"AWARENESS ABOUT RISK FACTORS AND SCREENING OF BREAST AND CERVICAL CANCERS AMONG FEMALE COLLEGE TEACHERS OF BELAGAVI CITY - A CROSS SECTIONAL STUDY"

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LIST OF ABBREVIATIONS USED

SL. No.	ABBREVIATIONS	EXPANSION OF THE ABBREVIATIONS
1	HPV	Human Papilloma Virus
2	HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
3	BSE	Breast Self-Examination
4	CBE	Clinical Breast Examination
5	PAP smear test	Papanicolaou smear
6	VIA	Visual Inspection with Acetic acid
7	VILI	Visual Inspection with Lugol's Iodine
8	VIAM	VIA with Magnification
9	CIN	Cervical Intraepithelial Neoplasm
10	DNA	Deoxyribose Nucleic Acid
11	WHO	World Health Organization
12	NPCDCS	National Programme for Prevention of Cancer, Diabetes, Cardiovascular diseases and Stroke
13	NCD	Non Communicable Diseases
14	CHC	Community Health Centre
15	EGFR	Epidermal Growth Factor Receptor
16	LCIS	Lobular Carcinoma In Situ

17	LMIC	Lower Middle Income Countries
18	ANM	Auxiliary Nurse Midwife
19	DES	Diethylstilboestrol
20	LEEP	Loop Electrosurgical Excision Procedure
21	CF	Correction Factor
22	MF	Multiplication Factor
23	OCP	OCP (Oral Contraceptive Pill)
24	BMI	Body Mass Index
25	HRT	Hormone replacement therapy
26	SD	Standard deviation
27	ANOVA	Analysis Of Variance
28	RR	Relative Risk

ABSTRACT

Background: Cancer is one of the leading cause of mortality worldwide, in which breast cancer and cervical cancer account for the top two cancers among women. These cancers typically present very late to the hospital mainly because of lack of knowledge and awareness of about the risk factors, screening methods and their benefits. Prevention by reducing risk factors and early detection of cancer remain the key strategy and most effective ways to reduce the global cancer burden.

Objectives: To assess the awareness of risk factors, presenting symptoms and screening practices of breast and cervical cancers among female pre-university college teachers of Belagavi city.

Methodology: This is a cross-sectional study conducted among female college teachers of Belagavi city. A sample of 45 colleges were selected randomly and from each college, maximum of 10 female teachers were selected. Data was collected using personal interview method after obtaining written and informed consent from 400 female college teachers. Questionnaire contained details regarding socio demographic variables, reproductive history, lifestyle factors, knowledge about the risk factors, presenting symptoms and their awareness regarding screening of breast and cervical cancer.

Findings: Study participants were between 23 to 55 years of age with a mean age of 33.65 ± 8.98 years and majority (46.75%) of them were below 30 years of age. Most of study participants belonged to Hindu religion (89.75%) and were from urban residence (79.75%). Majority of them were from science stream (48.5%) and had teaching experience of 1 – 10 years (69%). Most of them were married (58%). Less than half of the teachers said that they knew about breast cancer (41.25%) but only few teachers said that they knew about cervical cancer (17%). Most of the participants had average knowledge scores and only few had high

knowledge scores regardingbreast and cervical cancer. Breast cancer knowledge scores were significantly associated with age of 50years above, urban residence, higher education, higher work experience, consumption of OCP's and attainment of menopause and cervical cancer knowledge scores were significantly associated with 41 – 50 years of age group, higher education, higher per capita monthly income, history of abortion and attainment of menopause. This study points that the knowledge of female college teachers about breast and cervical cancer were moderate and only few participants had very good knowledge.Hence, it is of great importance to promote awareness about the disease in an ongoing basis so that women becomes aware of the problem, detect early warning signs and also adopt a healthy lifestyle.

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INTRODUCTION

One of the chief causes of mortality worldwide is cancer, which accounts for cases around 18.1 million and deaths due to cancer around 9.6 million.[1]

Problem of cancer is very significant due to high fatality and increasing incidence. Breast cancer stands first with the incidence of 46.3% and mortality rate of 13%, whereas cervical cancer stands fourth with the incidence of 13.1% and mortality rate 6.9% among women worldwide. In India, breast cancer (24.7% incidence and 13.4% mortality rate) and cervical cancer (14.7% incidence and 9.2% mortality rate) are the top two cancers among women.[1]

Most of the cases of these two cancers present very late to the hospital in advanced stages that require extensive treatment with reduced survival rates and thus are emerging major public health problem. The reasons are being unaware of presenting symptoms, lack of knowledge about the risk factors, lack of awareness regarding screening methods and their benefits, thinking oneself is not at risk, hesitancy to visit the physician and embarrassment, fear of being diagnosed as cancer, lack of access to screening facility and also lethargic attitude towards safe practices.[2,3,4]

For both the cancers of breast and cervix the symptoms are often subtle in early stage of disease, yet many women may neglect these symptoms or wait until symptoms progress to advanced stages of disease before they seek medical attention.[5]

Prevention by early detection of cancer and reducing the modifiable risk factors remains the key strategy and most effective ways to reduce the global cancer burden.[6]

Risk factors

Any attribute, characteristic or exposure of an individual which increases the likelihood of developing a disease or injury is known as risk factor.[7]

For breast cancer, the risk factors remain female gender, age, absence of childbearing or breastfeeding, higher oestrogen hormone levels, consumption of tobacco and alcohol, race, high-fat diet, obesity, radiation exposure and positive family history of cancer.[8]

For cervical cancer, the key risk factors include prolonged Human Papilloma Virus (HPV) infections and HIV/AIDS, starting of sexual activity before age of 20 years age, multiple sexual partners, smoking tobacco, consumption of Oral Contraceptive Pills (OCP) for more than 5 years, family history of cervical cancer, high parity (giving birth to more than 3 children) and immunosuppression due to other systemic disorders.[9]

Screening methods

Screening is defined as the presumptive identification of unrecognized disease in an apparently healthy, asymptomatic population by means of tests, examinations or other procedures that can be applied rapidly and easily to the target population.[7]

The sole purpose is to decrease the mortality and morbidity by advancing the time of diagnosis which further improves the prognosis by early intervention.[10]

Screening programs for cancer have been implemented in countries with greater available resources, but it is difficult to implement in countries like India.[11]

Breast cancer

It is said that breast cancer screening decreases the mortality by 20% and for every 235 women screened, one breast cancer death is prevented.[12]The classical screening tests for breast cancer are Breast Self-Examination (BSE), Clinical Breast Examination (CBE) and Mammography.[13]

Even though BSE is controversial, it plays a substantial part in detection of breast cancers an early stage in countries with low resource setting like India, where routine CBE and mammography cannot be done. BSE is advantageous as it is painless, safe, easy to perform, no special equipment required and also cost-effective.[14]

Clinical Breast Examination is defined as the examination of a woman's breasts by a healthcare professional, to recognise many different types of abnormalities and warning signs in the breast.[15] CBE necessitates clinician training and is a vital screening and also diagnostic tool especially for remote and rural communities with limited access to expensive technological resources.[16]

Mammography uses low-energy X-rays to detect abnormalities in the breast.[7]Significant reduction in mortality rate was seen up to 63% with mammography. Yet the problems with use are it is expensive, pain and discomfort, false positive report in and risk of exposure radiation.[4]

Cervical cancer

Goal of screening for cervical cancer is to detect pre-cancerous lesions which are due to infection with HPV, so that it could be excised at an early stage to prevent

development of invasive cancers and can be successfully treated to achieve decrease in cancer incidence and deaths.[17,18]

Cytology based test like Pap test, Visual Inspection with Acetic acid (VIA), Visual Inspection with Lugol's Iodine (VILI) and HPV DNA testing are the screening tests for cervical cancer.[7]

The most effective method for screening of cervical cancer is believed to be Pap smear as it stops the advancement by identifying precancerous state in turn allows 90% of cervical cancers to be diagnosed, treated and cured way before it can spread.[19] It is not that cost effective to be implemented in poor countries as it needs well trained staff to collect the samples and well trained cytopathologist to interpret the samples.[20]

VIA is a simple and cost effective procedure usually practiced in developing countries where high incidence of cervical cancer is seen. It is done by smearing 3 to 5% acetic acid on cervical transformation zone during speculum examination and interpreted by naked eye. Acetic acid coagulates proteins of nucleus which forms whitish discoloration of transformation zone in cases of Cervical Intraepithelial Neoplasia (CIN) and also invasive cancers as early as possible.[20]

Detection of DNA of high-risk HPV in cervical or vaginal smears samples is the basis of molecular HPV testing.

It is been merged into prevention programmes in high income countries as a main screening test. But it requires transport and processing of samples at a laboratory which is not so cost effective. Low cost testing is required so that it can be processed on-site where sample is collected for usage in several low-resource settings.[21]

With rise in high risk factors which are modifiable and equivalent rise in breast and cervical cancer cases among women in India, it seems appropriate to educate women regarding symptoms, risk factors of these cancers and also methods of screening so that many cases are revealed at the earliest.

The present study was conducted in Pre-university college teachers as they play an very important role in imparting education, hence they have the ability to improve healthy behaviours amongst younger population and also their parents. In the society, the part played by teacher is very important and respectable. No one else can form an impact deeper than a teacher. Students are profoundly influenced by teacher's character, competenceand moral commitment.So, the effort would be worth to impart education to female teachers regarding breast and cervical cancer so that they can spread awareness. A few studies were conducted with regard to awareness of breast and cervical cancer among this group hence this study was taken up.

AIMS AND OBJECTIVE OF THE STUDY

Primary Objective:

To assess the awareness of risk factors and screening practices of breast and cervical cancers among female pre-university college teachers of Belagavi city.

Secondary Objectives:

To assess the knowledge, attitude and practice about presenting symptoms of breast and cervical cancer among female college teachers.

REVIEW OF LITERATURE

The second leading reason of mortality worldwide is cancer and in 2018, it contributes to death of about 9.6 million.[22] Globally, development of cancer is expected to be seen among one in 5 men and one in 6 women, and cancer death accounts for one in 8 men and one in 11 women.[23]

Burden of cancer is increasing day by day due to various factors such as population growth, increasing life span and changing prevalence of few cancers which are being related to development of a country economically and socially. We can witness a changeover from cancers caused by infections and poverty to cancers linked to lifestyles particularly in rapidly growing economies. Pattern of cancers around the world shows, nearly fifty percent of the new cases and more than fifty percent of the cancer deaths for men and women combined is seen in Asia, as it covers nearly 60% of population of the world.[23]

The global cancer cases in Europe is 23.4 percentage and cancer deaths account 20.3 percentage, even though it covers only nine percentage of the world's population. Whereas, in America, the cancer incidence of 21.0 percentage and mortality of 14.4 percentage but it comprises only 13.3 percentage of the population. In other regions of the world, like Asia and Africa the magnitude of mortality (57.3 percentage and 7.3 percentage respectively) are comparatively high than incidence of the disease (48.4 percentage and 5.8 percentage respectively), the cancer forms in these areas are believed to have poorer prognosis, high mortality rates and also inadequate access to cancer screening and unavailability of proper treatment facilities.[23]Early diagnosis significantly rises the chances for successful treatment of

cancer. Identifying possible warning signs and health education to encourage early diagnosis by screening form important components for early detection of cancer.[24]

Pathogenesis of Cancer

Continuous and unregulated proliferation of cancer cells can be seen in a group of diseases known as cancer.[25]

Cancer cells do not respond aptly to the stimulus which controls regular cells. Cancer cells lose the growth control due to aberrations in regulatory systems of the cell and results in growth and division of cells in an abnormal way, which in turn spread to other tissues and organs which are normal and ultimately invading tissues all over the body.[25]

Cancer arise in any tissue of the body and can involve any type of cells.Cancer development is a process including multiple stages which comprises mutation and choosing of cells which can proliferate, survive, invade and metastasis. Steps in this are tumour initiation, cell proliferation and tumour progression. Tumour initiation is due to genetic alteration in turn causing atypical growth of individual cells. Cell proliferation means excessive growth of clonally derived tumour cell population. In tumour progression, further mutations occur in tumour cells. [25]

Carcinogens are the substances which cause cancer. Various agents like chemicals, radiations, hormones and viruses are been classified as carcinogens. Cancer development is a multistage and a complex course which is affected by many factors.[25]

The cancer cells have the following properties;

1. Abnormal proliferation of cancer cells due to atypical cell regulatory mechanism.

2. Cancer cells have lesser requirements of growth factors which contributes to the abnormal growth of cells and sometimes, these cells produce their own growth factors that further stimulates proliferation and help in angiogenesis.

3. Cancer cells are gently controlled by cell to cell and cell to matrix interactions causing the malignant cells to invade and metastasize easily.

4. They produce protease enzyme which dissolves components of extracellular matrix, helps these cells to metastasize.

5. They produce collagenase, which dissolves and infiltrate through basal laminae and invade the connective tissue below especially in carcinomas.

6. They do not differentiate ordinarily which is associated with abnormal proliferation.

7. They don't undergo apoptosis (programmed cell death), and thus show improved life span which in turn contributes to tumour development. [25]

Cancer control

Cancer control is a sequence of measures built on present knowledge in the fields of prevention, diagnosis, treatment, after care and rehabilitation, which are designed to reduce the number of new cases. The main approach is through primary and secondary prevention.

Types of interventions

The WHO emphasizes on four broad approaches in formulating national strategies for prevention and control of cancer:

1. Primary prevention

Goal is elimination or reduction in exposing to risk factors, like carcinogens and to change lifestyle factors associated with nutrition and physical activity.

2. Secondary prevention

Implementation of population based screening programmes for finding of cancer when curative therapy is likely.

3. **Diagnosis and treatment**

The main forms of therapy are surgical, chemotherapy and radiotherapy.

4. Palliative care

It is easing of symptoms throughout all stages of illness and also addresing psychological, quality-of-life aspects of disease and well being of patient and their family members. [26]

National Programme for Prevention of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS)

The program which is concerned with cancer prevention in India is NPCDCS. It was introduced in 2010 among 100 districts and merged with National Health Mission in 2013 with the emphasis to allow screening for common Non Communicable Diseases (NCD), at various levels through NCD clinics.This program has the following two components;

(i) Cancer

(ii) Diabetes, CVDs and Stroke.

Objectives of NPCDCS which are related to cancer

- Health promotion through change in behaviour along with participation from community, community based organizations, civil society and media
- Population based screening and opportunistic screening at all levels of the health care delivery system
- Capacity building at several levels of health care
- Diagnosis and cost effective therapy
- Database development of NCDs.[27]

Breast cancer

Globally the most frequent cancer detected and also the most common cause of mortality due to cancer among women is known to be breast cancer. Its incidence worldwide is 46.3% and in India it is 24.7%. One in 22 women will be diagnosed and one in 73 females are expected to die from cancer of the breast, before the age 75 years.[1,28]

Breast tumours usually develop because of the excessive proliferation of the ducts, which will advance to benign tumours or metastatic carcinomas as a result of continual stimulus by various carcinogenic influences.

Genes related to breast cancer

Breast cancer is been linked to many genes. Mutations and increased production of oncogenes and anti-oncogenes are important in the development of cancers.

1. BRCA1/2

BRCA 1 and 2 genes are anti-oncogenes which code for proteins that suppress development of tumours. Lack of these genes cause impaired regulation of cell cycle barriers, atypical division of centrosome, genetic instability and finally cell death. Around 20 to 25 percentage of inherited and 5 to 10 percentage of all breast cancers are mainly because of BRCA 1 and 2 mutations.

2. HER 2

It is found in 20 percentage of breast cancers and also indicates poorer clinical outcomes.

3. Epidermal Growth Factor Receptor (EGFR)

Overexpression of EGFR is seen in around 30 percentage of inflammatory breast cancer which causes increased growth of the cells, invasion into other tissues,angiogenesis and protection of cells from apoptosis.

4. c-Myc

Increased expression of c-Myc is largely seen in high grade, invasive breast cancers.

5. Ras

Increased expression of Ras genes are commonly associated with point mutations which is rarely seen in breast cancer (< 5%).[29]

Risk factors

Identification of factors linked to relatively high incidence of developing breast cancer is vital in overall health screening of women, which are:

1. Age: It is of great importance in breast cancer, as the incidence is directly proportional to the increasing age.

2. Gender: Commonly seen in women.

3. Past history of breast cancer: An individual having any past history of cancer in one breast, is more likely to present with a second primary cancer in the other breast.

4. Histologic: Lesions like lobular carcinoma in situ (LCIS) and proliferative changes with atypia, if detected during biopsy of breast tissue, considered as an important risk factor.

5. Family history of breast cancer: Approximately one fourth of all cases are associated with positive family history. There is about two to three fold higher risk for developing breast cancer in individuals whose first-degree relatives have breast cancer. 5 to 10% of all breast cancers are linked to genetic factors, but it can account for 25% in younger women with age less than 30 years.

6. Reproductive risk factors: Reproductive milestones that are known to increase oestrogen exposure in a female's lifetime are known to raise breast cancer risk. Factors like early age at menarche, late menopause, late age at first pregnancy and nulliparity are some of the known risk factors. If menopause occurs a year late, it rises the risk by 3% and if menarche is postponed by a year or each extra birth reduces the risk by 5% to 10%.

7. Exogenous hormone use: Therapeutic or supplemental oestrogen for contraception in premenopausal women and hormone replacement therapy among post-menopausal females increases the risk.

8. Lifestyle: Increased intake of alcohol, smoking and excessive fatty food consumption raises the risk. Alcohol intake will increase oestrogen related hormones and trigger the oestrogen receptor pathways. Consumption of 35 to 44g of alcohol /day can raise the cancer risk by 32%. Increased consumption of fatty food, is related with higher death rate (RR=1.3) and also poor prognosis. Smoking at an younger age has a raised risk on occurrence of the disease.[29,30]

Signs and symptoms

The commonest presenting symptoms of breast cancer include painless firm to hard lump in the breast, feeling of lumpiness in the breast, asymmetry of breasts, unilateral nipple retraction, unilateral bloody or serous nipple discharge, localized breast skin changes, such as tethering, oedema, puckering, or skin thickening and eczematous changes in or around the nipple or areola. Breast cancer is usually not painful but it can develop in inflammatory breast cancer or case of advanced disease where metastasis has occurred.

All these above mentioned symptoms of breast can be cancerous or a non-cancerous lump. It is very important to consult the doctor as soon as possible if any of the changes are noticed.[28,31]

Breast awareness, early detection and diagnosis and screening

Purpose of detection of cancers in an early stage is to reduce the death rate and consequences of advanced stages of cancer by early clinical diagnosis of symptomatic or by screening asymptomatic women. Detected cases, if treated early, there will be increased expectancy of life and improved quality of life. Early cancer detection is an important component of cancer control strategy for breast cancer. These strategies should also include health education, breast cancer awareness, skilled health-care providers at the primary care level, accessible and affordable health services with adequate infrastructure, human resources and information systems, prompt diagnosis, staging and treatment and follow-up care.

Breast awareness

Any abnormality in the breast tissue is first noticed by women herself which is achieved by educating the woman about breast awareness.[32] Breast awareness is focused towards encouraging woman to be conscious of how their breasts feel and look normally, so that any abnormality found can be reported early.

Breast self examination

Breast self examination (BSE) is a preventive health behaviour, it is an activity undertaken by a healthy person, for prevention of breast cancer or noticing changes at an early stage. It is a vital, simple, quick and cost-free technique for early diagnosis of breast cancer.[33]

In few studies it was found that BSE disclosed no decrease in mortality but was related with almost an increased detection of benign lesions which needed additional assessment and also excessive preoccupation with cancer and anxiety. Hence, WHO suggested BSE for raising awareness rather than as a screening method.[13]

Awareness regarding breast cancer is more relevant for Lower Middle Income Countries (LMIC), compared with developed countries, where they rely largely on mammographic screening to increase earlier detection and treatment.[28]

Clinical Breast Examination

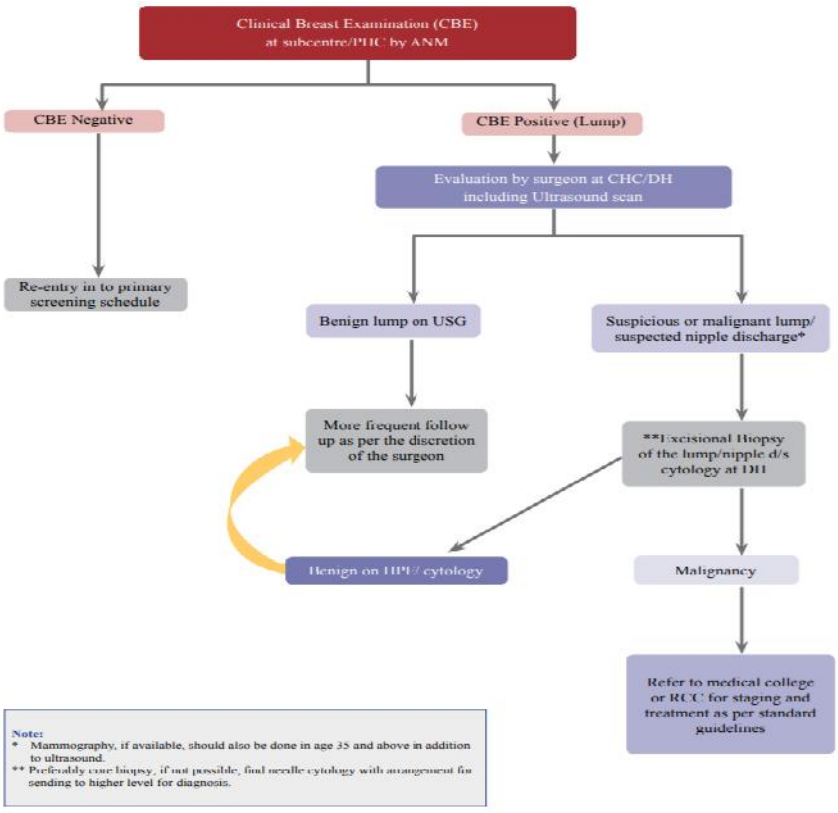
Clinical Breast Examination (CBE) is visual inspection and palpation of both breasts in various positions and on noticing anything abnormal to be referred for further investigations. It needs clinician training but not special apparatus is required. So, in communities where access is limited to expensive and technical resources, it is considered as a vital screening and diagnostic tool. 10% to 15% of palpable masses are missed by mammography, hence CBE along with mammography improves chances of breast cancer cases detected by screening.[27,33]

Mammography

It is an x-ray-based technique applicable to a woman who does not have any signs or symptoms which is helpful for detection of breast cancer in early stages. Screening detected tumours might be successfully treated with less aggressive regimens than larger tumors.[34]

In NPCDCS, All women who are more than 30 years of age, a staff nurse or ANM at the screening centre will provide a counselling and then screening will be done by CBE. It can be done by a physician or nurse or health worker who are trained. Post Population Based Survey follow-up is advised once in five years. The procedure for screening and management of breast cancer is given below:

Procedure for screening and management of breast cancer.[27]



Review of Articles

Breast cancer

A study conducted in New Delhi among 441 female school teachers to know the level of awareness about breast cancer and screening. It was seen, most of the teachers (92.7%) knew minimum one symptom, most said that the common presenting symptom as a lump (90.2%), next common symptom mentioned by participants was pain (48.7%). Sixty three percentage teachers recognised at least one high risk factor, around half of the participants who had not nursed their children were at a risk of developing breast cancer (59.2%) and half of the participants said that positive family history of breast cancer was important (58.0%), whereas knowledge about other risk factors was less. All study participants agreed that it is a serious illness. Only 36% knew the term Breast Self Examination. Only 13.37% said that it should be performed monthly. Around seven percentage of participants told that correct position of BSE and around only one percentage of teachers knew the correct time of the month when BSE should be done. None of the participants were practicing BSE nor underwent CBE and mammography.[35]

A qualitative study done to know the awareness of cancer of the breast in Mumbai city. Nine hundred and fifty questionnaires were given out and rate of response was 80% (n = 763). About 89% of the respondents knew of breast cancer as a disease and only 10% respondents were totally unaware. Around 86% participants stated that breast cancer affects only women but not men. Only 44% of individuals knew that this is a hereditary. Students had higher knowledge as compared to other participants. The commonest barrier noticed was hesitancy, lack of awareness or unable to make an appointment with the physician. The knowledge of mammography

was better among professionals and self employed respondents. Among individuals who had knowledge of mammography, only 6% had undergone this procedure. In this study, 44% were aware of BSE, but only 19% participants practiced it.[36]

A study was conducted among school teachers of Kuwait to assess KAP about breast cancer revealed that 67.5% knew about breast cancer. Main source of information was from doctors and health sector (98.2%), friends and neighbours (83.5%), broadcast media (76.0%) and from newspapers and magazines (60.2%). When participant's were asked regarding presenting symptoms answers given were breast lump (88.8%), increased size of neighbouring lymph nodes (83.6%), abnormal increase in size of the breast (73.9%). Whereas knowledge about retraction of nipples and retraction of breast skin was relatively poor. Regarding knowledge on risk factors, more than 3/4th of teachers responded about the effect of breast feeding correctly (78.6%), effect of smoking (63.7%), family history of breast cancer (54.2%), effect of HRT (51.1%) and effect of consumption of alcohol (50.1%). But, few participants knew the effect of increased age, age at first menstrual cycle and presence of benign breast disease. About fifty percentage of the participants said they don't know how to perform BSE (49.9%), knew but never practised (29.0%), applied it when they remembered (14.0%), only few respondents performed it on weekly, monthly or yearly basis (7.1%). Also, 81.9% and 85.7% never had CBE and did not know about mammography, respectively. Factors associated with satisfactory knowledge about breast cancer - older age (above 40 years), married women, history of consumption of OCPs and women with past history of child death showed significant and better knowledge level.[37]

Another study conducted in Bengaluru among 356 women IT professionals showed that all 356 women knew about breast cancer. About 12.35% women gave

positive family history. Respondents who had good knowledge were only 2 (0.5%), highest number of respondents were found to have fair knowledge (92.1%). Knowledge was gained through the internet, print, film media, by word of mouth through friends, relatives, and first‑hand information from people who suffered from breast cancer or infrequently due to guesswork. Almost 68% of the respondents were found to have poor attitude toward BSE. Some reasons being social stigma and social norms, which do not make it comfortable for women to talk/learn about and be familiar with their own body, gap in communication, fear and lack of knowledge. Lack of information on BSE and its procedure from authentic sources, poor attitude, busy work schedules and lack of foresight could be the causes for poor practice scores seen in 222 candidates. Positive correlation was found between age and knowledge, age and practice, however, a negative correlation between age and attitude. Only four women who had good attitude scores also had good practice scores, implying that despite having a good attitude, the lack of knowledge is preventing them from practicing BSE.[38]

Cervical cancer

Cancer which is believed to be largely preventable and is the commonly seen in low and middle income countries (LMICs) is cancer of the cervix. Globally, cervical cancer rank fourth with 13.1% incidence and 6.9% mortality rate. In India, 14.7% is the incidence and 9.2% is the mortality rate. A substantial decrease is seen in the number of cases and death rate and mortality from cervical cancer in the countries which had established effective screening programs countrywide. They mainly depend on cytology based tests like Papanicolaou smears to find pre-cancerous lesions which are excised before advancing to invasive cancer. Almost 91% of cervical cancers have been prevented in such countries.[1,39]

Persistent infection of the cervix with Human Papilloma Virus (HPV) is known as an essential cause of cervical cancer. More than 75% of cases are due to high-risk strains i.e. HPV 16 and 18. This virus is a very common STIs, typically acquired shortly after initiation of sexual activity. Most infections spontaneously resolve within one to two years, those that persist, predominantly the high risk types, may develop into cervical cancer precursors and eventually to invasive cervical cancer and this development can take up to 10–30 years.[39,40]

Risk Factors

As mentioned above, carcinogenic types of HPV are the chief, etiologic, infectious agents which cause most of the cases of cervical cancer. The risk factors other than HPV include:

1. Beginning of sexual activity at a younger age

2. Multiple sexual partners

3. Immunosuppression: HIV infection may lead to long-term persistence of viral infection

4. High parity

5. Using of OCPs for long time period

6. Exposure to tobacco either by active or passive smoking

7. Diethylstilboestrol (DES) exposure in utero

Factors which decreases the risk of cervical cancer

1. **Sexual abstinence**

2. **HPV vaccination**

3. **Use of barrier protection during sexual intercourse.**[41]

Signs and symptoms

It generally takes many years for precursor lesion to progress into invasive cervical cancer. Pre-cancerous lesions are often harmless and don't cause any symptoms. By the time cervical cancer exhibits symptoms, it will be relatively at a last stage of disease. The symptoms of cervical cancer are the following:

1. Abnormal menstrual bleeding like post-coital, inter-menstrual or post-menopausal

2. Abnormal discharge from the vagina with an unpleasant odour

3. Tiredness and weight loss

4. Pain in the abdomen, pelvis and low back ache

5. Pain when urinating

Screening

Historically, cervical cancer screening, was done by examination of cells collected from the cervix by Pap smear (cytology), which was followed by colposcopy for women smears contain atypical cells and histological assessment, and then treated surgically for individuals who were histologically diagnosed as cancer precursors. This resulted in extreme decrease in cases of cervical cancer and mortality in health systems where these screening programs effectively implemented. Whereas, in LMICs it is difficult to initiate or sustain cytology-based screening programs because of lack resources or health care or laboratory infrastructure.

Several methods which are simple, which can be done by health worker who are adequately trained, comparatively of low-cost, does not need laboratory set-up and offer instantaneous results, permitting “screen and treat” techniques which are suitable to low-resource settings, they are:

a. Unaided visual inspection

b. Visual inspection with acetic acid (VIA)

c. VIA with magnification (VIAM)

d. Visual inspection with Lugol's iodine. (VILI)[42]

Visual Inspection with Acetic Acid (VIA)

In India, under the NPCDCS program, VIA is used for screening all the women aged thirty years and above except who are menstruating, pregnant, within 12 weeks postpartum or post-abortion and women with a prior history of treatment for cervical cancer.

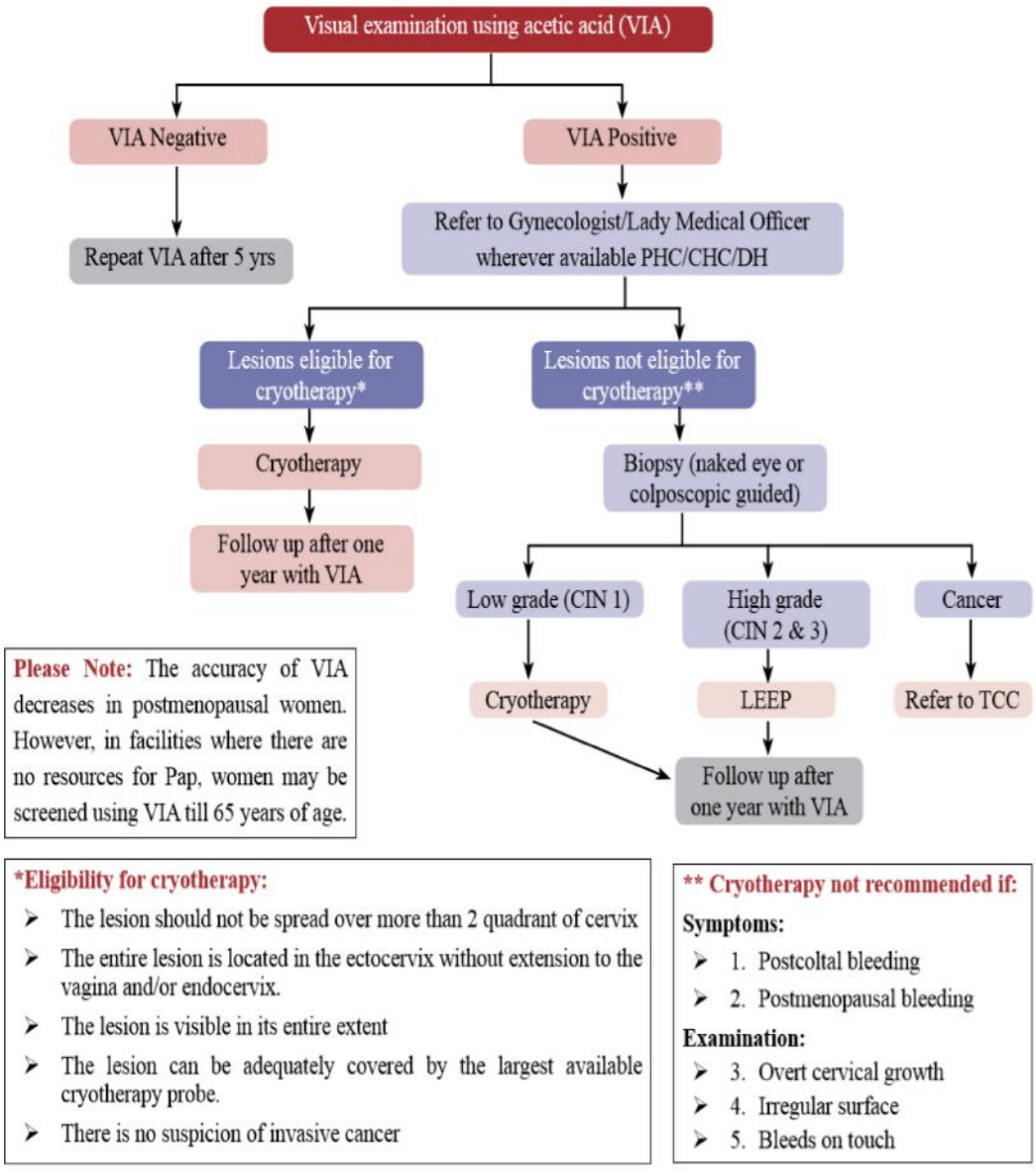
VIA includes smearing of 3 to 5% acetic acid solution to the cervix, followed by visualising it with the bare eyes using a bright light source. It is time saving (procedure takes less than 5minutes), inexpensive as no equipment or supplies are required and simple, can be done by primary care staff with minimal training. A positive test is indicated by well-defined aceto-white area which is close to the transformation zone. Provides instant result which is used to choose treatment, usually with cryotherapy or Loop Electrosurgical Excision Procedure (LEEP). If VIA is negative, VIA is to be repeated after 5 years.[43]

Visual inspection with Lugol's iodine (VILI)

It is also known as Schiller's test. Lugol's iodine is used as an alternative to acetic acid. Normally, glycogen is present in squamous epithelium cells which will be

lacking in precancerous cells and invasive cancer. Because of the glycogenic nature of iodine, normal squamous epithelium will be stained brown or black. Whereas, precancerous cells and invasive cancer will be seen as well defined, dense areas of mustard or saffron yellow in colour.[42]

Procedure for screening and management of cervical cancer[27]



Review of Articles

Cervical Cancer

A study was conducted in Perdoor of UdupiTaluka, to know KAP regarding Human Papilloma Virus (HPV) Infection and its health effects among rural women. In which 1020 women had enrolled. No one among the study participants knew about HPV and did not know about its health effects. Around 25.3 % of women informed that they wash of genital areas after sexual contact. Statistically significant association of genital hygiene with higher education was seen (χ^2=159.3, p-value <0.001). Only twenty four participants (2.4%) had undergone screening by Pap smear testing and most of the participants (97.6%) had never heard of it. Only 2.6% of women reported use of male condoms among partners. Only one woman, who was a widow, gave history of multiple sexual partners.[44]

A study conducted in north central Nigeria, in which 239 women were enrolled to find out the awareness of Pap smear and VIA as screening tools. Here, only 11.7% of women had heard regarding cervical cancer. Only few identified Pap smear as a screening test (4.2%), while none were aware of VIA test.[45]

In a study of 300 females to know the KAP about cervical cancer and screening in Bahrain. Approximately 65% women knew regarding Pap smear. Health professionals (51.5%), family and friends (18%) were the chief source of information. 64% participants stated that in finding pre-cancerous lesions and cancer of the cervix, Pap smear was helpful, 44.3% said that Pap smear test must be repeated every three years and more than half of the participants told that they knew the purpose of the Pap smear. 59%, 33.7% and 34.3% respondents said that Pap smear is non-invasive, should start at the beginning of sexual life and not to perform during menstrual cycle.

Only 40.7% had Pap smear, 45.5% liked to have it done at a gynaecology clinics and 16.4% in a PHC. Pap smear was necessary even in the absence of signs and symptoms was a popular agreement among educated women and educational status was significant with attitude (χ^2= 15.718; p=0.047).[46]

Another study done to determine using of cervical cancer screening services involved 512 female primary school teachers from 110 primary schools. Among these, 21% women stated that they had underwent cervical cancer screening. Cervical cancer screening services were utilized more among women aged 20 to 29years (28%), married women (22%) and with higher education (24%). Almost 67.8% participants told that cervical cancer is preventable. Utilization of the services were 3times more in multiparous women than zero parity. Utilization of the services were found to be 2 times higher among respondents with more than one lifetime sexual partners. Teachers between the age 20 to 29 years used the screening services more as compared to women of 40 to 49 years.[47]

In a study done in slums of Mumbai, to know the knowledge of cervical cancer among couples, in which 1958 eligible couple were enrolled. Among which 37.7% of wives had more awareness of cervical cancer than spouses, in whom awareness was only 8.5%. A huge gap (29.2%) was seen regarding knowledge about cervical cancer between them. In couples, only 6.3% were aware and 33.6% were conflicting in terms of knowledge about cervical cancer. Around 3.6% of husbands and 9.7% of wives knew about pap smear test, among individuals who had knew about cervical cancer. There was significant difference in awareness between husband and wife (p=0.01).[2]

METHODOLOGY

a) Study design:

A cross-sectional study.

b) Study period:

One year – 1st January to December 31st 2018.

c) Source of data:

Female teaching staff of Pre-university colleges of Belagavi city.

d) Sample size:

Sample size = $4P (100- P)/d^2$

where,

P = Prevalence, taken as 50% (prevalence is not known)

d = Relative error in estimation of P, taken as 10% of P = 5

Thus,

$n = 4\times50(100-50)/5^2$

n = 400

e) Data Collection:

Data was collected by using a pre-designed and pre-tested questionnaire by personal interview method. Written informed consent from all the eligible subjects was taken prior to the data collection.

f) Inclusion Criteria:

Female teaching staff of pre-university colleges located in Belagavi city limits.

g) Exclusion Criteria:

Female teaching staffs who have been diagnosed and treated for breast or cervical cancer.

h) Sampling Method:

- The sampling method adopted is quota sampling. (Quota sampling is a type of convenience sampling with an added approach that puts an effort to include subject types which might be underrepresented in the convenience sample).[48]

i) Sampling Procedure:

- Total number of pre-university colleges in Belagavi city = 59.
- Three fourth of total number of colleges were taken in the study (45 colleges).
- These 45 colleges were randomly selected by picking up of chits.
- And from each college, maximum of 10 female teaching staff were selected.

Ethical Clearance:

Ethical clearance was obtained from the Institutional Ethics Committee for Human subject's Research of J. N. Medical College, KLE university, Belagavi (Ref:MDC/DOME/01 dated 22 November 2017).

Informed Consent:

Written informed consent was taken from all participants before starting of interview for data collection. Participants were told in detail regarding the purpose of the study and their rights, possible benefits and risks.

Method of data collection:

Personal interview of eligible participants was conducted by the investigator, using pre-designed and per-tested questionnaire adopted from Breast and Cancer Awareness Measure.[49] Data regarding socio demographic variables, reproductive history and lifestyle factors like age, address, religion, education, subject they are teaching, working experience, socio-economic status, marital status, menstrual history, age at marriage, age at first pregnancy, any history of abortions, duration of breast feeding, menopausal history, gynaecological surgeries, diet history, physical activity, history of habits, etc. were collected.

Visits were made by the investigator to all the 45 pre-university colleges in Belagavi city. When each college was visited, prior permission was taken from college principal after mentioning about the purpose of the study. After obtaining the permission, female staff room was approached and teachers who did not have any class in the next hour were briefedregarding the purpose of the study and after getting their written informed consent, they were interviewed in the staff room itself.

The participants were given free chance to discontinue from the study at any given point of time for any privacy or confidential issues or work related issues. Care was taken to make sure that the participants did not have any hinderance in their work.

Operational definition

Pre-university college teacher are the ones who teach an intermediate course (plus-two) of two years duration after tenth class.

Instruments used for data collection

Measuring tape

The subject was asked to stand straight without footwear, with heels, buttocks and back straight and arms hanging by side. The height was measured from head to heel. The coinciding reading was measured to the nearest0.1 cm using a metallic measuring tape.

Adult weighing scale

Bodyweight was measured without any footwear and with minimal clothing to the nearest 0.1 kilogram using a standard portable adult weighing machine, which was standardized periodically during the study. The scale was adjusted to zero before each session and weight was recorded in kilograms.

Sphygmomanometer

Blood pressure of each individual was measured on right arm in sitting position at the nearest convenient place available. A standard digital sphygmomanometer was used for all the participants. Three readings were taken within three minutes and mean of three readings was taken as the final reading for classification.

Questionnaire

Questionnaire for the present study was adopted from the Breast and Cervical Cancer Awareness Measure and it was customized according to the needs of the present study. Some questions regarding knowledge and practice of breast and cervical cancer screening were added to the questionnaire to meet the study objectives.

Proforma variables

Wherever possible, standard definitions were used to determine the definitions of the terminologies in the study.

Sociodemographicproforma

Age: Age of the participant in years.Age completed on last birthday.

Address: Study participant's place of present stay was collected. It was grouped as urban among those who stayed within the area covered under city corporation and rural among those who stayed in the areas covered by gram panchayat.

Religion: Study participant's religion was noted and grouped as Hindu, Muslim, Christian and others (Jain etc.).

Education: All study subjects were asked about educational qualification i.e., graduation, post-graduation and PhD.

Department: Study participants were asked about the department they are working at present or subject they are teaching in the college.

Number of working years: Number of yearsthe study participants have worked as teacher in per-university college.

Monthly family income: Combined income of all earning family members.

Socio-economic status: Information about per capita income (rupees)per month was obtained and then the socio-economic status was classified using Modified B. G. Prasad's classification.

$$Monthly\ per\ capita\ income\ = \frac{Total\ monthly\ income\ of\ the\ family}{Total\ members\ of\ family}$$

Adjustmentsweremade with the help of Correction Factor (CF), which was calculated as below:

$$Multiplication\ factor(MF) = \frac{Value\ of\ consumer\ price\ index}{100}$$

$$MF = \frac{309}{100} = 3.09$$

The new income value can now be calculated using the following equation:

$$New\ income\ value = Old\ income\ value\ (Base\ 1960) \times 4.93\ \times 4.63\ \times MF$$

Socio Economic status: Class	Classification of 1961 (per capita income in rupees/month)	Classification for 2016 (per capita income in rupees per month)[50]
I	100 and above	7008 and above
II	50 – 99	3504-7007
III	30 – 49	2102-3503
IV	15 – 29	1051-2101
V	Below 15	1050 and Below

Marital status: Data regarding marital status was obtained and categorized as unmarried, married, widower, divorcee and separated.

Reproductive history

Menarche: Menarche is the first menstrual cycle, which generally happens between 10 – 16 years of age. It indicates the commencement of the capacity to reproduce and it is also linked with the development of secondary sexual characteristics.[51]

Menstruation: Woman's regular bleeding which happens once a month, in this phase body sheds the lining of the uterus. Normally it last from 3 to 5 days.

Menstrual cycles: When ithappens regularly, this is called the menstrual cycle.

Regular cycles: Cycles ranging from 21 to 35 days.

Irregular cycles: Cycles ranging less than 21 days or more than 35 days.

Pregnancy: It is a state in which a woman carries a fertilized egg inside her body.[52]

Full term pregnancy: Period from three weeks before up totwo weeks after the estimated delivery date is known "term".[53]

Abortion: Abortion is defined as pregnancy termination prior to 20 weeks of gestation or less than 500 gm weight of the foetus at birth.[54]

Breast feeding: It is an unique means of providing nutrition for growth and development of infants, it is also an vital part of the reproductive process with significant implications for the health of mothers. Exclusive breastfeeding for 6 months,thereafter complementary foods with continued breastfeeding up to 2 years of age is accepted.[55]

OCP (Oral Contraceptive Pill): A pill used to prevent pregnancy.

Menopause: A biological point in a female's life after which she is not fertile and is marked by the stopping of menstruation. The changes linked with thisare due toreduction and cessation of ovarian function ceases.[56]

Life style factors

Physical activity: It is defined as any bodily movement produced by skeletal muscles that requires energy expenditure.

- Sedentary: 30mins of physical activity done for 3 to 4 days in a week.
- Intense: More than 30mins of physical activity done for 6 to 7 days in a week.[57]

Anthropometry

Body Mass Index: Calculation of BMI = weight in kg/ (Height in m)^2

BMI calculate was categorised as per WHO criteria for Asian population.[58]

Category	Body Mass Index
Underweight	< 18.5 Kg/m^2
Normal	18.5 – 23.0 Kg/m^2
Overweight	23.0 – 27.5 Kg/m^2
Obese	>27.5 Kg/m^2

Blood Pressure: Blood pressure findings after being recorded were classified according to updated JNC – 8 guideline recommendations.[59]

Category	Systolic Blood Pressure	Diastolic Blood Pressure
Normal	< 120 mmHg	< 80 mmHg
Prehypertension	120 – 139 mmHg	80 – 89 mmHg
Hypertension Stage I	140 – 159 mmHg	90 – 100 mmHg
Hypertension Stage II	160 mmHg and above	100 mmHg and above

Breast cancer and related definitions

Hormone replacement therapy (HRT): HRTis a therapy which is used to reduce the common symptoms of menopause and long-term biological changes, such as bone loss, that result from decreasing levels of the natural hormones oestrogen and progesterone in a woman's body. [60]

Breast self-examination(BSE): BSE is a screening method used to detect early breast cancer.

Clinical Breast Exam (CBE): CBE is a physical exam of the breasts and the underarm area by a trained healthcare professional.[61]

Mammography: It is a type of breast imaging which makes use of low-dose x-rays to detect cancer in an early stage, when it is curable.[62]

Nipple discharge cytology: Cytologicexamination of a nipple discharge is usually helpful when no palpable or mammographic abnormality is identified.[63]

Cervical cancer and related terms

HPV infection: Infection caused by Human Papilloma Virus, which is a double stranded DNA virus.[64]

Pap smear: Papanicolaou test. A procedure in which a small brush or spatula is used to gently take out cells from the cervix so they can be checked under a microscope for cervical cancer or cell changes that may lead to cervical cancer.[65]

Visual inspection with acetic acid (VIA): Naked-eye visual inspection of the cervix with acetic-acid wash.[66]

Visual inspection with lugol's iodine (VILI): Naked-eye visual inspection of the cervix with lugol's iodine.

Statistical Analysis:

The data was tabulated and master chart was prepared (Annexure V). Data collected in the questionnaire which was coded and entered in Microsoft excel sheet. Mean and Standard Deviation were calculated for some of the numerical data. Categorical data was summarized using rates (percentages). Data was analysed using Statistical Package for Social Sciences (SPSS), version 24.0. Tables and charts were prepared. Statistical analysis was done using Pearson's Chi- Square test and One way ANOVA to find out the association between knowledge scores of breast and cervical cancer and various socio-demographic data. A probability value (p value) of less than 0.05 was considered as significant.

RESULTS

The present study was conducted among 400 pre-university female college teachers of Belagavi city during the period of January 2018 to December 2018.

The data obtained was tabulated and analysed under the following headings as below:

A. Socio-demographic data
B. Reproductive data
C. Lifestyle factors
D. Anthropometry
E. Awareness of breast cancer
F. Awareness of cervical cancer
G. Scoring
H. Association of knowledge on breast cancer with various sociodemographic and reproductive data
I. Association of knowledge on cervical cancer with various sociodemographic and reproductive data
J. Association of combined knowledge on breast and cervical cancer with various sociodemographic and reproductive data
K. Association of combined cancer knowledge, knowledge on risk factors, symptoms and screening scores with various sociodemographic and reproductive data by one way ANOVA

A. Socio-demographic data

Table 1. Distribution of study participants according to age (n=400)

Age	Frequency	Percentage (%)
≤ 30yrs	187	46.75
31-40yrs	108	27.0
41-50yrs	84	21.0
≥ 51yrs	21	5.25
Total	**400**	**100**

In the present study, 187 (46.75%) participants were below 30years of age, 108 (27%) were between 31 – 40 years, 84 (21%) were between the age group of 41 – 50 years and 21 (5.25%) were above 51years of age.

The mean age of participants was 33.65 years ± 8.98 SD (Standard Deviation).

Graph 1: Distribution of study participants according to age (n=400)

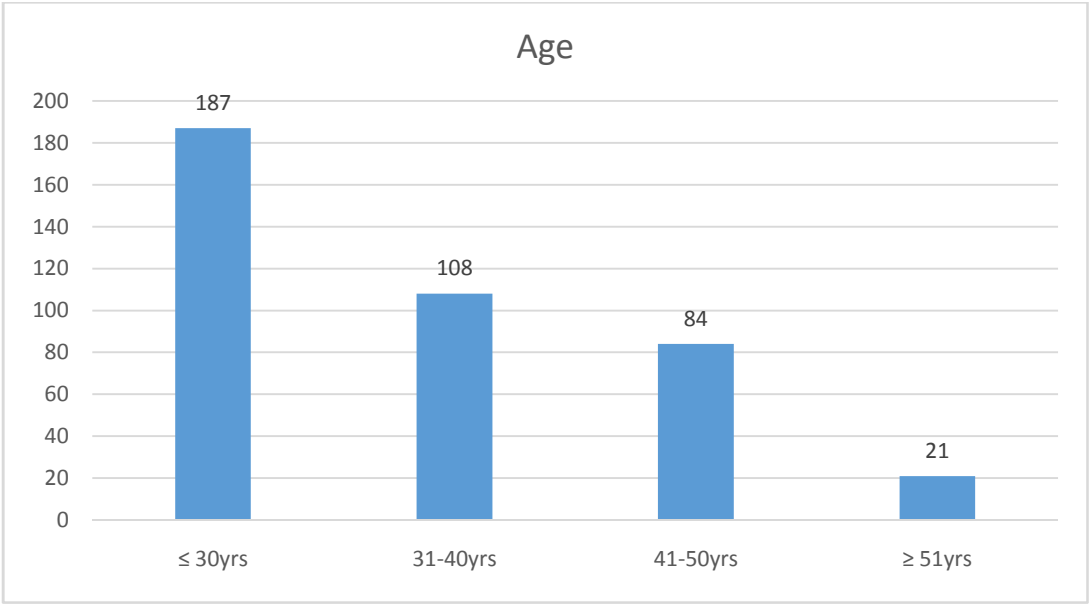


Table 2. Distribution of study participants according to residence (n=400)

Address	Frequency	Percentage (%)
Urban	319	79.75
Rural	81	20.25
Total	**400**	**100**

In the present study, 319 (79.75%) participants stayed in urban areas of Belagavi and 81 (20.25%) participants presently stayed in nearby rural areas.

Graph 2: Distribution of study participants according to residence (n=400)

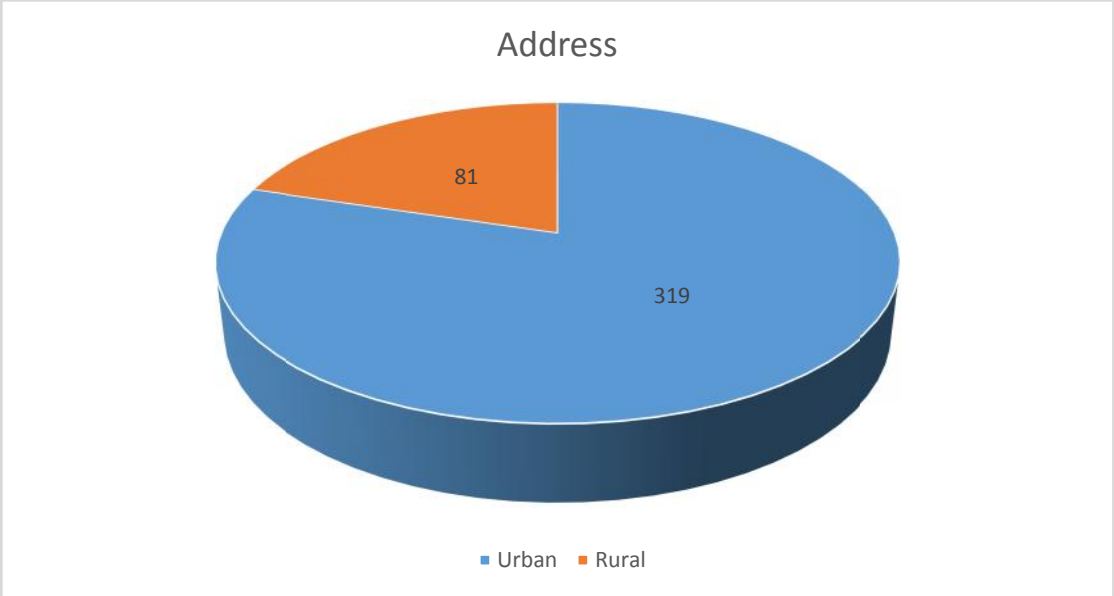


Table 3. Distribution of study participants according to religion (n=400)

Religion	Frequency	Percentage (%)
Hindu	359	89.75
Muslim	27	6.75
Others	14	3.5
Total	**400**	**100**

In the present study, 359 (89.75%) participants were Hindus, 27 (6.75%) were Muslims, 14 (3.5%) were in the others category which included Christians and Jains.

Graph 3: Distribution of study participants according to religion (n=400)

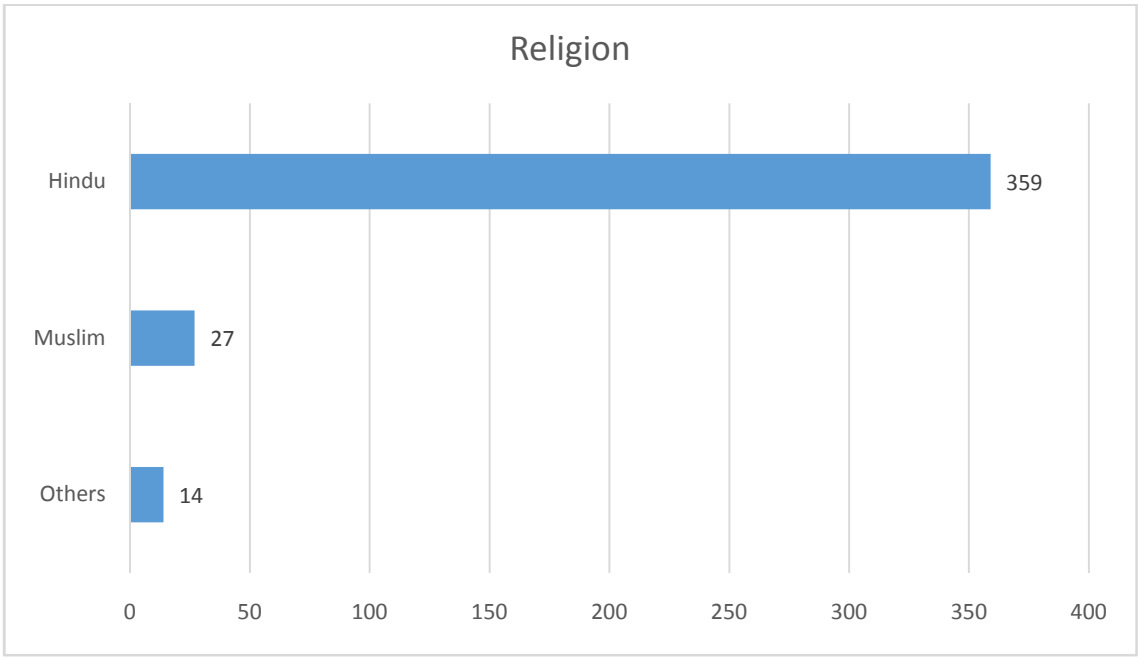


Table 4. Distribution of study participants according to education (n=400)

Education	Frequency	Percentage (%)
Post-graduation	392	98
PhD	8	2
Total	**400**	**100**

In the present study, 359 (89.75%) participants were post-graduates and 8 (2%) had completed PhD.

Graph 4. Distribution of study participants according to education (n=400)

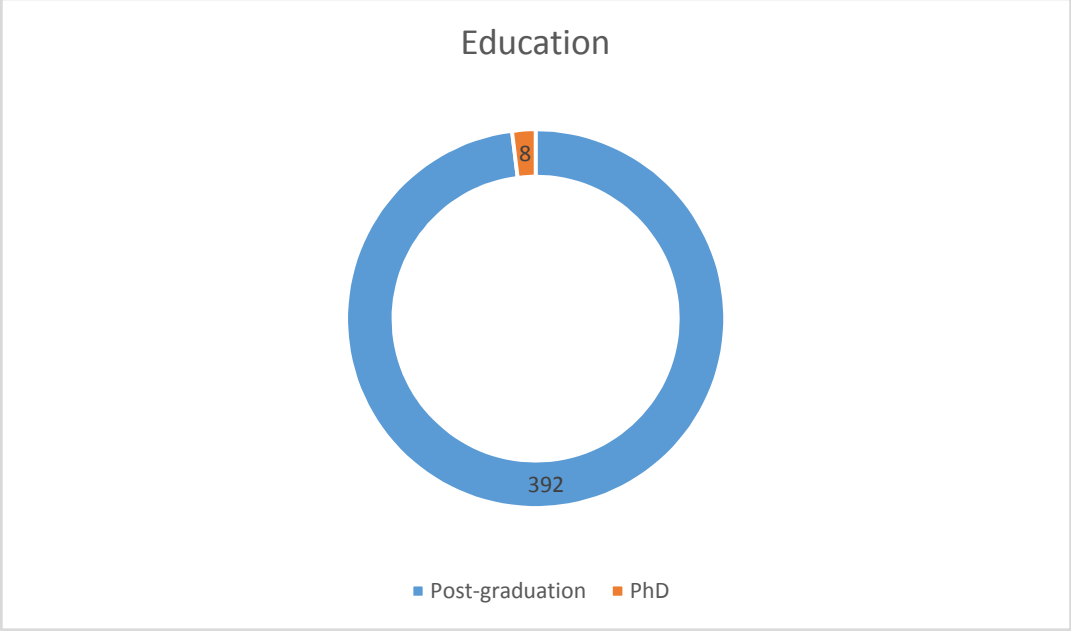


Table 5. Distribution of study participants according to streams they teach (n=400)

Streams	Frequency	Percentage (%)
Arts	116	29.0
Science	194	48.5
Commerce	14	3.5
Languages and others	76	19.0
Total	**400**	**100**

In this study, majority of the study participants belonged to science stream 194 (48.5%), followed by arts 116 (29%), language and others 76 (19%) and commerce 14 (3.5%) streams.

Graph 5. Distribution of study participants according to streams they teach (n=400)

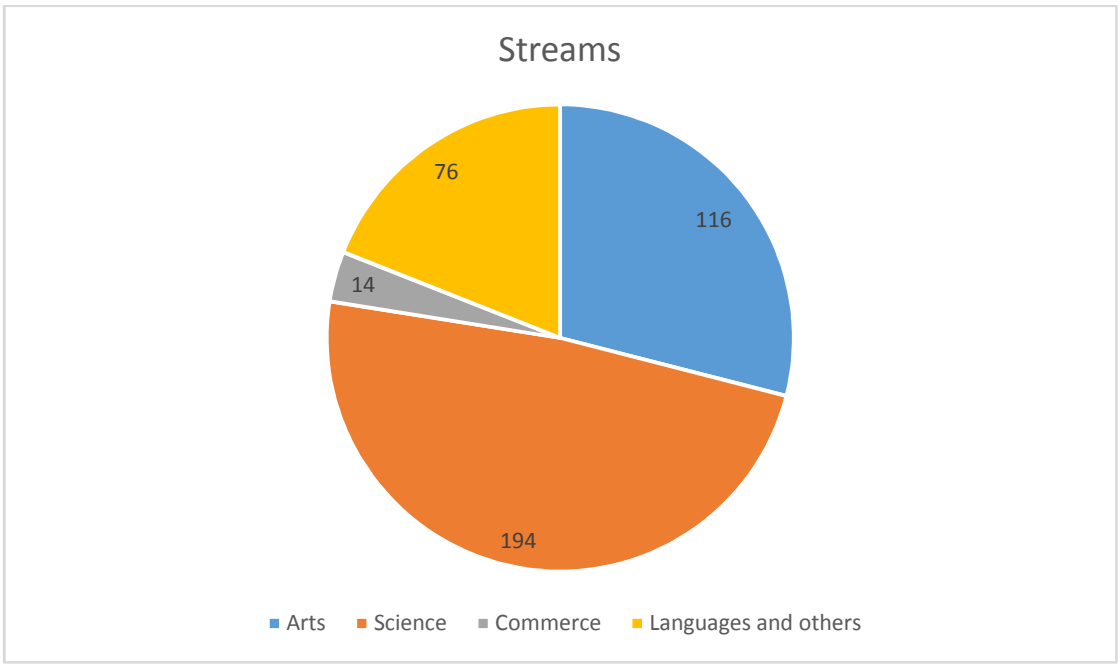


Table 6. Distribution of study participants according to number of working years (n=400)

No of working years	Frequency	Percentage (%)
1-10yrs	276	69.0
11-20yrs	97	24.3
≥ 21yrs	27	6.8
Total	**400**	**100**

In this study, the work experience of 276 (69%) study participants was less than 10 years, 97 (24.3%) had experience between 11 to 20 years and 27 (6.8%) had more than 21 years of working experience.

The mean teaching experience of participants was 8.2 years ± 0.35 SD (Standard Deviation).

Graph 6. Distribution of study participants according to number of working years (n=400)

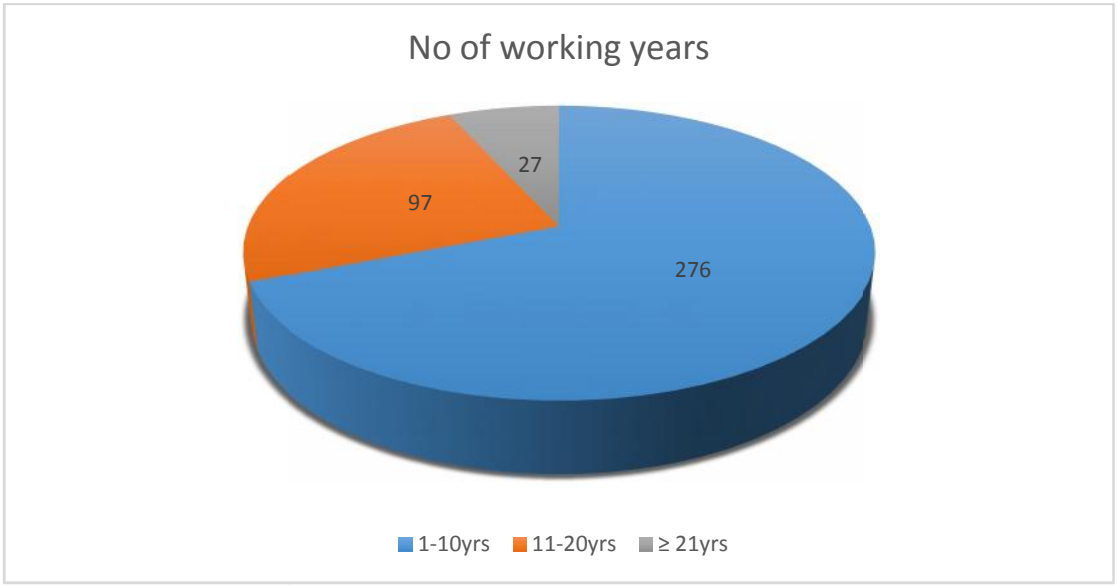


Table 7. Distribution of study participants according to per capita monthly income (n=400)

Per capita monthly income (rupees)	Frequency	Percentage (%)
≤ 10000	95	23.75
10001-20000	170	42.5
20001-30000	61	15.25
≥ 30001	74	18.5
Total	**400**	**100**

In this study, 95 (23.75%) of study participants had per capita monthly income below Rs.10,000, 170 (42.5%) had between Rs.10,001 – 20,000, 61 (15.25%) had between Rs.20,001 – 30,000 and 74 (18.5%) had above Rs.30,001.

Graph 7. Distribution of study participants according to per capita monthly income (n=400)

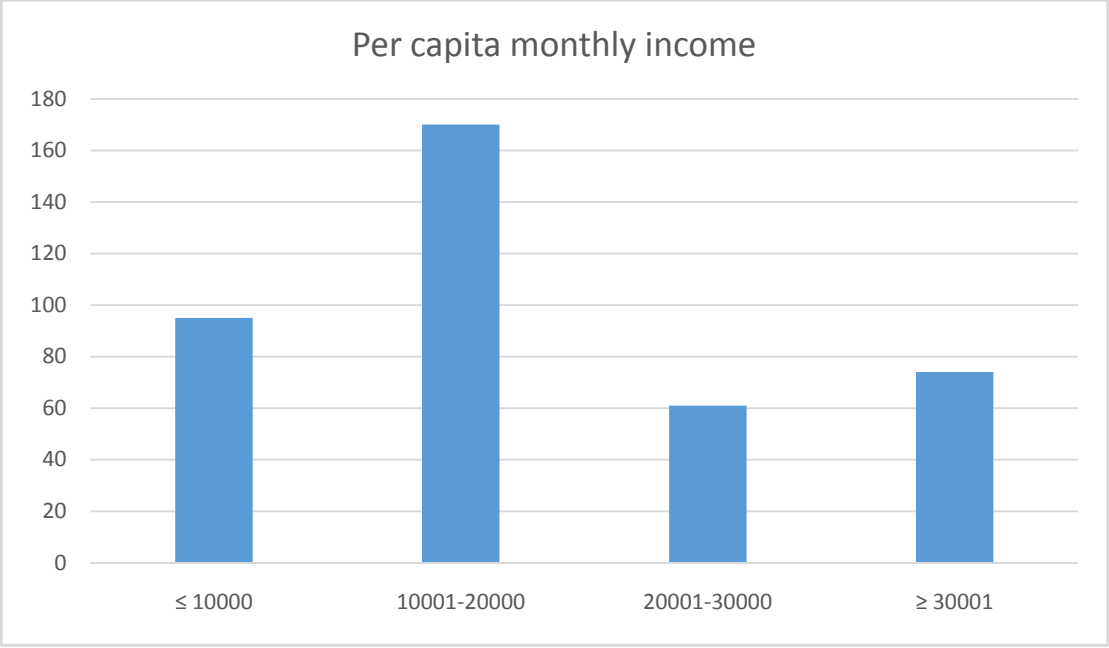


Table 8. Distribution of study participants according to Socio-economic status according to modified B G Prasad classification (n=400)

Socio-economic status	Frequency	Percentage (%)
Class I	375	93.75
Class II	25	6.25
Total	**400**	**100**

In this study, 375 (93.75%) of study participants belonged to class I socio-economic status and 25 (6.25%) belonged to class II socio-economic status. None of the participants belonged to class III, class IV or class V.

Graph 8. Distribution of study participants according to Socio-economic status according to modified BG Prasad classification (n=400)

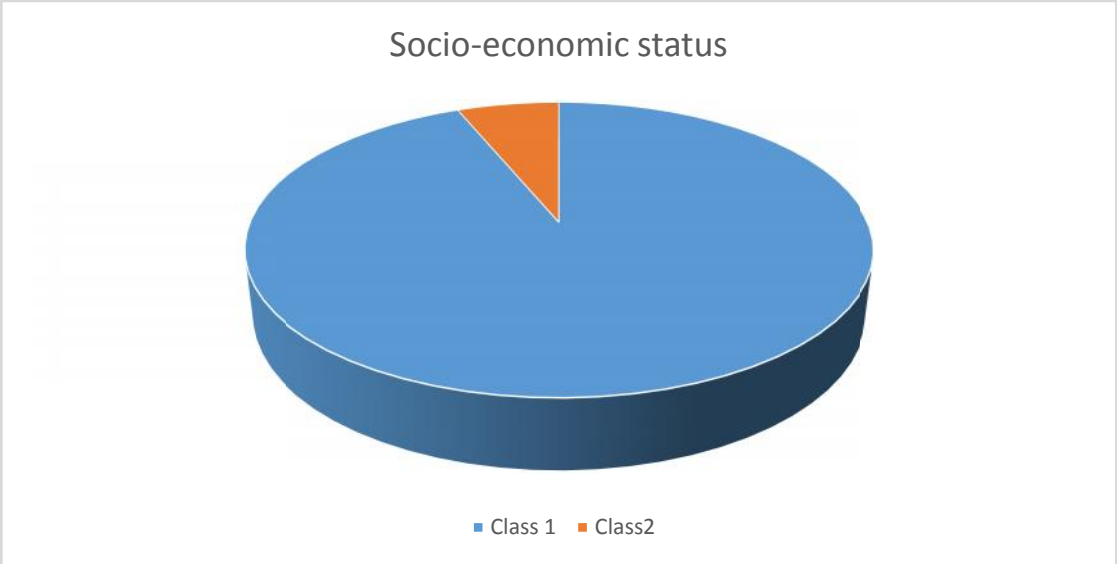
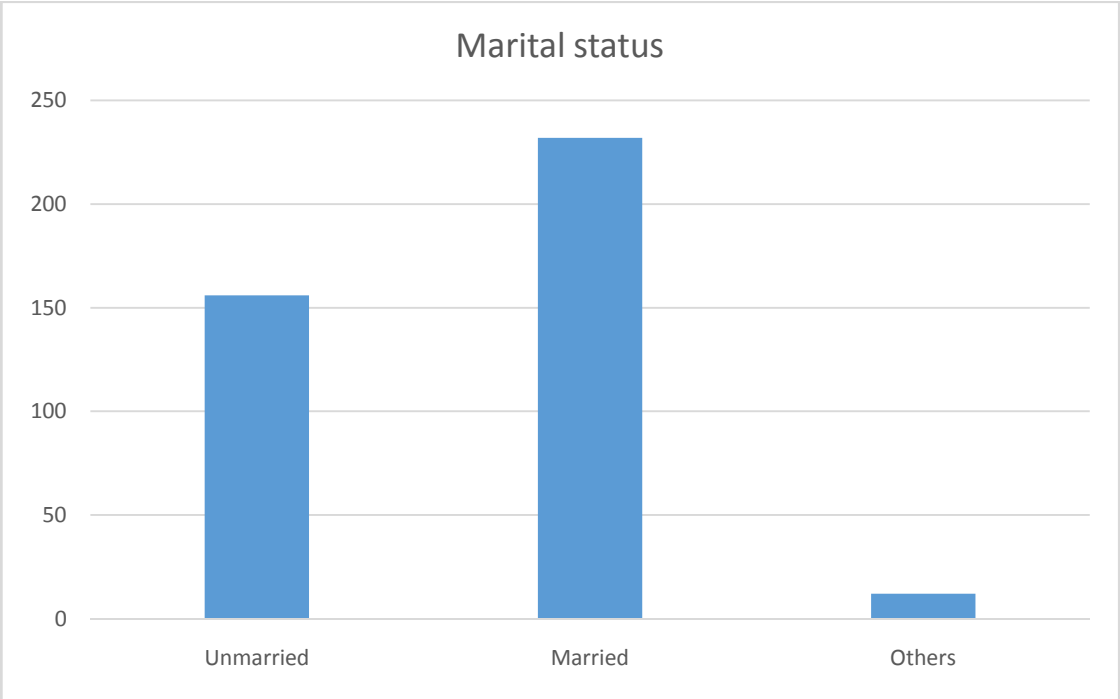


Table 9. Distribution of study participants according to Marital status (n=400)

Marital status	Frequency	Percentage (%)
Unmarried	156	39
Married	232	58
Others	12	3
Total	**400**	**100**

In this study, the study participants 156 (39%) were unmarried, 232 (58%) were married and 12 (3%) were others which included widowed divorced.

Graph 9. Distribution of study participants according to Marital status (n=400)



B. Reproductive data

Table 10. Distribution of study participants according to Age at menarche (n=400)

Age at menarche (years)	Frequency	Percentage (%)
11 – 13	101	25.25
14 – 17	299	74.75
Total	**400**	**100**

In this study, 101 (25.25%) participants had menarche between the age of 11 - 13 years and 299 (74.75%) between the age of 14 - 17 years. The mean age at menarche of study participants is 14.36 ± 1.23.

Graph 10. Distribution of study participants according to Age at menarche (n=400)

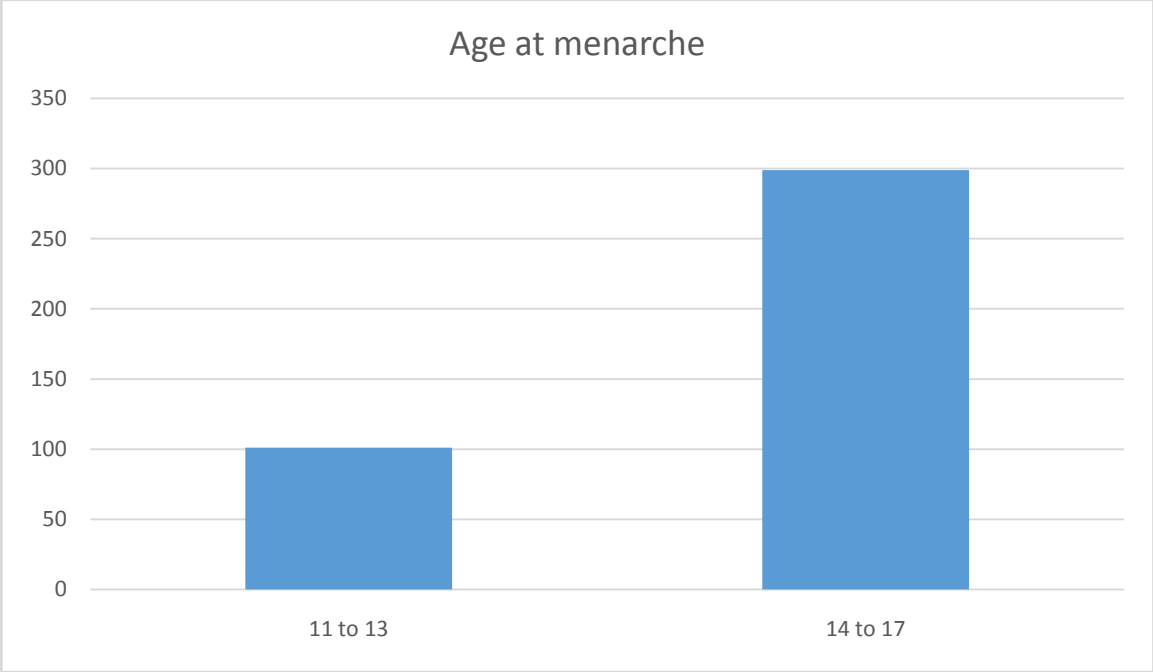


Table 11. Distribution of study participants according to regularity of menstrual cycle (n=400)

Menstrual cycles	Frequency	Percentage (%)
Regular	364	91.00
Irregular	36	9.00
Total	**400**	**100**

In this study, 364 (91%) participants had regular menstrual cycle and 36 (9%) had irregular menstrual cycle.

Graph 11. Distribution of study participants according to regularity of menstrual cycle (n=400)

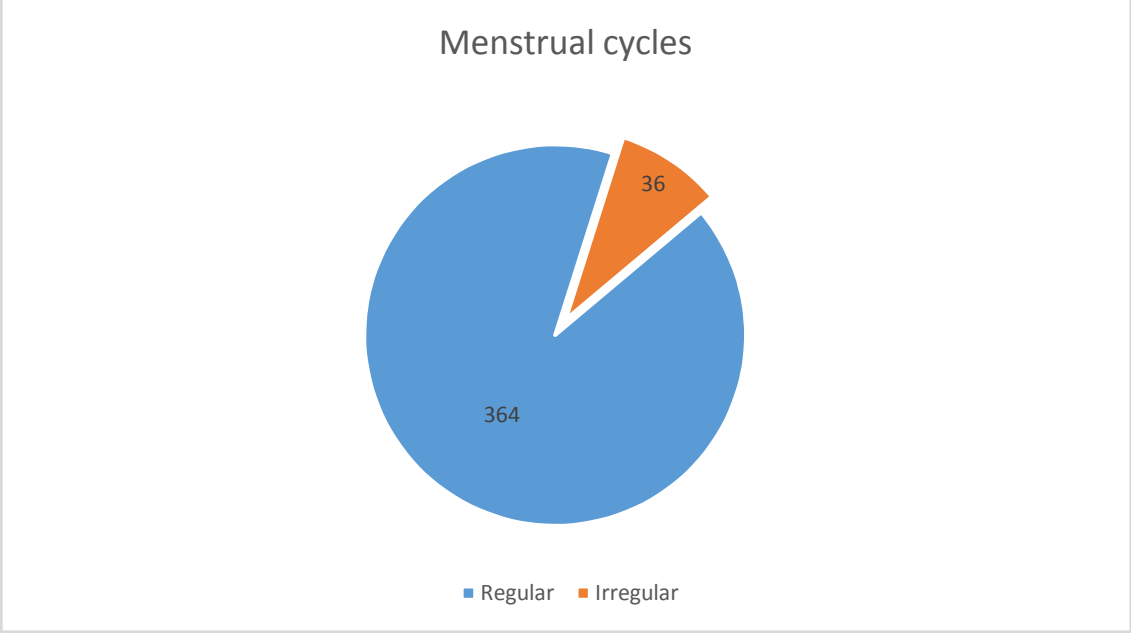


Table 12. Distribution of study participants according to Age at marriage (n=234)

Age at marriage (years)	Frequency	Percentage (%)
≤ 20	12	5.13
21 -25	107	45.72
26 -30	84	35.9
31 – 35	12	5.13
> 35	19	8.12
Total	**234**	**100**

In this study, 12 (5.13%) participants were married before or at 20 years of age, 107 (45.72%) were married between 21 – 25 years, 84 (35.9%) were married between 26 – 30 years, 12 (5.13%) were married between 31 – 35 years and 19 (8.12%) were married above 35 years of age. The mean age at marriage = 26.17 ± 4.49.

Graph 12. Distribution of study participants according to Age at marriage (n=234)

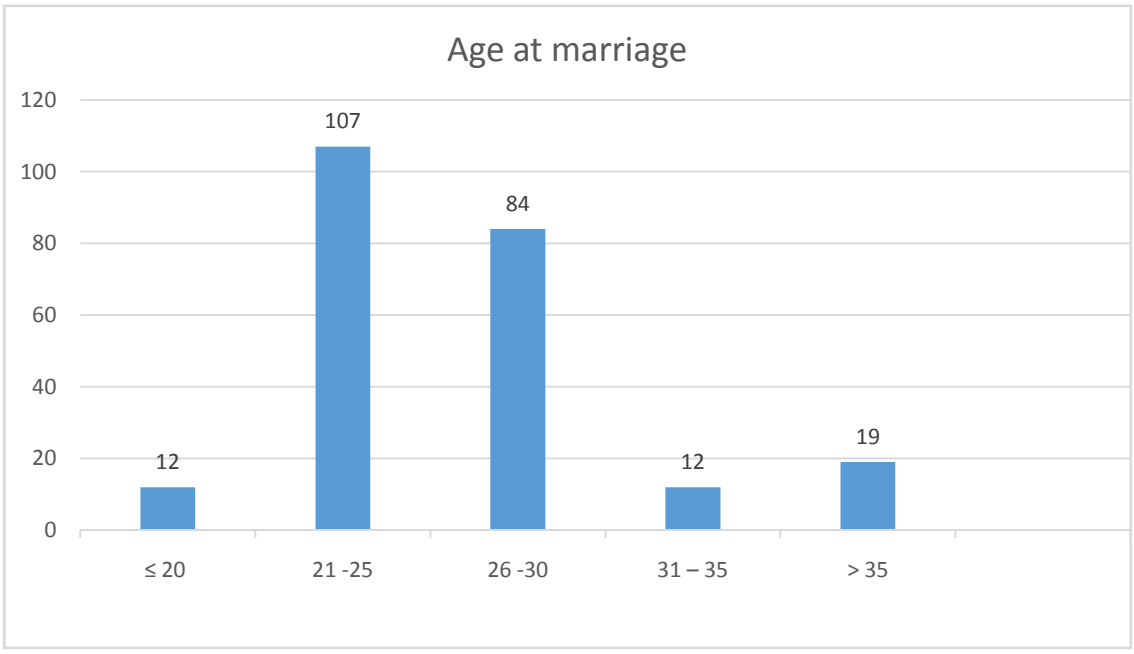


Table 13. Distribution of study participants according to Age at first pregnancy (n=179)

Age at first pregnancy (years)	Frequency	Percentage (%)
< 25	58	32.4
26 – 30	100	55.87
31 – 35	7	3.91
36 – 40	14	7.82
Total	**179**	**100**

In this study, 58 (32.4%) study participants had first pregnancy before 25 years of age, 100 (55.87%) participants had first pregnancy between the age of 26 to 30 years, 7 (3.91%) study participants had first pregnancy between 31 – 35 years of age and 14 (7.82%) study participants had first pregnancy between 36 – 40 years of age. The mean age at first pregnancy was 27.32 ± 4.30.

Graph 13. Distribution of study participants according to Age at first pregnancy (n=179)

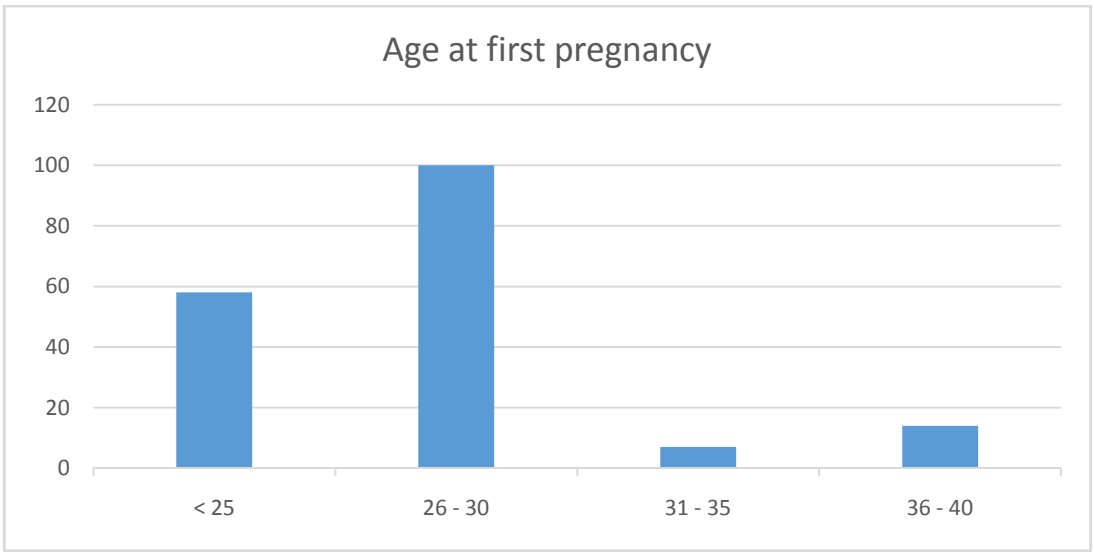


Table 14. Distribution of study participants according to occurrence of abortions (n=179)

Abortions	Frequency	Percentage (%)
Yes	71	39.66
No	108	60.34
Total	**179**	**100**

In the present study, 71 (39.66%) women had abortion and 108 (60.34%) did not have abortion in their lifetime.

Graph 14. Distribution of study participants according to occurrence of abortions (n=179)

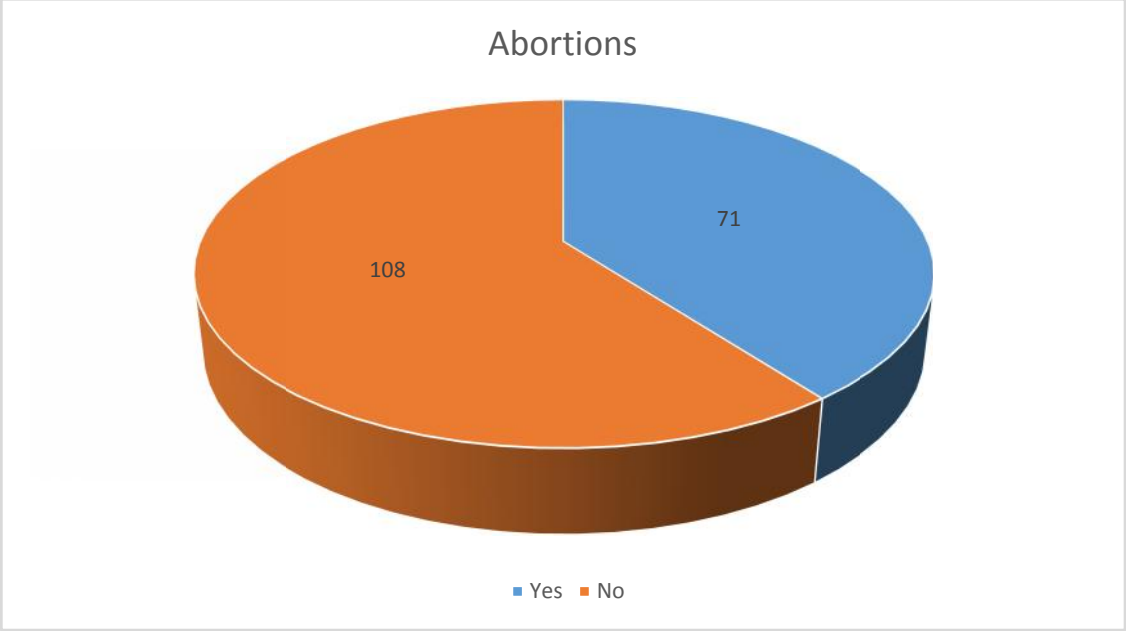


Table 15. Distribution of study participants according to number of months breastfeeding (n=179)

Breastfeeding (months)	Frequency	Percentage (%)
6 – 12	56	31.28
12 – 24	109	60.89
>24	14	7.82
Total	**179**	**100**

All participants in this study had breastfeed their children (179).

In this study, 56 (31.28%) participants had breastfed their children for 6 to 12 months, 109 (60.89%) had breastfed for 12 to 24 months and 14 (7.82%) had breastfed for more than 24 months.

Graph 15. Distribution of study participants according to number of months breastfeeding (n=179)

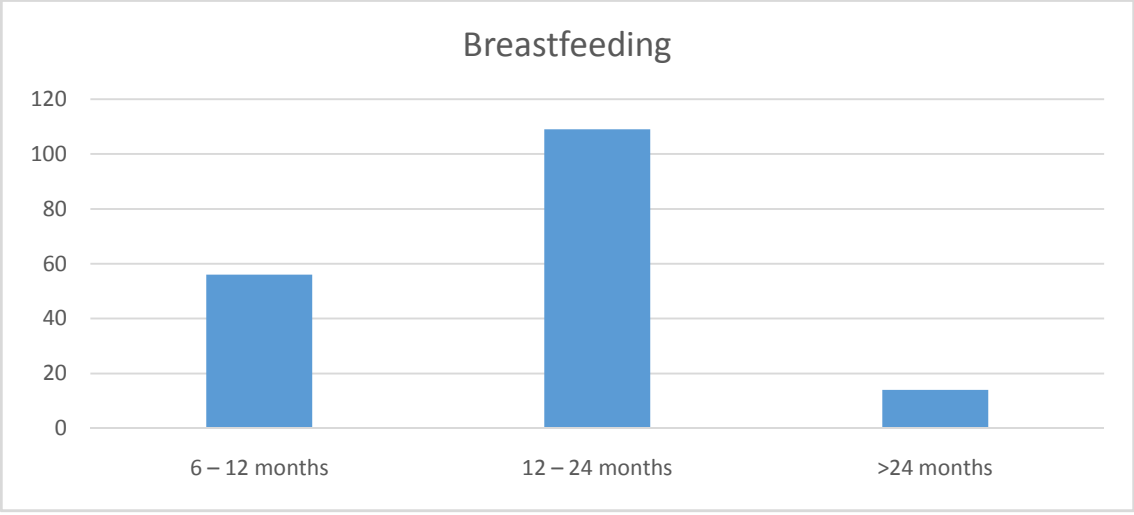


Table 16: Distribution of study participants according to use of Oral Contraceptive Pills (n=234)

Use of OCPs	Frequency	Percentage (%)
Yes	45	19.23
No	189	80.77
Total	**234**	**100**

In the study, among 234 married women, 45 (19.23%) study participants were using oral contraceptives.

Graph 16: Distribution of study participants according to use of Oral Contraceptive Pills (n=234)

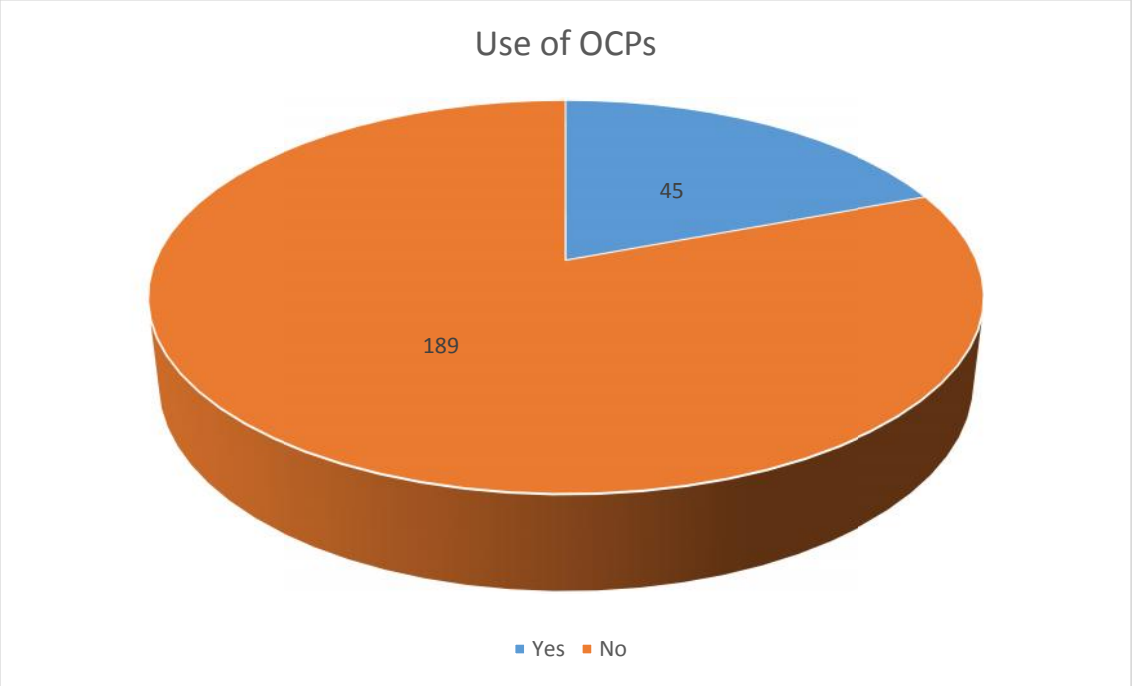


Table 17. Distribution of study participants according to duration of Oral Contraceptive Pills use (n=45)

Duration of OCPs (months)	Frequency	Percentage (%)
<24	29	64.44
24 – 60	16	35.56
Total	**45**	**100**

In this study, 29 (64.44%) had used OCPs for a period of less than 24 months, 16 (35.56%) had used for 24 to 60 months and none of the study participants had consumed oral contraceptive pills for more than 60 months. The mean duration of OCP use was 25.42 ± 13.72.

Graph 17. Distribution of study participants according to duration of OCP use (n=45)

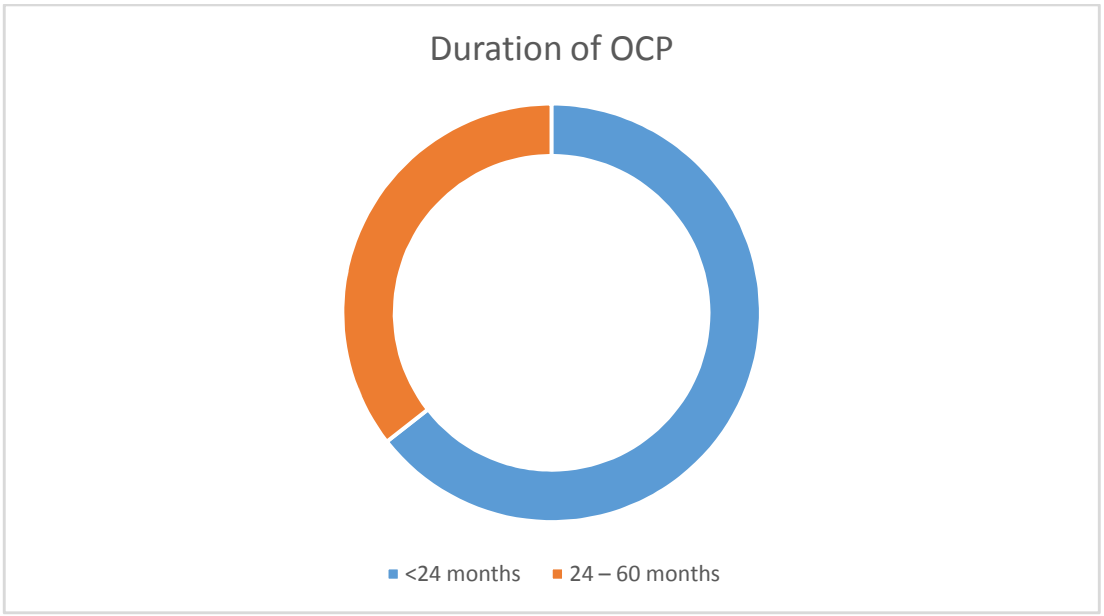


Table 18. Distribution of study participants according to attainment of menopause (n=400)

Attained menopause	Frequency	Percentage (%)
Yes	36	9
No	364	91
Total	**400**	**100**

In the study, 36 (9%) had attained menopause and 364 (91%) had not attained menopause.

Graph 18. Distribution of study participants according to attainment of menopause (n=400)

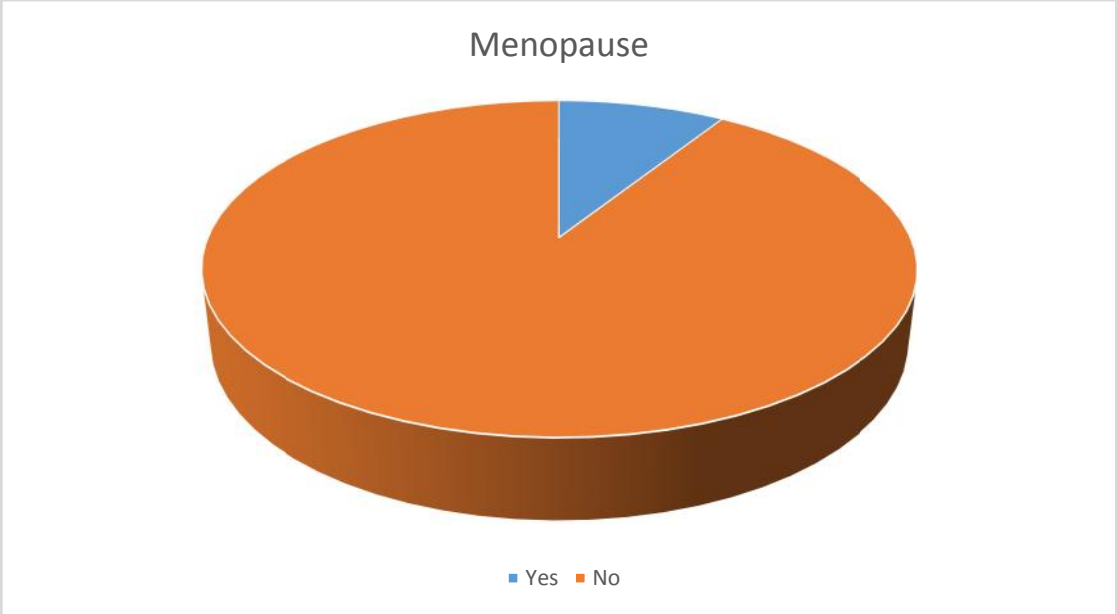


Table 19. Distribution of study participants according to age at menopause (n=36)

Age at menopause (years)	Frequency	Percentage (%)
41 – 45	14	38.89
> 45	22	61.11
Total	**36**	**100**

In this study, none of the participants had menopause before the age of 40 years, 14 (38.89%) between the age of 41 - 45 years and 22 (61.11%) after the age of 45. Mean age at menopause was 46.44 ±2.21.

Graph 19. Distribution of study participants according to Age at menopause (n=36)

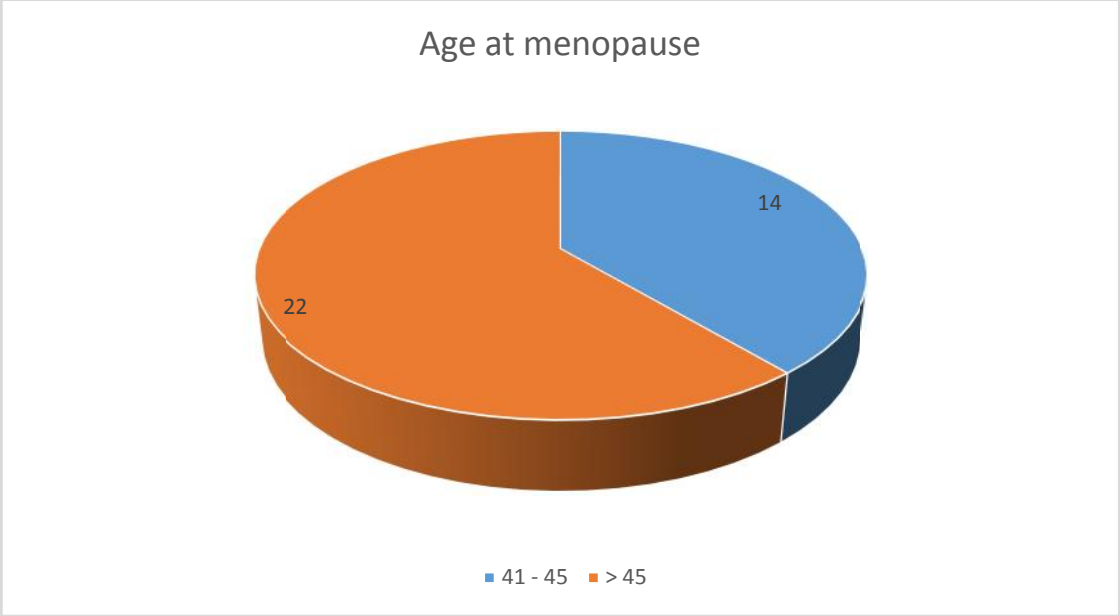
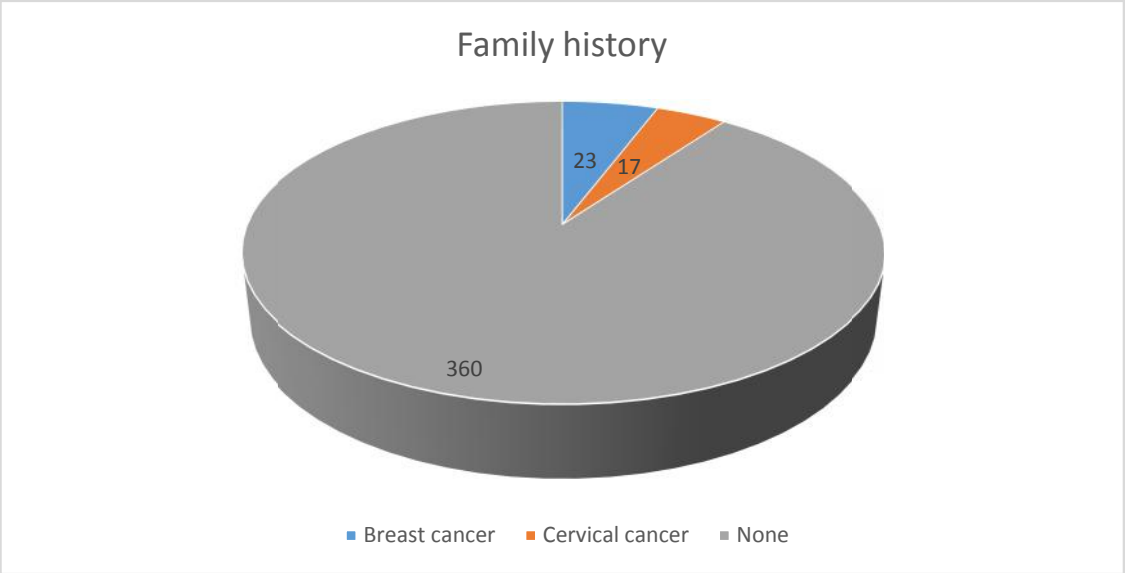


Table 20: Distribution of study participants according to family history of cancers (n=400)

Family history	Frequency	Percentage (%)
Breast cancer	23	5.75
Cervical cancer	17	4.25
None	360	90
Total	**400**	**100**

In this study, 23 (5.75%) participants had positive family history of breast cancer, 17 (4.25%) had positive family history of cervical cancer, none of the participants had family history of both breast and cervical cancer and 360 (90%) did not have. Here, not only first degree family but second degree relatives were also taken into consideration.

Graph 20: Distribution of study participants according to family history of cancers (n=400)



C. Lifestyle factors

Table 21: Distribution of study participants according to diet (n=400)

Diet	Frequency	Percentage (%)
Vegetarian	221	55.25
Mixed	179	44.75
Total	**400**	**100**

In this study, among 400 participants, 221 (55.25%) were vegetarians and 179 (44.75%) were practicing mixed diet patterns.

Graph 21: Distribution of study participants according to diet (n=400)

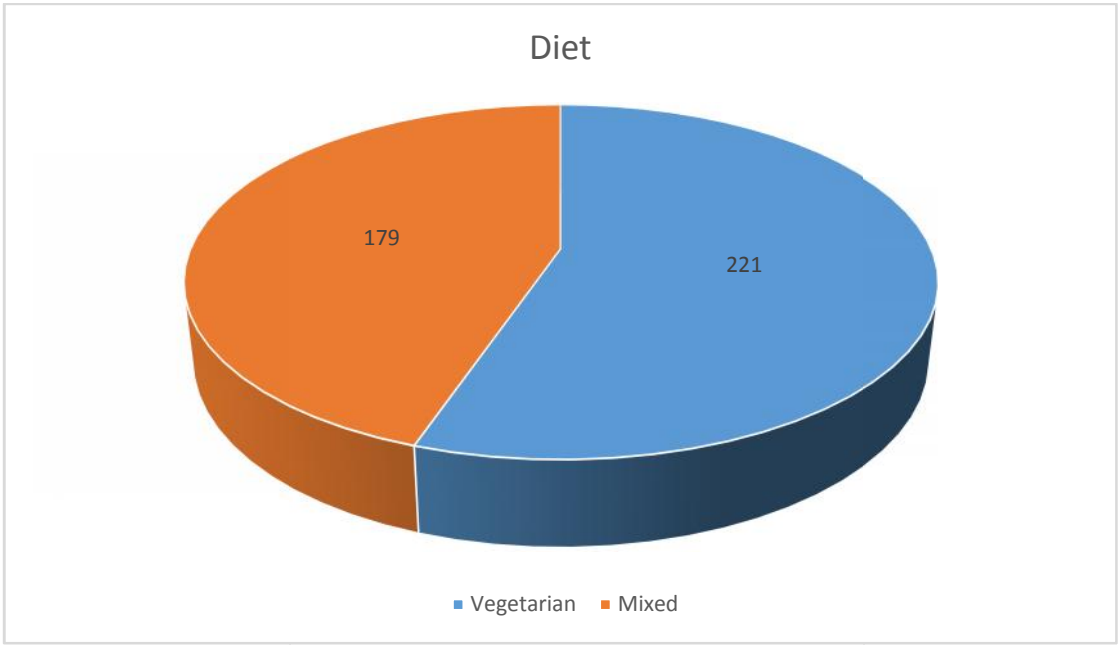


Table 22: Distribution of study participants according to consumption of high fried food or red meat, fruits and vegetables, food with high salt content, aerated drinks and sweets and High fibre and whole grains (n=400)

Consumption of	Not consuming	1 – 2 times a week	3 - 4 times a week	5 - 6 times a week	>6 times a week	Total (%)
High fried food or red meat	0	354 (88.5)	27 (6.75)	8(2)	11 (2.75)	**400 (100)**
Fruits and vegetables	0	32(8)	158 (39.5)	127(31.75)	89(22.25)	**400 (100)**
Food with high salt content	8(2)	346 (91)	23 (5.75)	5(1.25)	0	**400 (100)**
Aerated drinks and sweets	4(1)	363(90.75)	28 (7)	5 (1.25)	0	**400 (100)**
High fibre and whole grains	0	24 (6)	181(45.25)	167(41.75)	28 (7)	**400 (100)**

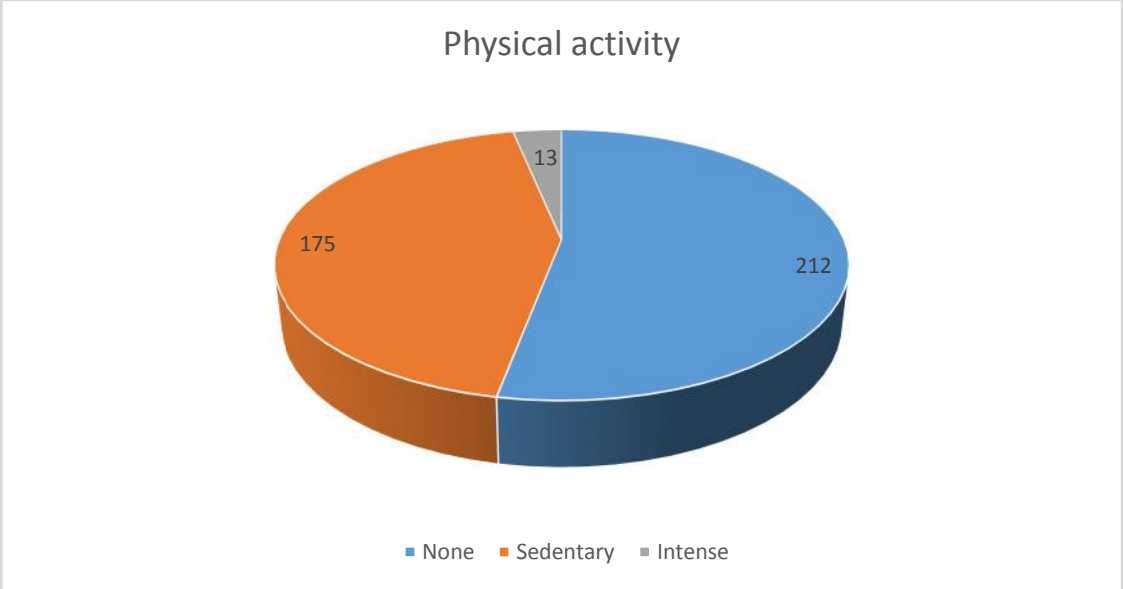
In the study, 354 (88.5%) participants had practice of consuming high fried food or red meat once or twice a week, 285 (71.25%) were consuming fruits and vegetables three to six times a week, 346 (91%) were consuming food with high salt content once or twice a week, 363 (90.75%) were consuming aerated drinks and sweet once or twice a week and 348 (87%) were consuming high fibre and whole grains three to six times a week.

Table 23: Distribution of study participants according to physical activity (n=400)

Physical activity	Frequency	Percentage (%)
None	212	53.00
Sedentary	175	43.75
Intense	13	3.25
Total	**400**	**100**

In the study, 212 (53%) study participants reported that they were not physically active, 175 (43.75%) participants were sedentary (30 minutes of physical activity for 3 to 4 days a week) and 13 (3.25%) participants were sedentary (>30 minutes of physical activity for 5 to 6 days a week).

Graph 22: Distribution of study participants according to physical activity (n=400)



None of the study participants were smoking, chewing tobacco and consuming alcohol.

D. **Anthropometry**

Table 24: Distribution of study participants according to BMI (n=400)

BMI	Frequency	Percentage (%)
<18.5 (Underweight)	27	6.75
18.5-22.9 (Healthy)	152	38
23-24.9 (Overweight)	67	16.75
>25 (Obese)	154	38.5
Total	**400**	**100**

In this study, 27 (6.75 %) women were underweight, 152 (38%) were healthy (normal BMI range) 67 (16.75%) were overweight and 154 (38.5%) were obese.

Graph 23: Distribution of study participants according to BMI (n=400)

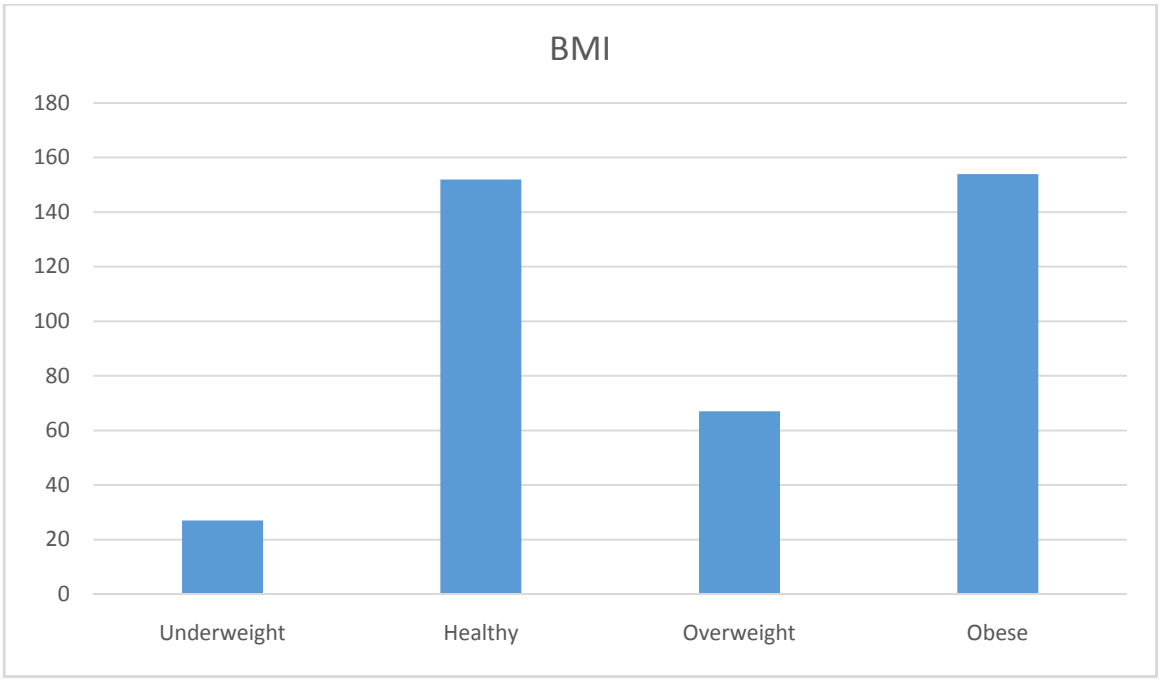
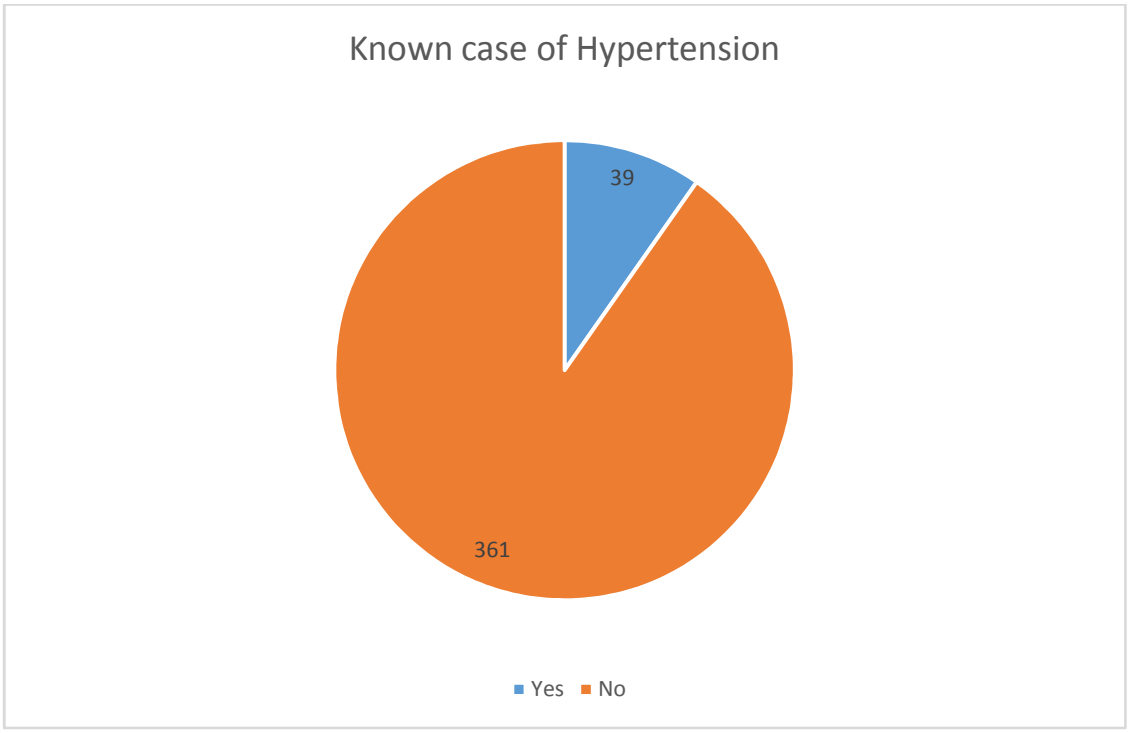


Table 25: Distribution of study participants according to hypertension (n=400)

Known case of hypertension	Frequency	Percentage (%)
Yes	39	9.75
No	361	90.25
Total	**400**	**100**

In this study, 39 (9.75%) study participants were known case of hypertension and 361 (90.25%) were not a known of hypertension.

Graph 24: Distribution of study participants according to hypertension (n=400)



E. Awareness of breast cancer

Table 26: Distribution of study participants according to knowledge on risk factors of breast cancer (n=400)

Knowledge on risk factors of breast cancer	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)	Total (%)
Past history of breast cancer	42(10.5)	139(34.75)	94(23.5)	92(23)	33(8.25)	**400 (100)**
Using Hormone Replacement Therapy	14(3.5)	116(29)	137(34.25)	100(25)	33(8.25)	**400 (100)**
Drinking more than one unit of alcohol per day	42(10.5)	106(26.5)	91(22.75)	88(22)	73(18.25)	**400 (100)**
Being overweight	27(6.75)	84(21)	100(25)	145(36.25)	44(11)	**400 (100)**
Family history of breast cancer	58(14.5)	101(25.25)	92(23)	90(22.5)	59(14.75)	**400 (100)**
Having children later on in life or not at all	8(2)	102(25.5)	120(30)	111(27.75)	59(14.75)	**400 (100)**
Early menarche	0 (0)	39(9.75)	173(43.25)	137(34.25)	51(12.75)	**400 (100)**
Late menopause	17(4.25)	88(22)	127(31.75)	131(32.75)	37(9.25)	**400 (100)**
Physical inactivity	16(4)	86(21.5)	139(34.75)	127(31.75)	32(8)	**400 (100)**
Consumption of OCP's	0 (0)	115(28.75)	166(41.5)	84(21)	35(8.75)	**400 (100)**
Personal history of non-cancerous breast cancer	13(3.25)	134(33.5)	171(42.75)	53(13.25)	29(7.25)	**400 (100)**
Eating junk food	6(1.5)	133(33.25)	103(25.75)	116(29)	42(10.5)	**400 (100)**

In this study, 139 (34.75%) participants agreed that past history of breast cancer, 137 (34.25%) participants were neutral about using Hormone Replacement Therapy, 106 (26.5%) participants agreed drinking more than one unit of alcohol per day, 145 (36.25%) participants disagreed being overweight, 101 (25.25%) participants agreed family history of breast cancer, 120 (30%) participants were neutral about having children later on in life or not at all, 173 (43.25%) participants were neutral about early menarche, 131 (32.75%) participants disagreed that late menopause, 139 (34.75%) were neutral about being physically inactive, 166 (41.5%) were neutral about consumption of OCP's, 171 (42.75%) were neural about personal history of non-cancerous breast cancer and 133 (33.25%) participants agreed eating junk food as the risk factors for development of breast cancer.

Table 27: Distribution of study participants depending on knowledge of symptoms of breast cancer (n=400)

Knowledge of symptoms of breast cancer	**Yes(%)**	**No(%)**	**Don't know(%)**	**Total(%)**
Change in the position of nipple	86 (21.5)	158 (39.5)	156 (39)	**400 (100)**
Pulling of nipple	102 (25.5)	150 (37.50)	148 (37)	**400 (100)**
Pain in either of the breast or armpit	211 (52.75)	67 (16.75)	122 (30.5)	**400 (100)**
Puckering or dimpling of breast skin	156 (39)	74 (18.5)	170 (42.5)	**400 (100)**
Discharge or bleeding from nipple	180 (45)	69 (17.25)	151 (37.75)	**400 (100)**

Lump or thickening in breast	261 (65.25)	36 (9)	103 (25.75)	**400 (100)**
Nipple rash	65 (16.25)	156 (39)	179 (44.75)	**400 (100)**
Redness of breast skin	119 (29.75)	117 (29.25)	164 (41)	**400 (100)**
Lump or thickening under armpit	196 (49)	62 (15.5)	142 (35.5)	**400 (100)**
Changes in size of breast	135 (33.75)	143 (35.75)	122 (30.5)	**400 (100)**

In this study, 86 (21.5%) women said that change in position of nipple, 102 (25.5%) said that pulling of nipple, 211 (52.75%) said that pain in the breast or armpit, 156 (39%) said that puckering or dimpling of breast skin, 180 (45%) said that discharge or bleeding from nipple, 261 (65.25%) said that lump or thickening in the breast, 65 (16.25%) said that nipple rash, 119 (29.75%) said that redness of breast skin, 196 (49%) said that lump or thickening under armpit and 135 (33.75%) said that changes in size of the breast are the symptoms of breast cancer correctly.

Table 28: Distribution of study participants depending on awareness of breast cancer screening (n=400)

Awareness of breast cancer screening	**Frequency**	**Percentage**
Yes	165	41.25
No	235	58.75
Total	**400**	**100**

In this study, 165 (41.25%) study participants stated that they knew about breast cancer screening and 235 (58.75%) did not know about breast cancer screening.

Table 29: Distribution of study participants depending on awareness of ideal age to start breast cancer screening (n=165)

Ideal age to start breast cancer screening	Frequency	Percentage
20 - 30 years	18	10.91
30 - 40 years	43	26.06
40 - 50 years	62	37.58
>50 years	13	7.88
Don't know	29	17.58
Total	**165**	**100**

In this study, only 62 (37.58%) of women had stated correctly that the ideal age to start breast cancer screening is 40 - 50 years, 74 (44.85%) participants said wrong answer and 29 (17.58%) said that they don't know.

Table 30: Distribution of study participants depending on knowledge of breast cancer screening methods (n=165)

Knowledge of methods of breast cancer screening	Frequency	Percentage
Breast self-examination	11	6.67
Mammography	37	22.42
Don't know	117	70.91
Total	**165**	**100**

In the study, 11 (6.67%) participants knew the breast screening method breast self-examination, 37 (22.42%) knew about mammography and no one mentioned about clinical breast examination or nipple discharge cytology.

Table 31: Distribution of study participants depending on knowledge breast self-examination (n=11)

Knowledge BSE	True(%)	False(%)	Total(%)
Necessary for determining lump at early	11 (100)	0 (0)	**11 (100)**
Should be done monthly	11 (100)	0 (0)	**11 (100)**
Should be done at luteal phase of menstruation	7 (63.64)	4 (36.36)	**11 (100)**

In this study, out of the participants who knew about breast self-examination, all of them agreed to the fact that breast self-examination is necessary for determining lump early and it should be done monthly and only 4 (36.36%) participants said that it should not be done in luteal phase of menstrual cycle.

Table 32: Distribution of study participants depending on performing breast self-examination (n=11)

Performing BSE	Frequency	Percentage	Total (%)
Yes	8	72.73	**11 (100)**
No	3	2.27	**11 (100)**

Only 8 (72.73%) out of 11 women were performing BSE and 3 (27.27%) did not perform breast self-examination.

All 8 participants who were performing BSE, id it on monthly basis.

Table 33: Distribution of study participants depending on reasons for not performing breast self-examination (n=3)

Reasons for not performing BSE	Frequency	Percentage
No time to perform BSE	2	66.67
Forget performing BSE	1	33.33
Total	**3**	**100**

In this study, 2 (66.67%) participants reported that they do not have time to perform BSE, 1 (33.33%) said that they forget to perform BSE and none of the participants said that they does not know how to perform BSE and thinks that BSE is an unnecessary examination.

Table 34: Distribution of study participants depending on knowledge on mammography (n=37)

Knowledge mammography	True	False	Total(%)
Necessary for determining lump at early	24 (64.86)	13 (35.14)	**37 (100)**
Should be done monthly	13 (35.14)	24 (64.86)	**37 (100)**
Should be done at luteal phase of menstruation	33 (89.19)	4 (10.81)	**37 (100)**

In this study, out of the participants who had undergone mammography, 24 (64.86%) participants said that mammography should be done yearly, 13 (35.14%) said that it is a painful procedure and 33 (89.19%) said that it can detect cancer with or without mass.

None of the study participants had undergone mammography.

Table 35: Distribution of study participants depending on opinion about does mammography decreases the mortality of breast cancer (n=37)

Decrease in mortality by mammography	Frequency	Percentage
Yes	25	67.57
No	12	32.43
Total	**37**	**100**

In this study, 25 (67.57%) participants said that mammography decreases the mortality of breast cancer and 12 (32.43) said that it does not decrease the mortality of breast cancer.

Table 36: Distribution of study participants depending on how often they check their breast (n=400)

How often study participants check their breast	Frequency	Percentage
Rarely or never	130	32.50
At least once every 6 monthly	105	26.25
At least once a month	138	34.50
At least once a week	27	6.75
Total	**400**	**100**

In this study, 130 (32.5%) stated that they never or rarely, 105 (26.25%) said that at least once every 6 months, 138 (34.5%) said that at least once a month and 27 (6.75%) said that at least one a week check their breast.

Table 37: Distribution of study participants depending on how confident they are in detecting changes in their breast (n=400)

How confident study participants are in detecting changes in their breast	Frequency	Percentage
Not at all confident	112	28.00
Slightly confident	161	40.25
Fairly confident	107	26.75
Very confident	20	5.00
Total	**400**	**100**

In this study, 112 (28%) participants were not at all confident, 161 (40.25%) were slightly confident, 107 (26.75%) were fairly confident and only 20 (5%) were very confident in detecting changes in their breast.

Table 38: Distribution of study participants depending on if they have ever seen a doctor regarding changes that they have detected in their breast (n=400)

If study participants had ever seen a doctor regarding changes that they have detected in their breast	Frequency	Percentage
Yes	44	11
No	162	40.5
Not noticed a change	194	48.5
Total	**400**	**100**

In this study, 44 (11%) had seen a doctor regarding the changes that they had detected in their breast, 162 (40.5%) had not seen a doctor even though they had detected changes in their breast and 194 (48.5%) had not detected any changes.

Table 39: Distribution of study participants depending on how soon they would contact doctor when they detect changes in their breast (n=400)

How soon would study participants contact doctor when they detect changes in their breast	Frequency	Percentage
Within a day	177	44.25
Within a week	191	47.75
Within a month	32	8
Total	**400**	**100**

In this study, 177 (44.25%) participants consult doctor within a day if they detect any changes in their breast, 191 (47.75%) within a week and 32 (8%) within a month.

Table 40: Distribution of study participants depending on how confident they are in detecting a breast cancer symptom (n=400)

How confident study participants are in detecting a breast cancer symptom	Frequency	Percentage
Not at all confident	103	25.75
Not very confident	187	46.75
Fairly confident	97	24.25
Very confident	13	3.25
Total	**400**	**100**

In this study, 103 (25.75%) women said that they are not at all confident, 187 (46.75%) said that they are not very confident, 97 (24.25%) said that they are fairly confident and only 13 (3.25%) were very confident in detecting a breast cancer symptom.

F. Awareness of cervical cancer

Table 41: Distribution of study participants according to knowledge on risk factors of cervical cancer (n=400)

Risk factors of cervical cancer	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)	Total (%)
Human Papilloma Virus	33 (8.25)	163 (40.75)	125 (31.25)	40 (10)	39 (9.75)	**400 (100)**
Tobacco use	20 (5)	141 (35.25)	116 (29)	78 (19.5)	45 (11.25)	**400 (100)**
Weakened immune system	32 (8)	109 (27.25)	164 (41)	65 (16.25)	30 (7.5)	**400 (100)**
Long term use of oral contraceptive pill	27 (6.75)	84 (21)	182 (45.5)	77 (19.25)	30 (7.5)	**400 (100)**
Sexually Transmitted Infection	12 (3)	115 (28.75)	144 (36)	98 (24.5)	31 (7.75)	**400 (100)**
Starting to have sex at a young age	5 (1.25)	107 (26.75)	111 (27.75)	139 (34.75)	38 (9.5)	**400 (100)**
Having many sexual partners	25 (6.25)	131 (32.75)	107 (26.75)	99 (24.75)	38 (9.5)	**400 (100)**
Having many children at frequent intervals	15 (3.75)	76 (19)	133 (33.25)	136 (34)	40 (10)	**400 (100)**
Having a sexual partner with many previous partners	38 (9.5)	111 (27.75)	121 (30.25)	97 (24.25)	33 (8.25)	**400 (100)**

In this study, 163 (40.75%) participants agreed that infection with Human Papilloma Virus, 141 (35.25%) participants agreed that the use of tobacco, 163 (40.75%) were neutral about weakened immune system, 182 (45.5%) participants were neutral about long term use of Oral Contraceptive Pills, 144 (36%) participants were neutral about Sexually Transmitted Infection, 139 (34.75%) participants disagreed that starting to have sex at a young age, 131 (32.75%) participants agreed that having many sexual partners, 136 (34%) participants disagreed that having many children at frequent intervals, 121 (30.25%) were neutral about having a sexual partner with many previous partners as the risk factors for development of cervical cancer.

Table 42: Distribution of study participants depending on knowledge of symptoms of cervical cancer (n=400)

Symptoms of cervical cancer	Yes (%)	No (%)	Don't know (%)	Total (%)
Vaginal bleeding between periods	136 (34)	94 (23.5)	170 (42.5)	**400 (100)**
Persistent lower back pain	67 (16.75)	157 (39.25)	176 (44)	**400 (100)**
Persistent vaginal discharge with unpleasant odour	83 (20.75)	116 (29)	201 (50.25)	**400 (100)**
Discomfort or pain during sex	90 (22.5)	96 (24)	214 (53.5)	**400 (100)**
Heavy menstrual flow	71 (17.75)	132 (33)	197(49.25)	**400 (100)**
Persistent diarrhoea	28 (7)	140 (35)	232 (58)	**400 (100)**
Vaginal bleeding after menopause	212 (53)	31 (7.75)	157 (39.25)	**400 (100)**
Persistent pelvic pain	93 (23.25)	62 (15.50)	245 (61.25)	**400 (100)**
Vaginal bleeding during or after sex	106 (26.5)	75 (18.75)	219 (54.75)	**400 (100)**
Blood in the stool or urine	66 (16.5)	137 (34.25)	197 (49.25)	**400 (100)**
Unexplained weight loss	110 (27.5)	88 (22)	202 (50.5)	**400 (100)**

In this study, 136 (34%) said that vaginal bleeding between the periods,6 (16.75%) said that persistent lower back pain, 83 (20.75%) said that persistent vaginal discharge with unpleasant odour, 90 (22.5%) said that discomfort or pain during sex, 71 (17.5%) said that heavy menstrual flow, 28 (7%) said that persistent diarrhoea, 212 (53%) said that vaginal bleeding after menopause, 93 (23.25%) said that persistent pelvic pain, 106 (26.5%) said that vaginal bleeding during or after sex, 66 (16.5%) said that blood in stools or urine and 110 (27.5%) said that unexplained weight loss are the symptoms of cervical cancer.

Table 43: Distribution of study participants depending on awareness of cervical cancer screening (n=400)

Awareness of cervical cancer screening	**Frequency**	**Percentage**
Yes	68	17
No	332	83
Total	**400**	**100**

In this study, 68 (17%) study participants stated that they knew about cervical cancer screening and 332 (83%) did not know about cervical cancer screening.

Table 44: Distribution of study participants depending on knowledge of methods of cervical cancer screening (n=68)

Methods of cervical cancer screening	Yes (%)	No (%)	Total (%)
Pap smear test	26 (38.24%)	42 (61.76%)	**68 (100)**
Visual inspection with acetic acid test	7 (10.29%)	61 (89.71%)	**68 (100)**

In this study, 26 (38.24%) women mentioned pap smear and 7 (10.29%) mentioned visual inspection with acetic acid test as one of the method of cervical cancer screening. None of the study participants knew about visual inspection with lugol's iodine test.

Table 45: Distribution of study participants depending on knowledge about pap smear test (n=26)

Knowledge about pap smear test	True (%)	False (%)	Total (%)
Should be done yearly	**26 (100)**	**0 (0)**	**26 (100)**
Should be done 3years after the onset of sexual intercourse	**11 (42.31)**	**15 (57.69)**	**26 (100)**
It is a difficult procedure	**22 (84.62)**	**4 (15.38)**	**26 (100)**
If repeated pap smear tests (3 times) are normal, it can be done every 2–3 years	**14 (53.85)**	**12 (46.15)**	**26 (100)**

In this study, out of the participants who knew about pap smear test, all the participants said that pap smear should be done yearly, 11 (42.31%) said that should be done three years after the onset of sexual intercourse, 22 (84.62%) said that it is a difficult procedure and 14 (53.85%) said that if three repeated pap smears are normal, it can be done every 2 to 3 years.

Table 46: Distribution of study participants depending on undergoing about pap smear test (n=26)

Undergoing Pap smear test	Frequency	Percentage
Yes	16	61.54
No	10	38.46
Total	**26**	**100**

Among these, 16 (61.54%) participants had undergone pap smear test.

Table 47: Distribution of study participants depending on reasons for not undergoing Pap smear test (n=10)

Reasons for not undergoing Pap smear test	Frequency	Percentage
Being virgin	1	10
Forget it	4	40
It is embarrassing	5	50
Total	**10**	**100**

In this study, 1 (10%) participant said that being virgin, 4 (40%) said that they forget it and 5 (50%) said that it was embarrassing. These were the reasons given for not undergoing pap smear test.

All participants who knew about pap smear test agreed that pap smear reduces the mortality of cervical cancer.

Table 48: Distribution of study participants depending on how confident they are in noticing a cervical cancer symptom (n=400)

Confidence in noticing cervical cancer symptoms	Frequency	Percentage
Not at all confident	197	49.25
Not very confident	156	39
Fairly confident	45	11.25
Very confident	2	0.5
Total	**400**	**100**

In this study, 197 (49.25%) of participants were not at all confident, 156 (39%) were not very confident, 45 (11.25%) were fairly confident and only 2 (0.5%) were very confident in noticing cervical cancer symptoms.

Table 49: Distribution of study participants depending on reasons which they might give to avoid going to doctor even when they have a symptom which might be serious.(Multiple answers)

Reasons given to avoid going to doctor	Frequency	Percentage
Too embarrassed to go and see the doctor	186	22.17
Too scared to go and see the doctor	148	17.64
Worried about wasting the doctor's time	0	0
I find the doctor difficult to talk to	78	9.3
Difficult to make an appointment with the doctor	52	6.2
Too busy to make time to go to the doctor	109	12.99
Too many other things to worry about	40	4.77
Difficult to arrange transport to the doctor's surgery	0	0
Worrying about what the doctor might find may stop me from going to the doctor	138	16.45
Not feeling confident talking about my symptom with the doctor	88	10.49
Total	**839**	**100**

In this study, most of the participants said that they were too embarrassed (186), too scared (148), too busy to make time (109) or worrying about what the doctor might find (138) were the reasons which they gave to avoid going to doctor even when they have a symptom which might be serious.

G. Scoring

Each of the questions on knowledge of risk factors, symptoms and screening of breast and cervical cancer was equitably scored.

A 5-point Likert scale (Strongly agree/Agree/Neutral/Disagree/Strongly disagree) was used for knowledge of risk factors. Two point (2) was assigned to strongly agree and agree responses, one point (1) to neutral and zero points to disagree and strongly disagree answers.

Categorical responses (Yes/No/Don't know or True/False) were applied for the symptom and screening related questions. One point (1) was assigned to a correct answer and zero point (0) for don't know or an incorrect answer.

The knowledge scored were separately calculated for breast and cervical cancer. Combined knowledge score was deduced by summing scores of both breast and cervical knowledge scores.

Mean and standard deviation were calculated for each of the parameters. The scores were divided into three categories:

1. Low (≤mean - SD)
2. Average (>mean-SD to <mean + SD)
3. High (≥ mean + SD).

Table 50: Distribution of study participants according to scoring of breast cancer knowledge, scoring of cervical cancer knowledge and scoring of combined knowledge (n=400)

Scoring of knowledge	Low (%)	Average (%)	High (%)	Total (%)
Breast cancer	75 (18.75)	269 (67.25)	56 (14.0)	**400 (100)**
Cervical cancer	63 (15.75)	259 (64.75)	78 (19.5)	**400 (100)**
Combined (breast and cervical cancer)	69 (17.25)	271 (67.75)	60 (15.0)	**400 (100)**

In this study, most of the study participants had average knowledge scores of breast cancer [269 (67.25%)], cervical cancer [259 (64.75%)] and combined knowledge scores [271 (67.75%)].

H. Association of knowledge on breast cancer with various sociodemographic and reproductive data

Table 51: Association between age of the study participants and knowledge on breast cancer (n=400)

Age group	Low (%)	Average (%)	High (%)	Total (%)
≤ 30yrs	51 (27.27)	114 (60.96)	22 (11.76)	**187 (100)**
31-40yrs	17 (15.74)	91 (84.26)	0 (0)	**108 (100)**
41-50yrs	7 (8.33)	48 (57.14)	29 (34.52)	**84 (100)**
≥ 51yrs	0 (0)	16 (76.19)	5 (23.81)	**21 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 66.3400, df = 3, p = 0.0001*				

In the present study, association between the age group of the study participants and breast cancer knowledge scores was found to be statistically significant indicating that the knowledge scores of breast cancer improved with age.

Table 52: Association between residence of the study participants and knowledge on breast cancer (n=400)

Residence	Low (%)	Average (%)	High (%)	Total (%)
Urban	44 (13.79)	225 (70.53)	50 (15.67)	**319 (100)**
Rural	31 (38.27)	44 (54.32)	6 (7.41)	**81 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 26.3210, df = 1, p = 0.0001*				

As seen in the above table, there is statistically significant association between participants of urban residence and breast cancer knowledge scores.

Table 53: Association between religion of the study participants and knowledge on breast cancer (n=400)

Religion	Low (%)	Average (%)	High (%)	Total (%)
Hindu	64 (17.83)	243 (67.69)	52 (14.48)	**359 (100)**
Muslims	11 (40.74)	12 (44.44)	4 (14.82)	**27 (100)**
Others	0 (0)	14 (100)	0 (0)	**14 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 16.1160, df = 2, p = 0.0030*				

In this study, the study participants belonging to Hindu religion had higher knowledge scores as compared to participants of other two categories and the association was statistically significant.

Table 54: Association between education of the study participants and knowledge on breast cancer (n=400)

Education	Low (%)	Average (%)	High (%)	Total (%)
Postgraduates	75 (19.13)	265 (67.60)	52 (13.27)	**392 (100)**
Ph D	0 (0)	4 (50.0)	4 (50.0)	**8 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 9.4490, df = 1, p = 0.0090*				

In the present study, association between the education of the study participants and breast cancer knowledge scores was found to be statistically significant indicating that the PhD degree holders had higher knowledge.

Table 55: Association between streams of the study participants and knowledge on breast cancer (n=400)

Streams	Low (%)	Average (%)	High (%)	Total (%)
Arts	31 (26.72)	73 (62.93)	12 (10.35)	**116 (100)**
Science	33 (17.01)	133 (68.56)	28 (14.43)	**194 (100)**
Commerce	7 (50.0)	5 (35.71)	2 (14.29)	**14 (100)**
Languages	4 (5.26)	58 (76.32)	14 (18.42)	**76 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 24.4770, df = 3, p = 0.0001*				

As seen in the above table, there is statistically significant association between streams of teaching among the study participants and breast cancer knowledge scores, indicating the participants belonging to language stream had better knowledge regarding breast cancer as compared to participants of other categories.

Table 56: Association between work experience of the study participants and knowledge on breast cancer (n=400)

Work experience	Low (%)	Average (%)	High (%)	Total (%)
1-10yrs	63 (22.83)	183 (66.30)	30 (10.87)	**276 (100)**
11-20yrs	12 (12.37)	64 (65.98)	21 (21.65)	**97 (100)**
≥ 21yrs	0 (0)	22 (81.48)	5 (18.52)	**27 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
$\chi^2 = 16.8660$, df = 2, p = 0.0020*				

In this study, significant association is seen between work experience and breast cancer knowledge scores and the knowledge is higher with increasing work experience.

Table 57: Association between per capita monthly income of the study participants and knowledge on breast cancer (n=400)

Per capita monthly income ( )	Low (%)	Average (%)	High (%)	Total (%)
≤ 10000	23 (24.21)	60 (63.16)	12 (12.63)	**95 (100)**
10001-20000	21 (12.35)	136 (80.0)	13 (7.65)	**170 (100)**
20001-30000	17 (27.87)	33 (54.10)	11 (18.03)	**61 (100)**
≥ 30001	14 (18.92)	40 (54.05)	20 (27.03)	**74 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
$\chi^2 = 30.4650$, df = 3, p = 0.0001*				

In the present study, significant association is seen between participants with per capita monthly income above .30001 and breast cancer knowledge scores.

Table 58: Association between socio economic status (according to modified B.G. Prasad's classification) of the study participants and breast cancer (n=400)

Socio-economic status	Low (%)	Average (%)	High (%)	Total (%)
Class I	68 (18.13)	251 (66.93)	56 (14.93)	**375 (100)**
Class II	7 (28.0)	18 (72.0)	0 (0)	**25 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 5.0400, df = 1, p = 0.0800				

As seen in the above table, no significant association is seen between socioeconomic status and breast cancer knowledge scores but there is increase in knowledge with increase in socio-economic status.

Table 59: Association between marital status of the study participants and knowledge on breast cancer (n=400)

Marital status	Low (%)	Average (%)	High (%)	Total (%)
Unmarried	41 (26.28)	107 (68.59)	8 (5.13)	**156 (100)**
Married	34 (14.66)	157 (67.67)	41 (17.67)	**232 (100)**
Others	0 (0)	5 (41.67)	7 (58.33)	**12 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 38.1120, df = 2, p = 0.0001*				

In the present study, breast cancer knowledge scores was higher among participants in others category which included widowed and divorced which was significantly associated.

Table 60: Association between history of abortions of the study participants and knowledge on breast cancer (n=179)

History of abortions	Low (%)	Average (%)	High (%)	Total (%)
Yes	7 (9.86)	48 (67.61)	16 (22.53)	**71 (100)**
No	0 (0)	82 (75.93)	26 (24.07)	**108 (100)**
Total	**7 (3.91)**	**130 (72.63)**	**42 (23.46)**	**179 (100)**
$\chi^2 = 11.0990$, df = 1, p = 0.0040*				

In this study, higher knowledge scores of breast cancer is seen among participants who did not have a history of abortion which is significantly associated.

Table 61: Association between use of oral contraceptive pills among the study participants and knowledge on breast cancer (n=179)

Use of OCPs	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	27 (60.0)	18 (40.0)	**45 (100)**
No	7 (5.22)	103 (76.87)	24 (17.91)	**134 (100)**
Total	**7 (3.91)**	**130 (72.63)**	**42 (23.46)**	**179 (100)**
$\chi^2 = 10.6760$, df = 1, p = 0.0050*				

As seen in the above table, significant association is seen between history of consumption of OCPs and breast cancer knowledge scores.

Table 62: Association between attainment of menopause among the study participants and knowledge on breast cancer (n=400)

Attainment of menopause	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	27 (75.0)	9 (25.0)	**36 (100)**
No	75 (20.60)	242 (66.48)	47 (12.91)	**364 (100)**
Total	**75 (18.75)**	**269 (67.25)**	**56 (14.0)**	**400 (100)**
χ^2 = 11.1900, df = 1, p = 0.0040*				

In the present study, higher breast cancer knowledge scores is seen among participants who have attained menopause and the association is statistically significant.

I. Association of knowledge on cervical cancer with various sociodemographic and reproductive data

Table 63: Association between age of the study participants and knowledge on cervical cancer (n=400)

Age group	Low (%)	Average (%)	High (%)	Total (%)
≤ 30yrs	52 (27.81)	111 (59.36)	24 (12.83)	**187 (100)**
31-40yrs	11 (10.19)	91 (84.26)	6 (5.55)	**108 (100)**
41-50yrs	0 (0)	41 (48.81)	43 (51.19)	**84 (100)**
≥ 51yrs	0 (0)	16 (76.19)	5 (23.81)	**21 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 105.3230, df = 3, p = 0.0001*				

In this study, a statistically significant association is seen between cervical cancer knowledge scores and age group. The scores are found to be higher among participants with of 41 – 50 years of age.

Table 64: Association between residence of the study participants and knowledge on cervical cancer (n=400)

Residence	Low (%)	Average (%)	High (%)	Total (%)
Urban	51 (15.99)	206 (64.58)	62 (19.43)	**319 (100)**
Rural	12 (14.82)	53 (65.43)	16 (19.75)	**81 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
$\chi^2 = 0.0670$, df = 1, p = 0.9670				

As see in the above table, there was no significant association between residence and cervical cancer knowledge scores.

Table 65: Association between religion of the study participants and knowledge on cervical cancer (n=400)

Religion	Low (%)	Average (%)	High (%)	Total (%)
Hindu	51 (14.20)	245 (68.25)	63 (17.55)	**359 (100)**
Muslims	4 (14.81)	8 (29.63)	15 (55.56)	**27 (100)**
Others	8 (57.14)	6 (42.86)	0 (0)	**14 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
$\chi^2 = 44.0760$, df = 2, p = 0.0001*				

In the present study, higher cervical cancer knowledge scores is seen in Hindu and Muslim religion which is significantly associated.

Table 66: Association between education of the study participants and knowledge on cervical cancer (n=400)

Education	Low (%)	Average (%)	High (%)	Total (%)
Postgraduates	63 (16.07)	257 (65.56)	72 (18.37)	**392 (100)**
Ph D	0 (0)	2 (25.0)	6 (75.0)	**8 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 16.1730, df = 1, p = 0.0001*				

In this study, there is significant association between PhD holders and cervical cancer knowledge scores.

Table 67: Association between streams of the study participants and knowledge on cervical cancer (n=400)

Streams	Low (%)	Average (%)	High (%)	Total (%)
Arts	25 (21.55)	87 (75)	4 (3.45)	**116 (100)**
Science	27 (13.92)	118 (60.82)	49 (25.26)	**194 (100)**
Commerce	0 (0)	12 (85.71)	2 (14.29)	**14 (100)**
Others with languages	11 (14.47)	42 (55.26)	23 (30.27)	**76 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 32.8620, df = 3, p = 0.0001*				

As seen in the above table, knowledge scores for cervical cancer was found to be higher among participants of commerce stream and is statistically significant.

Table 68: Association between work experience of the study participants and knowledge on cervical cancer (n=400)

Work experience	Low (%)	Average (%)	High (%)	Total (%)
1-10yrs	63 (22.83)	177 (42.39)	36 (13.04)	**276 (100)**
11-20yrs	0 (0)	60 (61.86)	37 (38.14)	**97 (100)**
≥ 21yrs	0 (0)	22 (81.48)	5 (18.52)	**27 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 52.8190, df = 2, p = 0.0001*				

In the present study, cervical cancer knowledge scores is significantly associated with increasing work experience of the study participants.

Table 69: Association between per capita monthly income of the study participants and knowledge on cervical cancer (n=400)

Per capita monthly income	Low (%)	Average (%)	High (%)	Total (%)
≤ 10000	8 (8.42)	73 (76.84)	14 (14.74)	**95 (100)**
10001-20000	31 (18.24)	118 (69.41)	21 (12.35)	**170 (100)**
20001-30000	16 (26.23)	32 (52.46)	13 (21.31)	**61 (100)**
≥ 30001	8 (10.81)	36 (48.65)	30 (40.54)	**74 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 38.8690, df = 3, p = 0.0001*				

In the present study, knowledge was higher among participants whose per capita monthly income was above Rs. 30001 and was significantly associated.

Table 70: Association between socio economic status of the study participants and knowledge on cervical cancer (n=400)

Socio economic status	Low (%)	Average (%)	High (%)	Total (%)
Class I	63 (16.8)	238 (63.47)	74 (19.73)	**375 (100)**
Class II	0 (0)	21 (84.0)	4 (16.0)	**25 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 5.8940, df = 1, p = 0.0530				

In this study, no significant association is seen between socioeconomic status and cervical cancer knowledge scores.

Table 71: Association between marital status of the study participants and knowledge on cervical cancer (n=400)

Marital status	Low (%)	Average (%)	High (%)	Total (%)
Unmarried	54 (34.62)	90 (57.69)	12 (7.69)	**156 (100)**
Married	9 (3.88)	166 (71.55)	57 (24.57)	**232 (100)**
Others	0 (0)	3 (25.0)	9 (75.0)	**12 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 98.8500, df = 2, p = 0.0001*				

In the present study, cervical cancer knowledge scores was higher among participants of others category which included widowed and divorced and is significantly associated.

Table 72: Association between history of abortions of the study participants and knowledge on cervical cancer (n=179)

History of abortions	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	35 (49.30)	36 (50.70)	**71 (100)**
No	4 (3.70)	78 (72.23)	26 (24.07)	**108 (100)**
Total	**4 (2.23)**	**113 (63.13)**	**62 (34.64)**	**179 (100)**
χ^2 = 14.9670, df = 1, p = 0.0010*				

As seen in the above table, statistically significant association is seen betweenparticipants with history of abortion and cervical cancer knowledge scores.

Table 73: Association between use of oral contraceptive pills among the study participants and knowledge on cervical cancer (n=179)

Use of OCPs	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	25 (55.56)	20 (44.44)	**45 (100)**
No	4 (2.99)	88 (65.67)	42 (31.34)	**134 (100)**
Total	**4 (2.23)**	**113 (63.13)**	**62 (34.64)**	**179 (100)**
χ^2 = 3.5590, df = 1, p = 0.1690				

In this study, the knowledge scores are seen to be higher among participants who consumed OCPs but no statistically significant association is noted.

Table 74: Association between attainment of menopause among the study participants and knowledge on cervical cancer (n=400)

Attainment of menopause	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	27 (75.0)	9 (25.0)	**36 (100)**
No	63 (17.31)	232 (63.73)	69 (18.96)	**364 (100)**
Total	**63 (15.75)**	**259 (64.75)**	**78 (19.5)**	**400 (100)**
χ^2 = 7.4860, df = 1, p = 0.0240*				

As seen in the above table, there is significant association between attainment of menopause and cervical cancer knowledge scores.

J. Association of combined cancer knowledge scores with various sociodemographic and reproductive data

Table 75: Association between age of the study participants and combined cancer knowledge scores (n=400)

Age group	Low (%)	Average (%)	High (%)	Total (%)
≤ 30yrs	54 (28.88)	113 (60.42)	20 (10.70)	**187 (100)**
31-40yrs	15 (13.89)	91 (84.26)	2 (1.85)	**108 (100)**
41-50yrs	0	51 (60.71)	33 (39.29)	**84 (100)**
≥51yrs	0	16 (76.19)	5 (23.81)	**21 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 89.0060, df = 3, p = 0.0001*				

In the present study, statistically significant association is seen between increasing age andcombined cancer (breast and cervical) knowledge scores.

Table 76: Association between residence of the study participants and combined cancer knowledge scores (n=400)

Residence	Low (%)	Average (%)	High (%)	Total (%)
Urban	48 (15.05)	219 (68.65)	52 (16.30)	**319 (100)**
Rural	21 (25.92)	52 (65.2)	8 (9.88)	**81 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 6.3990, df = 1, p = 0.0410*				

In this study, participants who are residents of urban locality had higher knowledge and the association is statistically significant.

Table 77: Association between religion of the study participants and combined cancer knowledge scores (n=400)

Religion	Low (%)	Average (%)	High (%)	Total (%)
Hindu	61 (16.99)	242 (67.41)	56 (15.6)	**359 (100)**
Muslims	4 (14.81)	19 (70.38)	4 (14.81)	**27 (100)**
Others	4 (28.57)	10 (71.43)	0 (0)	**14 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 3.3950, df = 2, p = 0.4940				

As seen in the above table, no significant association is seen between religion and combined cancer (breast and cervical) knowledge scores.

Table 78: Association between education of the study participants andcombined cancer knowledge scores (n=400)

Education	Low (%)	Average (%)	High (%)	Total (%)
Postgraduates	69 (17.6)	269 (68.62)	54 (13.74)	**392 (100)**
Ph D	0 (0)	2 (25.0)	6 (75.0)	**8 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 23.2020, df = 1, p = 0.0001*				

In the present study, PhD holders had higher knowledge compared to post-graduates and the association is significant.

Table 79: Association between streams of the study participants and combined cancer knowledge scores (n=400)

Streams	Low (%)	Average (%)	High (%)	Total (%)
Arts	38 (32.76)	70 (60.34)	8 (6.9)	**116 (100)**
Science	30 (15.46)	134 (69.07)	30 (15.46)	**194 (100)**
Commerce	1 (7.14)	11 (78.57)	2 (14.29)	**14 (100)**
Language	0 (0)	56 (73.68)	20 (26.32)	**76 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 43.6960, df = 3, p = 0.0001*				

In this study, participants of language stream had higher combined cancer (breast and cervical) knowledge scores, which is significantly associated.

Table 80: Association between work experience of the study participants and combined cancer knowledge scores (n=400)

Work experience	Low (%)	Average (%)	High (%)	Total (%)
1-10yrs	67 (24.27)	181 (65.58)	28 (10.14)	**276 (100)**
11-20yrs	2 (2.06)	68 (70.10)	27 (27.84)	**97 (100)**
≥21yrs	0 (0)	22 (81.48)	5 (18.52)	**27 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 41.7620, df = 2, p = 0.0001*				

As seen in the above table, statistically significant association is seen between work experience and combined cancer (breast and cervical) knowledge scores. The knowledge scores showed increasing trend with increasing work experience.

Table 81: Association between per capita monthly income of the study participants and combined cancer knowledge scores (n=400)

Per capita monthly income	Low (%)	Average (%)	High (%)	Total (%)
≤ 10000	21 (22.10)	64 (67.37)	10 (10.53)	**95 (100)**
10001-20000	18 (10.59)	139 (81.76)	13 (7.65)	**170 (100)**
20001-30000	22 (36.07)	22 (36.07)	17(27.87)	**61 (100)**
≥30001	8 (10.81)	46 (62.16)	20 (27.03)	**74 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 55.5460, df = 3, p = 0.0001*				

In the present study, there is significant association between per capita monthly income above Rs.30001 and combined cancer (breast and cervical) knowledge scores.

Table 82: Association between socio economic status of the study participants and combined cancer knowledge scores (n=400)

Socio economic status	Low (%)	Average (%)	High (%)	Total (%)
Class I	68 (18.13)	247 (65.87)	60 (16.0)	**375 (100)**
Class II	1 (4.0)	24 (96.0)	0 (0)	**25(100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 9.8550, df = 1, p = 0.0071*				

In this study, statistically significant association is seen between increasing socioeconomic status and combined cancer (breast and cervical) knowledge scores.

Table 83: Association between marital status of the study participants and combined cancer knowledge scores (n=400)

Marital status	Low (%)	Average (%)	High (%)	Total (%)
Unmarried	45 (28.85)	107 (68.59)	4 (2.56)	**156 (100)**
Married	24 (10.35)	159 (68.53)	49 (21.12)	**232 (100)**
Others	0 (0)	5 (41.67)	7 (58.33)	**12 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
χ^2 = 58.7860, df = 2, p = 0.0001*				

As seen in the above table, knowledge scores was higher among others category which included widowed and divorced which is significantly associated.

Table 84: Association between history of abortions of the study participants and combined cancer knowledge scores (n=179)

History of abortions	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	45 (63.38)	26 (36.62)	**71 (100)**
No	0 (0)	80 (74.07)	28 (25.93)	**108 (100)**
Total	0 (0)	125 (69.83)	54 (30.17)	**179 (100)**
$\chi^2 = 2.3250$, df = 1, p = 0.1270				

In the present study, no significant association is seen between history of abortion and combined cancer (breast and cervical) knowledge scores.

Table 85: Association between use of oral contraceptive pills among the study participants and combined cancer knowledge scores (n=179)

Use of OCPs	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	25 (55.56)	20 (44.44)	**45 (100)**
No	0 (0)	100 (74.63)	34 (25.37)	**134 (100)**
Total	**0 (0)**	**125 (69.83)**	**54 (30.17)**	**179 (100)**
$\chi^2 = 5.8160$, df = 1, p = 0.016*				

In this study, there is statistically significant association between history of consumption of OCPs and combined cancer (breast and cervical) knowledge scores.

Table 86: Association between attainment of menopause among the study participants and combined cancer knowledge scores (n=400)

Attainment of menopause	Low (%)	Average (%)	High (%)	Total (%)
Yes	0 (0)	27 (75.0)	9 (25.0)	**36 (100)**
No	69 (18.96)	244 (67.03)	51 (14.01)	**364 (100)**
Total	**69 (17.25)**	**271 (67.75)**	**60 (15)**	**400 (100)**
$\chi^2 = 9.7680$, df = 1, p = 0.0080*				

In the above table, statistically significant association is seen between attainment of menopause and combined cancer (breast and cervical) knowledge scores.

K. Association of combined cancer knowledge, knowledge on risk factors, symptoms and screening scores with various sociodemographic and reproductive data by one way ANOVA

Table 87: Comparison of age groups with combined cancer knowledge, knowledge on risk factors, symptoms and screeningby one way ANOVA

Age group	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
≤ 30yrs	25.51 ± 13.05	18.80 ± 8.33	5.78 ± 5.42	0.93 ± 1.89
31-40yrs	24.79 ± 9.56	18.52 ± 7.77	5.42 ± 3.92	0.85 ± 1.44
41-50yrs	38.74 ± 11.32	25.55 ± 5.75	9.90 ± 5.22	3.29 ± 3.11
≥51yrs	29.62 ± 13.55	24.38 ± 5.44	3.57 ± 6.55	1.67 ± 3.06
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
F-value	**28.3693**	**19.8694**	**17.7408**	**26.2939**
P – value	**0.0001***	**0.0001***	**0.0001***	**0.0001***

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among the age group of 41 – 50 years, the computed 'F' value were more than the table value at 0.05 level of significance. So, the high knowledge scores among the age group of 41 – 50 years was statistically significant.

Table 88: Comparison of residence with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way t-test

Residence	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Urban	29.23 ± 13.2	20.87 ± 7.94	6.89 ± 5.5	1.48 ± 2.41
Rural	24.67 ± 11.72	18.74 ± 8.51	4.64 ± 4.55	1.28 ± 2.23
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
t-value	**2.8414**	**2.1194**	**3.3889**	**0.6614**
P – value	**0.0047***	**0.0347***	**0.0008***	**0.5087**

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among urban participants, the computed ‘t’ value were more than the table value at 0.05 level of significance, except for the awareness of screening in which ‘t’ value was less than table value. So, the high knowledge scores among the urban participants was statistically significant for total awareness, awareness of risk factors and awareness of symptoms.

Table 89: Comparison of religion with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way ANOVA

Religion	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Hindu	28.45 ± 13.34	20.34 ± 8.16	6.56 ± 5.49	1.55 ± 2.45
Muslim	28.22 ± 11.06	21 ± 8	6.63 ± 4.44	0.59 ± 1.45
Others	24.93 ± 6.9	21.79 ± 6.81	2.86 ± 3.01	0.29 ± 0.47
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
F-value	**0.4904**	**0.2847**	**3.2245**	**3.7977**
P – value	**0.6127**	**0.7524**	**0.0408***	**0.0232***

The mean scores of total awareness, awareness of screening of breast and cervical cancer were high among Hindu participants and mean scores of awareness of risk factors, awareness of symptoms were high among Muslim participants. The computed 'F' value were more than the table value at 0.05 level of significance for the awareness of symptoms and awareness of screening. So, the high knowledge scores among the Hindu participants was statistically significant for awareness of screening and the high knowledge scores among the Muslim participants was statistically significant for awareness of symptoms.

Table 90: Comparison of education with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way t-test

Education	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Postgraduate	28.03 ± 13.01	20.30 ± 8.11	6.36 ± 5.42	1.37 ± 2.34
PhD	42 ± 2.27	27 ± 2.27	10 ± 1.07	5 ± 1.07
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
t-value	**-3.0337**	**-2.3309**	**-1.8957**	**-4.3772**
P – value	**0.0026***	**0.0203***	**0.0587**	**0.0001***

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among PhD degree holders, the computed 't' value were more than the table value at 0.05 level of significance, except for the awareness of symptoms in which 't' value was less than table value. So, the high knowledge scores among the PhD degree holders was statistically significant for total awareness, awareness of risk factors and awareness of screening.

Table 91: Comparison of streams with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way ANOVA

Streams	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Arts	21.73 ± 11.35	16.37 ± 8.38	4.86 ± 4.51	0.5 ± 0.89
Science	29.73 ± 12.65	21.6 ± 7.05	6.46 ± 5.59	1.66 ± 2.59
Commerce	28.21 ± 13.88	20.5 ± 9.07	6.57 ± 4.52	1.14 ± 1.23
Language	34.74 ± 12.10	23.66 ± 7.66	8.72 ± 5.53	2.36 ± 2.98
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
F-value	**19.0667**	**16.9188**	**8.2889**	**11.2716**
P – value	**0.0001***	**0.0001***	**0.0001***	**0.0001***

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among the language stream, the computed 'F' value were more than the table value at 0.05 level of significance. So, the high knowledge scores among the language was statistically significant.

Table 92: Comparison of work experience with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way ANOVA

Work experience	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
1 – 10 years	25.78 ± 12.74	18.87 ± 8.30	5.9 ± 5.2	1.01 ± 1.92
11 – 20 years	35.29 ± 11.6	24 ± 6.73	8.59 ± 5.23	2.70 ± 2.95
≥ 21 years	29.04 ± 13.03	20.44 ± 8.09	6.43 ± 5.39	1.44 ± 2.38
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
F-value	**21.0814**	**18.1150**	**12.2268**	**19.9412**
P – value	**0.0001***	**0.0001***	**0.0001***	**0.0001***

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among the participants who had work experience of 11 – 20 years, the computed 'F' value were more than the table value at 0.05 level of significance. So, the high knowledge scores among the participants who had work experience of 11 – 20 years was statistically significant.

Table 93: Comparison of per capita monthly income with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way ANOVA

Per capita monthly income	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
≤ 10000	26.37 ± 13.06	19.85 ± 7.8	5.51 ± 5.73	1.01 ± 1.88
10001-20000	27.48 ± 10.49	20.25 ± 7.5	5.82 ± 4.16	1.42 ± 2.22
20001-30000	28.54 ± 17.62	20.74 ± 11.01	7.02 ± 6.78	0.79 ± 1.28
≥30001	32.5 ± 13.19	21.36 ± 6.94	8.55 ± 5.66	2.58 ± 3.41
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
F-value	**3.552**	**0.5469**	**5.9382**	**8.7464**
P – value	**0.0145***	**0.6505**	**0.0006***	**0.0001***

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among participants who had per capita monthly income above Rs. 30001, the computed 'F' value were more than the table value at 0.05 level of significance, except for the awareness of risk factors in which 'F' value was less than table value. So, the high knowledge scores among the participants who had per capita monthly income above Rs. 30001, was statistically significant for total awareness, awareness of symptoms and awareness of screening.

Table 94: Comparison of socioeconomic status with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way t-test

Socioeconomic status	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Class I	28.28 ± 13.25	20.38 ± 8.21	6.45 ± 5.46	1.46 ± 2.42
Class II	28.76 ± 9.26	21.32 ± 6.16	6.24 ± 4.3	1.2 ± 1.63
Total	28.31 ± 13.03	20.44 ± 8.09	6.43 ± 5.39	1.44 ± 2.38
t-value	**-0.1791**	**-0.5643**	**0.1841**	**0.5211**
P – value	**0.8579**	**0.5729**	**0.8541**	**0.6026**

The mean scores of total awareness, awareness of risk factors of breast and cervical cancer was high among class II socioeconomic status and awareness of symptoms, awareness of screening of breast and cervical cancer were high among class II socioeconomic status, the computed ‘t’ value were less than the table value at 0.05 level of significance. So, the high knowledge scores was not significantly associated with socioeconomic status.

Table 95: Comparison of marital status with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way ANOVA

Marital status	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Unmarried	23.19 ± 12.32	16.93 ± 8.04	5.38 ± 4.66	0.87 ± 1.55
Married	31.08 ± 12.43	22.39 ± 7.36	6.93 ± 5.74	1.77 ± 2.73
Others	41.25 ± 7.45	28.25 ± 2.3	10.5 ± 4.25	2.5 ± 2.47
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 5.39**	**1.44 ± 2.38**
F-value	**26.1702**	**31.0607**	**7.5700**	**8.1362**
P – value	**0.0001***	**0.0001***	**0.0006***	**0.0003***

The mean scores of total awareness, awareness of risk factors, awareness of symptoms and awareness of screening of breast and cervical cancer were high among others category which includes widowed and divorced, the computed 'F' value were more than the table value at 0.05 level of significance. So, the high knowledge scores among others category was statistically significant.

Table 96: Comparison of menopause with combined cancer knowledge, knowledge on risk factors, symptoms and screening by one way t-test

Attainment of menopause	Total awareness (mean ± SD)	Awareness of risk factors (mean ± SD)	Awareness of symptoms (mean ± SD)	Awareness of screening (mean ± SD)
Yes	32.44 ± 13.35	25.03 ± 5.5	5.31 ± 6.11	2.11 ± 2.93
No	27.9 ± 12.94	19.98 ± 8.17	6.54 ± 5.31	1.37 ± 2.31
Total	**28.31 ± 13.03**	**20.44 ± 8.09**	**6.43 ± 6.39**	**1.44 ± 2.38**
t-value	**2.0049**	**3.6239**	**-1.3152**	**1.7814**
P – value	**0.0457***	**0.0003***	**0.1892**	**0.0756**

The mean scores of total awareness, awareness of risk factors and awareness of screening were high among the participants who had attained menopause andawareness of symptoms of breast and cervical cancer were high among the participants who had not attained menopause. The computed ‘t’ value were more than the table value at 0.05 level of significance for total awareness and awareness of risk factors and less than table value for awareness of symptoms and awareness of screening. So, the high knowledge scores among the participants who had attained menopause was statistically significant total awareness and awareness of risk factors.

DISCUSSION

The present study was conducted among 400 female pre-university college teachers in Belagavi city during the period of January 2018 to December 2018.

A. Socio-demographic data

- **Age**

In this study, majority (46.75%) of the respondents were below 30 years of age and the mean age of study participants was 33.65 ± 8.98 years.

Similarly, in a study conducted among Kuwaiti female teachers the mean age of partiipants was 33.4 ± 5.3 years and most of them were below 40 years of age.[37]

Another study which was a part of pink chain campaign conducted in different cities accross India, the mean age was 41.6 years and most of them (80%) were in the age group of 31 - 50 years.[4]

In a study conducted in Al Hassa, Saudi Arabia, mean age of female secondary school teacherswas 37.9±8.2 years and 82% were above the age of 30 years.[67]

- **Residence**

In this study, more than three-fourth of the participants (79.75%) were residents of urban areas.

Similarly, in a study which was conducted as a part of pink chain campaign, 81.6 % of college teachers were from urban background.[4]

In a study conducted an Saudi Arabia, 64.2% secondary school female teachers were resided in urban areas.[67]

- **Religion**

In this study, most of the participants (89.75%) were Hindus. In a study conducted in Delhi showed similar findings (83.7%) were Hindus.[35]

- **Marital status**

In this study, the study participants majority (58%) were married, 39% were unmarried and few were (3%) widowed and divorced. Whereas, in a study conducted among Kuwaiti female teachers, majority of them were married (95.2%).[37]

In another study conducted in India, which was part of pink chain campaign, most (85.9%) of them were married.[4]

In a similar study conducted in Saudi Arabia female teachers of secondary school, 88.7% were married and 11.3% were divorced or widowed.[67]

B. Reproductive data

- **Regularity of menstrual cycle**

In this study, majority (91%) of study participants had regular menstrual cycles. Comparable results were seen in a study conducted among teachers of Kuwait, in which 81.7% of the study participants had regular menstrual cycles.[37]

- **Occurrence of abortions**

In present study, out of 179 females who were pregnant, 71 participants (39.67%) had history of abortions. Similarly, in a study conducted among Kuwaiti female teachers 40.9% participants had history of abortion.[37]

A study was conducted among rural women of south India, in which history of abortion was given by 9.6% of women.[44]

- **Use of oral contraceptive pills**

Among 234 married women, 45 (19.23%) study participants were using oral contraceptives. In a study conducted among Kuwaiti female teachers, 47.3% participants were using OCPs was seen to bemore than the present study.[37]

- **Menopause**

In this study, 9% of participants attained menopause. A study conducted among Kuwaiti female teachers, 2.9% stated that their menstruation had ceased.[37]

- **Family history of cancers**

In this study, 23 (5.75%) participants had positive family history of breast cancer and 17 participants (4.25%) had positive family history of cervical cancer. A study was conducted among health professionals in Sri Lanka, 24.2% had a positive family history of breast and cervical cancers.[3]

A study conducted among female teachers of Saudi Arabia, positive family history of breast cancer was seen among 12% of participants.[68]

Whereas, astudy was conducted in Gaza cityamong female school teachers among those, 23% had family history of breast cancer.[69]

C. Lifestyle factors

- **Habits**

In the present study, no one had the habit of smoking, chewing tobacco nor consuming alcohol.

In a study conducted as a part of pink chain campaign among female college teachers, 10.8% of the participants were smokers and 26.2% of the participants were alcoholics.[70]

E. Awareness of breast cancer

- **Knowledge on risk factors**

In this present study, the identified risk factors of breast cancer by the study participants were as follows, past history of breast cancer (45.25%), family history of breast cancer (39.75%), alcoholism (37%), non-cancerous breast lesion (36.75%), eating junk food (34.75%), using hormone replacement therapy (32.5%), overweight (27.75%), late child birth or nulliparity (27.5%), late menopause (26.25%), physical inactivity (25.5%), consumption of OCPs (28.75%) and the least identified risk factor was early menarche (9.75%).

In a study conducted as part of pink chain campaign among teachers, identified these risk factors - advancing age (44.8%), genetic factors (37.1%) ,family history of breast cancer (65.3%), radiation treatment (14.1%), menarche at an early age (16.6%), late menopause (17.9%), nulliparous (23%), having first child at >30 years (21.7%), oral contraceptives (17.3%), no breast feeding (7.69%), obesity (52.5%), smoking (65.3%).[70] The findings in both the studies are almost similar.

In a study conducted in South Delhi, risk factors mentioned by study participants were advancing age (4.9%), consumption ofOCPs can cause breast cancer regardless of the duration (8%), breast feeding is protective against breast cancer (24%) and less frequently mentioned risk factors were obesity and excessive intake of fat.[71]

In a study conducted in Turkey among female nursing staff, knowledge about risk factors was better. The following factors such as age (72%), positivefamily history (94.4%), nulliparity (85.6%), absence of breast feeding (82.4%), consumption ofOCPs or HRT (50.4%) were most commonly identified as risk factors. Less identified factors weremenarche at an early age (23.2%) and menopause at a late age (28.8%).[72]

- **Knowledge on symptoms**

In this study, 86 (21.5%) women said that change in position of nipple, 102 (25.5%) said that pulling of nipple, 211 (52.75%) said that pain in the breast or armpit, 156 (39%) said that puckering or dimpling of breast skin, 180 (45%) said that discharge or bleeding from nipple, 261 (65.25%) said that lump or thickening in the breast, 65 (16.25%) said that nipple rash, 119 (29.75%) said that redness of breast skin, 196 (49%) said that lump or thickening under armpit and 135 (33.75%) said that changes in size of the breast are the symptoms of breast cancer correctly.

In a study conducted as a part of pink chain campaign, the following symptoms were identified by teachers - lump, hard knot or thickening (83.3%), redness, warmth or darkening (60.8%), change in the size or shape of nipple or breast (65.3%), dimpling or puckering of the skin or nipple (51.2%), nipple discharge that starts suddenly (48.7%).[70]

In a study conducted in South Delhi, knowledge of symptoms was much lesser as compared to present study. In which 42% women said that lump is an early symptom but only 5% participants said that painless lump is a symptom of breast cancer, 41% participants mentioned pain as a symptom, 7% mentioned nipple discharge and 1.6% mentioned skin changes.[71]

- **Awareness of screening**

In this study, 41.25% of study participants said that they know about breast cancer screening. In a study conducted in Kuwait among female college teachers, 2/3rd of the respondentsknew about breast cancer(67.5%).[37]

- **Breast self-examination**

Knowledge on Breast Self-Examination

In the present study, out of the participants who said that they knew about breast self-examination, all of them agreed breast self-examination is necessary for early detection of lump and it is to be done once a month and only 4 (36.36%) participants said that it should not be done in luteal phase of menstrual cycle.

In another study conducted among female school teachers in Gaza city, 25.9% correctly said that it should be performed monthly, 7% participants knew that the suitable time to perform a BSE was few days after menstruation.[69]

A study was done among female teachers of college in New Delhi, 36% participants knew the term BSE. Among which 13.37% said that they know the correct frequency of doing BSE, 7.2% knew correct position and only 1.36% participants knew of the right time of performing it.[35]

In a study done in Turkeyamong nursing staff, 84.8% participants said that BSE was required for noticing lump at an early stage, 90.4% thought it should be performed monthly, 68% said it is to be done in luteal phase of menstruation. Also 12.5% nurses said that it was not necessary examination.[72]

Performing Breast Self-Examination

Eight (72.73%) out of eleven women were performing BSE and 3 (27.27%) did not perform BSE. A study was conducted among female school teachers in Gaza city, 61.9% performed BSE but only 25.4% were performing as per recommendations.[69]

In a study conducted in New Delhi, breast self-examination term was heard by only 36% of the teachers. Knowledge about when and how to perform BSE was poor.

Among which only 13.37% knew the right frequency of performing BSE was once a month.[35]

In a study done among nurses in a rural area of Turkey, 74.4% performed BSE monthly.[72]

In a study done amongst women of an urban resettlement colony in South Delhi, only 11% knew about BSE, and only 2participants had performedBSE.[71]

- **Reasons for not performing BSE**

In this study, 2 (66.67%) participants said they don't have time to perform BSE, 1 (33.33%) said that they forget to perform BSE and none of the women said that they does not know how to perform BSE and thinks that BSE is not a nnecessary examination.

Similarly, in a study conducted amongst female under-graduate students in a training college, most (84.6%) said that they didn't know how to perform. Whereas, others thinks that they don't have a breast problem (70.9%), fear of detecting abnormality (36.8%), Forgetfulness (32.1%), too young to have breast cancer (41.2%), doesn't feel comfortable doing it (16.7%) and unsure about its benefits (10.2%).[14]

In a study conducted among teachers of Kuwait, the following reasons were given - lack of knowledge (43.5%), did not liked to touch breasts (13.3%), worrying to notice a lump (20.9%), no time (12.4%), forgetting (26.1%). no complaints (33%), culture and health beliefs (3.1%), inaccessibility of specialized centres (11.2%), no lump was found during previous examination (7.1%) and neglecting (11.4%).[37]

A study wasdone among nursing staff in a rural area of Turkey, the reasons which they gave for not performing BSE were, 46.8% said they did not have time,

31.3% said that they forget to perform BSE, 9.4% said they did not know how to perform.[72]

- **Mammography**

Knowledge on mammography

In this study, out of the participants who had undergone mammography, 24 (64.86%) participants said that mammography should be done yearly, 13 (35.14%) said that it is a painful procedure and 33 (89.19%) said that it can spot cancer with or without mass.

In a study conducted among school teachers in Gaza city, 23.9% said that mammography is a painful procedure.[69]

All of the nurses participated in a study conducted in Turkey said that mammography should be done yearly, 17.6% (22) told that it was a painful technique and 57.6% (72) said that it could detect cancer with or without mass.[72]

Undergoing mammography

In this study, none of the study participants had undergone mammography. Similarly, in a study done amongst female teachers in Delhi, none of the participants had undergone mammogram.[35]

Whereas, among female school teachers of Gaza city, 4.1% of the participants had undergone mammography.[69]

F. Awareness of cervical cancer

- **Knowledge on risk factors of cervical cancer**

In the present study, risk factors of cervical cancer identified by the study participants were, Human Papilloma Virus infection (49%), tobacco use (40.25%),

weakened immune system (35.5%), use of OCPs (27.75%), Sexually Transmitted Infection (31.75%), early initiation of sexual activity (28%), multiple sexual partners (39%), having many children at frequent intervals (22.75%) and having a sexual partner who hasmultiple sexual partners (37.25%).

Study of pink chain campaign for cervical cancer conducted in various states of India, showed the following as risk factors - HPV infection (30.7%), multiple sexual partners (26.9%), smoking (51.2%), Decreased Immunity (7.69%), oral contraceptives (6.41%), early marriage (14.1%), early pregnancy (12.8%), multiple pregnancies (13.4%), genital hygiene (35.8%), family history of cervical cancer (44.8%).[70]

In a study conducted in Perdoor village of Udupi district, knowledge about risk factors was high (62.8%). Participants stated that having many sexual partners (38.4%), early initiation of sexual intercourse (36.2%), sexually transmitted diseases (27.3%), HPV infection (24.3%), and poor menstrual hygiene (21.1%) rises the risk of cervical cancer amongfemales.[44]

In a study conducted among female school teachers in Mushin, awareness of risk factors for cervical cancer mentioned were having many sexual partners (61.1%), positive family history of cervical cancer (60.0%) and HPV infection (43.8%).[73]

In a study conducted among nurses in Turkey, when asked to mention risk factors, 76% said tobacco smoking, 56% mentioned early initiation of sexual intercourse, 71.2% havingmany sexual partners and 83.2% mentioned history of STDs as risk factors of cervical cancer.[72]

- **Knowledge of symptoms of cervical cancer**

In the present study, most of the women knew about vaginal bleeding after menopause (53%), vaginal bleeding between the periods (34%), persistent vaginal discharge with unpleasant odour (20.75%), discomfort or pain during sex (22.5%), (23.25%) persistent pelvic pain, (26.5%) vaginal bleeding during or after sex and unexplained weight loss (27.5%) being the symptoms of cervical cancer. The least known symptoms were persistent lower back pain (16.75%),blood in stools or urine (16.5%), heavy menstrual flow (17.5%) and persistent diarrhoea (7%).

In a study conducted in Perdoor village of Udupi district, awareness about presenting symptoms of cervical cancer was 64.2%, among which bleeding between periods (48.3%), foul smell discharge (27.8%), urinary urgency (23.8%), bleeding after coitus in women of any age (20.6%) and postmenopausal bleeding (18.3%) were identified.[44]

In a study conducted in North Bengal, almost 90% of womendid not knowabout the warning signals of cervical cancer.[74]

In a study was conducted amongst nursing staff in Turkey, most of the nurses mentioned pain in pelvis (75.2%), pain during coitus (82.4%) and bleeding per vagina /vaginal discharge (88%).[72]

- **Knowledge of methods of cervical cancer screening**

In this study, 26 (38.24%) women mentioned about pap smear and 7 (10.29%) mentioned about VIA test as one of the technique of cervical cancer screening. No one knew about VILI test.

In a study, 7 (10.29%) women knew about VIA test and also none of the participants had any knowledge about VILI as a screening method for cervical cancer.

A study was conducted among teachers of public secondary school in Mushin, 31.9% and 4.3% participants knew about VIA and VILI respectively.[73]

- **Knowledge about pap smear test**

In a study, out of the women who knew about pap smear test, all the respondents said that pap smear should be done yearly, 11 (42.31%) said that test is to be done three years after the start of sexual intercourse, 22 (84.62%) said that it is a difficult procedure and 14 (53.85%) said that if three repeated pap smears are normal, it can be done every 2 to 3 years.

In this study, 55.88% participants agreed that pap smear reduces the death rate of cervical cancer.

A study was conducted amongst female health professionals in Sri Lanka, participants said that pap smear detects cervical cancer (21.8%) and it can detect pre-cancerous stage of cervical cancer (76.3%).[3]

A study was conducted amongst women visiting PHC in Bahrain in which 64% thought that the Pap smear was beneficial in detecting precancerous lesions and cancer of the cervix, 44.3% said that they should undergo a Pap smear every 3 years, 67.7% said that the aim of the test was to detect atypical cells in the cervix, 59% of the respondents said that it is noninvasive and 33.7% believed that women should undergo Pap smear before the initiation of their sexual life. And also 10% thought that it is not effective in decreasing the cases and death rates of cervical cancer.[46]

In rural region of Turkey, when nurses were enquired about pap smear test as a screening method 84.8% said that it should be performed yearly, 94.4% thought that it was a difficult procedure, only 23.2% said that it should be performed every 3 years after the initiation of sexual life. About 66.4% did not knew that if the repeated pap

smear tests were normal, it could be done every 2–3 years. However, 75.2% of them believed that pap smear decreases mortality of cervical cancer.[72]

- **Undergoing PAP smear test**

In the present study, among teachers who knew about pap smear test, 16 (61.54%) participants had undergone pap smear test. In a study conducted at Perdoor village of Udupi district, only 13.4% participants had donepap smear test.[44]

A study was conducted among nursing staff in rural region of Turkey, 50.4% of the participants never underwentpap smear test.[72]

- **Reasons for not performing PAP smear test**

In this study, among the participants who had not undergone PAP smear test, when asked for reason, 10% participant said that being virgin, 40% said that they forget it and 50% said that it was embarrassing.

Among the nurses who participated in a study conducted in Turkey, reasons mentioned for not performing pap smear test, that they were virgin (31.2%), forgetfulness (39.1%) and embarrassment (29.7%).[72]

G. Scoring of knowledge

- Breast cancer

In this study, 75 (18.75%) study women had low knowledge scores, 269 (67.25%) had average knowledge scores and 56 (14%) had high knowledge scores of breast cancer.

In a study done in Gaza city among female teachers, only 34.9% of had higher knowledge, 40% had moderate level of knowledge and 25.1% had limited level knowledge of risk factors.[69]

A study conducted among IT professionals in India, only 2 (0.5%) participants had good knowledge and majority of them had fair knowledge about breast self-examination [328 (92.1%)].[38]

- Cervical cancer

In this study, 63 (15.75%) study respondents had low knowledge scores, 259 (64.75%) had average knowledge scores and 78 (19.5%) had high knowledge scores of cervical cancer.

In a study conducted in rural India among women, most of the study population (98.5%) had poor knowledge about cervical cancer screening and only few (1.5%) had good knowledge.[19]

A study was done among females attending Obstetrics and Gynaecology Department in a hospital of South India. Among all respondents, 152 (37.7%) had good knowledge, 148 (36.7%) had moderate knowledge and 103 (25.5%) had poor knowledge.[75]

Association of knowledge on breast cancer with various sociodemographic and reproductive data

- Breast cancer

In the present study, breast cancer knowledge was significantly associated with age above 50years, urban residence, higher education, longer work experience, OCP consumption and attainment of menopause.

In a study conducted among Kuwaiti female teachers, variables like older age (40 years and over), married women, history of contraceptive pill consumption showed significantly better knowledge level than others.[37]

In a study done among female college teachers in Gaza city, strong association was noticed between the practicing of screening methods and age group. The eldest women proved higher performance of screening methods than the youngest women. Significant associations were not noticed with marital status, locality, having children and health insurance.[69]

In a study conducted in Delhi, there was a statistically significant association between awareness of breast cancer and higher literacy status and higher socioeconomic status. But, the association between age and awareness of breast cancer was not found to be statistically significant.[71]

- Cervical cancer

In the present study, cervical cancer knowledge is seen to besignificantly associated with age group 41 - 50years, higher education, higher per capita monthly income, history of abortions and attainment of menopause.

In a study conducted among rural Indian women in Udupi district, association between awareness of cervical cancer and higher education, income, age at initiation of sexual activity and source of health information was statistically significant.[19]

A study conducted in Bahrain among women attending primary health care centre, married women had better awareness and use of Pap smear test and also had positive attitude towards the Pap smear which was statistically significant.[46]

A hospital based cross sectional study was done in Bathalapalli, Anantapur. Significant association was seen between good knowledge and variables such as age, residence, religion, marital status, parity, educational status, occupation and monthly household income.[75]

CONCLUSION

This study points that the knowledge of female college teachers about breast and cervical cancer were moderate. Only few participants had very good knowledge which was slightly higher for cervical cancer.

Numerous women miss out on early detection of cancers due to lack of knowledge and practice of screening. In such case, it is of great importance to promote awareness about the disease in an ongoing basis so that women becomes aware of the problem, detect early warning signs and also adopt a healthy lifestyle.

Teachers are the ones who can assist development of healthy lifestyle among young adults in order to avoid risk factors, identifying the presenting symptoms and promoting screening as a part of regular lifestyle so that more and more women at a younger age become aware of these cancers.

LIMITATIONS

The results are not generalizable to the whole population because the study population is selective. Study participants in the present study may be more knowledgeable and more health conscious when compared with other group of women, hence the awareness regarding breast and cervical cancer may vary among others.

The study design used in the present study allows for certain probabilities of recall bias.

RECOMMENDATIONS

Educational programs are very important to create awareness throughout community regarding cancer prevention, preventable cancer risk factors, benefits of early diagnosis and availability of screening facilities.

Further studies are required for evaluating the knowledge and attitudes of Indian women in different occupational groups in order to explore the size of this problem which in turn helps in policy making for cancer screening.

Health programmes should be evidence based in order to increase cancer knowledge and to support risk behaviour change.

SUMMARY

This study was conducted among female pre-university college teachers of Belagavi city, to assess the awareness of risk factors, presenting symptoms and screening practices of breast and cervical cancers.

A total of 400 female teachers were interviewed spanning from 23 to 55 years of age with a mean age of 33.65± 8.98 years and 46.75% of them were below 30 years of age.

- Majority of study population belonged to Hindu religion (89.75%).
- More than half of the participants were from urban residence (79.75%).
- The mean teaching experience of study population was 8.2 ± 0.35 years, most of them had work experience between 1 to 10 years (69%). Majority of them were from science stream (48.5%).
- Almost all of them belonged to class I socio-economic status according to modified B. G. Prasad's classification (93.75%).
- More than half of them were married (58%) and among those three-fourth had conceived at least once in their lifetime (76.5%).
- Among married women, less than one-fourth were consuming OCP's (19.23%).
- Only few had attained menopause (9.0%).
- Study participants had family history of breast (5.75%) and cervical (4.25%) cancer.

BREAST CANCER

- Less than half of the teachers said that they knew about breast cancer (41.25%).
- Most of the participants had average knowledge scores regarding breast cancer (67.25%) and only few had high knowledge scores (14%).
- Very few participants were practising BSE and none of the participants had undergone mammography and CBE.
- Almost half of the participants said that they were not very confident in noticing breast cancer symptom (46.75%).
- Breast cancer knowledge scores were significantly associated with age above 50years, urban residence, higher education, higher work experience, consumption of OCP's and attainment of menopause.

CERVICAL CANCER

- Only few teachers said that they knew about cervical cancer (17%).
- Most of the participants had average knowledge scores regarding cervical cancer (64.75%) and only few had high knowledge scores (19.5%).
- Very few participants had undergone cervical cancer screening.
- Almost half of the participants said that they were not very confident in noticing cervical cancer symptom (49.25%).
- Cervical cancer knowledge scores were significantly associated with 41 – 50 years of age group, higher education, higher per capita monthly income, history of abortion and attainment of menopause.

COMBINED CANCER KNOWLEDGE SCORES

- Combined cancer knowledge scores were significantly associated with increasing age, urban residence, higher education, language teaching stream, increased work experience, per capita monthly income above Rs.30001, higher socio-economic status, marital status being widowed and divorced, consumption of Oral Contraceptive Pills and attainment of menopause.
- Awareness of risk factors of breast and cervical cancer were significantly associated with age group of 41 – 50 years, urban residence, higher education, language teaching stream, work experience of 11 – 20 years, marital status being widowed and divorced and attainment of menopause.
- Awareness of symptoms of breast and cervical cancer were significantly associated with age group of 41 – 50 years, urban residence, Muslim religion, language teaching stream, work experience of 11 – 20 years, higher per capita monthly income and marital status being widowed and divorced.
- Awareness of screening of breast and cervical cancer were significantly associated with age group of 41 – 50 years, Hindu religion, higher education, language teaching stream, work experience of 11 – 20 years, higher per capita monthly income and marital status being widowed and divorced.

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ANNEXURES – I – ETHICAL CLEARANCE CERTIFICATE

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Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 2470759

Ref: MDC/DOME/ 01 **Date: 22/11/2017**

To,

Dr. Sangeetha S,
PG student in Community Medicine.
J.N.Medical College,
BELAGAVI.

REG. NO. BD0117001 ıb: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"AWARENESS ABOUT RISK FACTORS AND SCREENING OF BREAST AND CERVICAL CANCERS AMONG FEMALE COLLEGE TEACHERS OF BELAGAVI CITY – A CROSS SECTIONAL STUDY"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee

(Dr. Roopa M Bellad)
Chairman,
JNMC Institutional Ethics Committee

ANNEXURES – II – CONSENT FORM

Awareness about risk factors and screening of breast and cervical cancers among female college teachers of Belagavi city- A cross sectional study.

INVESTIGATORS:

Introduction:

Breast and cervical cancers are the most common causes of cancer mortality among women in India, but actually they are largely preventable diseases. Awareness and health seeking practices have been shown to be poor in many developing countries, necessitating the need for proper awareness

Objective / Purpose of the study:

You are being invited to participate in the study to assess Level of awareness of risk factors and screening practices of breast and cervical cancers among female pre-university college teachers of Belagavi city.

Procedures:

In this study you will have to answer a few prepared questions about you're the sociodemographic characteristics, knowledge of risk factors of breast and cervical cancers and various screening procedures. The entire procedure may take 15 to20 minutes. If you agree to participate, I will collect the required information during my visit.

Possible benefits:

You will not be eligible for any kind of monetary benefits or free services by virtue of your participation in the study. You will be benefited by health education given during this study.

Possible risks:

No risk is involved in the study.

Cost of participation:

You will not have any costs attached to your participation.

Legal rights:

By signing this consent form you are not waiving any of your legal rights.

Privacy and Confidentiality:

The results of the study may be published for scientific purposes. However your identity will not be revealed. All information collected will be coded so that no one other than investigator will know your identity.

Withdrawal from the study:

Participation in this study is voluntary .If you don't wish to participate in this study you will

not lose benefits to which you are entitled. You can withdraw from the study anytime if you wish to do so.

Authorization to publish the results:

The researcher may use the information gathered from this study for presentation in scientific journals. However your identity will not be revealed.

Questions:

If you have any queries regarding the study, you can contact _____ orDr _____ . If you have any questions about rights as a research participant you can contact Dr.Roopa Bellad, Chairman, JNMC Institutional Ethical Committee on Human Subjects Research on 0831-2471350.

Consent Summary:

"I have been explained all the contents of this consent form in my local language and having understood and clarified all my queries about the study to the best of my knowledge. I hereby give my voluntary consent for participation in the study. I do sign the informed consent form in front of an eyewitness whom I recognize."

Name and Signature/left thumb impression of the participant:

Name and Signature/left thumb impression of the witness:

Name and Signature of the interviewer:

Date: _____ .

Place: _____ .

ANNEXURES – III – PROFORMA

Level of awareness of risk factors and screening practices of breast and cervical cancers among pre-university college teachers of Belagavi city.

Participant No: _____ **Date:**

A. Socio-Demographic Data:

1. Name: _____
2. Age: ___ years
3. Address: _____
4. Religion: a. Hindu b. Muslim. c. Christian d. Other _____
5. Education: _____.
6. Department: _____.
7. Number of working years: _____.
8. Monthly Family Income: _____
9. Total no of family Members: _____
10. Socio-economic status: Modified B G Prasad Classification: Class I/ II/ III/ IV/V
11. Marital status: a) Unmarried b) Married c) Widower d) Divorcee e) separated

REPRODUCTIVE HISTORY

1. Age at menarche:_____.
2. Menstrual cycles: a) Regular b) Irregular
3. Age at marriage:_____.
4. Age at first pregnancy:_____.
5. Number of term pregnancies:_____.
6. Any abortions:_____.
7. Number of children breastfed and duration of breast feeding:_____.
8. Use of OCP and duration of OCP use:_____.
9. Any surgeries like removal of uterus or removal of ovaries:_____.
10. Age at menopause:_____.
11. Any family history of breast or cervical cancer:_____.

LIFE STYLE FACTORS

Diet:

1. Vegetarian/Mixed
2. High fried food or red meat times per week:
3. Fruits/vegetables per week:
4. High salty food per week:
5. Sugary drinks/ sweets per week:
6. High fibre/whole grains per week:

Physical activity:

1. None
2. Sedentary (30 mins, 3–4 times per week)
3. Intense (>30 mins, 6–7 times per week)

Addiction:

1. Smoking: Past/Present/Never
2. Tobacco Chewer: Past/Present/Never
3. Alcohol: Past/Present/Never

GENERAL PHYSICAL EXAMINATION

1. Height:_____.
2. Weight: _____.
3. BMI: _____.
4. Blood pressure:_____.

BREAST CANCER

1. The following may or may not increase a woman's chance of developing breast cancer. How much do you agree that each of these can increase a woman's chance of developing breast cancer?

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE

a. Do you think having a past history of breast cancer					
b. Do you think using HRT (Hormone Replacement Therapy)					
c. Do you think drinking more than 1 unit of alcohol a day					
d. Do you think being overweight (BMI over 25)					
e. Do you think having a close relative with breast cancer					
f. Do you think having children later on in life or not at all					
g. Do you think starting your periods at an early age					
h. Do you think having a late menopause					
i. Do you think doing less than 30 mins of moderate physical activity 5 times a week					
j. Do you think takingoral contraceptives					
k. Do you think personalhistory of certain non-cancerous breast diseases					
l. Do you think eating junk food					

2. Do you know about Breast Screening?

   a) Yes

   b) No (Skip to Q 14)

IF YES:

3. What is the ideal age to start Breast Screening?

   a) 20 - 30 years

   b) 30 – 40 years

   c) 40 – 50 years

   d) Above 50years

   e) Don't know

4. Can you name few screening methods of breast cancer? .

5. What do you know about breast self-examination (BSE)?

   a) It is necessary for determining lump at early (True/False)

   b) It should be done monthly (True/False)

   c) It should be done at luteal phase of menstruation (True/False)

6. Do you perform BSE?

   a) Yes

   b) No

   If yes, how often? _____.

7. If not, why do not perform BSE monthly?

   a) I have no enough time to perform BSE (yes/no)

   b) I forget performing BSE (yes/no)

   c) I don't know how to perform BSE (yes/no)

   d) I think that BSE is an unnecessary examination(yes/no)

8. What do you know about clinical breast examination?
    a) It should be done by health profession (True/False)
    b) It should be done annually (True/False)

9. Did you ever have CBE?
    a) Yes
    b) No

10. If not, why did you have CBE?
    a) CBE I have no enough time (yes/no)
    b) I forget it (yes/no)
    c) CBE is embarrassing to me (yes/no)
    d) I think that is an unnecessary examination (yes/no)

11. What do you know about mammography?
    a) It should be done yearly (True/False)
    b) It is a painful procedure (True/False)
    c) It can detect cancer with or without mass (True/False)

12. Do you believe that Mammography decreases the mortality of breast cancer?
    a) Yes
    b) No

13. Did you ever have a mammography?

a) Yes

b) No

14. Do you know anything about nipple discharge cytology?

a) Yes

b) No

15. Do you think a change in the position of your nipple could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

16. Do you think pulling in of your nipple could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

17. Do you think pain in one of your breasts or armpit could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

18. Do you think puckering or dimpling of your breast skin could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

19. Do you think discharge or bleeding from your nipple could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

20. Do you think a lump or thickening in your breast could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

21. Do you think a nipple rash could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

22. Do you think redness of your breast skin could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

23. Do you think a lump or thickening under your armpit could be a sign of breast cancer?

a) Yes

b) No

c) Don’t know

24. Do you think changes in the size of your breast or nipple could be signs of breast cancer?

a) Yes

b) No

c) Don’t know

25. How often do you check your breasts?

a) Rarely or never

b) At least once every 6 months

c) At least once a month

d) At least once a week

26. Are you confident you would notice a change in your breasts?

a) Not at all confident

b) Slightly confident

c) Fairly confident

d) Very confident

27. Have you ever been to see a doctor about a change you have noticed in one of you breasts?

    a) Yes

    b) No

    c) Not noticed a change in one of my breasts

28. If you found a change in your breasts, how soon would you contact your doctor?

29. How confident are you that you would notice a breast cancer symptom?

    a) Not at all confident

    b) Not very confident

    c) Fairly confident

    d) Very confident

CERVICAL CANCER

1) The following may or may not increase a woman's chance of developing cervical cancer. How much do you agree that each of these can increase a woman's chance of developing cervical cancer?

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
1) Do you think infection with HPV (human papillomavirus)					
2) Do you think tobacco use in any form					
3) Do you think having a weakened immune system (e.g. because of HIV/AIDS, immunosuppressant drugs or having a transplant)					
4) Do you think long term use of the contraceptive pill					
5) Do you think infection (a sexually transmitted infection)					
6) Do you think starting to have sex at a young age (before age 17)					
7) Do you think having many sexual partners					
8) Do you think having many children at frequent intervals					
9) Do you think having a sexual partner with many previous partners					

2) Do you know anything about cervical cancer screening?

c) Yes

d) No (Skip to Q10)

IF YES:

3) Can you name few methods of cervical cancer screening?

4) What do you know about pap smear test?

a) It should be done yearly (True/False)

b) It should be done 3 years after the onset of sexual intercourse (True/False)

c) It is so difficult procedure (True/False)

d) If repeated pap smear tests (three times) are normal, it can be done every 2–3 years (True/False)

5) Did you ever have pap smear test?

e) Yes

f) No

6) If not, why didn't you have pap smear test?

a) I am virgin (yes/no)

b) I forget it (yes/no)

c) Pap smear test is embarrassing to me (yes/no)

7) Do you believe that pap smear test decreases mortality of cervical cancer?

a) Yes

b) No

8) Do you know about visual inspection with acetic acid test?

a) Yes

b) No

9) Do you know about visual inspection with lugol's iodine test?

a) Yes

b) No

10) Do you think vaginal bleeding between periods could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

11) Do you think persistent lower back pain could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

12) Do you think a persistent vaginal discharge that smells unpleasant could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

13) Do you think discomfort or pain during sex could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

14) Do you think menstrual periods that are heavier or longer than usual could be a sign of cervical cancer?

a) Yes

b) No

c) Don’t know

15) Do you think persistent diarrhoea could be a sign of cervical cancer?

a) Yes

b) No

c) Don’t know

16) Do you think vaginal bleeding after the menopause could be a sign of cervical cancer?

a) Yes

b) No

c) Don’t know

17) Do you think persistent pelvic pain could be a sign of cervical cancer?

a) Yes

b) No

c) Don’t know

18) Do you think vaginal bleeding during or after sex could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

19) Do you think blood in the stool or urine could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

20) Do you think unexplained weight loss could be a sign of cervical cancer?

a) Yes

b) No

c) Don't know

21) How confident are you that you would notice a cervical cancer symptom?

a) Not at all confident

b) Not very confident

c) Fairly confident

d) Very confident

22) Sometimes people put off going to see the doctor, even when they have a symptom that they think might be serious. These are some of the reasons people give for delaying.Could you say if any of these might put you off going to the doctor? (Multiple answers are accepted)

a) Too embarrassed to go and see the doctor

b) Too scared to go and see the doctor

c) Worried about wasting the doctor's time

d) I find the doctor difficult to talk to

e) Difficult to make an appointment with the doctor

f) Too busy to make time to go to the doctor

g) Too many other things to worry about

h) Difficult to arrange transport to the doctor's surgery

i) Worrying about what the doctor might find may stop me from going to the doctor

j) Not feeling confident talking about my symptom with the doctor

ANNEXURES – IV – KEY TO THE MASTER CHART

A. Participant Code

B. Age

C. Address

1.Urban 2.Rural

D. Religion

1.Hindu 2.Muslim 3.Christian 4.Others

E. Education

1.Graduate 2.Post-Graduate 3.PhD

F. Department

G. Number of working years

H. Monthly family income

I. Total no. of family members

J. Per-capita monthly income

K. Socio-economic status

1.Class I 2.Class II 3.Class III 4.Class IV 5.Class V

L. Marital status

1.Unmarried 2.Married 3.Widower 4.Divorcee 5.Separated

M. Age at menarche

N. Menstrual cycles

1.Regular 2.Irregular

O. Age at marriage

P. Age at first pregnancy

Q. No. of full term pregnancies

R. Abortions

1.Yes 2.No

S. Number of abortions

T. Breast feeding done

1.Yes 2.No

U. Duration of Breast feeding (months)

V. Use of OCP

1.Yes 2.No

W. Duration of OCP use (months)

X. Undergone any Gynaecological surgeries

1.Yes 2.No

Y. Attained Menopause

1.Yes 2.No

Z. Age at menopause

AA. Family history of cancers

1.Breast 2-Cervical 3.Both 4.None

AB. Diet

1.Vegetarian 2.Mixed

AC. Consumption of high fried food or red meat - number of times per week

AD. Consumption of fruits or vegetables - number of times per week

AE. Consumption of high salty food - number of times per week

AF. Consumption of aerated drinks/ sweets - number of times per week

AG. Consumption of high fibre/ Whole grains - number of times per week

AH. Physical Activity

1.None 2.Sedentary 3.Intense

AI. Smoking

1.Past 2.Present 3.Never

AJ. Tobacco chewer

1.Past 2.Present 3.Never

AK. Alcohol

1.Past 2.Present 3.Never

AL. Height

AM. Weight

AN. BMI

AO. Known Case of Hypertension

1.Yes 2.No

AP. Systolic Blood Pressure

AQ. Diastolic Blood Pressure

BREAST CANCER

- The following may or may not increase a woman's chance of developing breast cancer. How much do you agree that each of these can increase a woman's chance of developing breast cancer?

AR. Do you think having a past history of breast cancer

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AS. Do you think using HRT

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AT. Do you think drinking more than 1 unit of alcohol a day

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AU. Do you think being overweight (BMI over 25)

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AV. Do you think having a close relative with breast cancer

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AW. Do you think having children later on in life or not at all

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AX. Do you think starting your periods at an early age

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AY. Do you think having a late menopause

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

AZ. Do you think doing less than 30 mins of moderate physical activity 5 times a week

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

BA. Do you think taking oral contraceptives

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

BB. Do you think personal history of certain non-cancerous breast diseases

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

BC. Do you think eating junk food

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

BD. Do you know about Breast Screening?

1.Yes 2.No

BE. What is the ideal age to start Breast Screening?

1. 20 - 30years 2. 30 - 40years 3. 40 - 50years 4. Above 50years

5. Don’t know

BF. Can you name few screening methods of breast cancer?

BG. It is necessary for determining lump at early

1.True 2.False

BH. It should be done monthly

1.True 2.False

BI. It should be done at luteal phase of menstruation

1.True 2.False

BJ. Do you perform BSE?

1.Yes 2.No

BK.If yes, how often (months)

BL. If not, why do not perform BSE monthly

1.I have no enough time to perform BSE

2.I forget performing BSE

3.I don’t know how to perform BSE

4.I think that BSE is an unnecessary examination

BM. It should be done by health profession

1.True 2.False

BN. It should be done annually

1.True 2.False

BO. Did you ever have CBE?

1.Yes 2.No

BP. If not, why did you not have CBE

1.CBE I have no enough time

2.I forget it

3.CBE is embarrassing to me

4.I think that is an unnecessary examination

BQ. It should be done yearly

1.True 2.False

BR. It is a painful procedure

1.True 2.False

BS. It can detect cancer with or without mass

1.True 2.False

BT. Do you believe that Mammography decreases the mortality of breast cancer?

1.Yes 2.No

BU. Did you ever have a mammography?

1.Yes 2.No

BV. Do you know anything about nipple discharge cytology?

1.Yes 2.No

BW. Do you think a change in the position of your nipple could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

BX. Do you think pulling in of your nipple could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

BY. Do you think pain in one of your breasts or armpit could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

BZ. Do you think puckering or dimpling of your breast skin could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

CA. Do you think discharge or bleeding from your nipple could be a sign of breast cancer?

1-Yes 2.No 3.Don't know

CB. Do you think a lump or thickening in your breast could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

CC. Do you think a nipple rash could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

CD. Do you think redness of your breast skin could be a sign of breast cancer?

11.Yes 2.No 3.Don't know

CE. Do you think a lump or thickening under your armpit could be a sign of breast cancer?

1.Yes 2.No 3.Don't know

CF. Do you think changes in the size of your breast or nipple could be signs of breast cancer?

1.Yes 2.No 3.Don't know

CG. How often do you check your breasts?

1.Rarely or never

2.At least once every 6 months

3.At least once a month

4.At least once a week

CH. Are you confident you would notice a change in your breasts?

1.Not at all confident 2-Slightly confident 3.Fairly confident

4-Very confident

CI. Have you ever been to see a doctor about a change you have noticed in one of you breasts?

1.Yes 2.No 3.Not noticed a change in one of my breasts

CJ. If you found a change in your breasts, how soon would you contact your doctor?

1.same day 2.within one week 3.within one month

CK. How confident are you that you would notice a breast cancer symptom?

1.Not at all confident 2-Not very confident 3.Fairly confident

4.Very confident

CERVICAL CANCER

- The following may or may not increase a woman's chance of developing cervical cancer. How much do you agree that each of these can increase a woman's chance of developing cervical cancer?

CL. Do you think infection with HPV

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CM. Do you think tobacco use in any form

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CN. Do you think having a weakened immune system

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CO. Do you think long term use of the contraceptive pill

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CP. Do you think infection

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CQ. Do you think starting to have sex at a young age

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CR. Do you think having many sexual partners

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CS. Do you think having many children at frequent intervals

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CT. Do you think having a sexual partner with many previous partners

1.Strongly Agree 2.Agree 3.Neutral 4.Disagree 5.Strongly Disagree

CU. Do you know anything about cervical cancer screening?

1.Yes 2.No

CV. Can you name few methods of cervical cancer screening?

CW. It should be done yearly

1.True 2.False

CX. It should be done 3 years after the onset of sexual intercourse

1.True 2.False

CY. It is so difficult procedure

1.True 2.False

CZ. If repeated pap smear tests (three times) are normal, it can be done every 2–3 years

1.True 2.False

DA. Did you ever have pap smear test?

1.Yes 2.No

DB.If not, why didn't you have pap smear test?

1.I am virgin 2.I forget 3.Pap smear test is embarrassing to me

DC. Do you believe that pap smear test decreases mortality of cervical cancer?

1.Yes 2.No

DD. Do you know about visual inspection with acetic acid test?

1.Yes 2.No

DE. Do you know about visual inspection with lugol's iodine test?

1.Yes 2.No

DF. Do you think vaginal bleeding between periods could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DG. Do you think persistent lower back pain could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DH. Do you think a persistent vaginal discharge that smells unpleasant could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DI. Do you think discomfort or pain during sex could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DJ. Do you think menstrual periods that are heavier or longer than usual could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DK. Do you think persistent diarrhoea could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DL. Do you think vaginal bleeding after the menopause could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DM. Do you think persistent pelvic pain could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DN. Do you think vaginal bleeding during or after sex could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DO. Do you think blood in the stool or urine could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DP. Do you think unexplained weight loss could be a sign of cervical cancer?

1.Yes 2.No 3.Don't know

DQ. How confident are you that you would notice a cervical cancer symptom?

1.Not at all confident 2.Not very confident 3.Fairly confident

4.Very confident

DR. Sometimes people put off going to see the doctor, even when they have a symptom that they think might be serious. These are some of the reasons people give for delaying.

Could you say if any of these might put you off going to the doctor?

1.Too embarrassed to go and see the doctor

2.Too scared to go and see the doctor

3.Worried about wasting the doctor's time

4.I find the doctor difficult to talk to

5.Difficult to make an appointment with the doctor

6.Too busy to make time to go to the doctor

7.Too many other things to worry about

8.Difficult to arrange transport to the doctor's surgery

9.Worrying about what the doctor might find may stop me from going to the doctor

10.Not feeling confident talking about my symptom with the doctor

| Participant no. | Age | address | Religion | Education | Department | no. of working years | monthly family income | Total no. of family members | Per-capita monthly income | Socio-economic status | Marital status | Age at menarche | Menstrual cycles | Age at marriage | Age at first pregnancy | No. of full term pregnancies | Abortions | No. of abortions | Breast feeding done | Duration of Breast feeding (months) | Use of OCP | Duration of OCP use (months) | Undergone any Gynaecological surgeries | Attained Menopause | Age at menopause | Family history of cancers | Diet | High fried food or red meat - no. of times per week | Fruits or vegetables - no. of times per week | High salty food - no. of times per week | Sugary drinks/ sweets - no. of times per week | High fibre/ Whole grains - no. of times per week | Physical Activity | Smoking | Tobacco chewer | Alcohol | Height | Weight | BMI | Known Case of Hypertension | SBP | DBP | Do you think having a past history of breast cancer | Do you think using HRT | Do you think drinking more than 1 unit of alcohol a day | Do you think being overweight (BMI over 25) | Do you think having a close relative with breast cancer | Do you think having children later on in life or not at all | Do you think starting your periods at an early age | Do you think having a late menopause | Do you think doing less than 30 mins of moderate physical activity 5 times a week | Do you think taking oral contraceptives | Do you think personal history of certain non-cancerous breast diseases | Do you think eating junk food | Do you know about Breast Screening? | What is the ideal age to start Breast Screening? | Can you name few screening methods of breast cancer? | It is necessary for determining lump at early | It should be done monthly | It should be done at luteal phase of menstruation | Do you perform BSE? | If yes, how often (months) | If not, why do not perform BSE monthly | It should be done by health profession |
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| It should be done annually | Did you ever have CBE? | If not, why did you not have CBE | It should be done yearly | It is painful procedure | It can detect cancer with or without mass | Do you believe that Mammography decreases the mortality of breast cancer? | Did you ever have a mammography? | Do you know anything about nipple discharge cytology? | Do you think a change in the position of your nipple could be a sign of breast cancer? | Do you think pulling in of your nipple could be a sign of breast cancer? | Do you think pain in one of your breasts or armpit could be a sign of breast cancer? | Do you think ducterig or dimpling of your breast skin could be a sign of breast cancer? | Do you think discharge or bleeding from your nipple could be a sign of breast cancer? | Do you think a lump or thickening in your breast could be a sign of breast cancer? | Do you think a nipple rash could be a sign of breast cancer? | Do you think a persistent vaginal discharge that smells unpleasant could be a sign of cervical cancer? | Do you think menstrual periods that are heavier or longer than usual could be a sign of cervical cancer? | Do you think changes in the size of your breast or nipple could be signs of breast cancer? | How often do you check your breasts? | Are you confident you would notice a change in your breasts? | Have you ever been to see a doctor about a change you have noticed in one of you breasts? | If you found a change in your breasts, how soon would you contact your doctor? (days) | How confident are you that you would notice a breast cancer symptom? | Do you think infection with HPV | Do you think tobacco use in any form | Do you think having a weakened immune system | Do you think long term use of the contraceptive pill | Do you think having a weakened immune system | Do you think long term use of the contraceptive pill | Do you think infection | Do you think having sex at a young age | Do you think having many sexual partners | Do you think having many children at frequent intervals | Do you think having a sexual partner with many partners | Do you know anything about cervical cancer screening? | Can you name few methods of cervical cancer screening? | It should be done yearly | It should be done 3 years after the onset of sexual intercourse | It is so difficult procedure | If repeated pap smear tests (three times) are normal, it can be done every 2–3 years | Did you ever have pap smear test | If not, why didn't you have pap smear test? | Do you believe that pap smear test decreases mortality of cervical cancer? | Do you know about visual inspection with acetic acid test? | Do you know about visual inspection with lugol's iodine test? | Do you think vaginal bleeding between periods could be a sign of cervical cancer? | Do you think persistent lower back pain could be a sign of cervical cancer? | Do you think a persistent vaginal discharge that smells unpleasant could be a sign of cervical cancer? | Do you think discomfort or pain during sex could be a sign of cervical cancer? | Do you think menstrual periods that are heavier or longer than usual could be a sign of cervical cancer? | Do you think a lump or thickening under your armpit could be a sign of breast cancer? | Do you think changes in the size of your breast or nipple could be signs of breast cancer? | How often do you check your breasts? | Are you confident you would notice a change in your breasts? | Have you ever been to see a doctor about a change you have noticed in one of you breasts? | If you found a change in your breasts, how soon would you contact your doctor? 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