconomically, 96.0% belonged to Stratum 1. Regarding occupation, 67.4% were homemakers, 12.7% were employees, and 11.2% were self-employed. Household income was less than one minimum wage for 89.8% of participants, and the most common family configuration was nuclear (75.8%).

Figure 1 presents the results for the knowledge, attitudes, and practices variables. Regarding knowledge, deficient (50.0%) and fair (47.2%) levels prevailed. When analyzing specific items within this dimension, 57.8% of participants acknowledged knowing how to perform self-examination. Additionally, 86.6% of women knew which population should perform self-examination, while 8.4% specifically identified females aged 20 years and older as the target group. Attitudes toward breast self-examination were pre-dominantly fair (49.4%) and negative (44.1%); only 6.5% demonstrated positive attitudes. Barriers influencing the decision to perform the exam included religious beliefs (27.3%),

the belief that examination is sinful (25.8%), lack of time (25.5%), laziness (21.1%), perceived lack

of importance (16.1%), and forgetfulness (14.6%). These factors hinder the adoption of health-promoting behaviors, indicating that sociocultural factors, previous behaviors, and situational influences limit the development of positive attitudes among the women attending the institution.

Regarding practice, 59.9% of women demonstrated inadequate practices, while 21.1% and 18.9% demonstrated adequate and fair practices, respectively. Most women reported receiving explanations on how to perform self-examination during medical consultations (58.1%). Additionally, 91.6% reported no family history of breast cancer, and 94.4% reported no personal history of breast alterations. However, some participants indicated the presence of masses or cysts (2.2%) and pain (1.2%).

Table 2 shows the correlation analysis between knowledge, attitudes, and practices regarding breast self-examination revealing statistically significant relationships between knowledge and attitudes ($p < .01$), knowledge and practices ($p < .01$), and attitudes and practices ($p < .01$).

Table 3 shows the association between KAP dimensions and sociodemographic variables, knowledge levels showed significant correlations ($p < 0.05$) with secondary education ($p < 0.001$), health security regime ($p < 0.001$), occupation as homemaker ($p = 0.029$), and family income less than one minimum wage ($p = 0.036$) [Note: Cohabitation, socioeconomic stratum, and family type showed non-significant correlations ($P > 0.05$) in your data but were listed as significant in the original text; please verify.] Table 3).

Conversely, practices regarding self-examination showed statistically significant correlations with cohabitation ($p = 0.005$), affiliation with the subsidized health security system ($p = 0.004$), and nuclear family structure ($p = 0.013$). No statistically significant correlations were observed between attitudes and demographic variables (all $p > 0.05$), including age ($p = 0.917$), health security regime ($p = 0.621$), socioeconomic stratum ($p = 0.946$), or family income ($p = 0.737$).

Finally, correlation estimates indicate that personal factors significantly influence behavior, including the recognition of benefits and perceived barriers. These factors also limit the a-

doption of health-promoting behaviors, highlighting the need for nursing-led interventions that support action plans to overcome these barriers.

Table 1. Sociodemographic Aspects of Women in Cartagena (n = 322)

Variables	n	%
Age		
20–29	149	46.3
30–39	85	26.4
40–49	42	13.0
50–59	36	11.2
> 59	10	3.1
Marital status		
Common-law marriage	213	66.1
Bachelor	55	17.1
Married	33	10.2
Separated or divorced	12	3.7
Widower	9	2.8
Education		
No formal education	26	8.1
Primary education	70	21.7
Secondary education	143	44.4
Technical/vocational education	75	23.3
Undergraduate degree	5	1.6
Postgraduate degree	3	0.9
Social security scheme		
Subsidized	266	82.6
Contribution	56	17.4
Special	0	0.0
Linked	0	0.0
Socioeconomic Stratum*		
1	309	96.0
2	10	3.1
3	3	0.9
Occupation		
Housewife	217	67.4
Employee	41	12.7
Self-employed	36	11.2
Student	20	6.2
Unemployed	8	2.5
Retired or pensioned	0	0.0
Total monthly household income (in minimum wages)		
< 1	289	89.8
1–2	32	9.9
3–4	1	0.3
> 4	0	0.0
Family Type		
Nuclear	244	75.8
Nuclear of origin	61	18.9
Monoparental	16	5.0
Extensive	1	0.3
Total		100.0

* Classification of the population based on economic and social characteristics that identifies the standard of living, access to resources, opportunities, and living conditions among different groups of people.

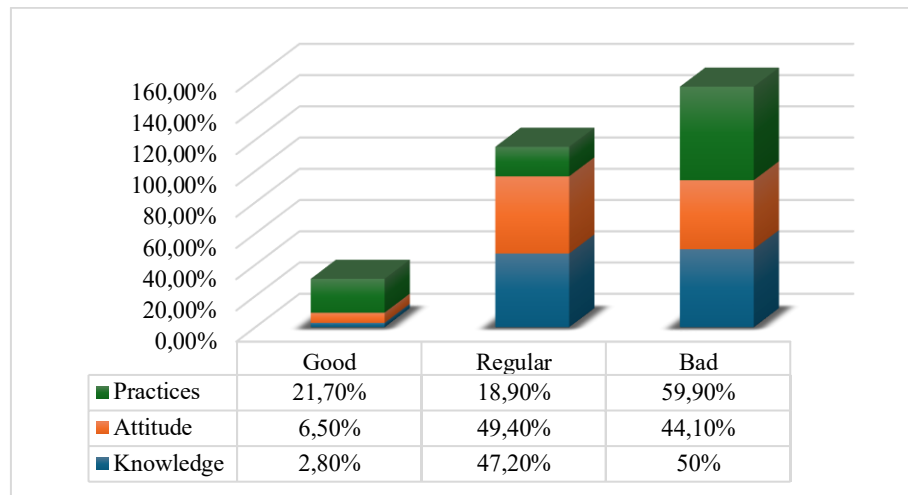


Figure 1. Description Women's of Knowledge, Attitudes and Practices Breast Self-Examination

Table 2. Correlation between Knowledge, Attitudes and Practices Around Breast Self-Examination

Variables	Tau_b de Kendall* (Coefficient)	Rho de Spearman* (Coefficient)	Strength of Correlation
Practices & Knowledge	0.299**	0.358**	Weak to Moderate Positive
Practices & Attitudes	0.361**	0.451**	Moderate Positive
Knowledge & Attitudes	0.176**	0.229**	Weak Positive

*p value 0.000

Table 3. Average Breast Self-Exam Knowledge, Attitudes, and Practices Scores by Sociodemographic

Variables	Knowledge		Attitudes		Practices	
	Average	p	Average	p	Average	p
Age						
20–29	2.9		2.3		5.8	
30–39	3.0	0.659	2.7	0.291	5.9	0.917
40–49	2.9		3.1		6.0	
50–59	3.0		3.0		6.2	
> 59	3.3		3.6		5.9	
Marital status						
Common-law marriage	2.9		2.4		5.8	
Bachelor	3.0	0.376	2.5	0.005	6.3	0.478
Married	2.9		4.3		6.1	
Separated or divorced	3.3		3.4		6.0	
Widower	3.0		0.9		4.8	
Education						
No formal education	2.6		2.6		5.5	
Primary education	2.6	0.000	2.1	0.312	5.9	0.435
Secondary education	3.0		2.6		5.9	
Technical/vocational education	3.3		3.0		6.1	

Variables	Knowledge		Attitudes		Practices	
	Average	<i>p</i>	Average	<i>p</i>	Average	<i>p</i>
Undergraduate degree	3.3		5.0		8.0	
Postgraduate degree	3.5		2.0		5.3	
Social security scheme						
Subsidized	2.9		2.4		5.9	
Contribution	3.2	0.000	3.7	0.004	6.1	0.621
Special	-		-		-	
Linked	-		-		-	
Socioeconomic Stratum*						
1	2.9		2.6		5.9	
2	3.0	0.561	2.4	0.152	6.0	0.946
3	4.5		6.3		6.3	
Occupation						
Housewife	2.8		2.3		5.9	
Employee	3.0	0.029	3.5	0.150	5.5	0.369
Self-employed	3.2		3.1		6.3	
Student	3.4		3.0		6.5	
Unemployed	3.2		3.3		6.9	
Total monthly household income (in minimum wages)						
< 1	2.9	0.036	2.6	0.549	5.9	0.737
1–2	3.1		2.9		5.8	
3–4	-		-		-	
> 4	-		-		-	
Family Type						
Nuclear	3.0		2.9		6.0	
Nuclear of origin	3.0	0.447	1.5	0.013	6.1	0.363
Monoparental	2.8		2.2		6.1	
Extensive	-		-		-	

Discussion

Breast self-examination (BSE) is a critical tool for the timely detection of breast abnormalities. This study provides empirical evidence of a significant relationship between knowledge, attitudes, and practices regarding BSE among women in Cartagena, Colombia. The findings suggest that adequate knowledge fosters a proactive attitude, which in turn leads to correct self-examination.

However, the results indicate insufficient knowledge within the studied population, consequently hindering BSE performance. This pattern of lack of knowledge and inadequate practice aligns with findings from other contexts. In Bangladesh, approximately one-third of participants identified a lack of knowledge as the primary barrier to BSE, highlighting the need for cul-

turally appropriate educational interventions (Sarker et al., 2022). Similarly, a study in southern India reported that most women demonstrated inadequate knowledge, unfavorable attitudes, and poor BSE practices, suggesting that informational and cultural barriers are key determinants limiting the adoption of this preventive behavior (Jadhav et al., 2024). These findings underscore the urgent need to implement effective community-based strategies to promote BSE as an essential method for early detection, particularly given that breast cancer remains a leading cause of female mortality worldwide (International Agency for Research on Cancer, 2022).

Demographic variables, including marital status, occupation, socioeconomic status, and education, significantly influenced the knowledge and BSE performance. Education emerged as a

particularly relevant factor; higher educational levels were associated with a better understanding of BSE importance and a greater likelihood of regular practice ($p < 0.001$). This aligns with Tuyen et al. (2019) and Nguyen et al. (2023), who showed that knowledge tends to be higher in groups with more education, emphasizing the role of schooling in promoting healthy behaviors. Conversely, lower socioeconomic conditions limit information-seeking capacity and awareness. Additionally, marital status and occupation may influence access to information and time available for self-care. Women who perceive their health status as vulnerable may be more inclined to seek information and practice BSE as a preventive measure (Hussen et al., 2023).

Attitudes toward BSE were predominantly unfavorable, with fair and negative attitudes prevailing. This result correlates with the knowledge deficits described earlier. As Hernández-Escobar et al. (2019) state, knowledge is the foundation for the development of attitudes and practices; when knowledge is inadequate, attitudes toward medical care are likely to be unfavorable. However, knowledge transmission alone does not guarantee the adoption of preventive practices. Attitudes play a crucial role in motivating regular BSE. The prevalence of negative attitudes suggests the need to address beliefs, fears, and misconceptions. Interventions should focus on strengthening women's self-efficacy, providing practical skills, and highlighting the benefits of early detection to improve survival rates and reduce morbidity (Cheraghalizadeh et al., 2025).

The inter-connection between knowledge and attitude formation is supported by theoretical models such as the Theory of Planned Behavior (Conner, 2020), which posits that beliefs influence attitudes, which in turn predict intentions and behavior. However, this relationship is mediated by sociocultural elements. Religion emerged as a critical factor; recent studies indicate that religious interpretations of health and fate can impact the perceived usefulness of pre-

ventive practices (AlMutawah et al., 2025; Mukama et al., 2017). Alshafie et al. (2024) determined that women with strong religious beliefs may be less likely to perform self-examinations, as their attitudes are often less favorable. In Cartagena, where religious beliefs play a significant role in daily life, it is imperative to understand dominant religious narratives surrounding breast cancer to design culturally resonant health messages that avoid generating resistance.

Regarding practice, the high prevalence of inadequate BSE performance (59.9%) points to a critical gap between theoretical knowledge and practical ability. This finding is consistent with studies in other Colombian and Latin American contexts, which report a high proportion of women performing BSE incorrectly or infrequently (López-Hoyos et al., 2022). Similarly, B.K. and Kaphle (2023) reported a high prevalence of poor practices (77.79%). The lack of adequate practical training, confusing information, and the absence of follow-up likely contribute to this situation. Future interventions should prioritize hands-on training and demonstration of correct techniques, using strategies such as community workshops and educational videos to ensure skill acquisition.

This study has several limitations. The cross-sectional design prevents establishing causal relationships, allowing only the identification of associations at a specific point in time. The use of self-reported instruments may introduce recall or social desirability bias, particularly among participants with heterogeneous educational levels. The sample, predominantly composed of women from low socioeconomic strata tied to the subsidized health system, limits the generalizability of the findings. Additionally, the ordinal categorization of variables may reduce sensitivity to detect subtle variations. Despite a relatively small sample size, the study provides an adequate approximation of the phenomenon. A key strength is the detailed documentation of KAP variables within the nursing discipline at the local level, offering a baseline

for future research and practical interventions.

Conclusion

Knowledge, attitudes, and practices regarding breast self-examination remain suboptimal among women in Cartagena, although these variables are significantly interrelated. These findings highlight the importance of educating populations about risk factors and detection measures to establish rational health habits. Nursing professionals should lead culturally tailored educational interventions that address personal factors and environmental influences. Strengthening early detection strategies through improved knowledge and positive attitudes is essential to reduce breast cancer morbidity and mortality in vulnerable communities.

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available to protect the privacy and confidentiality of the participants.

Author Contributions

Rafael Enrique Arnedo Martínez: Conceptu-

alization, Methodology, Formal Analysis, Writing - Original Draft, Writing -Review & Editing, Supervision, Project Administration. **Keidis Ruidíaz Gómez:** Methodology, Investigation, Data Validation, Writing – Review & Editing, Final Approval of the Manuscript.

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