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PRACTICES RELATED TO THE PREVENTION AND EARLY DETECTION OF BREAST CANCER AND THE ROLE OF ACTIVE INFORMATION-SEEKING AMONG FEMALE STUDENTS AT TRA VINH UNIVERSITY, VIETNAM

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Abstract – *This study was designed to determine the proportion of female students at Tra Vinh University, Vietnam, who engaged in appropriate practices towards breast cancer prevention and early detection, and to identify associated factors. A cross-sectional descriptive study was conducted with 371 female students at Tra Vinh University using a structured questionnaire. Data collection took place from October 2023 to September 2024 in 12 schools of Tra Vinh University. Results showed that only 16.4% of the students reported engaging in correct practices. A statistically significant association was found between students' engagement in seeking information about breast cancer and their preventive practices ($p < 0.05$). Students who actively sought out information were more likely to engage in correct practices compared to their counterparts.*

Keywords: breast cancer, female student, prevention, Tra Vinh University.

I. INTRODUCTION

Breast cancer is the most common type of cancer among women worldwide. According to the Ministry of Health of Vietnam [1], it is the most frequently diagnosed cancer among women aged 20–49 and the leading cause of cancer-related death among women aged 30–49.

In Vietnam, an estimated 126,000 new cancer cases and 94,000 cancer-related deaths occur annually (data from 2021). Breast cancer alone accounts for approximately 15,000 new cases and over 6,000 deaths per year. Notably, there has been a trend toward earlier onset of breast cancer in Vietnamese women [1].

The proportion of breast cancer cases diagnosed at an early stage in Vietnam remains low, where the stage of diagnosis is an independent prognostic factor. Patients with late-stage diagnosis experience higher rates of recurrence and mortality following treatment [2]. According to the U.S. Centers for Disease Control and Prevention, breast cancer in young women is often diagnosed at a later stage and tends to be more difficult to treat. This is supported by research showing that certain aggressive subtypes, such as triple-negative breast cancer, are more prevalent among younger women, contributing to poorer prognoses [3]. Additionally, the incidence of breast cancer in younger populations appears to be increasing, raising further concern about early detection and management in this age group [4]. Beyond clinical outcomes, the diagnosis is also frequently associated with reduced quality of life, including concerns about body image, fertility, and feelings of isolation.

A study by Nguyen Minh Phuong et al. [5] found that the proportion of women with accurate knowledge and appropriate practices was relatively low: only 32.5% demonstrated correct knowledge, and just 19.9% reported engaging in appropriate preventive practices. Similarly, Pham Thuy Quynh et al. [6] reported that only 24.1% of participants correctly performed breast self-examinations for early breast cancer detection. To assess the level of preventive practices and identify areas for timely intervention and counseling to support breast cancer prevention and

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early detection among female students at Tra Vinh University, a corresponding investigation was conducted among female students and examined the factors associated with these practices.

II. LITERATURE REVIEW

Recent research on breast cancer awareness and preventive practices identifies three recurring themes: low levels of knowledge and preventive behaviors among women, limited attention to younger demographics, and the influential role of education in shaping health-related behaviors [7, 8]. These patterns are evident across both Vietnamese and international contexts, particularly in low- and middle-income countries [7, 9, 10].

Studies consistently report that many women lack adequate knowledge about breast cancer and engage minimally in preventive behaviors [7, 8, 10]. In Vietnam, fewer than 20% of women reported engaging in health-promoting activities, such as regular physical exercise or early detection methods [5]. In Hanoi, breast self-examination (BSE) practices were also inadequate, with crucial steps like axillary lymph node checks frequently omitted [6]. Internationally, similar trends are observed. For instance, female university students in Bangladesh and women in Northern Ethiopia exhibited limited practical engagement in preventive measures, despite moderate awareness levels [9].

Although primarily clinical in nature, evidence from hospital-based studies further highlights the consequences of delayed detection. A study at Phu Tho General Hospital documented that a substantial proportion of breast cancer patients were diagnosed at stage III, suggesting ongoing gaps in early detection and preventive practices at the community level [11]. These findings reinforce concerns raised in awareness-focused studies and emphasize the public health implications of insufficient preventive behaviors.

A critical gap in the literature is the underrepresentation of younger women. Most Vietnamese and international studies focus on adult women as a broad group, without age-stratified analysis [10–13]. As a result, the unique needs and vulnerabilities of younger women-particularly adolescents and university students, are often overlooked. Evidence suggests that younger women tend to have lower awareness and weaker motivation to adopt preventive practices, underscoring the need for age-specific interventions [5, 9].

Educational attainment is consistently identified as a key factor associated with improved knowledge and preventive behaviors [8, 10, 12]. Women with higher education levels are more likely to perform BSE and seek early detection services. However, systemic barriers such as cultural beliefs, stigma, limited access to healthcare, and insufficient targeted communication continue to hinder behavior change [7, 12]. Among younger women, psychosocial concerns related to fertility, body image, and future planning may also influence engagement in preventive care [8].

Overall, the literature reveals persistent challenges, such as limited awareness, insufficient preventive practice, and a lack of youth-focused approaches. While education plays a crucial role, it must be paired with culturally responsive, accessible, and age-sensitive public health strategies to effectively promote early detection and prevention, particularly among younger women in low- and middle-income countries.

III. RESEARCH METHODS

A. Location, participants, and time of research

The study was conducted from October 2023 to September 2024 at 12 academic schools of Tra Vinh University, Vietnam. Participants of this study consist of current female students at Tra Vinh University, excluding those who are diagnosed with breast cancer.

B. Methods

The study was designed as a descriptive cross-sectional study, utilizing retrospective data collected from medical records. The sample size was calculated using the standard formula for proportion, as shown in Formula (1).

$$n = Z^2_{1-\alpha/2}\frac{p(1-p)}{d^2} \quad (1)$$

where:

n: sample size to be studied;

$Z^2_{1-\frac{\alpha}{2}}$: reliability coefficient = $(1.96)^2$;

d: allowable error 5% = 0.05;

p: desired proportion value.

Based on the study by Nguyen Minh Phuong et al. [5], where the proportion (p) was 0.325, the calculated sample size (n) was 337. Accounting for an anticipated 10% sample loss, the final sample size was calculated to be approximately 371 participants. The sampling method employed was systematic random sampling. Initially, a list of all female students from the 12 schools of Tra Vinh University was compiled, with identification numbers assigned sequentially from 1 to 5661, representing the total female student population. The sampling interval (k) was then calculated as 5661 divided by 371, yielding approximately 15. A simple random draw was performed from 1 to 15 to determine the starting point, with the number 5 selected randomly. Subsequently, the final sample was generated by selecting every fifteenth student from the list, beginning at position 5, in accordance with the systematic sampling procedure.

Data collection tools

Data were collected using a self-administered questionnaire with two main components included. The first was a general information section that gathered data on participants' age, ethnicity, faculty, academic year, hometown, marital status, and family history of breast cancer. The second component focused on practices related to breast cancer prevention and early detection, consisting of eight questions with four response options: always, often, sometimes, and never. Students who provided appropriate responses to at least 7 out of 8 questions ($\geq$ 80%) were categorized as having correct practice, while those with fewer than 7 appropriate responses (< 80%) were classified as having incorrect practice [10].

Data collection techniques

A structured questionnaire, adapted from the study by Nguyen Minh Phuong et al. [5], was used to assess practices and associated factors related to breast cancer prevention and early detection among female students. The questionnaire was distributed to female students for self-administration.

Data analysis methods

All data collected through the questionnaire were thoroughly checked for completeness and accuracy, coded, and entered using EpiData 3.1. Data processing and analysis were performed using SPSS version 20.0.

Descriptive statistics were used to summarize the data, with frequencies and percentages calculated for categorical variables, while quantitative variables such as age were presented using the mean and standard deviation or the median and interquartile range, as appropriate. Analytical statistics included the Chi-square (χ^2) test to examine associations between categorical variables. Univariate logistic regression was conducted to evaluate the relationship between each independent variable and the dependent variable, and variables with p-values < 0.2 in the univariate analysis were considered for inclusion in the multivariate logistic regression model.

C. Ethics in research

The study was approved by the Ethics Council of Tra Vinh University under Decision No. 204/GCT-HDDD dated June 11, 2023. All study participants were fully informed about the research and surveyed only after obtaining their consent. Personal information was kept strictly confidential. Participants received counseling and were provided with knowledge and information regarding the prevention and early detection of breast cancer.

IV. RESULTS AND DISCUSSION

A. General characteristics of research subjects

Table 1 presents the general characteristics of the female students participating in the study (n = 371). The participants were aged between 18 and 32 years, with a mean age of 20.3$\pm$2.65 years. These results are consistent with the study population, which consisted of full-time female students currently enrolled at Tra Vinh University.

Table 1: General characteristics of female students participating in the study (n = 371)

Characteristic		Frequency (%)
Age (years) (Mean ± standard deviation) 20,30 ± 2,65 (18–32)		
Ethnic group	Kinh	289 (77.9)
	Khmer	68 (18.3)
	Chinese	10 (2.7)
	Other	4 (1.1)
Living area	Urban	110 (29.6)
	Countryside	261 (70.4)
School	School of Medicine and Pharmacy	110 (29.6)
	School of Agriculture and Aquaculture	28 (7.5)
	School of Economics and Law	87 (23.5)
	School of Engineering & Technology	10 (2.7)
	School of Dentistry	13 (3.5)
	School of Foreign Languages	34 (9.2)
	School of Public Management, Office Administration and Tourism	12 (3.2)
	School of Southern Khmer Language, Culture and Arts	19 (5.1)
	School of Education	52 (14.0)
	School of Basic Sciences	2 (0.5)
	School of Political Theory	2 (0.5)
	School of Applied Chemistry	2 (0.5)
Academic years	First year	102 (27.5)
	Second year	81 (21.8)
	Third year	88 (23.7)
	Fourth year	56 (15.1)
	Fifth year	26 (7.0)
	Sixth year	18 (4.9)

Previous research has reported that the youngest age of breast cancer onset can be as early as 26 years, based on clinical and paraclinical observations in patients at Phu Tho General Hospital [11] and on assessments of self-care behaviors among patients undergoing chemotherapy at K Hospital [7]. These findings suggest a trend of breast cancer appearing at younger ages; therefore, assessing preventive practices among this age group is essential for timely interventions and counseling [14].

The majority of participants in this study were Kinh (77.9%), while 18.3% were Khmer. This finding echoes the results of the study by Nguyen Minh Phuong et al. [5], which also reported a higher proportion of Kinh students compared to Khmer students. However, the proportion of Khmer students (18.3%) was considerably higher than the 3.8% reported in their research [8]. This statistic is consistent with the demographic profile of Tra Vinh Province, currently part of Vinh Long Province. According to the 2023 statistics, the Khmer ethnic group constitutes nearly 32% of the population – the highest proportion among all Mekong Delta Provinces [15].

Students from various schools currently enrolled at Tra Vinh University were surveyed using a systematic random sampling method. Among these, the School of Medicine and Pharmacy had the highest participation rate (29.6%). The majority of surveyed students were in their first to third years of study (73%). Students in the fifth and sixth years accounted for the smallest proportion (11.9%), all of whom were enrolled in the General Medicine program. Including students in health-related fields not only meets the research objectives but is also important for assessing their knowledge. This enables timely interventions to enhance their understanding, thereby preparing them to fulfill their future roles in public healthcare effectively.

Table 2: Marital status of the study participants

	Characteristic	Frequency (%)
Marital status	Single	334 (90.0)
	Married	14 (3.8)
	Other	23 (6.2)

Table 3: Family history of breast cancer

	Characteristic	Frequency (%)
Family history of breast cancer	No	360 (97.0)
	Yes	11 (3.0)

The statistical results in Table 2 show that the majority of students were single (90%). Additionally, 97% of students reported no family history of breast cancer (see Table 3). After the survey, 86% of the students stated that they had previously sought information about breast cancer. The majority accessed this information via the internet (62.8%). These findings are consistent with those of Dao Thi Hai Yen et al. [12], who reported in 2021 that 86.85% of women in some coastal communes of Thuy Nguyen District, Hai Phong, had obtained information about breast cancer. While the present study focused on a younger demographic (mostly aged 18–22 years), Dao Thi Hai Yen et al.'s study [12] involved participants with a mean age of 40.56 ± 12.21 years. This comparison suggests that women across various age groups show a strong interest in learning about breast cancer – an area that should be continuously promoted in public health education. However, it is notable that 14% of students had never sought out breast cancer-related information. This indicates the need for wider and more accessible dissemination of knowledge through academic programs, books, newspapers, radio, and especially digital platforms. Given students' frequent use of technological devices, increasing breast cancer awareness through social media and digital channels should be a priority.

B. The rate of correct breast cancer practices among the study participants

Breast cancer prevention involves simple daily practices that can reduce risk factors associated with the disease. For the purposes of this study, correct practice was defined as scoring ≥ 7 points, equivalent to $\geq 80\%$. As shown in Figure 1, only 16.4% of participants met the criteria for correct breast cancer prevention practice.

In comparison, Nguyen Minh Phuong et al. [5] reported a higher rate of 19.9%. The lower

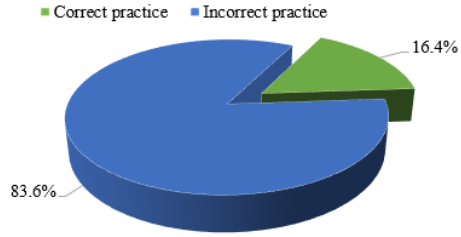

Fig. 1: Proportion of correct practices for breast cancer prevention

figure in the current study may be attributed to the stricter threshold for correct practice ($\geq 80\%$) versus $\geq 75\%$ in the previous study [5].

Table 4: Breast cancer prevention practices of the study participants

Breast cancer prevention practices	Correct practice Frequency (%)	Incorrect practice Frequency (%)
Breast self-examination	83 (24.4)	288 (77.6)
Eat plenty of green vegetables	237 (63.9)	134 (36.1)
Do not drink alcohol	341 (91.9)	30 (8.1)
Do not smoke cigarettes	362 (97.6)	9 (2.4)
Exercise	138 (37.2)	233 (62.8)
Maintain a healthy weight	194 (52.3)	177 (47.7)
Maintain good mental health	243 (65.5)	128 (34.5)
Maintain a positive psychological state	226 (60.9)	226 (60.9)

Table 4 details the specific practices reported by participants. The highest correct practice rates were observed for avoiding alcohol (91.9%), not smoking (97.6%), maintaining good mental health (65.5%), eating green vegetables (63.9%), and maintaining a healthy weight (52.3%). These behaviors are relatively easy to adopt and align with the sociocultural context of Vietnamese women, who traditionally smoke and drink less than men. In contrast, lower adherence was noted in regular exercise (37.2%) and periodic breast cancer screening (39.1%). These findings suggest that while students possess a certain level of knowledge, this has not been translated into consistent practice, likely due to a lack of attention to personal health. Therefore, health education focusing on risk awareness and the importance of screening is essential and should be implemented promptly. Notably, only 22.4% of students correctly performed breast and chest

self-examinations. This gap between knowledge and practice is significant: while 33.7% knew the method, only 22.4% performed it correctly. This aligns with previous findings revealed by Pham Thuy Quynh et al. [6], conducted in Hanoi. Although 50.7% of women were aware of the importance of nipple examination, only 26.2% performed it correctly [6]. Similarly, in 2020, Nguyen Thi Diem Huong et al. [13] found that while 96.6% of women had heard of breast cancer, only 47.5% had ever practiced self-examination. Of these, just six individuals (3.7%) reported performing monthly self-examinations. The most common reason cited for not performing BSE was the absence of symptoms (70.9%). Furthermore, 60.3% of the participants did not know how to perform the procedure correctly. Other reasons included discomfort (10.1%), the belief that BSE was unnecessary (10.1%), and lack of time (12.3%) [13]. These barriers are modified through effective health communication strategies that emphasize both the benefits and correct methods of breast self-examination. The efforts have the potential to improve BSE practices among young women.

Table 5: Association between practices and characteristics of study participants after multivariate logistic regression analysis

Characteristic	Correct practice	Incorrect practice	Odds ratio (95% CI)	p-value
Actively seeks information (Yes)	58 (18.3%)	259 (81.7%)	3.464 (1.039-11.552)	0.043
Does not seek information (No)	3 (5.6%)	51 (94.4%)	-	-

In terms of practice, this study identified two factors associated with breast cancer practices among female students: ethnicity and prior exposure to information about breast cancer. Female students of Kinh ethnicity were 2.462 times more likely to demonstrate correct practices compared to students of other ethnic groups. Regarding prior knowledge, among the 317 students who had previously sought information about breast cancer, 18.3% demonstrated correct practices, whereas in the group of 54 students who had not sought such information, only 5.6% practiced correctly – a statistically significant difference

A similar trend was observed in the study by Nguyen Minh Phuong et al. [10], where prior exposure to breast cancer information was associated with higher levels of knowledge. After conducting multivariate logistic regression, as shown in Table 5, a statistically significant association was found between correct practice and prior knowledge of breast cancer ($p < 0.05$).

V. CONCLUSION AND RECOMMENDATIONS

The survey results of 371 female students at Tra Vinh University, conducted from October 2023 to September 2024, found that only 16.4% of students demonstrated correct preventive practices regarding breast cancer. Statistical analysis also revealed a significant association between breast cancer prevention practices and students' engagement in seeking information about the disease ($p < 0.05$), with those who actively sought information being more likely to perform correct preventive practices compared to those who did not.

Based on the findings of this study, several important recommendations are proposed for breast cancer prevention, early detection practices, and future research. The School of Medicine and Pharmacy, in collaboration with the Department of Obstetrics and student health clubs at Tra Vinh University, should organize training sessions and thematic workshops to educate students on breast cancer prevention methods and early detection strategies. Social media platforms can be utilized to establish information channels aimed at disseminating knowledge about breast cancer prevention and early detection among students. In addition, the specialized breast clinic at Tra Vinh University Hospital, equipped with modern screening and diagnostic tools such as ultrasound and mammography, should be introduced and promoted to students and their families as a resource for breast health assessment and care.

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