Intrinsic motivation for breast cancer screening among women: a cross-sectional study

Dang Thi Chau[1], Nguyen Thi Ngoc Tu[2] , Ho Thi Thuy Trang[3*]

[1]Faculty of Nursing, Da Nang University of Medical Technology & Pharmacy, Da Nang, Vietnam

[2]Anaesthesia and Resuscitation Department, Da Nang University of Medical Technology & Pharmacy, Da Nang, Vietnam

[3]Faculty of Nursing, Hue University of Medicine and Pharmacy, Hue University, Vietnam

Abstract

Background: Early detection and timely treatment significantly enhance the odds of beating breast cancer, which is the most prevalent form of cancer among women globally. An individual's intrinsic motivation plays a pivotal role in determining their willingness to undergo regular cancer screenings. **Objective:** The purpose of study is to identify factors of intrinsic motivation that affect breast cancer screening. **Subjects and Methods:** A cross-sectional study was conducted among 649 women living in Da Nang city. The data collection tools included a questionnaire form on participants' characteristics and the Intrinsic Motivation Inventory tool. In data analysis, descriptive statistics and regression were used. **Results:** The mean score for intrinsic motivation was calculated as 69.18 ± 8.23. The subscale scores for the intrinsic motivation for breast cancer screening were as follows: perceived usefulness and importance (18.86 ± 2.87), perceived choice and effort (19.80 ± 2.63), perceived interest and relatedness (12.94 ± 1.70), perceived competence (9.41 ± 2.13), pressure and tension (8.18 ±1.33). The most frequent reasons for intrinsic motivation of screening were higher scores for religion (β = 0.12), regular health check-up (β = 0.14), having family history of breast cancer (β = 0.18), regularly receiving breast cancer information (β = 0.10), and having women's health issues (β =0.14). **Conclusions:** This study elucidates the factors that influence women's decisions to engage in opportunistic breast cancer screening. Gaining a comprehensive understanding of these determinants is crucial for developing targeted and effective interventions to enhance screening participation, whether through organized initiatives or opportunistic methods.

Keywords: *Breast cancer; breast cancer screening; intrinsic motivation, woman.*

1. INTRODUCTION

Breast cancer remains one of the most prevalent malignancies among women globally. In Vietnam alone, recent estimates from GLOBOCAN report approximately 24,563 new cases and 10,008 breast cancer-related deaths annually [1]. Addressing this growing public health concern requires a multifaceted approach, encompassing public education on risk factors and symptoms, the implementation of routine screening programs, advancements in therapeutic research, and the provision of psychosocial support for both patients and survivors [2-6]. A concerted emphasis on prevention, early detection, and comprehensive care is critical to mitigating the burden of breast cancer. Strengthening healthcare systems to support these efforts may ultimately reduce disease incidence and mortality while improving survival outcomes and the overall quality of life for affected individuals.

Breast cancer screening plays a critical role in facilitating early detection, enhancing treatment efficacy, and improving patient outcomes [7]. Motivation is a pivotal factor in encouraging individuals to participate in regular breast cancer screening, as part of a broader commitment to health-promoting behaviors [6,8]. Grounded in Self-Determination Theory, motivation is the driving force that fuels an individual's behavior, providing the necessary guidance, consistency, and determination to succeed [9]. The theory distinguishes between three forms of motivation, with intrinsic motivation recognized as the most powerful driver of sustained engagement and behavioral change.

Intrinsic motivation serves as a compelling driver of sustained engagement in health-promoting behaviors [10-12]. Defined as the internal desire to perform an activity for its inherent satisfaction, intrinsic motivation emerges from personal interests, curiosity, and the innate desire to acquire and master new skills [9, 13]. It is a self-determined form of motivation that arises from a person's natural interests, curiosity, and desire to learn and master new skills. This motivation is characterized by

**Corresponding Author: Ho Thi Thuy Trang, Email: htttrang@huemed-univ.edu.vn*

DOI: 10.34071/jmp.2025.4.6

Received: 28/05/2024; Accepted: 18/07/2025; Published: 30/08/2025

a sense of autonomy, competence, and relatedness, which are crucial factors in fostering long-term engagement, creativity, and psychological well-being. Understanding and leveraging intrinsic motivation is essential to enhancing participation, improving adherence, and ultimately supporting both performance and long-term health outcomes..

Therefore, the research aim is to identify the intrinsic motivation for breast cancer screening among women and its factors. By recognizing and addressing intrinsic motivations, healthcare providers could develop more effective strategies for promoting breast cancer screening and improving outcomes for individuals and communities.

To guide this inquiry, the study addresses the following research questions:

- What intrinsic motivations influence women's participation in breast cancer screening?

- What factors are associated with intrinsic motivation toward breast cancer screening?

2. SUBJECTS AND METHODS

2.1. Study design: A cross-sectional study was carried out among women from Jun 2021 to Jun 2022 at Danang, Vietnam.

2.2. Study population and sampling: The study population included women over 20 years. The researchers excluded those who were incapable of communicating or giving consent due to any disability. Potential participants were recruited through a convenient sampling method. Each potential candidate for the research was asked relevant questions to establish their eligibility for the study.

The required sample size for the study was calculated using G*Power software version 3.1.9.4. Based on a statistical model with seven predictors, the parameters were set as follows: power = 0.80, effect size = 0.02, and alpha error probability (α) = 0.05. The minimum required sample size was determined to be 647 participants. Ultimately, the study was conducted with a final sample of 621 participants, drawn from a total of 800 cases included in the quantitative inquiry.

2.3. Measurements

The survey consisted of standardized demographics, general information, and validated scales. Intrinsic Motivation Inventory questionnaire (IMI) was utilized to identify intrinsic motivation of breast cancer screening, which was developed by Su Mi Jung [2]. This tool consisted of five dimensions, including usefulness and importance, choice and effort, interest and relatedness, competence, pressure and tension. Each item is scored on a 5-point rating scale, with a score from 1 = strongly disagree to 5 = strongly agree. The higher the score is the higher the motivation for cancer screening. All measures were translated from English to Vietnamese using a back-translation procedure [12] and passed culture barriers by testing carefully based on guides [7, 12]. CVI test result was 0.93, which was considered suitable with the content study [5]. In the trial study on 65 samples Cronbach alpha index was 0.95.

2.4. Data collection

The investigators provided a detailed explanation of the procedure and precautions to the participants before starting the formal investigation. A Google form was used to complete the survey, and all the data were entered twice and validated. Any cases, items, scales, or questionnaires with a response rate of less than 90% were excluded. Any missing data were filled in using the median value of specific items.

2.5. Data Analysis:

Statistical analyses were carried out by SPSS 26. The sample was analyzed using descriptive statistics. Multiple linear regression was applied to explore influential factors of intrinsic motivation of screening. All p-values were two-tailed with a significance level of 0.05.

2.6. Ethical considerations

All participants gave their informed consent. We received the permission paper from the Ethical Committee of Hue University (number H2021/258).

3. RESULTS

3.1. Participant's characteristics

A total of 621 women participated in the study. The majority (60.90%) were over 40 years of age. Most participants reported having no religious affiliation (81.60%), while 18.40% identified as having a religion. Regarding educational attainment, 57.80% had completed college or university, 30.80% had finished high school, and 11.40% had only completed primary or junior high school. In terms of monthly income, 50.60% reported earning more than 5 million VND, 34.90% earned between 2 - 5 million VND, and 14.50% earned less than 2 million VND. A majority of respondents were married (79.50%). Additionally, 55.70% reported undergoing regular health check-ups, and 80% stated that they regularly received information about breast cancer.

Table 1. Characteristics of the participants (n =

621)

Variable		Frequency	Percentage (%)
Age	20 - 40	243	39.10
	> 40	378	60.90
Religion	No religion	507	81.60
	Have religion	114	18.40
Living area	Hai Chau	157	25.30
	Son Tra	119	19.20
	Thanh Khe	136	21.90
	Cam Le	61	9.80
	Lien Chieu	67	10.80
	Ngu Hanh Son	81	13.00
Educational status	Primary/Junior high school	71	11.40
	High school	191	30.80
	College/university	359	57.80
Monthly income	< 2 million	90	14.50
	2 - 5 million	217	34.90
	> 5 million	314	50.60
Married status	Married	494	79.50
	Divorced/widowed/living alone	76	12.20
	Single	51	8.20
Breast cancer screening	No	311	50.10
	Yes	310	49.90
Regular health check-up	No	275	44.30
	Yes	346	55.70
Family history of breast cancer	No	528	85.00
	Yes	93	15.00
Regularly receving breast cancer's information	No	124	20.00
	Yes	497	80.00
Women's health issues	No	457	73.60
	Yes	164	26.40

3.2. Intrinsic motivation for breast cancer screening among women

The average intrinsic motivation score among participants was 69.18. Overall, 43.6% of respondents demonstrated a high level of intrinsic motivation. Within the subscale of perceived choice and effort, 56.9% of participants scored at a high level, representing the strongest dimension of intrinsic motivation. In contrast, the majority of respondents (63.0%) reported a relatively low level of perceived competence, indicating a potential area of concern within their intrinsic motivational profile.

Table 2. Intrinsic motivation for breast cancer screening (n = 621)

Variable	Mean (SD)	Intrinsic motivation			
		Low		High	
		n	%	n	%
Intrinsic motivation	**69.18 (8.23)**	**350**	**56.4**	**271**	**43.6**
Perceived usefulness and importance	18.86 (2.87)	299	48.1	322	51.9
Perceived choice and effort	19.80 (2.63)	272	43.8	349	56.2
Perceived interest and relatedness	12.94 (1.70)	287	46.2	334	53.8
Perceived competence	9.41 (2.13)	391	63.0	230	37.0
Pressure and tension	8.18 (1.33)	362	58.3	259	41.7

3.3. Participants' intrinsic motivation for breast cancer screening and related factors

Results from the multivariable linear regression analysis are presented in Table 3. The overall model predicting total intrinsic motivation was statistically significant ($F = 16.27$, $p < 0.001$), explaining 16% of the variance (Adjusted $R^2 = 0.15$). Significant positive predictors of intrinsic motivation included regular health check-ups ($\beta = 0.14$, $t = 3.30$, $p < .01$), a family history of breast cancer ($\beta = 0.18$, $t = 4.42$, $p < 0.01$), regular access to breast cancer information ($\beta = 0.10$, $t = 2.53$, $p < 0.05$), concern for women's health issues ($\beta = 0.14$, $t = 3.35$, $p < 0.01$), and religious affiliation ($\beta = 0.12$, $t = 3.14$, $p < 0.01$). In contrast, marital status and actual participation in breast cancer screening were not significant predictors in the model.

Table 3. Predictors of intrinsic motivation in the multiple regression model

Variable	β	t	
Perceived usefulness and importance			
Breast cancer screening	0.09	2.11*	F = 17.19,
Regular health check-ups	0.12	2.95**	p = 0.000,
Family history of breast cancer	0.17	4.08**	$R^2 = 0.123$,
Regularly receiving breast cancer information	0.11	2.67**	Adjusted $R^2 = 0.116$
Women's health issues	0.08	1.99*	
Perceived choice and effort			
Married status	-0.04	-1.05	F = 18.03,
Regular health check-ups	0.16	4.04**	p = 0.000,
Regularly receiving breast cancer information	0.13	3.22**	$R^2 = 0.11$,
Women's health issues	0.18	4.66**	Adjusted R = 0.099
Perceived interest and relatedness			
Religion	0.16	4.02**	F = 9.71,
Married status	-0.08	-2.06*	p = 0.000,
Family history of breast cancer	0.12	2.84**	$R^2 = 0.059$,
Women's health issues	0.06	1.41	Adjusted R = 0.053
Perceived competence			
Religion	0.21	4.91**	F = 30.98,
Family history of breast cancer	0.24	6.46**	p = 0.000,
Regularly receiving breast cancer information	0.20	-0.39	$R^2 = 0.17$,
Women's health issues	0.19	3.48**	Adjusted R = 0.16
Pressure and tension			
Breast cancer screening	0.11	2.48*	F = 19.03,
Regular health check-ups	0.16	3.76**	p = 0.000,
Regularly receiving breast cancer information	0.14	3.36**	$R^2 = 0.11$,
Women's health issues	0.09	2.21*	Adjusted R = 0.10
Total intrinsic motivation			
Religion	0.12	3.14**	
Married status	-0.06	-1.57	F = 16.27,
Breast cancer screening	0.03	0.71	p = 0.000,
Regular health check-up	0.14	3.30 **	$R^2 = 0.16$,
Family history of breast cancer	0.18	4.42 **	Adjusted R = 0.15
Regularly receiving breast cancer's information	0.10	2.53 *	
Women's health issues	0.14	3.35 **	

*$p < 0,05$; **$p < 0,01$

4. DISCUSSION

The present study explored intrinsic motivation and its related components among women regarding breast cancer screening behaviors. This results identified that 43.6% of women demonstrated a high level of intrinsic motivation indicates. This finding indicates a favorable disposition towards proactive health measures. It is closely aligned with the self-determination theory, which posits that individuals are motivated by both intrinsic and extrinsic factors [9, 14]. Intrinsic motivation, in this context, refers to the innate drive or personal interest that women possess regarding maintaining breast health. This motivation is underpinned by the sense of autonomy, competence, and relatedness that women experience while engaging in this health behavior. Women who experience intrinsic motivation towards breast self-examination are more likely to adopt this proactive health behavior willingly and consistently. This complements the principles of self-determination theory that underscore the importance of intrinsic motivation in driving behavior and promoting psychological well-being. Conversely, the majority of participants (54.4%) demonstrated low intrinsic motivation, suggesting that many women may not yet fully internalize the importance of or feel personally engaged in this preventive behavior. This discrepancy highlights a critical gap whereby, despite a subset exhibiting proactive motivation, most individuals may rely on external cues or encounter psychological barriers that impede consistent engagement in screening. Therefore, targeted interventions are needed to enhance intrinsic motivation among these women, potentially by increasing awareness, fostering autonomy, and building emotional connections to the behavior, to ultimately improve screening uptake and early detection outcomes.

In this study, participants with high intrinsic motivation reported higher levels of perceived choice and effort (56.2%), perceived interest and relatedness (53.8%), and perceived usefulness and importance (51.9%). These findings underscore the critical roles of autonomy, emotional engagement, and personal value attribution in motivating health-related behaviors. Interestingly, perceived competence was reported more frequently among participants with low intrinsic motivation (63.0%), a counterintuitive result suggesting that a sense of competence alone may be insufficient to foster intrinsic engagement in breast cancer screening. This implies that while some women may feel capable of performing screening behaviors, they may not perceive these actions as personally meaningful or internally driven. By contrast, participants with high intrinsic motivation reported lower levels of pressure and tension (41.7%) compared to their less motivated counterparts (58.3%), indicating that intrinsic motivation is associated with a more favorable emotional experience. Reduced perceived pressure may reflect a stronger sense of volition and self-endorsement, core tenets of intrinsic motivation, that are essential for sustaining long-term adherence to preventive health behaviors. Collectively, these findings highlight the need for interventions that move beyond competence-building to also nurture autonomy, foster emotional investment, and establish personally meaningful connections to the behavior.

This study examined the factors influencing intrinsic motivation and its psychological components concerning breast cancer screening behaviors among women. The regression analyses identified several significant predictors, including sociodemographic and health-related variables, that contributed to overall intrinsic motivation and its subdimensions. The results indicate that regular health check-ups, a family history of breast cancer, regular access to breast cancer information, and women's health issues consistently and positively predicted multiple components of intrinsic motivation. Specifically, these factors were significantly associated with increased perceptions of usefulness and importance, greater autonomy and effort, and reduced emotional pressure related to breast cancer screening. These findings underscore the value of sustained health education and preventive health practices in fostering both cognitive and emotional aspects of motivation.

Family history of breast cancer emerged as a particularly strong predictor of perceived competence ($\beta = 0.24$, $p < 0.01$), suggesting that personal or familial exposure to the disease may increase confidence in one's ability to engage in screening. Similarly, religion was significantly associated with perceived competence ($\beta = 0.21$), interest/relatedness ($\beta = 0.16$) and total intrinsic motivation ($\beta = 0.12$), potentially reflecting the influence of cultural and community norms on psychological engagement and health perceptions. These findings reinforce the notion that value systems and belief structures can meaningfully shape individuals' health-related motivation. Interestingly, marital status showed a negative association with

perceived interest and relatedness (β = -0.10). This may indicate that married women face competing priorities or external pressures that reduce their sense of autonomy or emotional connection to screening behaviors, potentially limiting intrinsic engagement.

Regular health check-ups were a significant predictor of intrinsic motivation for breast cancer screening (β = 0.14, t = 3.30, p < 0.01), suggesting that individuals who consistently engage with healthcare services are more likely to develop internalized motivation for preventive health behaviors. Similarly, regularly receiving breast cancer information was positively associated with intrinsic motivation (β = 0.10, t = 2.53, p < 0.05), indicating that timely and relevant health information may enhance awareness, knowledge, and perceived personal relevance-key factors that support informed decision-making and autonomous motivation. Furthermore, concern for women's health issues also significantly predicted greater intrinsic motivation (β = 0.14, t = 3.35, p < 0.01), reflecting the influence of gender-specific health awareness in fostering personal commitment to preventive action. These findings highlight the synergistic impact of healthcare engagement, access to health information, and attentiveness to women's health concerns in shaping intrinsic motivation. They underscore the need for public health strategies that extend beyond information dissemination to promote meaningful, value-driven engagement with personal and preventive health.

These findings are consistent with prior research by Jung and Jo, who employed the Intrinsic Motivation Inventory to examine breast cancer screening behaviors among 905 individuals, revealing a strong association between screening participation and intrinsic motivation [15]. Together, these results underscore the importance of increasing access to reliable health information and promoting routine engagement with preventive care to enhance intrinsic motivation. By identifying and leveraging internal motivational drivers, healthcare providers and policymakers can design more effective communication strategies and interventions that resonate with women's personal values and decision-making processes.

This study has several limitations that should be acknowledged. First, its cross-sectional design limits the ability to infer causal relationships between intrinsic motivation and breast cancer screening behaviors. Second, the study focused exclusively on women, which restricts the generalizability of the findings to other populations, including men and gender-diverse individuals who may also participate in or be affected by breast cancer screening initiatives. Additionally, cultural and contextual factors that may influence motivation were not fully explored, which may affect the interpretation and applicability of the results. Future research should consider longitudinal designs and more diverse samples to validate and expand upon these findings.

5. CONCLUSION

This study highlights the significant role of intrinsic motivation and its psychological components in influencing women's engagement in breast cancer screening behaviors. The predictors including regular health check-ups, family history of breast cancer, access to information, and attention to women's health issues were found to positively influence various dimensions of intrinsic motivation. These findings underscore the importance of designing interventions that not only build knowledge and skills but also foster personal relevance, emotional engagement, and a sense of agency in preventive health behaviors.

REFERENCES

1. Ferlay J, Ervik M, Lam F, Laversanne M, Colombet M, Mery L, Piñeros M, Znaor A, Soerjomataram I, Bray F. Global Cancer Observatory: Cancer Today [Internet]. Lyon (FR): International Agency for Research on Cancer; 2024 [cited 2025 March 26]. Available from: https://gco.iarc.who.int/today.

2. Newman LA. Breast cancer screening in low and middle-income countries. Best Pract Res Clin Obstet Gynaecol. 2022 Sep;83:15–23.

3. Jenkins C, Minh LN, Anh TT, Ngan TT, Tuan NT, Giang KB, et al. Breast cancer services in Vietnam: a scoping review. Glob Health Action. 2018 Jan 1;11(1):1435344.

4. Mohan R, Thulaseedharan JV. Awareness of risk factors, symptoms and screening of breast cancer: A cross-sectional survey among 35–65-year-old women in Alappuzha district, Kerala, India. J Fam Med Prim Care. 2023 Oct;12(10):2401–7.

5. Ngan TT, Jenkins C, Minh HV, Donnelly M, O'Neill C. Breast cancer screening practices among Vietnamese women and factors associated with clinical breast examination uptake. PLoS ONE. 2022 May 27;17(5):e0269228.

6. Estebsari F, Rahimi Khalifehkandi Z, Latifi M, Farhadinasab A, Vasli P, Mostafaie D. Protection Motivation Theory and Prevention of Breast Cancer: A Systematic Review. Clin Breast Cancer. 2023 Jun;23(4):e239–46.

7. Khani Jeihooni A, Moayedi ZS, Momenabadi V, Ghalegolab F, Afzali Harsini P. Effect of Educational Intervention Based on Theory of Planned Behavior (TPB) on Doing Breast Self-examination in a Sample of

Iranian Women. Breast Cancer Basic Clin Res. 2023 Jan 26;17:11782234221145417.

8. Asadi N, Memarian R, Vânki Z. Motivation to Care: A Qualitative Study on Iranian Nurses. J Nurs Res. 2019 Aug;27(4):e34.

9. Ryan RM, Deci EL. Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. Contemp Educ Psychol. 2020 Apr 1;61:101860.

10. Safizade H, Amirzadeh N, Mangolian Shahrbabaki P. Motivational Factors for Breast Cancer Screening Behaviors in Iranian Women: A Qualitative Study. Asian Pac J Cancer Prev APJCP. 2020 Oct 1;21(10):3109–14.

11. Farkas AH, Nattinger AB. Breast Cancer Screening and Prevention. Ann Intern Med. 2023 Nov;176(11):ITC161–76.

12. AlAbdulKader A, Gari D, Al Yousif G, Alghamdi A, AlKaltham S, AlDamigh F, et al. Perceived Barriers and Facilitators to Breast Cancer Screening Among Women in Saudi Arabia. Breast Cancer Dove Med Press. 2023;15:505–13.

13. Nur NR, Ermiati E, Praptiwi A. Women's Intrinsic Motivation in Conducting Breast Self-Examination. J Nurs Care [Internet]. 2018 Jul 3 [cited 2024 Jan 25];1(2). Available from: http://jurnal.unpad.ac.id/jnc/article/view/16326

14. Ryan, R. M., & Vansteenkiste, M. Self-determination theory, In The Oxford Handbook of Self-Determination Theory. Oxford University Press; 2023.

15. Jung SM, Jo HS. Intrinsic motivation factors based on the self-determinant theory for regular breast cancer screening. Asian Pac J Cancer Prev APJCP. 2014;15(23):10101–6.