**A STUDY ON AWARENESS LEVEL OF BREAST CANCER AMONG REPRODUCTIVE AGED WOMEN (21 TO 50 YEARS) IN VIRUDHUNAGAR DISTRICT, TAMILNADU.**

**Dr.M.BALAJI.M.B.A.M.F.T.M.PHIL, Ph.D., DR.V.NEVETHITHA.M.B.B.S.M.B.A.**

**HEAD & ASSOCIATE PROFESS M.D.(PERSUING)**

**DEPARTMENT OF MANAGEMENT STUDIES,**

**V.H.N.S.N.COLLEGE (AUTNOMOUS), VIRUDHUNAGAR.**

**Abstract**

Breast cancer is the most common cancer among women worldwide, and it can be detected at an early stage through self-examination which increases the chance of survival. This study

aimed to assess knowledge and practice of breast self-examination (BSE) among females in a rural area of Virudhunagar district

In India, breast and cervix-uterus are the first and third most common sites of cancers contributing to about 144,937 cases ( Patil et al., 2019). Reports from the Tamil Nadu Cancer Registry Project (2017) observed that 56% of women were affected by cancer, out of which gynecological cancers (breast, cervix and ovary) comprised of 50%. The survival rates of breast and cervical cancers can be improved by early diagnosis (National Programme for Prevention and Control of Cancer, Diabetes, CVD and Stroke, 2017). Yet, the universal availability and accessibility of screening are debatable (Jacob, 2012), particularly in developing countries like India (Gakidou et al., 2008, Van Dyne et al., 2019, Gupta et al.,2019). While coverage is a concern, the low screening uptake by targeted women has been reported as the major challenge in cancer screening. Significant information asymmetry, economic, cultural and psychosocial factors have been identified as barriers for the low cancer screening uptake among women (Nyblade et al., 2017).

**Key Words:** Breast cancer, Breast Self Examination, Breast feeding and Changes in breast shape.

**Introduction**

Over the past few decades, there is reduction in the occurrence of various communicable diseases and the world is now in the era of non communicable diseases (NCDs). India is not an exemption for this epidemic. Since the prevalence of NCDs is increasing, they are gaining importance as a public health problem in both developed and developing countries. Increase in life expectancy increases the chance of survival and thereby increases the number of older adults, thus increasing the prevalence of NCDs. Breast cancer is the second most common cancer worldwide and is the most common cause of cancer among women both in developed and also in developing countries. Screening is the alien word for most people. Hence, naturally, this results in most people presenting only when the disease becomes symptomatic, and on an average, most “symptomatic” cancers are stage 2b and beyond. Breast cancer patients do not tend to survive for a longer time if the cancer is detected at a late stage because the tumor size at the time of diagnosis has a significant impact on survival rate even with effective treatment. Frequent breast self-examination (BSE) has been shown to have favorable clinical outcome among breast cancer patients. The reasons for late detection of breast cancer includes low awareness, presence of stigma, fear about pain during screening and fear about the disease, gender inequity, lack of screening test and infrastructure, low literacy, and low-income levels. One potentially important strategy in reducing breast cancer mortality is the use of screening methods such as BSE, clinical breast examination, and mammography for early detection. Early detection helps in the treatment before metastasis and associated with excellent prognosis. Low awareness regarding breast cancer is one of the factors which reduce the effective use of screening tests. Raising awareness may also empower women to follow healthy behaviors and health promotion activities. Health motivation and improving confidence are two important factors which improve preventive health behaviors.BSE is considered to be a simple, inexpensive, quick, noninvasive, nonhazardous intervention. This could be a useful measure for early identification of breast cancer in resource-poor countries where accessibility to better screening methods is less. The sensitivity of the test was found to be 78%. BSE also encourages women to take an active responsibility in preventive health. In addition, it helps to overcome the fear, stigma, and taboos.

**OBJECTIVES OF THE STUDY:**

1) To determine the respondents’ level of knowledge about Breast cancer in Virudhunagar district.

2) To identify the respondents’ level of awareness about Breast Self Examination (BSE) and its performance in the study area.

3) To know whether respondents resort to seek medical assistance after the Breast Self Examination (BSE).

The study mainly depended on primary data which were collected by conducting a sample survey of 100 customers of wedding cards in Madurai city. The survey was conducted in 2021. Stratified random sampling method was used for the selection of samples. The sample size was determined by Kukeran formula. Relevant statistical tools such as mean, percentage calculation, chi square and one way Anova were used for the analysis of survey data. The sample survey was conducted for a period of 45 days December 2020 to February 2021.

**RESULTS AND DISCUSSION**

1. 50% answered as breast cancer can be detected at early stage.

2. Analysis of variance one way (ANOVA) indicate that there is between Age and Knowing the sign and symptoms.

3. The use of Friedman’s test indicates that there is no significant difference in the ranks provided by women to the five factors Pray, Follow up of traditional, Consult a doctor, Do nothing and Start discuss with mother/ sisters that they do if they find changes during Breast Self Examination.

4. Analysis of variance one way (ANOVA) indicate that there is no significant difference in the mean value of age and ‘Performing Breast Self Examination.

5. The use of Friedman’s test indicates that there is significant difference in the ranks assigned by the women in rating the factors Painless swelling, Change in breast shape, Unshaping of the nipple, Swelling under armpit, Pain in the breast region and Pain in the breast region.

6. Analysis of variance one way (ANOVA) indicate there no significant difference in the mean value of Educational Qualification and ‘Knowing the risk factors groups and regular checkup’ as the method of detecting breast cancer.

7. Chi –Square tests indicates that there is no significant association between Educational Qualification and awareness about breast cancer.

8. Chi-square tests indicate that there is no association between Age and methods to test breast cancer.

9. Chi-square tests indicate that there is association between Age and identification of breast cancer in early stage.

Common diseases are known to all the different classes of people. But some genetic or new diseases are not known to all the classes of people.

**I. INPUT DATA: TABLE - 1**

**AWARENESS ABOUT BREAST CANCER**

|  |  |  |  |
| --- | --- | --- | --- |
| S.No | Particulars | Frequency | Per centage |
| 1 | Yes | 156 | 52.0 |
| 2 | No | 144 | 48.0 |
|   | Total | 300 | 100 |

**HYPOTHESIS TESTING**

**ANALYSIS OF VARIANCE ONE WAY (ANOVA)**

ANOVA technique is used when an independent variable is of nominal scale with more than two categories and the dependent variable is metric or at least on interval scale. In the present study, one-way ANOVA was used to analyze the relationship between Age and method of detection of breast cancer in early stage.

Age and Knowing the sign and symptoms

H0 – There is no significant difference between Age and Knowing the sign and symptoms

H1- There is a significant difference between Age and Knowing the sign and symptoms.

**I. INPUT DATA: TABLE - 2**

|  |
| --- |
| ANOVA |
| Knowing the risk factors groups and regular checkup |
|  | Sum of Squares | Df | Mean Square | F | Sig. |
| Between Groups | 6.009 | 2 | 3.004 | 2.041 | .132\*\*\* |
| Within Groups | 437.228 | 297 | 1.472 |  |  |
| Total | 443.237 | 299 |  |  |  |

\*\*\*15% level of significance

From ANOVA analysis summary table, the statistical significance of the model is proved to be first. From the above table the P value are significance is 0.132 which means more than 0.05 , which means this model is not acceptable.

**ANALYSIS OF VARIANCE ONE WAY (ANOVA)**

ANOVA technique is used when an independent variable is of nominal scale with more than two categories and the dependent variable is metric or at least on interval scale. In the present study, one-way ANOVA was used to analyze the relationship between Age and method of detection of breast cancer in early stage.

Age and Performing Breast Self Examination

H0: There is no significant difference in the mean value of age and ‘Performing Breast Self Examination’ as the method of detecting breast cancer.

H1: There is significant difference in the mean value of age and ‘Performing Breast Self Examination’ as the method of detecting breast cancer.

**FRIEDMAN TEST**

The Friedman’s test is a non-parametric statistical test developed by the U.S. economist Milton Friedman. Similar to the parametric repeated measures ANOVA, it is used to detect differences in treatments across multiple test attempts. The procedure involves ranking each row (or block) together, then considering the values of ranks by columns.

In the present study, women were asked to rank the five factors selected for the study of what they do if they find changes during Breast Self Examination. The factors are Pray, Follow up of traditional, Consult a doctor, Do nothing and Start discuss with mother/ sisters. The null hypothesis given below is verified by the Friedman’s Test.

H0 – There is no significant difference in the ranks provided by women to the five factors that they do if they find changes during Breast Self Examination.

H1 - There is significant difference in the ranks provided by women to the five factors that they do if they find changes during Breast Self Examination

**I. INPUT DATA: TABLE – 3**  **CHI- SQUARE VALUE**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | Mean Rank | Chi- Square Value | P value |
| Pray | 1.14 |  |  |
| Follow up of traditional | 3.14 |  |  |
| Consult a doctor | 2.19 | 146.262 | 0.000\* |
| Do nothing | 3.52 |  |  |
| Start discuss with mother/ sisters | 2.32 |  |  |

\*1% level of significance

From the above table, it is clear that, mean rank for the factor ‘ Do nothing' is very high of 3.52 and mean rank for the factor Pray is very low (1.14). Hence, Do nothing is the most important factor that affects if the respondents find changes during Breast Self Examination.

As the computed P- value (0.000) is less than the assumed significance value of 0.05, the above null hypothesis is rejected. Hence, there is significant difference in the ranks assigned by the women in rating the factors Pray, Follow up of traditional, Consult a doctor, Do nothing and Start discuss with mother/ sisters that they do if they find changes during Breast Self Examination.

**ANALYSIS OF VARIANCE ONE WAY (ANOVA)**

ANOVA technique is used when an independent variable is of nominal scale with more than two categories and the dependent variable is metric or at least on interval scale. In the present study, one-way ANOVA was used to analyze the relationship between Age and method of detection of breast cancer in early stage.

Age and Performing Breast Self Examination

H0: There is no significant difference in the mean value of age and ‘Performing Breast Self Examination’ as the method of detecting breast cancer.

H1: There is significant difference in the mean value of age and ‘Performing Breast Self Examination’ as the method of detecting breast cancer.

**I. INPUT DATA: TABLE – 4**

|  |
| --- |
| **ANOVA** |
| Performing Breast Self Examination |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 7.737 | 2 | 3.869 | 2.306 | .101\*\*\* |
| Within Groups | 498.299 | 297 | 1.678 |  |  |
| Total | 506.037 | 299 |  |  |  |

15% level of significance

From ANOVA analysis summary table, the statistical significance of the model is proved to be first. From the above table the P value are significance is 0.101 which means more than 0.05 , which means this model is not acceptable.

**FRIEDMAN TEST**

The Friedman’s test is a non-parametric statistical test developed by the U.S. economist Milton Friedman. Similar to the parametric repeated measures ANOVA, it is used to detect differences in treatments across multiple test attempts. The procedure involves ranking each row (or block) together, then considering the values of ranks by columns.

In the present study, women were asked to rank the six factors selected for the study of the following problems as symptoms of breast cancer. The factors are Painless swelling, Change in breast shape,Unshaping of the nipple, Swelling under armpit,Pain in the breast region and Pain in the breast region. The null hypothesis given below is verified by the Friedman’s Test.

H0 – There is no significant difference in the ranks provided by women to the six factors that they find as symptoms of breast cancer.

H1 - There is significant difference in the ranks provided by women to the six factors that they find as symptoms of breast cancer.

**I. INPUT DATA: TABLE - 5**

|  |  |  |
| --- | --- | --- |
| CHI SQUARE VALUE |  |  |
|  | Mean Rank | Chi-SquareValue | P value |
| Painless swelling | 2.80 |  |  |
| Change in breast shape | 5.10 |  |  |
| Unshaping of the nipple | 4.55 |  |  |
| Swelling under armpit | 1.88 | 610.561 | 0.000\* |
| Pain in the breast region | 4.15 |  |  |
| Skin color changes in breast area | 2.53 |  |  |

 \*1% level of significance

From the above table, it is clear that, mean rank for the factor Change in breast shape is very high of 5.10 and mean rank for the factor.Swelling under armpit is very low (1.88). Hence, Change in breast shape is the most important factor that affects find as symptoms of breast cancer.

As the computed P- value (0.000) is less than the assumed significance value of 0.05, the above null hypothesis is rejected. Hence, there is significant difference in the ranks assigned by the women in rating the factors Painless swelling, Change in breast shape,Unshaping of the nipple, Swelling under armpit,Pain in the breast region and Pain in the breast region that they find as symptoms of breast cancer.

**ANALYSIS OF VARIANCE ONE WAY (ANOVA)**

ANOVA technique is used when an independent variable is of nominal scale with more than two categories and the dependent variable is metric or at least on interval scale. In the present study, one-way ANOVA was used to analyze the relationship between Educational Qualification and Knowing the risk factors groups and regular checkup.

**Educational Qualification and Knowing the risk factors groups and regular checkup**

H0: There is no significant difference in the mean value of Educational Qualification and ‘Knowing the risk factors groups and regular checkup’ as the method of detecting breast cancer.

H1: There is significant difference in the mean value of Educational Qualification and ‘Knowing the risk factors groups and regular checkup’ as the method of detecting breast cancer.

**I. INPUT DATA: TABLE - 6**

|  |
| --- |
| **ANOVA** |
| Knowing the risk factors groups and regular checkup |
|  | Sum of Squares | df | Mean Square | F | Sig. |
| Between Groups | 15.270 | 4 | 3.817 | 2.230 | .066\*\* |
| Within Groups | 504.927 | 295 | 1.712 |  |  |
| Total | 520.197 | 299 |  |  |  |

10% level of significance

From ANOVA analysis summary table, the statistical significance of the model is proved to be first. From the above table the P value are significance is 0.66 which means more than 0.05, which means this model is not acceptable.

**TEST OF HYPOTHESIS USING CHI SQUARE**

 In the case of cross tabulation involving two (non metric) variables, a test of significance called the Chi-squared test is used to test if the two variables are strongly associated with each other significantly. The Chi-square test is a useful method of comparing observed data with those expected theoretically. Women’s education and the ways they think to create more awareness about breast cancer are cross-tabulated from 300 women. A cross tabulation with a Chi-squared test was requested from the SPSS computer package. The output is shown in the below table.

Testing of hypothesis:

H0 - There is no significant association between Educational Qualification and awareness about breast cancer.

H1 - There is significant association between Educational Qualification and awareness about breast cancer.

**I. INPUT DATA: TABLE - 7**

|  |
| --- |
| Educational Qualification \* Awareness program Crosstabulation |
| Count |
|  | Awareness program | Total |
| Animated Videos | Printed material with images | Hospital | Whatsapp | Medical professionals consult |
| Educational Qualification | SSLC | 14 | 17 | 17 | 16 | 6 | 70 |
| HSC | 45 | 3 | 19 | 18 | 5 | 90 |
| Degree | 38 | 0 | 27 | 29 | 6 | 100 |
| PG | 14 | 0 | 0 | 5 | 1 | 20 |
| Below 10th std | 12 | 0 | 3 | 3 | 2 | 20 |
| Total | 123 | 20 | 66 | 71 | 20 | 300 |

|  |
| --- |
| Chi-Square Tests |
|  | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 68.412a | 16 | .000 |
| Likelihood Ratio | 69.852 | 16 | .000 |
| Linear-by-Linear Association | 1.397 | 1 | .237 |
| N of Valid Cases | 300 |  |  |
| a. 10 cells (40.0%) have expected count less than 5. The minimum expected count is 1.33. |

From the table, it is understood that the ‘P’ value, that is, Pearson chi-square tests read a significance level of 0.000 at 5% level of significance.

This P value 0.000 being less than the significance level of 0.05, the null hypothesis is rejected. Thus at 95 percentage of confidence level, 1 accepts the alternative hypothesis, i.e.There is no association between Education level qualification and awareness about breast cancer.

**CHI SQUARE**

 In the case of cross tabulation involving two (non metric) variables, a test of significance called the Chi-squared test is used to test if the two variables are strongly associated with each other significantly. The Chi-square test is a useful method of comparing observed data with those expected theoretically. Women’s education and the ways they think to create more awareness about breast cancer are cross-tabulated from 300 women. A cross tabulation with a Chi-squared test was requested from the SPSS computer package. The output is shown in the below table.

Testing of hypothesis:

H0 - There is no significant association between Age and methods to test breast cancer.

H1 - There is significant association between Age and methods to test breast cancer.

**I. INPUT DATA: TABLE - 8**

|  |
| --- |
| Age \* methods to test Breast Cancer Cross tabulation |
| Count |
|  | methods to test Breast Cancer | Total |
| Breast self-examination | Ultrasoundscan | Mammographytest | Do not know |
| Age | 21 – 30 years | 104 | 3 | 1 | 12 | 120 |
| 31 -40 years | 71 | 28 | 19 | 12 | 130 |
| 41 -50 years | 50 | 0 | 0 | 0 | 50 |
| Total | 225 | 31 | 20 | 24 | 300 |

|  |
| --- |
| Chi-Square Tests |
|  | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 68.260a | 6 | .000 |
| Likelihood Ratio | 80.877 | 6 | .000 |
| Linear-by-Linear Association | .438 | 1 | .508 |
| N of Valid Cases | 300 |  |  |
|  |  |  |  |
| a. 2 cells (16.7%) have expected count less than 5. The minimum expected count is 3.33. |

From the table, it is understood that the ‘P’ value, that is, Pearson chi-square tests read a significance level of 0.000 at 5% level of significance.

This P value 0.000 being less than the significance level of 0.05, the null hypothesis is rejected. Thus at 95 percentage of confidence level, 1 accepts the alternative hypothesis, i.e.There is no association between Age and methods to test breast cancer.

**TEST OF HYPOTHESIS USING CHI SQUARE**

 In the case of cross tabulation involving two (non metric) variables, a test of significance called the Chi-squared test is used to test if the two variables are strongly associated with each other significantly. The Chi-square test is a useful method of comparing observed data with those expected theoretically. Women’s education and the ways they think to create more awareness about breast cancer are cross-tabulated from 300 women. A cross tabulation with a Chi-squared test was requested from the SPSS computer package. The output is shown in the below table.

**Testing of hypothesis**:

 H0 - There is no significant association between Age and identification of breast cancer in early stage.

H1 - There is significant association between Age and identification of breast cancer in early stage.

**I. INPUT DATA: TABLE - 9**

|  |
| --- |
| Age \* detect breast cancer in early stage Cross tabulation |
| Count |
|  | detect breast cancer in early stage | Total |
| Knowing the sign and symptoms | Knowing the risk factors groups and regular checkup | Performing Breast Self Examination | Regular mammogram test after age of 40 |
| Age | 21 – 30 years | 88 | 1 | 22 | 9 | 120 |
| 31 -40 years | 61 | 24 | 31 | 14 | 130 |
| 41 -50 years | 6 | 14 | 26 | 4 | 50 |
| Total | 155 | 39 | 79 | 27 | 300 |

|  |
| --- |
| Chi-Square Tests |
|  | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 68.535a | 6 | .000 |
| Likelihood Ratio | 79.290 | 6 | .000 |
| Linear-by-Linear Association | 28.708 | 1 | .000 |
| N of Valid Cases | 300 |  |  |
| 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.50. |

From the table, it is understood that the ‘P’ value, that is, Pearson chi-square tests read a significance level of 0.000 at 5% level of significance.

This P value 0.000 being less than the significance level of 0.05, the null hypothesis is rejected. Thus at 95 percentage of confidence level, 1 accepts the alternative hypothesis, i.e. There is association between Age and identification of breast cancer in early stage.

**Suggestions**

**AGE & KNOWLEDGE OF DETECTION OF BREAST CANCER AT EARLY STAGE**

An important finding is that 50% answered as breast cancer can be detected at early stage. As a mother by imparting knowledge to daughter child should explain about breast cancer and Breast Self Examination during her teenage and it considered as a guide for healthy life and act as a moral duty.

**KNOWLEDGE LEVEL OF INTERNAL HARMONE CYCLICAL**

It is found that 40 Percent of the respondents had their menarche between from the age group of 13 to 15 years.Women Health educational system should be introduced from the age group of 10 years to 13 years specifically focus on girls and coeducational schools and educate the methods of internal hormone cyclical and changes in physical appearance and emphasis the value of

Early and Delay menstrual and it impacts on women health issues. Women biological literacy system should be introduced in the college level through professional medical speakers or add on courses specially focus on Breast cancer and its impacts on life of the women.

**BREAST CANCER SYMPTOMS & LISTS OF EFFECTS AS INDICATION OF BREAST CANCER**

It is found that the use of Friedman’s test indicates that there is significant difference in the ranks assigned by the women in rating the factors Painless swelling, Change in breast shape,Unshaping of the nipple, Swelling under armpit Pain in the breast region and Pain in the breast region. The investigation unveils a majority of 80.3% answered loss of appetite as an effect of breast cancer, 55% answered body pain as not an effect of breast cancer,74% answered weight loss as not an effect of breast cancer and 76% answered anemia as an effect of breast cancer. By educating the women through posters and audio messages via FM as different type of symptom and indication by mentioning as beginning stage of breast cancer.

**Conclusion**

This study showed that level of awareness and practice of BSE among women were low. Mass media mainly television should be used to disseminate information on BSE. Health workers should intensify health education on the importance of BSE when they come in contact with women during antenatal and immunization clinic sessions. Some of these women could also be trained to act as peer educators for the other women. By showing geographical disparities in screening practices across districts of India, this study highlights the importance of ensuring a region-specific and organ-specific approach towards control and prevention of cancer. The identified factors responsible for the uptake of screening could be a guiding force to decide how and where tailored interventions may be best targeted.

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