https://africanjournalofbiomedicalresearch.com/index.php/AJBR
Afr. J. Biomed. Res. Vol. 27(October 2024); 1109 - 1115

Research Article

Knowledge and Acceptance of Breast Prosthesis and its use following Modified Radical Mastectomy.

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ABSTRACT

Background: Breast cancer poses a significant health challenge for women globally, with high survival rates but considerable morbidity and mortality. Its management involves a multidisciplinary approach, including medications, chemotherapy, radiation, and surgery, along with post-operative physiotherapy. In rural areas, women often resort to makeshift solutions like stuffing handkerchiefs or cotton balls in their undergarments to simulate a full breast, which can lead to discomfort and skin issues. A proper breast prosthesis offers a more comfortable and accessible alternative, enhancing body image and reducing emotional distress for breast cancer survivors after modified radical mastectomy (MRM). Awareness and knowledge about breast prosthesis among women undergoing MRM are crucial for improving their quality of life post-surgery**.**

Materials and methods: A validated questionnaire was prepared on Google form and circulated among the female breast cancer patients, who had undergone modified radical mastectomy. Data was further analyzed with the help of appropriate statistical methods.

Results: Patients with breast cancer exhibit little or poor knowledge and awareness of breast prosthesis and its use following MRM. A poor knowledge of breast prosthesis is demonstrated by 82.47% of the population and 17.48 % of population demonstrated good knowledge of breast prosthesis. 82.77% of respondents exhibit insufficient awareness &17.2% respondents exhibit satisfactory awareness of breast prosthesis and its use following modified radical mastectomy.

Conclusion: This report concludes that there is prerequisite knowledge and awareness about breast prosthesis and its use following modified radical mastectomy among female population with breast cancer.

Keywords: Breast cancer, Modified Radical Mastectomy, Breast prosthesis, Knowledge, Awareness.

Received: 25/10//2024 *Accepted: 30/10/2024*

DOI: https://doi.org/10.53555/AJBR.v27i3.3245

INTRODUCTION:

Globally, breast cancer is one of the leading and common cancer among women and it is associated with significant morbidity and mortality. Breast cancer is a type of cancer which grows in breast cells and progresses in stages. Anatomically, the glandular tissue in the breasts (lobules: these generate milk), and the (ducts: these are tubes that deliver milk to the nipples) & the connective tissue which is made up of fatty and fibrous tissue. Usually, Normal cells are designed to proliferate and divide in a controlled, ordered fashion, replenishing lost cells with each new cell. Cells can occasionally develop abnormally and continue to divide known as "cancerous cells". Owing to alterations\mutations in DNA\RNA or any other factor, causes cancerous cells to arise from normal cells. In malignant cells, the process of cell division is disrupted & uncontrolled, leading to formation of tumor & cell proliferation. The Initial onset of breast cancer is caused by aberrant cell growth in the ductal and lobular lining of the breast.[1] The early symptoms of breast cancer may involve a new lump in underarm or in breast, itching or discharge from the nipples and scaly or pitted skin on nipple, breast pain or discomfort.

Epidemiological studies, shows that the burden of breast cancer globally is increasing & expected to cross almost 2 million by 2030. As per WHO, estimated number of new breast cancer cases (females) of all ages in 2020, worldwide was 24.5%. Due to increasing incidence, more youthful females are being impacted, and as a result of higher survival rate, there are overall more women who are afflicted with breast cancer. Consequently, breast cancer is a major health concern for women worldwide.[2]

Based on degree of progression, breast cancer is given a stage upon diagnosis, which aids the physician in determining the appropriate plan of treatment and prognosis. Stages of breast cancer can be broadly classified as, Non-invasive breast cancer, which includes ; Ductal carcinoma in situ (DCIS) in which abnormal cells grow in ducts of breast, which may progress to invasive breast cancer. And other is Lobular carcinoma in situ (LCIS) which consists of abnormal cells in lobules of breast, which may increase the risk of developing breast cancer. Another one is Invasive breast cancer ,which includes ; Invasive ductal carcinoma (IDC) which starts in ducts & accounts for 80% of breast cancer and other is Invasive Lobular carcinoma (ILC) which starts in lobules & accounts for 10% of breast cancer. [1]

Other less common types of breast cancer are, Pagets disease, Inflammatory breast cancer, medullary and mucinous. Also, breast cancer can invade through nearby \ spread through the body via, the lymphatic system or blood vessels.[1]

The Management of breast cancer is multidisciplinary & has come a long way. The treatment is mainly based on the type and stage of cancer. It primarily includes medications such as chemotherapy and hormone therapy, then procedures such as lumpectomy, mastectomy and breast reconstruction surgery also therapy such as radiation therapy. In surgical treatment, Modified radical mastectomy (MRM) is considered standard treatment as it is less invasive, safe and common treatment followed by most breast cancer patients. MRM, is a surgical procedure in which breast tissue, pectoral fascia, nipple/areolar complex, axillary lymphatics and overlying connective tissue near the tumor is removed, with preservation of pectoralis major muscle. MRM, successfully accomplishes the objective of removing every regional lymph node for precise staging. Furthermore, the cosmetic outcome is better than with a total radical mastectomy.[3]

Many women, who do not wish to go for breast reconstruction surgery after MRM can opt for breast prosthesis.[5] Also, many women suffer physically and psychologically because of loss of organ which is a sign of feminity, using breast prosthesis can help them.[6] For breast cancer patients who have undergone MRM, may choose not to have reconstruction , or be unable to have one, and find wearing a breast prosthesis an effective and suitable long term choice.

An external breast prosthesis is an artificial breast form or device that is used to replace a entire or partial, surgically excised breast tissue.[5]

The importance of breast prosthesis among post MRM patients includes:

1. Breast prosthesis can improve patients figure physically.
2. Using breast prosthesis can improve the balance, posture and shoulder drop that can occur due to imbalance of weight after surgical removal of unilateral breast.[6]
3. Using external breast prosthesis can help boost patients self-confidence.
4. It can improve overall quality of life of post mastectomy patients.
5. Reduces associated emotional distress, trauma of disfigurement.
6. Provides cosmetic value.

The majority of breast prosthesis are constructed from anti-allergenic, soft silicone gel that is thinly coated. They are sculpted to resemble a woman's breast or a portion of a breast in its natural shape. The outside has a smooth, soft feel to it, and it can include a nipple. Non-silicone breast forms also exist. External breast prostheses comes in different styles, shapes, sizes, & skin tones, which are specifically designed to as natural breast. There are temporary (softie/cumfie) as well as permanent prosthesis.[7]

The styles are, Full/ standard prosthesis, this type of prosthesis goes straight against the chest. Partial breast prosthesis it is used to replace the partially removed breast tissue, which is worn inside a bra. Then there are stick on prosthesis; this forms sticks directly onto the skin. Has an adhesive surface as a part of prosthesis itself. And Swim prosthesis which are used while swimming. The shapes are; Symmetrical, this form of prosthesis can be worn on either side, as it is symmetrical. Asymmetrical: This form,is designed for either left or right side. And Tear drop, this form is used by women with fuller breast in lower and outer area of breast. The materials used for most of the prostheses are made from silicon, which is soft gel-like substance. Other than silicon, foam prostheses are also available which is lighter & cooler. Also the skin tones of Breast prostheses can be custom-made with similar skin tone as the individual.[7]

MATERIALS AND METHODOLOGY :

It was an cross sectional, retrospective study conducted in Krishna Hospital Karad, Satara district. The goal of this study was to find knowledge and awareness of use of breast prosthesis, such as knowledge & awareness about breast cancer, of breast prosthesis, its various types, skin tones, knowledge & awareness of use of breast prosthesis after MRM, and its possible benefits. This study was conducted as per inclusion and exclusion criteria. All female patients diagnosed with carcinoma breast, who had undergone modified radical mastectomy, greater than one year were included in this study. Patients who had undergone breast reconstruction surgery, patients with recent modified radical mastectomy were excluded in this study. This study was conducted on 72 female breast cancer patients who had undergone MRM, greater than one year in Karad. Informed consent was taken from the study participants. And a self administered & validated questionnaire was circulated among these attendants via online Google form method. Copyright no. L.-154971/2024 & L-150842/2024. This questionnaire was based on general questions about breast cancer, like education , early detection, etc. Knowledge of breast prosthesis, various types of breast prosthesis, different materials being used, way of use, affordability and accessibility of breast prosthesis and its hygiene. Also, awareness regarding use of breast prosthesis, benefits of using breast prosthesis after MRM were included in this questionnaire. The questionnaire was also explained in regional Marathi language.

RESULTS:

The goal of this study was to find knowledge and awareness of use of breast prosthesis, after MRM, and benefits of using breast prosthesis. This study was conducted as per inclusion and exclusion criteria. A validated questionnaire was circulated among these attendants via online Google form method. The purpose of the questionnaire was to ascertain the level of knowledge and awareness of breast prosthesis & its use following modified radical mastectomy.

The questionnaire was provided, including 24 questions, in which categories were made according to question type. The first category was about general knowledge of breast cancer included 4 questions, second was based on knowledge of breast prosthesis which included 10 questions & third was on awareness of use of breast prosthesis, which also included 10 questions.

Seventy-two female breast cancer patients who had undergone modified radical mastectomy were approached with 100 percent feedback on the structured and validated questionnaire. Grading of questionnaire: Yes response = 1 and No response = 0

If an individuals 80% responses are positive (yes), then it will be considered as that individual has enough knowledge and awareness of breast prosthesis & its use following modified radical mastectomy.

Poor knowledge of breast prosthesis is demonstrated by 82.47 % of the population & 17.48 % of population demonstrated good knowledge of breast prosthesis. In terms of awareness, 82.77 % of respondents exhibit insufficient awareness & 17.2 % of respondents exhibit satisfactory awareness of breast prosthesis and its use following modified radical mastectomy.

Statistical analysis:

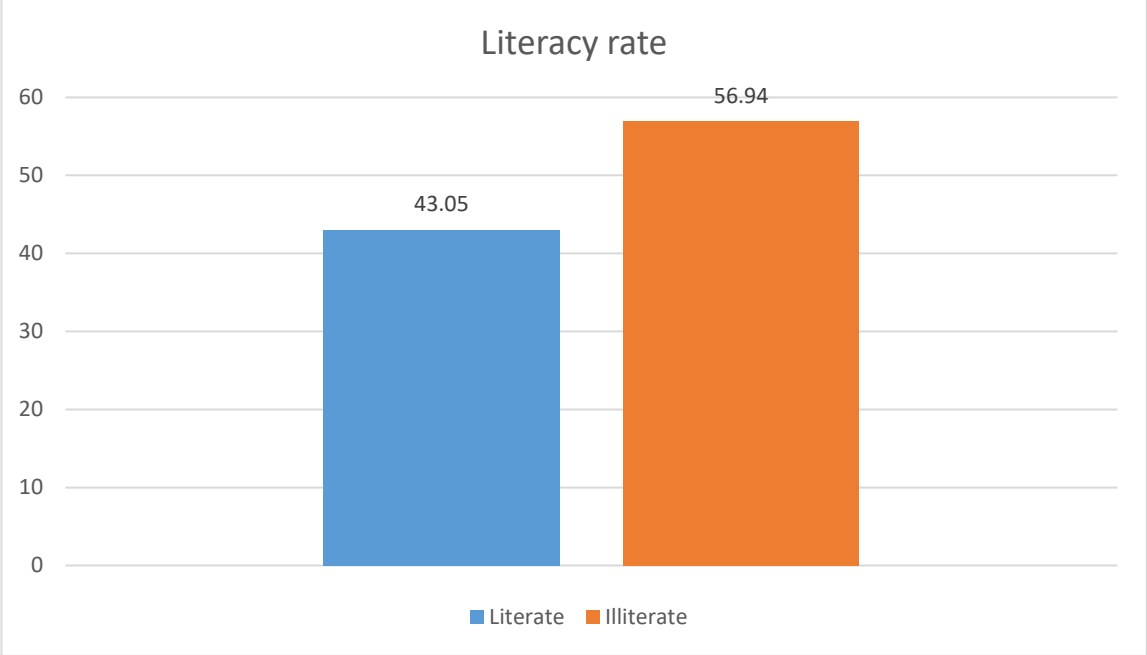

Chart no. 1: Bar diagram of Literacy rate of women involved in this study.

Table 1: Responses of literacy rate of women involved in this study.

	No. of females	Percentage
Literate	31	43.05%
Illiterate	41	56.94%

Table 2: Responses of general knowledge about breast cancer.

Questionnaire 1: General Questions.			
Sr. No.	**Questions**	**Number**	
		Yes	**No**
1	Do you know what cancer is?	65	7
2	Are you aware that breast cancer is common cancer in women?	49	23
3	Did you know that family history can be a cause of cancer?	57	15
4	Did you know that self-examination of breast can help identify the lump in breast?	64	8

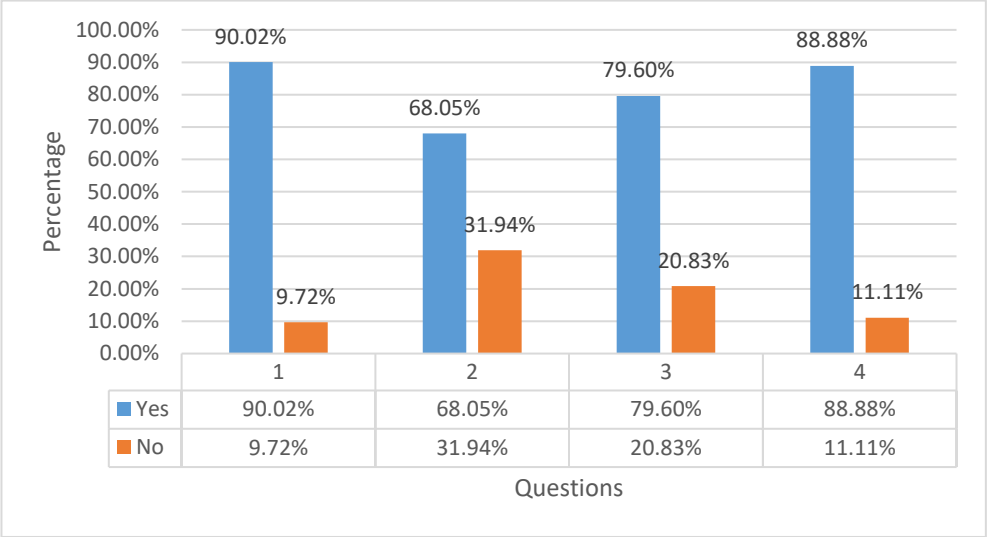

Chart no. 2: Bar diagram of general knowledge of breast cancer.

Table 2a : Evaluation of percentage distribution of Knowledge of breast cancer.

Knowledge regarding breast cancer.	Mean	SD	t value	P value
Good knowledge	82.3167	12.3684		0.0457
Poor knowledge	17.5900	12.4469	4.5178	Significant

Interpretation:

Patients show good knowledge of breast cancer. As majority of patients with breast cancer have good knowledge (81.5 %) and (18.4 %) show poor knowledge of breast cancer.

Table 3 : Evaluation of percentage distribution of knowledge of use of breast prosthesis.

Knowledge regarding breast prosthesis	Mean	SD	t value	P value
Good knowledge	19.4960	20.8207		0.0008
Poor knowledge	82.4940	20.8203	4.9360	Significant

Interpretation:

Patients show good knowledge of use of breast cancer. But majority of patients with breast cancer have inadequate knowledge (17.48 %) and (82.47 %) show poor knowledge of use of breast prosthesis .

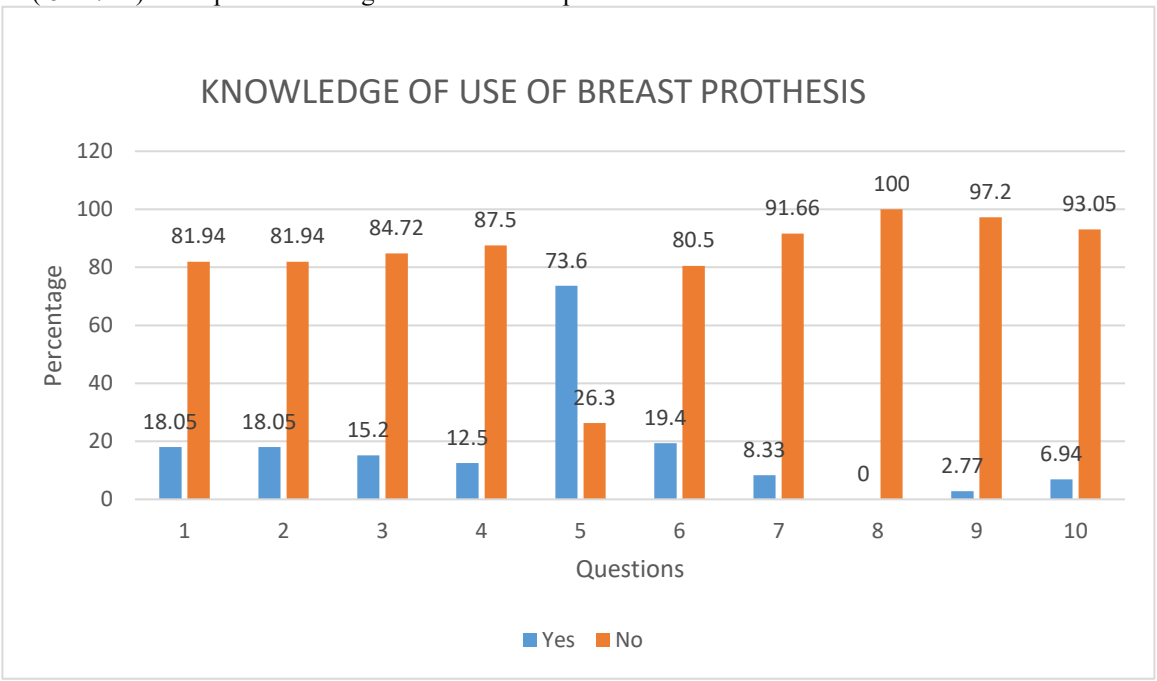

Chart no. 3: Bar diagram of knowledge of use of breast prosthesis.

Table 4: Evaluation of percentage distribution of awareness of breast prosthesis.
The mean, standard deviation and P value were calculated by statistician using an instat application.

Awareness regarding breast prosthesis	Mean	SD	t value	P value
Good knowledge	17.2107	19.4478	5.32982	0.0005 Significant
Poor knowledge	82.7730	19.7748		

Interpretation: From females with breast cancer who have undergone MRM, 82.77% females exhibit insufficient awareness & 17.2 % of respondents exhibit satisfactory awareness of breast prosthesis and its use following MRM.

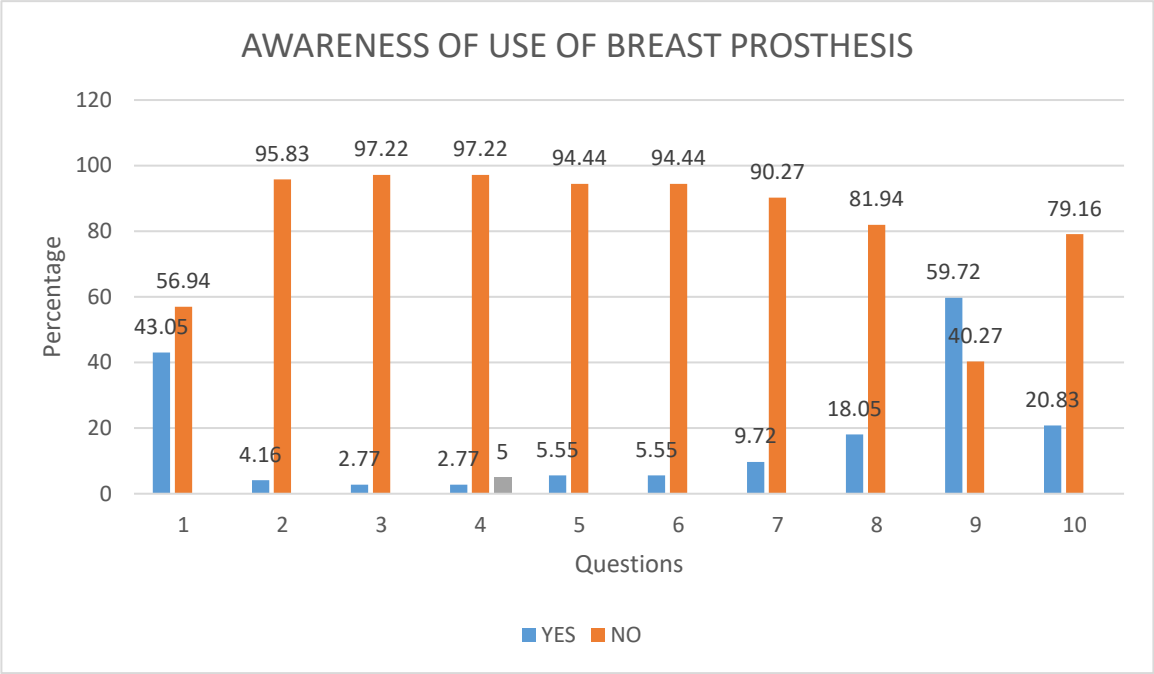

Chart no. 4 :Bar diagram of awareness of use of breast prosthesis

Table 5: Evaluation of obesity of women involved in this study , according to BMI.

No. Of Females	Category	BMI (kg/m^2)
29	Normal	18 -24.9
36	Overweight	25 -29.9
17	Obesity (grade 1)	30 -34.9

DISCUSSION:

This survey study aimed at finding knowledge regarding breast prosthesis among female breast cancer patients who had undergone MRM greater than one year. The presented study was aimed at finding basic knowledge of breast cancer, breast prostheses and also awareness of use of breast prosthesis after MRM. Results were concluded from responses to a structured self-made questionnaire. This survey was conducted in which about four general questions of breast cancer, 10 questions of knowledge of use of breast prosthesis and 10 questions of awareness of use of breast prosthesis were presented & distributed among 72 female breast cancer patients. Poor knowledge of breast prosthesis is demonstrated by 82.47 % of the population & 17.48 % of population demonstrated good knowledge of breast prosthesis. In terms of awareness, 82.77 % of respondents exhibit insufficient awareness & 17.2 % of respondents exhibit satisfactory awareness of breast prosthesis and its use following modified radical mastectomy.

In this present study, the minimum age found was 32 years and maximum age found was 77 years. 41 females were in the age group of 30 to 50 years, 27 females were in 50 to 70 years age group and 04 females were above 70 years of age. The mean age found was 50 years. Similar results were shown in the study by, Madhav, Madurantakam Royam MSca; at el. Epidemiologic analysis of breast cancer incidence, prevalence, and mortality in India: Protocol for a systematic review and meta-analyses; which says that, 48% of patients were under 50 years of age group. Furthermore, they are increasingly high in incidence for breast cancer. This means, the patients between the age of 25 and 40 are becoming more prevalent, which is undoubtedly a very alarming development. And this indicates that we have a large population in the younger age group and a much smaller one in the older age group & is of course, one specific

explanation for the larger numbers of younger patients.[8] Thus, much greater effort is to be made to make this population know about breast prosthesis, it's uses & possible benefits. For this purpose a considerate and multifaceted approach is necessary to ensure that the message is conveyed effectively and sensitively to the rural population regarding breast prostheses by medical health professionals or by using social media platforms.

In area of western Maharashtra many people are engaged in agricultural labour. According to this present study the majority of women involved in this study were farmers by occupation, accounting for approximately 80.55% , 16.66% were housewives and 2.77% of females were engaged in jobs, which correlates with study of K.C.Ramotra & S.P.Divate; A geographical study of agricultural development in Satara district of Maharashtra. Also the literacy rate of the district was 82.87 % and the female literacy rate was 68.64 %. The study concludes that the Karad tahsil is the most developed tahsil in Satara district of Maharashtra. The present study, showed that more than half of women were illiterate, accounting approximately 56.94%. Thus, due to poor knowledge, education and awareness these population are at increasing risk of developing cancer.[9]

The obesity is also one of the risk factor for developing breast cancer among females.Women with increased BMI are more prone to breast cancer, due to increased waist hip ratio (WHR) as compared to women who maintains a healthy weight. In this present study, 36 females had the Body Mass Index (BMI) of range 25-29.9 kg/m2 i.e overweight , followed by 29 females with normal BMI ranging from 18-24.9 kg/m2 & 17 females had grade 1 obesity ranging 30-34.9 kg/m2. Similar correlation was found, in a study by, Shreshtha MALVIA at el, Epidemiology of breast cancer in Indian women, which says that factors like BMI, WHR and obesity were major factors leading to increasing incidence of breast cancer.[10] This increased risk arises from a fact that adipose(fat) cells produces oestrogen. More the fat cells, more is the presence of oestrogen in the body which in turn results in growth and development of breast cancer.

A study by D. Ramu,at el showed after a mastectomy for breast cancer, fewer than half of patients use an external breast prosthesis;the use of prostheses is influenced by age, education, and urban living. They are used by women under fifty who have greater levels of education. All patients need the appropriate counseling, regardless of their age or financial situation. The current study adds to our grasp of what is known and understood about breast prosthesis today and it correlates to this present study as it is found that there is insufficient knowledge (82.47%) and little awareness(82.77%) of use of breast prosthesis. Therefore the present study emphasizes the need for more specific awareness about breast prosthesis and its use amongst breast cancer patients. For this, organizing regular health camps for breast cancer screening and awareness camps,where facts about breast cancer can be discussed. Also we can use this camps to provide information about breast prosthesis & support the breast cancer survivors.

A few number of breast cancer patients are aware of breast prosthesis use. External breast prosthesis use after total mastectomy, as demonstrated in the study by Simone W. Glaus MD, Grant W. Carlson MD, evaluates long term satisfaction among external breast prosthesis wearers and the impact of satisfaction of prosthesis use. As in the current study the knowledge regarding breast prosthesis was found to be poor, thus a greater effort is needed among the breast cancer population prior to surgery itself regarding the breast prosthesis and its various types, materials used, shapes and styles of external breast prosthesis is necessary as it can create awareness of use of breast prosthesis and its impact on quality of life of breast cancer patients following MRM. In consideration to that, one can incorporate with breast cancer survivors, organizations, support groups to establish a peer-led awareness campaign in which survivors from rural areas share their stories, experiences about breast prosthesis use.

As in the current study it was found that few females think that using external breast prosthesis will significantly improve the quality of life of women and can help the associated emotional distress following MRM which correlates with study by, P Gallagher et al. Eur J Cancer Center(engl), study concluded that a good quality external breast prosthesis and prosthesis fitting service is an integral part of recovery process post mastectomy.[11] Thus, developing a culturally sensitive program in consideration to their religious belief is to made. Inviting a breast prosthesis wearer & sharing her experience about the provision of an appropriate breast prosthesis use after MRM, how it can significantly improves the quality of life as well as body image issues of women and reduce associated emotional distress in breast cancer survivors soon after MRM can significantly impact the community.

A study conducted by Ravi Mehrotra and Kavita Yadav, elucidates that breast cancer is foremost cancer in India. And is fast developing into public health crisis & society's discomfort to talk about women bodies has made the situation worse. So timely upgrading of skills of existing health care workforce along with adopting newer technologies would further reduce incidence of breast cancer. For this knowledge & awareness of breast prosthesis is very important among women under going MRM in rural area. For instance, employing the use of pamphlets and visual aids. Distribute educational pamphlets and posters that provide a visual explanation of breast prosthesis, their functions, and their significance. During health camps or clinic visits, use visual aids to illustrate the benefits of prosthetics and how they are fitted. Therefore the current study helps to gain insight about the level of knowledge and awareness of external breast prosthesis among female breast cancer patients in rural area.

Due to limited awareness, one can organize interactive interdepartmental workshops in medical colleges, hospitals, and clinics, focusing particularly on the field of Oncology, especially for breast cancer patients. In these workshops, participants should be given education about breast cancer, breast self examination and available solutions like breast prosthesis after removal of breast tissue. Engaging youth in peer education program; it is imperative that the next generation should be educated in order to normalize conversations about breast health and breast prosthesis. Educating the next generation about breast cancer and breast prosthesis in general can have a long-term implication on health literacy and acceptance in remote areas. Therefore, teach them with easy to understand materials in their native language such that it enables them to convey the information with effectiveness. It is essential to give this knowledge to fill in any gap in awareness. The scientific evidence supporting various treatment programs, and

how these interventions contribute to improve the participants quality of life including the aspects such as body image, emotional status and post operative comfort. Implementing such measures can significantly contribute to increasing familiarity with the breast prosthesis among breast cancer patients. By fostering a better understanding among breast cancer patients about breast prosthesis there can be an enhancement in awareness of and understanding of breast prosthesis. Therefore it felt necessary to create a more specific understanding and promote the utilization of breast prosthesis to improve overall quality of life of breast cancer patients who have undergone MRM.

CONCLUSION:

The demonstration of breast cancer patients was poor with respect to knowledge and awareness of use of breast prosthesis. Knowledge about use of breast prosthesis is a growing need among the female breast cancer patients who have undergone MRM as is helps overcome the musculoskeletal problems, associated emotional distress and overall quality of life of women. As women are at an increasing risk of developing breast cancer, this study may prove beneficial by giving them a proper knowledge and understanding on such an important topic. Among entire population, poor knowledge of breast prosthesis is demonstrated by 82.47% of the population & 17.48% of population demonstrated good knowledge of breast prosthesis. In terms of awareness, 82.77% of respondents exhibit insufficient awareness & 17.2% of respondents exhibit satisfactory awareness of breast prosthesis and its use following modified radical mastectomy.

ACKNOWLEDGEMENT:

We acknowledge the guidance and support from KVV. Also would like to express my most humble and profound gratitude to the respected Dean Dr. G. Varadharajulu, Dean, Faculty of Physiotherapy, KVV for his inspiration, motivation, valuable guidance and suggestions throughout this project.

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