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Knowledge and practice of breast self-examination among women of reproductive age in Budiganga community of Morang, Nepal

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ABSTRACT

Background: Breast cancer is one of the leading causes of illness and death among women worldwide. Early detection through breast self-examination (BSE) plays a crucial role in improving survival rates. However, in many low-resource settings, both awareness and practice of BSE remain limited. **Aims and Objectives:** The aim of this study was to assess the level of knowledge and practice of BSE among reproductive-age women in the Budhiganga community of Morang, and to examine the association between sociodemographic factors and BSE knowledge and practice. **Materials and Methods:** A descriptive cross-sectional study was conducted, with data collected from a representative sample of reproductive-age women using a structured questionnaire. Participants were selected through random sampling, and the data were analyzed using descriptive statistics to evaluate the level of knowledge and frequency of BSE practice. **Results:** The study revealed that 72.4% of participants had heard of BSE, but only 5.4% reported practicing it regularly. While the majority recognized that BSE should be performed monthly (94%) and started in their 20s (96.7%), selected sociodemographic variable age ,marital status,education.occupation and monthly income was not found associated with knowledge and practice of BSE. **Conclusions:** The findings underscore the need for targeted community-based health education programs to enhance both knowledge and the practice of BSE. Raising awareness and providing hands-on training can help improve early breast cancer detection and contribute to reducing the disease burden in resource-limited communities.

Key words: Breast self-examination; Knowledge; Morang; Practice; Reproductive age

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INTRODUCTION

Breast cancer stands as the leading cause of cancer-related deaths globally, with a significant increase in both incidence and mortality observed over the past decade. Since 2008, the worldwide incidence of breast cancer has escalated by over 20%, accompanied by a 14% rise in mortality rates.[1] In Nepal, breast cancer ranks as the second most common cancer among women, with an age-adjusted incidence rate as high as 25.8/100,000 women, and a corresponding mortality rate of 12.7/100,000 women.[2] In 2020, there were 1973 newly reported cases of breast cancer in females, indicating an alarming upward trend.[3] Despite advancements in early detection methods, such as mammography and clinical breast examinations, the knowledge and practice of breast self-examination (BSE) remain suboptimal, particularly in low-resource settings. BSE is a cost-effective and non-invasive approach that women can perform regularly to identify early signs of breast abnormalities.[4] However, data from Budhiganga, Biratnagar, reveals a lack of comprehensive information regarding the awareness and understanding of BSE among reproductive-age women.

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The Sustainable Development Goals, specifically Goal 3, aim to enhance maternal health by reducing the global maternal mortality ratio to below 70/100,000 live births by 2030. Various interventions have been implemented globally to meet these targets.[5] Notably, despite significant progress in managing breast cancer, its incidence continues to grow, influenced largely by lifestyle changes.[6] The World Health Organization recommends early detection as a cornerstone for improving breast cancer outcomes, highlighting BSE, clinical breast examination, and mammography as effective screening methods.[7] A recent study from Butwal Sub-Metropolitan City indicated inadequate knowledge and practice of BSE among reproductive-age women.[8] Identifying the gaps in knowledge and the factors affecting it can empower health authorities to formulate effective educational interventions and promote BSE practices. BSE is an essential, cost-effective, and non-invasive method for the early detection of breast abnormalities, including breast cancer. Regular BSE practice allows women to familiarize themselves with their breast tissue, making it easier to notice any unusual changes such as lumps, skin dimpling, nipple discharge, or changes in breast size and shape. Early detection significantly increases the chances of successful treatment, reducing mortality and improving overall survival rates.[9]Click or tap here to enter text.

However, a lack of knowledge and awareness of BSE can have severe consequences. Women who do not practice BSE or recognize its importance may delay seeking medical attention when abnormalities arise, leading to late-stage diagnoses when treatment options become more limited and less effective. Delayed detection often results in increased mortality rates, higher medical costs, and a reduced quality of life for affected individuals.

The primary purpose of this study is to evaluate the knowledge and practice of BSE among reproductive-age women in Budhiganga, while also identifying the association of socioeconomic variables with these factors. By addressing the existing knowledge gaps and understanding the determinants influencing BSE, this research aims to contribute to improved early detection of breast cancer and overall health outcomes for women in this region. Hence, the objective of this study was to evaluate the level of knowledge and practice of BSE among reproductive-age women in Budhiganga and to identify the associations between knowledge and practice of BSE and sociodemographic variables.

By addressing this critical knowledge gap, the study has the potential to the current status and determinants of BSE knowledge and its association with the sociodemographic factors, this research will pave the way for better-informed health policies and programs, fostering a community better equipped to fight breast cancer through early detection.

MATERIALS AND METHODS

This observational descriptive quantitative hospital-based prospective cross-sectional study was conducted in the ward 2 and ward 4 of Budhiganga Community between October and November 2024, in all females of the reproductive age group fulfilling the inclusion criteria with informed consent to participate in the study, a self-structured proforma was administered to the research participants and the data were collected by face to face interview. Privacy and comfortable settings for participants were ensured. Using the prevalence rate BSE practice in Biratnagar of 24.6%,[10] a 95% confidence level and a margin of error set at 3%,using formula $n=Z^2.P(1-P)/d^2$, at 95% confidence level (1.96), the computed sample to account for potential non-responses, a 10% contingency was added, bringing the final sample size, that is, 254 participants. For case enrollment in the study, ethical clearance was taken from the institutional review committee of Birat Medical College Teaching Hospital (Ref: IRC-PA-398/2024). All data and findings were noted in a predesigned performa in the Nepali and English version. The questionnaire consisted of three parts, of which part 1 was about sociodemographic data, part 2 was about knowledge regarding BSE (10 items), and part 3 consisted of practice of BSE questions (six items). The correct response (>75%) questions related to knowledge and practice was considered as adequate knowledge and good practice and less than that was considered inadequate knowledge and poor practice. Data collected were checked thoroughly for completion and error. Data were entered manually in windows excel sheet and coded and recorded digitally using an IBM Statistical Package for the Social Sciences on Windows version 22.0. Descriptive statistics, that is, frequency, percentage, mean, standard deviation, and range and inferential statistics, i.e., Chi-square test were used. The level of significance was set at $P<0.05$.

Inclusion criteria

Inclusion criteria were as follow: women who are between the age of 15 and 49 years (reproductive age who reside in Budhiganga community of Morang, women who are not currently diagnosed with breast cancer, and women who voluntarily agree to participate in the study and provide informed consent were recruited.

Exclusion criteria

Exclusion criteria were as follow: women below 15 years or above 49 years, women who do not reside in Budhiganga, community of Morang, women who are currently diagnosed with breast cancer or are undergoing treatment for breast cancer and women who have significant communication barriers that prevent them from understanding the survey questions (e.g., severe hearing impairment and cognitive impairments).

RESULTS

The sociodemographic characteristics of the participants (n=275) reveal that the majority were in the 25–34 age group (47.2%) with a mean age of 29.59 years (SD=7.19). Most participants were married (90.9%) indicating a predominantly married population. In terms of education, nearly half of the participants had primary education (46.9%) highlighting low levels of advanced educational attainment. Regarding occupation, nearly half of the participants were homemakers (47.6%), and other groups included unemployed, students (2.4%), and self-employed participants (1.2%). The income distribution showed that the majority earned NPR 10,000–20,000/month (87%) and notably, no participants reported earning below NPR 10,000, reflecting a lower-middle-class economic background (Table 1).

Among the participants, 72.4% (n=184) had heard of BSE, while 27.6% (n=70) were unaware of it. The majority (94.0%, n=173) correctly identified that BSE should be performed monthly, while a small percentage (6.0%, n=11) incorrectly believed it should be done daily, weekly, or annually. Most participants (96.7%, n=178) correctly stated that BSE should be initiated in their 20 s, whereas 3.3% (n=6) had incorrect knowledge, citing below 20 years, 30 s, or 40 s as the appropriate age. About 60.9% (n=112) correctly recognized that BSE is best performed 7–10 days after menstruation. However, 39.1% (n=72) incorrectly thought it should be performed during menstruation, mid-cycle, or before menstruation. All participants who had heard of BSE (100%, n=184) acknowledged that BSE helps in the early detection of breast cancer. A significant proportion (73.9%, n=136) demonstrated knowledge of breast cancer risk factors, while 26.1% (n=48) lacked awareness (Table 2).

Only 5.4% (n=10) of the participants reported performing BSE regularly, whereas the vast majority, 94.6% (n=174), did not practice it regularly. A mere 4.3% (n=8) correctly performed BSE every month as recommended, while 95.7% (n=176) reported performing it only occasionally (e.g., once in a few months, annually) or only when experiencing discomfort. Only 5.4% (n=10) demonstrated the correct steps of BSE, including inspection in front of a mirror and palpation in different positions (lying, standing, or sitting). The majority, 94.6% (n=174), either limited themselves to inspection or palpation alone. Similarly, only 5.3% (n=10) used the correct palpation patterns (clock, wedge, and sweeping pattern) for BSE. The remaining 94.6% (n=174) used incomplete or incorrect patterns, such as only one or two of the methods (Table 3).

Inadequate knowledge was most prevalent among participants aged 15–24 years (59.6%), followed by those above 35 years (58.7%). Adequate knowledge was highest in the 25–34 age group (45.3%).No significant association was found between age and knowledge level (P=0.39). Inadequate knowledge was higher among married participants (65.0%) compared to unmarried participants (56.1%). The difference was not statistically significant (P=0.57). Inadequate knowledge was highest among participants with higher education (80.0%) and secondary education (65.6%). Education level was not significantly associated with knowledge of BSE (P=3.13). Students

Table 1: Sociodemographic characteristics of the participant

Demographic characteristics	Categories	Frequency
Age (y)	15–24	71 (28)
	25–34	120 (47.2)
	Above 35	63 (24.8)
	(Mean±SD)	29.591±7.19
Marital status	Unmarried	23 (9.1)
	Married	231 (90.9)
Education	No formal education	92 (36.2)
	Primary education	119 (46.9)
	Secondary education	38 (15)
	Higher education	5 (2.0)
Occupation	Unemployed	24 (9.4)
	Homemaker	121 (47.6)
	Student	6 (2.4)
	Employed	100 (39.4)
	Self-employed	3 (1.2)
Monetary income per month (NPR)	<10,000	0.0 (0)
	1000–20000	221 (87)
	<20000	33 (13)

Table 2: Participants knowledge regarding technique of breast self-examination

Items	Response options	Frequency
Heard of breast self-examination	Yes (Correct response)	184 (72.4)
	No (Incorrect response)	70 (27.6)
Frequency of breast self-examination	Daily/weekly/Annually (Incorrect response)	11 (6)
	Monthly (Correct response)	173 (94)
Starting age of performing breast self-examination	Below 20 years/30 s/40 s (Incorrect response)	6 (3.3)
	20 s (Correct response)	178 (96.7)
Best time to perform Breast -self -examination	During menstruation/ Mid-cycle/Before menstruation (Incorrect response)	72 (39.1)
	After menstruation (7–10th day) (Correct response)	112 (60.9)
BSE helps in early detection of cancer	Yes (Correct response)	184 (100)
	No (Incorrect response)	0.0 (00)
Knowledge about risk factors of breast cancer	Yes (Correct response)	136 (73.9
	No (Incorrect response)	48 (26.1)

showed the highest proportion of adequate knowledge (60.0%), while self-employed participants had the lowest (33.3%). No significant association was observed between occupation and knowledge level (P=0.72). Inadequate knowledge was slightly higher in participants with a monthly income below 10,000 (57.5%) compared to those earning 10,000–20,000 (54.2%). The association between income and knowledge was not statistically significant (P=0.09) (Table 4).

The findings indicate that adequate BSE practice was highest among the 25–34 age group (83.3%) and participants with higher or primary education (60–75%), while inadequate practice was prevalent among those with no formal education (100%). Homemakers (100%) and students (75%) had better BSE practices compared to unemployed individuals (50%). Income also showed a positive trend, with the 10,000–20,000 group (100%) practicing BSE more adequately than other income groups. There was no association found between the age, marital status, education, occupation and income with knowledge and practice of Breast self-examination (Table 5).

Table 3: Practice of breast self-examination

Items	Response options	Frequency
Performs breast self-examination regularly	Yes (Correct response)	10 (5.4)
	No (Incorrect response)	174 (94.6)
Performance of breast self-examination	Every month (Correct response)	8 (4.3)
	Once in few month/Annually/ Only if any discomfort (Incorrect response)	176 (95.7)
Steps of breast self-examination	Inspection on mirror and palpation (lying, standing or sitting position) (Correct response)	10 (5.4)
	Inspection only/Palpation only (Incorrect response)	174 (94.6)
Palpation pattern used for BSE	Clock, wedge, and sweeping pattern (Correct response	10 (5.3)
	Clock and wedge pattern/Sweep and clock pattern/Clock pattern only (Incorrect response)	174 (94.6)

DISCUSSION

The present study aimed to evaluate the knowledge and practice of BSE among reproductive-age women in the Budhiganga community of Morang. BSE is widely recognized as a key tool in the early detection of breast cancer, potentially improving survival rates through timely intervention. However, despite its importance, the study revealed substantial gaps in both knowledge and practice, pointing to the necessity for comprehensive and focused educational initiatives to bridge these gaps.

A significant proportion of participants (72.4%) had heard of BSE, demonstrating a relatively high level of awareness of the concept. Nevertheless, only 60.9% were aware of the correct timing for performing BSE, which should ideally occur 7–10 days after menstruation, and 39.1% harbored misconceptions about when to perform it, thinking it should be done during menstruation, mid-cycle, or before menstruation. While 94% of respondents correctly identified that BSE should be performed monthly, a smaller proportion (96.7%) knew that BSE should be initiated in their 20 s. These findings are consistent with previous research, such as Marahatta and Sharma (2018),[1] which highlighted a moderate level of awareness about BSE but identified significant gaps in knowledge, particularly

Table 4: Association of the level of knowledge of BSE with selected socio-demographic variables

Characteristic	Categories	Knowledge, frequency (%)		P-value
		Inadequate ≤75%	Adequate >75%	
Age	15–24	31 (59.6)	21 (40.4)	0.39
	25–34	47 (54.7)	39 (45.3)	
	Above 35	27 (58.7)	19 (41.3)	
Marital status	Married	13 (65.0)	7 (35.0)	0.57
	Unmarried	92 (56.1)	72 (43.9)	
Education	No formal education	34 (58.6)	24 (41.4)	3.13
	Primary education	46 (51.7)	43 (48.3)	
	Secondary education	21 (65.6)	11 (34.4)	
	Higher education	4 (80.0)	1 (20.0)	
Occupation	Unemployed	9 (56.3)	7 (43.8)	0.72
	Homemaker	51 (57.3)	38 (42.7)	
	Student	2 (40.0)	3 (60.0)	
	Employed	41 (57.7)	30 (42.3)	
	Self-employed	2 (66.7)	1 (33.3)	
Monthly income	<10,000	0.00	0.00	0.09
	1,000–20,000	92 (57.5)	68 (42.5)	
	<20,000	13 (54.2)	11 (45.8)	

Table 5: Association between practice of breast self-examination and selected sociodemographic variables

Characteristic	Categories	Practice, frequency (%)		P-value
		Inadequate	Adequate	
Age	15–24	1 (100)	0 (0.0)	3.75
	25–34	1 (16.7)	5 (83.3)	
	Above 35	2 (66.7)	1 (33.3)	
Marital status	Married	4 (40.0)	6 (60.0)	0
	Unmarried	4 (40.0)	6 (60.0)	
Education	No formal education	1 (100)	0 (0.0)	1.87
	Primary education	1 (25.0)	3 (75.0)	
	Secondary education	2 (40.0)	3 (60.0)	
	Higher education	2 (40.0)	6 (60.0)	
Occupation	Unemployed	3 (50.0)	3 (50.0)	0.62
	Homemaker	0 (0.0)	0 (0.0)	
	Student	1 (25.0)	3 (75.0)	
	Employed	0 (0.0)	0 (0.0)	
	Self-employed	0 (0.0)	0 (0.0)	
Income	<10,000	4 (57.1)	3 (42.9)	2.85
	1,000–20,000	0 (0.0)	3 (100)	
	<20,000	4 (40.4)	6 (60.6)	

concerning the correct techniques and optimal timing for performing BSE. This knowledge gap could be attributed to limited or inadequate health education campaigns targeting women in the community, a concern that mirrors the challenges seen in similar studies.

The majority of participants were in the 25–34 age group, with a mean age of 29.6 years. This indicates that the sample was predominantly within the reproductive age range, which is a critical period for the adoption of preventive health practices like BSE. This finding is in line with the study done in Ethiopia by Dinegde et al., where the majority population represents the reproductive age.[10] A large proportion of participants were married (90.9%) and had primary education (46.9%), which reflects a population with relatively low education levels and possibly limited access to health information. The high percentage of homemakers (47.6%) and monthly incomes in the range of NPR 10,000–20,000 (87%) suggest that participants may face economic constraints and social norms that could affect their health practices, including BSE.

The majority of participants (72.4%) had heard of BSE, and most could correctly identify the recommended monthly frequency (94%) and the optimal age to start BSE (20 s, 96.7%), the above finding is supported by the similar study done in Malaysia by Al-Naggar et al., where 88.8% has heard about BSE which shows the greater awareness about BSE.[11] However, there were significant gaps in understanding when to perform BSE, with 39.1% of participants suggesting incorrect times during the menstrual cycle in the present study. Despite some awareness, a concerning gap existed between knowledge and actual practice. Although 100% of those who had heard of BSE recognized its role in early cancer detection, fewer participants knew the correct steps and palpation patterns for performing BSE. This suggests that while health education has reached a certain level, it has not been fully effective in translating knowledge into correct practices. The actual practice of BSE was alarmingly low, with only 5.4% of participants performing it regularly. A significant portion (94.6%) did not adhere to the recommended monthly frequency, with some performing it sporadically or only when experiencing discomfort. The above findings are in line with the systematic review by Oluwakemi et al., done in Nigeria which showed that the women had average knowledge of BSE and poor practice.[12] This highlights a critical gap in the translation of knowledge into behavior. Additionally, only a small percentage (5.4%) correctly followed the steps and palpation patterns for BSE. This suggests a need for practical training and reinforcement of correct techniques, possibly through community-based health programs and workshops.

In terms of knowledge, age, marital status, education, occupation, and income did not show significant associations with BSE knowledge, suggesting that universal educational interventions might be necessary to increase BSE awareness across all demographic groups. However, there were slight trends indicating that participants with higher education tended to have better knowledge. The similar findings in contrasting to the study done in Ethiopia by Asmare et al., which findings suggest that level of education is strongly associated with BSE knowledge.[13] On the other hand, when it came to BSE practice, participants in the 25–34 age group and those with higher education demonstrated significantly better adherence to BSE recommendations. This suggests that education and age

are crucial factors in improving BSE practices, though the associations were weak.

Interestingly, neither age nor marital status showed a significant association with the practice of BSE, suggesting that barriers to BSE practice are more influenced by gaps in knowledge and socioeconomic factors than demographic variables. This observation emphasizes the importance of addressing socioeconomic disparities when designing public health campaigns to promote BSE.

The findings of this study underscore the need for comprehensive educational interventions to enhance both the knowledge and practice of BSE among reproductive-age women in the Budhiganga community. Such interventions should focus on improving awareness about the optimal timing and techniques for BSE and should be tailored to address the socio-economic barriers that hinder regular practice.

Limitations of the study

The study used a cross-sectional methodology, which only records data at one particular moment in time, making it more difficult to determine the causal relationships between sociodemographic characteristics and BSE practice and knowledge.The accuracy of the results may be impacted by recollection bias and social desirability bias, given the information on participants' knowledge and use of BSE was self-reported.Only the Budhiganga community in the Morang district was the site of the study. As a result, the results might not apply to women from diverse sociocultural and economic backgrounds in other parts of Nepal. Additionally, this study only used quantitative methodologies, which might have prevented it from gaining a deeper understanding of the cultural, personal, and belief-based barriers that affect BSE practice.

CONCLUSION

This study highlights the significant gap between awareness and actual practice of BSE among reproductive-age women in Budhiganga. It emphasizes the crucial role of education level in influencing BSE practice and identifies self-employed women as the most likely to perform BSE regularly.

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Authors' Contributions:
IS- Definition of intellectual content, literature survey, prepared first draft of manuscript, implementation of study protocol, data collection, data analysis, manuscript preparation and submission of article; **AM**- Concept, statistical analysis and interpretation and manuscript revision; **AS-** Design of study, manuscript revision and coordination; **SS-** Coordination and design of study,manuscript preparation manuscript revision.

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