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Awareness Regarding Breast Cancer Among Women of Reproductive Age Group in Bharatpur Metropolitan City Ward No. 10 Chitwan

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Abstract

The World Health Organization recognizes breast cancer as a global health concern and the most common cancer among women in both developed and developing countries. In Nepal, breast cancer ranks as the second most common malignancy after cervical cancer, with most cases diagnosed at late stages, placing substantial burden on the healthcare system. However, awareness remains limited, with only a minority of the population knowledgeable about the disease. This cross-sectional descriptive study assessed breast cancer awareness among women of reproductive age (15-49 years) in Bharatpur Metropolitan City Ward No. 10, Chitwan. A total of 209 women were recruited using non-probability convenience sampling, with data collected through face-to-face household interviews. Most respondents belonged to the 35-49 age group (50.7%), were Brahmin (53.1%), Hindu (90%), and had completed bachelor-level or higher education (48.3%). The majority were employed (84.3%), primarily as agricultural workers or housewives (41.5%), with family monthly incomes between NPR 50,000-100,000 (49.3%). Most were married (81.3%) and lived in nuclear families (73.7%). Only 1.4% had family history of breast cancer, and 91.9% had never participated in breast cancer awareness programs. Social media emerged as the primary information source (62.7%). The study found satisfactory awareness levels (64.6%), with significant associations between awareness and age, education level, family income, and prior participation in awareness programs. These findings provide baseline data for developing targeted local-level health interventions and awareness campaigns to improve early detection and outcomes of breast cancer in this community.

Keywords: Awareness, Breast Cancer, Knowledge, Survey and Screening

1. Introduction

1.1. Background

In the present era, the prevalence of non-communicable diseases is increasing and is a major public health concern. Among the major killers of NCD, cancer is one among them. Cancer accounted for nearly 10 million deaths in 2020, or nearly one in six deaths which include slung, prostate, colorectal, stomach and liver cancers the most common types of cancer among male while breast, colorectal, lung, cervical and thyroid cancer among women. Breast cancer is a type of cancer that starts in the breast when cells begin to grow out of control. Breast cancer cells usually form a tumor that can often be seen on an x-ray or felt as a lump Breast cancer can spread when the cancer cells get into the blood or lymph system and then are carried to other parts of the body, said to be metastasized Breast cancer is the second most common malignancy overall, first being cervical cancer and is the most common cancer in women worldwide, both in the developed and developing countries which have placed a substantial burden on the Nepalese healthcare system Breast cancer is the most frequently diagnosed cancer among women in 140 of 184 countries worldwide Breast cancer is more common among younger, premenopausal women, most of the cases being diagnosed at advanced stages so the survival rate is lower; despite of remarkable development in the managing the disease, the incidence of breast cancer is further continuing due to changes in lifestyles of Nepalese women. Almost 70% of women with breast cancer are aged over 50 years, and only 5% are younger than 40 years old. Breast cancer emerges as the first cause of death among women during 40-45 years old [1-11].

Family history of breast cancer, previous treatment of breast cancer followed by age, dietary factors, consumption of alcohol or tobacco, oral contraceptive pills and late pregnancy are found as major risk factors of breast cancer. The occurrence of breast cancer is high because women are exposed to various factors of breast cancer that include late age at first childbirth, fewer children, shorter duration of breast feeding, early age at menarche and late age at

menopause that adds to the risk. Lump in the breast, nipple discharge or bleeding, change in breast shape, discoloration of the breast, dimpling or pulling in of the nipple and Lump under the armpit are described as symptoms of breast cancer . The three recommended screening methods for early detection of breast cancer includes mammography, clinical breast examination (CBE) and breast self-examination (BSE) BSE is an inexpensive and easy method that can be carried out by women themselves and doesn't seek hospital visits and specialized equipment and expertise as in mammography and CBE. Treatment methods includeradiotherapy, tele therapy, surgery, brachytherapy, chemotherapy and palliative therapy. Awareness and knowledge regarding breast cancer prevention and screening methods should be reached in every corner of the world so as to early detect breast cancer outcome. Breast cancer awareness, increased publicity and education program are necessary and urgent, especially for older women and agricultural workers. Different studies have shown that level of awareness is lacking in the women especially of reproductive age group in developing countries. In case of Nepal, only minority of the population are aware of breast cancer that represents the visible portion of iceberg only whereas the majority of the unaware populations are hidden under water. So, the main aim of this research is to access the level of awareness of breast cancer among the women as there is a growing risk associated with the breast cancer which has directly impacted the lifestyle of Nepalese women [12-26].

1.2. Statement of Problem

Globally around 18.1 million new cancer cases and 9.6 million cancer deaths occurred in 2018, and, on average there is 20% risk of getting cancer before age of 75, and 10% dying from it. In women, breast cancer was most frequently diagnosed dominated by cervical cancer; breast cancer being one of the most frequent cause of death among women from cance. Breast cancer is most frequently diagnosed and a leading cause of death in women worldwide. According to WHO 2020, more than 2.3 million women worldwide are diagnosed with breast cancer and it accounts 685,000 deaths globally each year. As of the end of 2020, there were 7.8 million women alive who were diagnosed with breast cancer in the past 5 years, making it the world's most prevalent cancer and there is more lost disability-adjusted life years (DALYS) by women to breast cancer than any other type of cancer. The global burden of breast cancer is expected to cross 2 million by the year 2030, with growing proportions from developing countries According to data of 2018, in Southeast Asian region (SEAR), breast cancerous the most common type of cancer among females. In detail, a total of 137,514 new cases, counting for 26.9% of all diagnosed cancer types, among them, 50,935 death cases were recorded According to the data from seven major cancer service hospitals in 2012, breast cancer was the second most common malignancy among Nepalese women, after cervical cancer and has placed a substantial burden on the Nepalese healthcare system; the risk of breast cancer increases exponentially up to the age of menopause, and increases at a slower rate thereafter. In Nepal, 1967 new breast cancer cases were found in female in 2077/78. Majority of cases being diagnosed at the later stage; the survival rate of breast cancer is lower in the less developed nations. About 10-12% of patients might present with stage III in Australia, whereas in certain parts of Asia, such as China and India, the rates are up to 35-40% In cross-sectional study conducted in an urban area in Coimbatore, it is seen that most of the women (91%) were not aware about the risk factors of breast cancer and 89.5% were not aware about the symptoms of breast cancer. Also, in a cross-sectional survey carried out in a community setting with the female population in Pokhara, it was found that the level of awareness of breast cancer, including knowledge of warning signs and BSE, is sub-optimal among Nepalese women [14].

1.3. Rationale of The Study

WHO has recognized breast cancer as a subject of global health concern, it is major among the cancer in women both in developed and developing countries. Increased life expectancy, increased urbanization and adoption of western lifestyles are the major causes of increasing incidence of breast cancer. Though some risk can be reduced by early prevention, these strategies seem ineffective to eliminate breast cancer in low and middle-income countries where breast cancers are diagnosed at advanced stages. Therefore, early detection in order to improve breast cancer outcome and survival remains cornerstone of breast cancer control In Asia, breast cancer is fourth leading cause of cancer-related mortality among women. Breast cancer is frequently diagnosed in post-menopausal stage in developed countries but in Nepal, more than half (60%) are diagnosed in pre-menopausal women. The pre- to post-menopausal ratio of cases of breast cancer in Nepal is 6:4 whereas in developed countries it is 4:6. Breast cancer is the greatest threat to women health due to its increasing incidence and prevalence in Nepal and in Bagmati province the breast cancer incidence is highest and is in increasing trend compared to other provinces Despite the increased cases and mortality of breast cancer, many women of the developing countries are still not aware of breast cancer and its consequences. In developed countries the incidence of breast cancer is higher but due to the knowledge, awareness, early detection and treatment the death toll is lower as compared to ours. The main reason for low survival rate of breast cancer in developing countries like ours could be traced as the lack of awareness and diagnosis of problems at the advanced stage It is seen that awareness related to breast cancer is very low in developing countries, so research of such consent should be carried out to access the level of awareness that work as framework for the future. Though many studies regarding breast cancer have been conducted globally as well as Nepal, limited studies are focused on awareness regarding breast cancer in Nepal and no research has been undertaken in Bharatpur-10 on awareness regarding breast cancer. So, in instance of those situations this study will help to assess the level of awareness and perception on breast cancer among women of reproductive age group of Bharatpur-10, which could be useful in creating and implementing a breast cancer screening and awareness program for risk group. The findings of this study could provide a real time picture

of breast cancer awareness among women, which could be used as baseline data for local level health programme planning in the future [3-19].

1.4. Research Questions

• What is the level of awareness regarding breast cancer among women of reproductive age group in Bharatpur Metropolitan city ward no. 10?
• Are there any factors which are significantly associated with level of awareness regarding breast cancer?

1.5. Objective of The Study

1.5.1. General Objective

• To assess the awareness regarding breast cancer among women of reproductive age group in Bharatpur Metropolitan City, ward no.10, Chitwan.

1.5.2. Specific Objectives

• To identify the level of awareness regarding breast cancer among reproductive age women.
• To measure the association between level of awareness and independent variables.

1.6. Study Variables

1.6.1. Dependent Variable

• Awareness regarding breast cancer.

1.6.2. Independent Variables

1.6.2.1. Socio Demographic Factors

• Age
• Educational status
• Religion
• Ethnicity
• Type of family
• Marital status
• Occupation
• Family monthly income

1.6.2.2. Health Related Information

• Health personnel in the family
• Involvement in awareness program of breast cancer
• Family history of breast cancer
• Source of information

1.7. Conceptual Framework

This conceptual framework shows the relationship between dependent and independent variables of the research. Conceptual framework explains; especially shows in graphically, the main things to be studied, the key factors, variables and the presumed relationship among them.

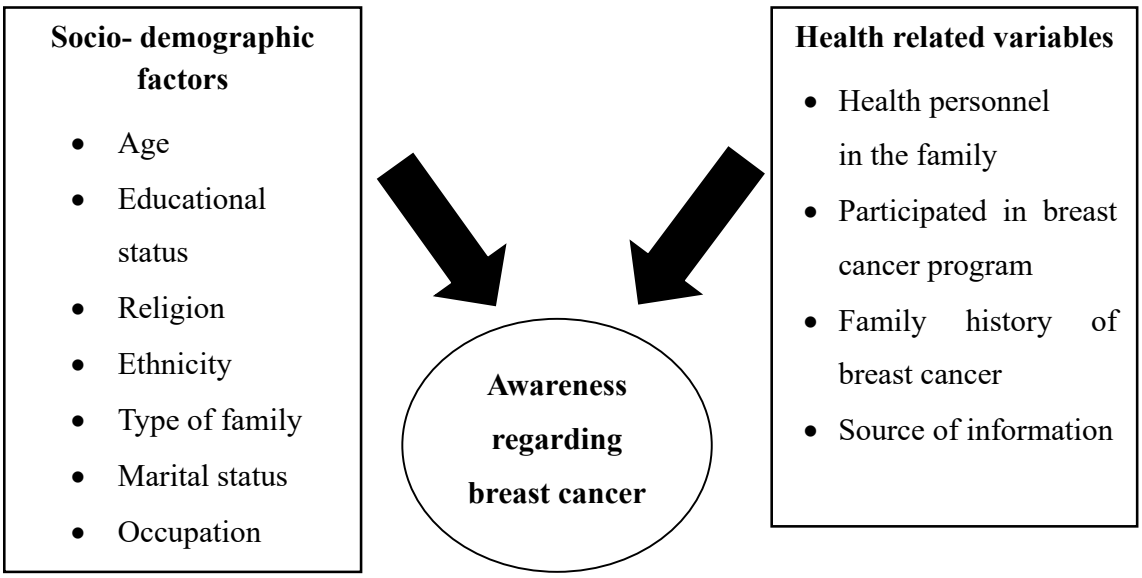


Figure 1: Conceptual Framework of The Study

1.8. Operational Definitions

1.8.1. Awareness

It is the act of participants being mindful or aware of breast cancer. It referred to having information on meaning, risk factors, sign and symptoms, early detection, treatment available and preventive measures of breast cancer.

1.8.2. Level of awareness

Semi-structured questionnaire was used for collecting data from the women of reproductive age group. The awareness regarding breast cancer related questions consists of five domains:

• Domain 1: General awareness
• Domain 2: Risk factors
• Domain 3: Sign and symptoms
• Domain 4: Early detection
• Domain 5: Treatment and preventive measures
• The respondents answered a total of 17 awareness-related multiple-choice questions to assess their level of awareness which includes four multiple response questions. Every

question was classified as correct or incorrect.
• The level of awareness was graded on a scale of 0 to 17. The grade was assigned as 1 for correct answers and 0 for incorrect answers.
• Total obtained score had normality test. The score wasn't normally distributed, so the cut-off value was median i.e. 10. Any score more or equal than cut off point, was considered as Satisfactory level of awareness and less than cut off point was considered as Unsatisfactory level of awareness.
• 0-9: Unsatisfactory level of awareness
• 10-17: Satisfactory level of awareness
• For multiple response questions, if the participants can answer half or more than half of the given responses from the list it was considered correct, hence given 1 score and remaining were considered as incorrect and given 0 score.

1.9. Women of Reproductive Age Group
It referred to female population that lies between the age group of 15-49 years and residing in Bharatpur Metropolitan City, ward no.10.

1.10. Age Group Category
For this study reproductive age group was categorized, by taking reference to a study (29), as:
• Early reproductive age: 15-24 years
• Mid-reproductive age: 25-34 years
• Late reproductive age: 35-40 years

2. Methodology
2.1. Research Design
A descriptive community based cross-sectional study design was applied to assess the awareness regarding breast cancer among reproductive age group women.

2.2. Research Method
Quantitative research method was applied in this study.

2.3. Study Site and its Justification
The study was carried out in Bharatpur Metropolitan City, ward no.10, Chitwan. Limited study has been conducted in this geographical area and the population density of this ward is highest among all.

2.4. Study Population
The study population was women of reproductive age group 15 to 49 years residing permanently in the study area.

2.5. Study Unit
Household unit

2.6. Sampling Method/ Technique
Non-probability convenience sampling technique was used for the data collection.

2.7. Sample Size
For the purpose of this study, 95% confidence interval, 5% allowable error and 83.2% prevalence rate from previous study was taken (28). Thus, formula for sample size estimation for infinite population is;

$$n_o = \frac{z^2pq}{d^2} \text{.....Cochran (1963)}$$

$$p = 83.2\% = 0.832$$

$$q = (1\text{-}p) = 1\text{-}0.83 = 0.168$$

$$d = 0.05$$

$$n_o = \frac{z^2pq}{d^2}$$

$$= \frac{1.96^2 \times 0.83 \times 0.168}{0.05^2}$$

$$= 214.78 \approx 215$$

$$n = \frac{no}{1+(no-1)/N} \quad \text{(For finite population)}$$

No. of women of reproductive age group in the ward (N) = 7546

$$n = \frac{215}{(1 + \frac{215-1}{7546})}$$

$$n = 209$$

Thus, the sample size for the study was n= 209.

2.8. Criteria for Sample Selection Inclusion and Exclusion criteria
2.8.1. Inclusion criteria
Women of reproductive age group 15 to 49 years residing in Bharatpur 10 and willing to provide written consent were included in the study. In the presence of two or more women of age 15 to 49 years in the same house, older woman was taken.

2.8.2. Exclusion criteria
Participants who were not available during the time of data collection and those who are mentally ill and physically disabled (can't speak, hear and see) were excluded from the study. Women who were diagnosed with breast cancer were excluded.

2.9. Data Collection Technique
Data was collected through face-to-face interview using developed questionnaire, after taking the informed consent from each participant.

2.10. Data Collection Tools
A self-developed, pre-tested, semi-structured questionnaire was used for the data collection. Questionnaire was classified

into three categories i.e. socio-demographic information, health related information and awareness regarding breast cancer. The awareness regarding breast cancer includes domains as general awareness, risk factors, sign and symptoms, early detection, and treatment and preventive measures.

2.11. Validity and Reliability

2.11.1. Validity

Questionnaire for the research was developed by extensive literature review. Content validity was achieved by using items from the previously validated surveys, by developing items based on an extensive literature search, and by frequently reviewing and refining the questions with the consultation of subject experts and supervisor. The research title, objectives and tools were properly defined to the respondents.

2.11.2. Reliability

Tools and questionnaires for the study was developed by extensive literature review along with the consultation of subject experts and concerned supervisors. The questionnaire was forth and back-translated into Nepali and English language and necessary editing was done. Pre-testing was done in 10% of sample population at another similar site than actual study site and improvements were made according to necessity.

2.12. Limitations of the Study

The study was conducted in a single ward of Bharatpur Metropolitan City, so it may not represent the scenario of whole district.

2.13. Ethical Consideration

Ethical approval was obtained from Thesis Committee of School of Public Health, CMC and CMCIRC and written approval from the ward office. The purpose and process of the study was clearly explained to the participants before data collection. Privacy and confidentiality of the participants was assured and maintained. Participants were informed of their rights to deny participation in the study or to withdraw from the study at any stage of data collection and written informed consent of the participants was received prior to data collection. In case of participants below 18 years, assent form was sought from the concerned parents/family members.

2.14. Data Management and Analysis

Data entry, management and analysis was done using IBM-SPSS version 20. Data entry was done by self and descriptive and inferential analysis was done with the consultation of subject experts and in guidance of concerned supervisors. Bi-variate analysis was carried out to examine the association between level of awareness and other independent variables at 5 % level of significance.

3. Findings

This chapter includes the interpretation and analysis of the findings of the study. The objective of the study was to assess the awareness regarding breast cancer among reproductive age women in Bharatpur Metropolitan City, ward no.10, Chitwan. Data were collected from a total of 209 samples through the semi-structured questionnaire. Face-to-face interviews with the respondents were conducted for the data collection and informed consent was taken from every respondent prior to the data collection. The collected data are interpreted and analyzed according to the objective of the study and are presented in this chapter.

3.1. Descriptive Analysis

3.1.1 Socio Demographic Characteristics of The Respondents

Table 1 presents the socio-demographic characteristics of the respondents who participated in the study. The age of the respondents ranges from 15 to 49 years with the median age 35 and interquartile range 14. Half of the respondents (50.7%) belonged to age group 35-49 years whereas minimum respondents (12%) were of age group 15-24 years. Majority of the respondents (53.1%) were from Brahmin ethnic group followed by Chhetri (24.9%), (18.7%) were Janajati, (1.9%) were Dalit and remaining were others. An overwhelming majority of the respondents were Hindu i.e. (90%), (7.7%) were Buddhist and remaining were Christians. Likewise, all of the respondents were literate and most of the respondents (48.3%) completed bachelor and above, followed by secondary education (42.6%), only few respondents (7.2%) had primary education and remaining had the general education. Most of the respondents (84.3%) were employed and remaining (15.8%) were unemployed and students. Out of employed (n=176), most of the respondents (41.5%) were engaged in agriculture/housewife occupation followed by business (36.4%), few numbers of respondents (14.2%) were employed in private sector and remaining (8%) were employed in government sector. Nearly half of the respondents (49.3%) family monthly income ranged from NRs. 50000 to 100000, followed by more than 1000000 and remaining (5.3%) had below 50000. Majority of the respondents (81.3%) were married, (18.2%) were unmarried and only (0.5%) were widowed. Talking about the family type, (73.7%) of the respondents were living in nuclear family and remaining (26.3%) in joint family.

Variables	Categories	Frequency(%)
Age group (in years)		
	Early reproductive age (15-24)	25 (12.0)
	Mid reproductive age (25-34)	78 (37.3)
	Late reproductive age (35-49)	106 (50.7)
Median (IQR) = 35(14) *Min/Max = 15/49*		
Ethnicity group		
	Brahmin	111 (53.1)
	Chhetri	52 (24.9)
	Janajati	39 (18.7)
	Dalit	4 (1.9)
	Others	3 (1.4)
Religion		
	Hindu	188 (90)
	Christian	5 (2.4)
	Buddhist	16 (7.7)
Educational level		
	General education	4 (1.9)
	Basic education	15 (7.2)
	Secondary education	89 (42.6)
	Bachelor and above	101 (48.3)
Employment status		
	Employed	176 (84.3)
	Unemployed	33 (15.8)
If employed, occupation (n=176)		
	Agriculture/Housewife	75 (41.5)
	Employed in government sector	12 (8.0)
	Employed in private sector	25 (14.2)
	Business	64 (36.4)
Family monthly income		
	Below 50000	11 (5.3)
	50000-100000	103 (49.3)
	More than 100000	95 (45.5)
Marital status		
	Married	170 (81.3)
	Unmarried	38 (18.2)
	Widowed	1 (0.5)
Family type		
	Nuclear	154 (73.7)
	Joint	55 (26.3)

Table 1: Socio Demographic Characteristics Among Women (N=209)

3.1.2. Health Related Information

Table 2 shows the description of health-related information of the respondents. Among all the respondents a larger majority (98.6%) had no family history of breast cancer and (1.4%) of the respondent's family members had breast cancer. Similarly, majority (91.9%) of the respondents were never involved in awareness program of breast cancer and very few (8.1%) were involved in awareness program of

breast cancer. More than half (64.1%) of the respondents didn't have health personnel in their family and remaining (35.9%) of the respondents had health personnel in their family. Furthermore, more than half of the respondents (62.7%) heard about breast cancer through social media, while (56.5%) of the respondents said family/relatives as major source of information, (28.2%) of the respondents said school as major source, (39.2%) of the respondents gained information from health personnel and remaining (6.7%) said others as source of information. Among the others (n=14), (42.85%) of the respondents said friends, (35.71%) said training, (14.28%) said NGO and (7.14%) of the respondents gained information from self.

Variables	Category	Frequency (%)
Family history of breast cancer		
	Yes	3 (1.4)
	No	206 (98.6)
Involvement in awareness program of breast cancer		
	Yes	17 (8.1)
	No	192 (91.9)
Presence of health personnel in family		
	Yes	75 (35.9)
	No	134 (64.1)
Source of information*		
	School	59 (28.2)
	Health personnel	82 (39.2)
	Mass media	131 (62.7)
	Family/ Relatives	118 (56.5)
	Others	14 (6.7)
If others, specify (n= 14)		
	Friends	6 (42.85)
	Self	1 (7.14)
	Training	5 (35.71)
	NGO	2 (14.28)

Table 2: Health Related Information Among Women (n=209)

3.1.3. General Awareness Regarding Breast Cancer

Table 3 shows the respondents' general awareness regarding breast cancer. Among all the respondents, most of the respondents (74.6%) gave correct response to the meaning of breast cancer and (81.8%) of the respondents answered correctly that breast cancer is not a communicable disease whereas (55%) of the respondents answered correctly that breast cancer can be spread to others parts of the body if left untreated. Most of the respondents (51.7%) were aware about family history of breast cancer, followed by (36.4%) of the respondents knew excessive alcoholism and smoking, (32.9%) of the respondents knew never breast fed a child, (27.3%) of the respondents said others, among the others (n=57), (49.12%) of the respondents knew less consumption of vegetables and fruits, (26.31%) knew exposure to harmful radiation, (12.28%) knew unhygienic practices, (10.52%) knew obesity and (1.75%) of the respondents knew untreated lymph node. Similarly (19.1%) of the respondents knew previous history of breast cancer, (15.8%) of the respondents knew use of oral contraceptive pills, (13.9%) of the respondents knew having children after 30 years and only (5.3%) of the respondents knew early menarche and late menopause as common risk factors of breast cancer. Majority of the respondents (71.3%) knew swelling, warmth and redness of breast, followed by (69.4%) of the respondents knew painless breast lump, (48.8%) of the respondents knew change in size and shape of the breast, (43.5%) of the respondents knew unusual discharge from nipple, (39.2%) of the respondents knew swelling or lump under arm, (30.1%) of the respondents knew dimpling or thickening of skin of breast, (16.3%) of the respondents knew change in skin color of nipple of breast and (14.4%) of the respondents knew change in size and shape of nipple as common sign and symptoms of breast cancer. Almost all respondents (97.6%) answered that breast cancer can be detected best at early stage, (52.4%) of the respondents gave correct response that breast self-examination (BSE) is easier and cheapest method to detect breast cancer, majority of the respondents (91.9%) gave correct response to the meaning of breast self- examination, (57.4%) of the respondents

knew appropriate age to start breast self-examination, (40.7%) of the respondents knew about frequency of breast self-examination. Likewise, (73.2%) of the respondents gave correct response to the meaning of clinical breast examination (CBE), few respondents were aware about mammogram, where few respondents (30.1%) knew about appropriate age to start mammogram and (44.5%) of the respondents knew about frequency of mammogram. Almost all the respondents (98.1%) were aware that breast cancer can be treated and treatment available in context of Nepal (98.6%). Majority of the respondents (86.1%) knew surgery as treatment method of breast cancer followed by (49.8%) chemotherapy, (19.1%) radiotherapy and (2.4%) hormonal therapy. About half of the respondents (51.7%) knew avoid fatty diet, followed by (50.7%) of the respondents knew eat green vegetables and fruits and doing breast self-examination as common preventive measures of breast cancer, (37.3%) of the respondents knew provide breast feeding to the baby at least 2 years, (36.4%) of the respondents knew avoid alcohol and smoking, (35.4%) of the respondents knew take daily bathing, similarly (20.6%) of the respondents knew decrease obesity, while (17.7%) of the respondents said others, among the others (n=37), (48.64%) of the respondents knew regular health check-up, (43.24%) knew be physically active, (5.40%) knew take rest and (2.70%) of the respondents knew that limit post-menopausal hormone therapy can reduce the risk of breast cancer.

Statements	Correct responses	
	Frequency	Percentage
General awareness		
Meaning of breast cancer, as growth of malignant cells within the breast tissue	156	74.6
Breast cancer is not a communicable disease	171	81.8
Breast cancer can be spread to other parts of body if left untreated	115	55.0
Awareness on common risk factors*		
Family history of breast cancer	108	51.7
Early menarche and late menopause	11	5.3
Having children after 30 years	29	13.9
Never breastfed a child	82	32.9
Use of oral contraceptive pills	33	15.8
Previous history of breast cancer	40	19.1
Excessive alcoholism and smoking	76	36.4
Others	57	27.3
If others, specify (n=57)		
Exposure to harmful radiation	15	26.31
Obesity	6	10.52
Untreated lymph node	1	1.75
Less consumption of vegetables and fruits	28	49.12
Unhygienic practices	7	12.28
Awareness on common warning signs and symptoms*		
Painless breast lump	145	69.4
Change in size and shape of the breast	102	48.8
Change in size and shape of the nipple	30	14.4
Change in skin color of nipple of breast	34	16.3
Dimpling or thickening of skin of breast	63	30.1
Unusual discharge from nipple	91	43.5
Swelling, warmth and redness of breast	149	71.3
Swelling or lump under arm	82	39.2
Awareness on early detection		
Breast cancer can be detected best at early stage	204	97.6
Breast self-examination is easier and cheapest method to detect breast cancer	110	52.4

Meaning of breast self-examination (BSE), as examination of breast by self	192	91.9
Breast self-examination should be started at the age of 20 years	120	57.4
Breast self-examination should be performed once a month	85	40.7
Meaning of clinical breast examination (CBE), as examination of breast by health professionals	153	73.2
Mammogram (Breast x-ray) should be started at the age of 40 years	63	30.1
Mammograms should be done once in a year	93	44.5
Awareness on treatment		
Breast cancer can be treated	205	98.1
Treatment of breast cancer is available in context of Nepal	206	98.6
Common methods of treatment of breast cancer in Nepal*		
Surgery	180	86.1
Chemotherapy	104	49.8
Radiotherapy	40	19.1
Hormonal therapy	5	2.4
Awareness on common preventive measures*		
Avoid fatty diet	108	51.7
Eat green vegetables and fruits	106	50.7
Avoid alcohol and smoking	76	36.4
Provide breast feeding to the baby at least 2 years	78	37.3
Take daily bathing	74	35.4
Doing breast self-examination	106	50.7
Decrease obesity	43	20.6
Others	37	17.7
If others, specify (n=37)		
Be physically active	16	43.24
Limit post-menopausal hormone therapy	1	2.70
Take rest	2	5.40
Regular health check-up	18	48.64

Table 3: General Awareness Regarding Breast Cancer Among Women (n=209)

3.1.4. Level of Awareness Regarding Breast Cancer

Table 4 shows the overall level of awareness regarding breast cancer among respondents. Among total respondents, more than half (64.6%) of the respondents had satisfactory level of awareness and one third of the respondents (35.4%) had unsatisfactory level of awareness regarding breast cancer.

Level of awareness	Frequency	Percentage (%)
Unsatisfactory (0-9)	74	35.4
Satisfactory (10-17)	135	64.6

Table 4: Level of Awareness Regarding Breast Cancer Among Women (n=209)

3.2. Inferential Analysis

According to the research objectives, the association between dependent variables (awareness regarding breast cancer) and independent variables is tested using Chi-square test.

3.3. Association Between Level of Awareness and Independent Variables

Table 5 presents the association between level of awareness and independent variables regarding breast cancer among respondents. Among all the socio-demographic variables of this study, the level of awareness was found to be significantly associated with age of the respondents (P-value= 0.001),

educational level of the respondents (P-value= 0.001) and family monthly income of the respondents (P-value= 0.008). Among all the health information related variables, the level of awareness is significantly associated only with involvement in awareness program of breast cancer with P-value 0.035.

Variables	Category	Level of awareness		P-value
		Unsatisfactory (%)	Satisfactory (%)	
Age group (in years)				0.001#
	15-24	11 (44)	14 (56)	
	25-34	15 (19.2)	63 (80.8)	
	35-49	49 (46.2)	57 (53.8)	
Ethnicity				
	Brahmin/Chhetri	61 (37.4)	102 (62.6))	0.383
	Non- Brahmin/Chhetri**	14 (30.4)	32 (69.6)	
Religion				
	Hindu	69 (36.7)	119 (63.3)	0.461
	Non-Hindu^^	6 (28.6)	15 (71.4)	
Education level				
	General and basic education	13 (68.4)	6 (31.6)	<0.001#
	Secondary education	37 (41.6)	52 (58.4)	
	Bachelor and above	25 (24.8)	76 (75.2)	
Occupation				
	Agriculture/ Housewife	31 (42.5)	42 (57.5)	0.120
	Non- Agriculture/ Housewife$$	32 (31.1)	71 (68.9)	
Family monthly income				
	Below 100000--	50 (43.9)	64 (56.1)	**0.008#**
	More than 100000	25 (26.3)	70 (73.7)	
Marital status				
	Married	61 (35.9)	109 (64.1)	0.999
	Unmarried++	14 (35.9)	25 (64.1)	
Family type				
	Nuclear	57 (37)	97 (63)	0.569
	Joint	18 (32.7)	37 (67.3)	
Family history of breast cancer				
	Yes	1 (33.3)	2 (66.7)	1.00β
	No	74 (35.9)	132 (64.1)	
Involvement in awareness program of breast cancer				**0.035# β**
	Yes	2 (11.8)	15 (88.2)	
	No	73 (38.0)	119 (62.0)	
Presence of health personnel in family				
	Yes	25 (33.3)	50 (66.7)	0.565
	No	50 (37.3)	84 (62.7)	

Table 5: Association Between Level of Awareness and Independent Variables Among Women (n=209)

# denotes significant association by applying Pearson chi-square test at 5% level of significance.
** denotes Non-Brahmin/Chhetri which includes the ethnicities Janajati, Dalit and Others ^^ denotes Non-hindu which includes the religions Christian, Muslim, Buddhist and Others $$ denotes Non-agriculture/Housewife which includes the occupation Employed in government sector, Employed in private sector, Labor and Others -- denotes Below 100000 which includes the family monthly income Below 50000 and 50000-100000 ++ denotes Unmarried which includes the marital status Unmarried, Widowed, Separated and Divorced β denotes association by applying Fisher's Exact test at 5% level of significance.

4. Discussion

A descriptive cross-sectional study conducted among 209 respondents, to assess the level of awareness regarding breast cancer among women of reproductive age group in Bharatpur Metropolitan City, ward no. 10, Chitwan. Current study found that 64.6% of the respondents had satisfactory level of knowledge regarding breast cancer. Similar level of awareness regarding breast cancer was observed by similar studies. While, studies conducted in Jharkhand, India and North-eastern, China showed contradictory results the findings of this study showed that there is statistically significant association between age, educational level, monthly family income and involvement in awareness program towards level of awareness regarding breast cancer. However, there was not any statistically significant association between ethnicity, religion, occupation, marital status, family type, family history of breast cancer and presence of health personnel in family towards level of awareness regarding breast cancer. The findings of this study suggest that level of awareness regarding breast cancer increased with the increase in age of respondents (up to 34 years), this result is in consistent with what was reported by other similar studies. However, the result is contradicted by result obtained by a study conducted in Nigerian women. In this study, the level of awareness among educated respondents (bachelor and above) was higher in comparison to others, similar results were shown by the studies conducted in Jharkhand and Delhi, India. While a similar study showed low level of awareness among this category of respondents [27-30].

Among the respondents, the level of awareness was satisfactory in women belonging to financially capable family background (i.e. family monthly income above NRs. 100000). A study conducted to assess the awareness regarding breast cancer at the community level among women in Delhi, India also showed that the level of awareness was satisfactory among respondents from financially capable family background However, a study conducted in Northern-eastern, China showed result opposite to that of this study The result of this study suggests that the level of awareness regarding breast cancer was satisfactory among the respondents who were not involved in the awareness program. The reason behind satisfactory level of awareness could be influence from mass media and family/relatives. The major sources of information regarding breast cancer were mass media (62.7%) and family/relatives (56.7%). This result is consistent with the results showed by similar studies Whereas, a study conducted among women visited to KIST medical college, Nepal by Shrestha K et.al showed that the major sources of information regarding breast cancer was health workers Among the respondents, vast majority (91.9%) had knowledge about Breast Self Examination and had been practicing it actively. This finding is greater than the findings shown by study conducted in Lalitpur (72%), Kathmandu (73%), and Telangana, India (73%) While, studies conducted in Jharkhand, India, Butwal, Nepal, and Pokhara, Nepal showed poor knowledge of BSE among the respondents The result of this study suggest that 71.3% of the respondents were aware about swelling, warmth and redness of breast and 69.4% were aware about painless lump in breast as signs and symptoms of breast cancer. From this findng it can be concluded that majority of the respondents were aware about signs and symptoms of breast cancer. Similar results were obtained in study conducted in Jharkhand, India and Lalitpur, Nepal While study conducted in Telangana, India and Pokhara, Nepal showed poor level of awareness regarding signs amd symptoms of breast cancer In this study nearly half of the respondents were aware about the family history of breast cancer as risk factor, similar result was shown by study conducted in Jharkhand, India Studies cnducted in Telangana, India and Kathmandu, Nepal showed poor level of awareness regarding risk factors of breast cancer [30-34].

5. Conclusion and Recommendations

This chapter presents conclusions and recommendations based on the objective of study.

5.1. Conclusion

The findings of the study suggest that the overall awareness is satisfactory among the women regarding breast cancer. Though, two-third of the respondents had satisfactory level of awareness, still one-third of women were not aware of breast cancer and its consequences which may largely impacts their preventive practices. Though awareness regarding breast cancer was considerable, there was poor awareness about risk factors and early detection. Since majority of the respondents were educated and from financially capable family background, it can be inferred that education and economic status are the major factors behind satisfactory level of awareness regarding breast cancer. The inferential analysis suggests that the age of the respondents, educational level, monthly family income and involvement in awareness program of breast cancer are significantly associated with level of awareness regarding breast cancer.

5.2. Recommendations

- Local government and concerned authorities need to enhance community targeted effective awareness programs and campaigns on breast cancer.
- Early detection of breast cancer among women was poor, so there is urgent need of awareness raising programs and campaigns based on breast self-examination (BSE) and

screening.

• Study of similar nature can be carried out in larger population so that the findings can be generalized precisely.

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