



NUTRITIONAL STATUS OF BREAST CANCER PATIENTS ATTENDING THE CHEMOTHERAPY

¹Deepika Pal, ²Neeru Bala, ³Anisha Verma

¹M.Sc Student, Department of Food Nutrition and Public Health, Ethelind College of Home Science, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India

²Associate Professor, Department of Food Nutrition and Public Health, Ethelind college of Home Science, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India

³Assistant Professor, Department of Food Nutrition and Public Health, Ethelind college of Home Science, Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad, Uttar Pradesh, India

ABSTRACT: The present study was carried out “Nutritional status of breast cancer patients attending the chemotherapy” with the objectives to assess the nutrient intake, anthropometric and clinical assessment of the breast cancer patients. A cross section survey which was conducted on a sample of 184 patients. The anthropometric measurements (Height, Weight and BMI) and Dietary intake (24 hours dietary recall method) was recorded and calculated using food composition table compared with RDA (ICMR, 2010). The result shows that 100 per cent patients were having lump nodes and swelling, 65 per cent experiencing change in shape, 11.95 per cent difference in nipple, 61.95 per cent unusual discharge, 57.04 per cent rashes on their skin and 18.47 per cent pain in breast. It was found that the mean daily intakes of protein, fiber, calcium, iron and vitamins were more and energy, carbohydrate and fat were less than ICMR, RDA value of normal woman. BMI of the respondents was observed before chemotherapy which indicated 1.08 per cent underweight, 34.81 per cent normal weight, 31.0 per cent overweight, 15.23 per cent grade I obese, 16.30 per cent grade II obese and 1.63 per cent grade III obese whereas after chemotherapy, 12.5 per cent underweight, 17.93 per cent normal weight, 36.99 per cent overweight, 15.23 per cent Grade I obese and 17.4 per cent Grade II obese were recorded.

Keywords: Breast cancer, chemotherapy, clinical assessment, Recommended Dietary Allowance, Anthropometric measurement.



Introduction:

In India cancer prevalence is estimated around 2.5 million, with over 0.8 million new cases and 0.5 million deaths occurring each year (**Nandakumar, 1990-96**). Breast cancer is the most common female cancer worldwide representing nearly a quarter (23 Per cent) of all cancers in women. The global burden of breast cancer is expected to cross 2 million by the year 2030, with growing proportions from developing countries. Although age-standardized incidence rates in India are lower than in the United Kingdom (UK) (25.8 versus 95 per 100,000), mortality rates are nearly as high (12.7 versus 17.1 per 100,000, respectively) as those of the UK (**Jemal *et al.*, 2011**). The most common type of breast cancer is ductal carcinoma, which begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple). Another type of breast cancer is lobular carcinoma, which begins in the lobules (milk glands) of the breast. Invasive breast cancer is breast cancer that has spread from where it began in the breast ducts or lobules to surrounding normal tissue (**National Cancer Institute, 2015**). The incidence of breast cancer is increasing in the developing world due to increase life expectancy, increase urbanization and adoption of western lifestyles. There is a high mortality due to late stage diagnosis as patients usually present at an advanced stage because of lack of awareness and non-existent breast cancer screening programs. Women have poor knowledge about breast cancer be it about risk factors, warning signs, or early detection procedures. Therefore it is important to create awareness and educate the community and to remove the misconceptions associated with ignorance through community based educational/awareness campaign. Early warning signs, significance of a painless lump need to be emphasized. Educating health care workers is also very important aspect. We also have to keep in mind only campaigns will not be enough, information need to be disseminated in a form which is appealing to the community (**Psomdatta, AIIMS, New Delhi, 2008**). **Reeve *et al.* (2007)** observed in their several studies, including the Million Women Study, report that the risk of breast cancer decreases with increasing BMI with a linear relationship along the BMI scale starting from 20 kg/m².

Chemotherapy: Chemotherapy is treatment with cancer-killing drugs that may be given intravenously (injected into your vein) or by mouth. The drugs travel through the bloodstream to reach cancer cells in most parts of the body. Occasionally, chemo may be given directly into the spinal fluid which surrounds the brain and spinal cord.

- **After surgery (adjuvant chemotherapy):** Adjuvant chemo is used to try to kill any cancer cells that might have been left behind or have spread but can't be seen, even on imaging tests. If these cells were allowed to grow, they could form new tumors in other places in the body. Adjuvant chemo can lower the risk of breast cancer coming back.
- **Before surgery (neo adjuvant chemotherapy):** Neo adjuvant chemo can be used to try to shrink the tumor so it can be removed with less extensive surgery. Because of this, neo adjuvant chemo is often used to treat cancers that are too big to be removed by surgery at the time of diagnosis (called locally advanced cancers). Also, by giving chemo before the tumor is removed, doctors can better see how the cancer responds to it. If the first set of chemo drugs doesn't shrink the tumor, your doctor will know that other drugs are needed.



It should also kill any cancer cells that have spread but can't be seen. Just like adjuvant chemo, neo adjuvant chemo can lower the risk of breast cancer coming back.

- **For advanced breast cancer:** Chemo can be used as the main treatment for women whose cancer has spread outside the breast and underarm area, either when it is diagnosed or after initial treatments. The length of treatment depends on how well the chemo is working and how well you tolerate it.

Methodology: The present study was a hospital based cross sectional study which was conducted in J. K. cancer hospital Kanpur, U.P. 184 patients were purposively. The anthropometric measurements (Swaminathan, 2013) and Dietary intake (24 hours dietary recall method) was recorded and calculated using food composition table compared with RDA (ICMR, 2010) clinical signs and symptoms (NCI, 2015), Hemoglobin level was taken from the record files of the patients. The data was analyzed by using appropriate statistical tool i.e. t-test (Kothari and Garg, 2014).

Result and Discussions: The finding of the presented study pertaining study to the topic “Nutritional status of breast cancer patients attending the chemotherapy” was conducted by survey method and result obtained were analyzed and discussed in this chapter.

Table 1: Distribution of the patients according by socio-demographic profile

S.NO.	Particulars	Frequency (N=184)	Per cent	
1.	Age (Years)	21-30	20	10.86
		31-40	64	34.78
		41-50	59	32.06
		51-60	41	22.28
2.	Educational Status	Illiterate	53	28.80
		High School	34	18.47
		Intermediate	20	10.86
		Graduate	41	22.28
		Post-Graduate	27	14.67
		Any Other(P.HD)	9	4.89
3.	Type of Family	Joint Family	113	61.41
		Nuclear Family	71	38.58



4.	Occupation	Service	18	9.78
		Business	9	4.89
		Agriculture	0	0
		Home Maker	154	83.69
		Any Other	3	1.63
5.	Annual income of family	55,001/- to 88,800/-	79	42.93
		88,801/- to 1,00,000/-	61	33.15
		Above Rs. 1,50,000/-	44	23.92

Table 1 shows the distribution of the respondents according to the general information and life style pattern. The pooled data showed that the patients in the age group 21-30 years were 10.86 Per cent. In the age group 31-40 years were 34.78 Per cent. In the age group of 41-50 years (32.06 %). Majority of the age group 51-60 years were 22.28 Per cent. Study revealed that Out of total patients, 28.80 Per cent were illiterate, 18.47 Per cent were educated up to high school, 10.86 Per cent were educated till intermediate, and 22.28 Per cent were graduates, similarly 14.67 Per cent respondents were post graduates, 4.89 Per cent were having any other (Diploma, PhD) education. Maximum patients i.e. 61.41 Per cent were belonged to joint families whereas, 38.58 Per cent belonged to nuclear families. According to table 4.1 Out of total patients, 9.78 Per cent were doing service, 4.89 Per cent were doing business, 0 Per cent was having agriculture as their occupation, 83.69 Per cent were homemaker and 3 Per cent were having any other occupation. Maximum number of patients (42.93) belong to low income group and earn annually Rs. 55,001/- to 88,800/- , 33.15 Per cent had an annual family income between Rs. 88,801/- to 1, 00,000/- and about 23.92 Per cent had an annual family income above Rs. 1, 50,000/- and they belonged to high income group. Available information is limited about the health status and health practices within diverse cultural groups and socio-demographic factors, and there is poor understanding about the amount of these factors affecting health education. It appears that many barriers to breast cancer screening are related to culture, income, education, immigration status, and language barriers.(Hoare *et al*. 1994).

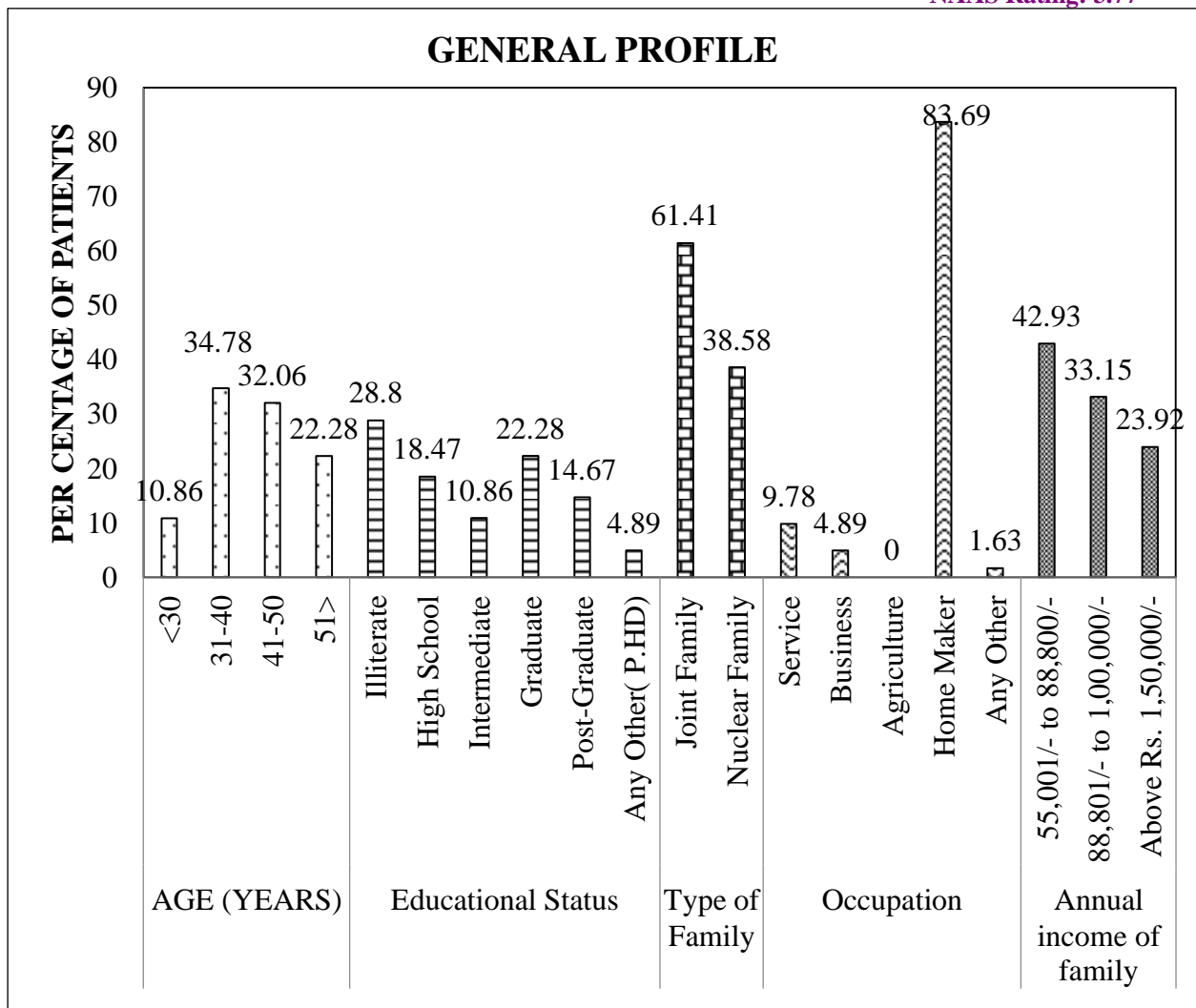


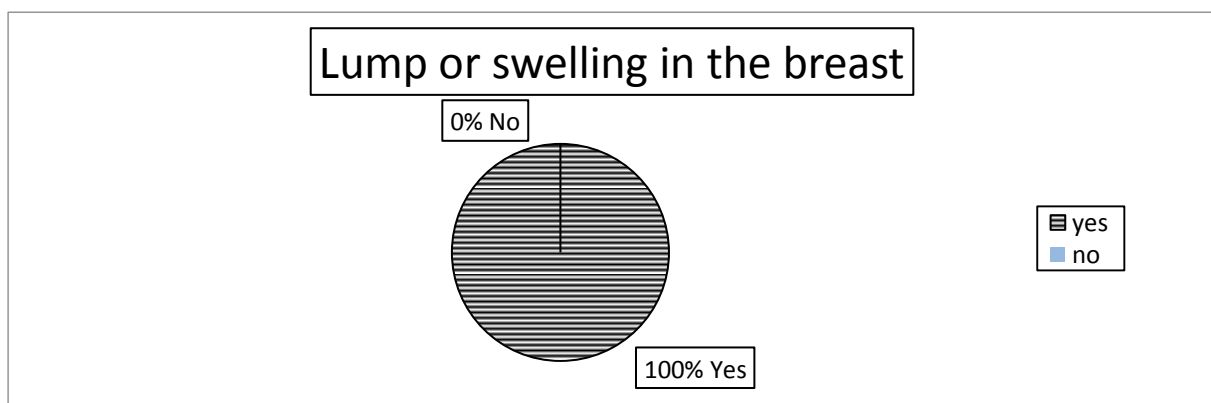
Table 2 Distribution of the patients according to their signs and symptoms

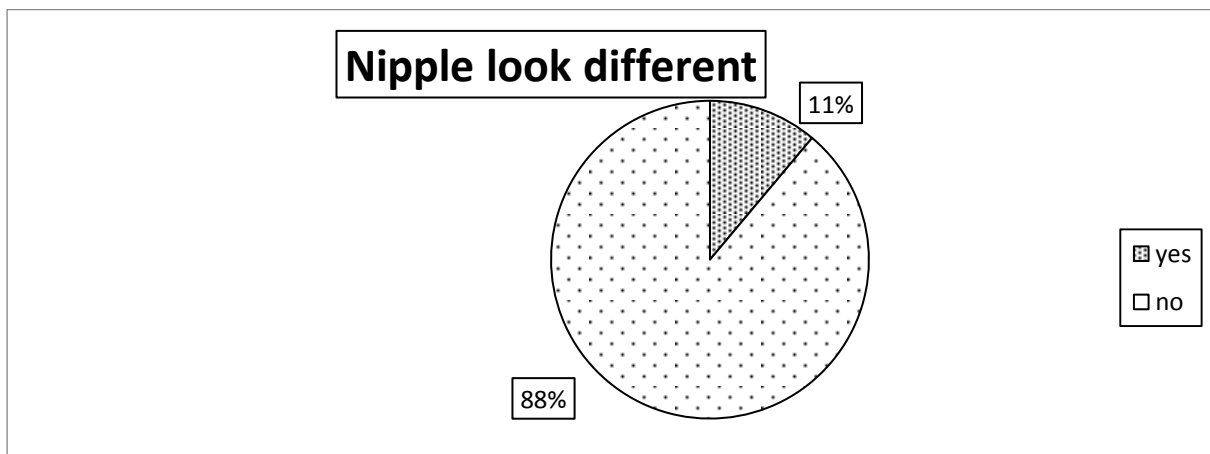
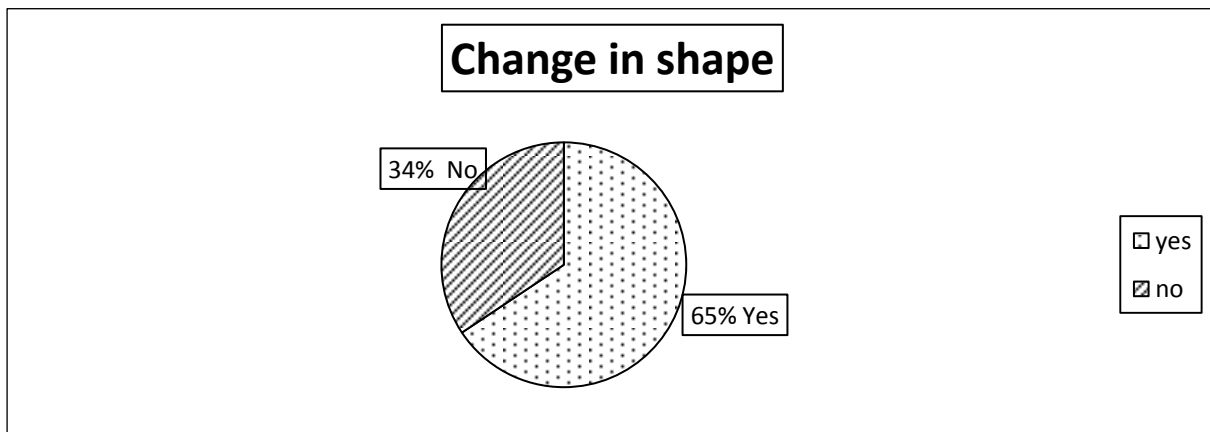
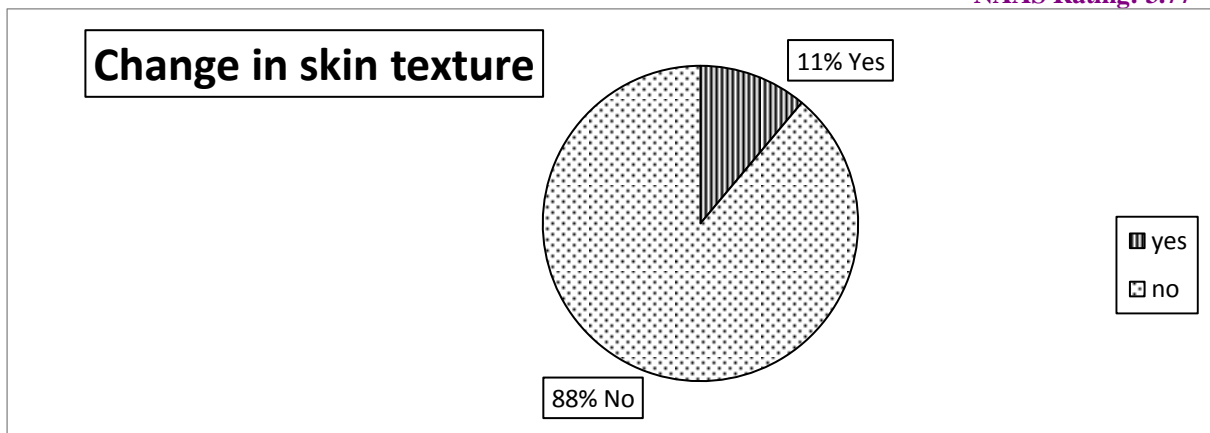
Distribution of respondent according to their signs and symptoms				
S.No.	Particular		N=184	percentage
1	Lump or swelling in the breast	Yes	184	100
		No	0	0
		Total	184	100
2	Change to skin texture	Yes	22	11.95
		No	162	88.04
		Total	184	100
3	Change to shape or texture	Yes	121	65.76
		No	63	34.23
		Total	184	100



4	Nipple look different	Yes	22	11.95
		No	162	88.04
		Total	184	100
5	Unusual discharge	Yes	114	61.95
		No	70	38.04
		Total	184	100
6	Any rash or crusting of the nipple	Yes	105	57.06
		No	79	42.93
		Total	184	100
7	Pain in breast	Yes	34	18.47
		No	150	81.52
		Total	184	100

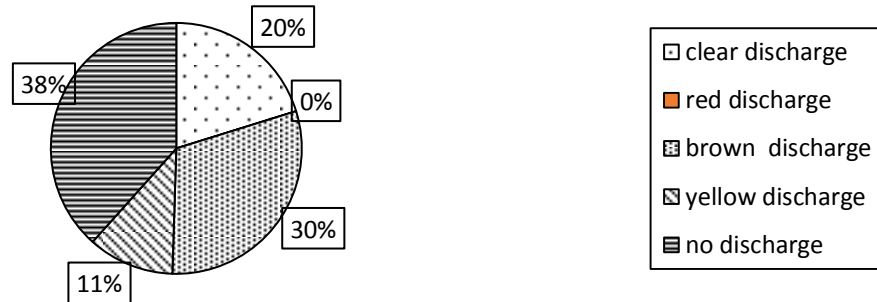
Table 4.2 describe that 100 per cent patients were having lump nodes and swelling in their breast, 11.95 Per cent patients felt change in skin texture, 88.04 Per cent patients did not felt any change, 65 Per cent patients were experiencing change in shape, 34.04 Per cent patients were not having any change, 11.95 Per cent patient experienced difference in nipple, 88.04 Per cent patients were not experienced any difference, 61.95 Per cent patients saw unusual discharge whereas, 38.04 Per cent patients were not felt anything, 57.04 Per cent patients found rashes on their skin, 42.93 Per cent patients have not found any rashes, 18.47 Per cent patients were having pain in breast, 81.52 Per cent patients have not felt any pain.



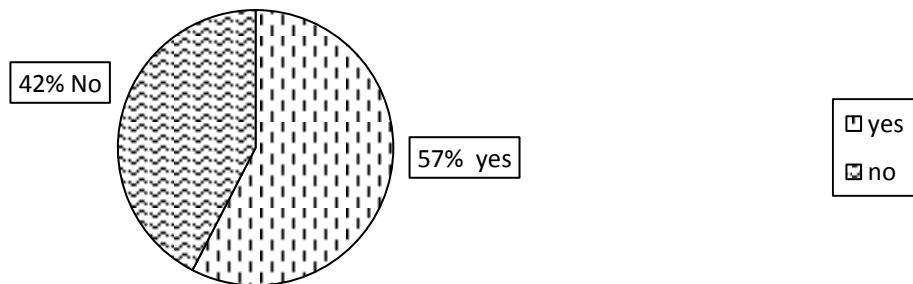




Unusual discharge



Rush or crusting



Pain in breast

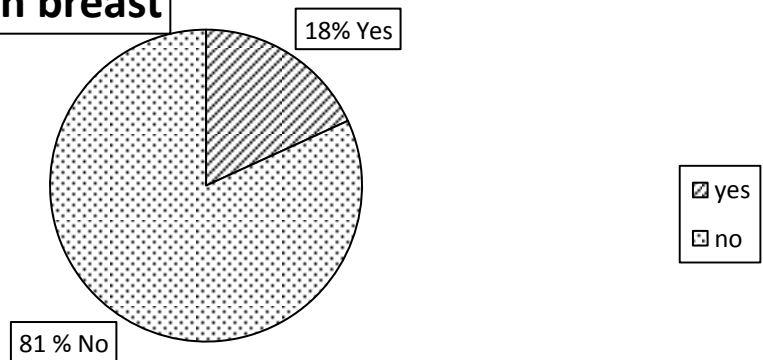




Table: 3 Distribution of patients according to their hemoglobin level.

S.No.	Particulars	N=184	Per cent
1	<12.0 g/dl	72	39
2	12.0-15.5 g/dl	112	61

Table 4.3 shows that out of total, 39 Per cent patients were anemic (<12.0 g/dl) and 61 Per cent patients hemoglobin was normal i.e. (12.0-15.5 g/dl). This may indicate that women hemoglobin did not effect by the chemotherapy doses findings in the study was in line with previous study revealed that the hemoglobin was decreased among women who received chemotherapy doses (kailajarvi *et al*, 2000).

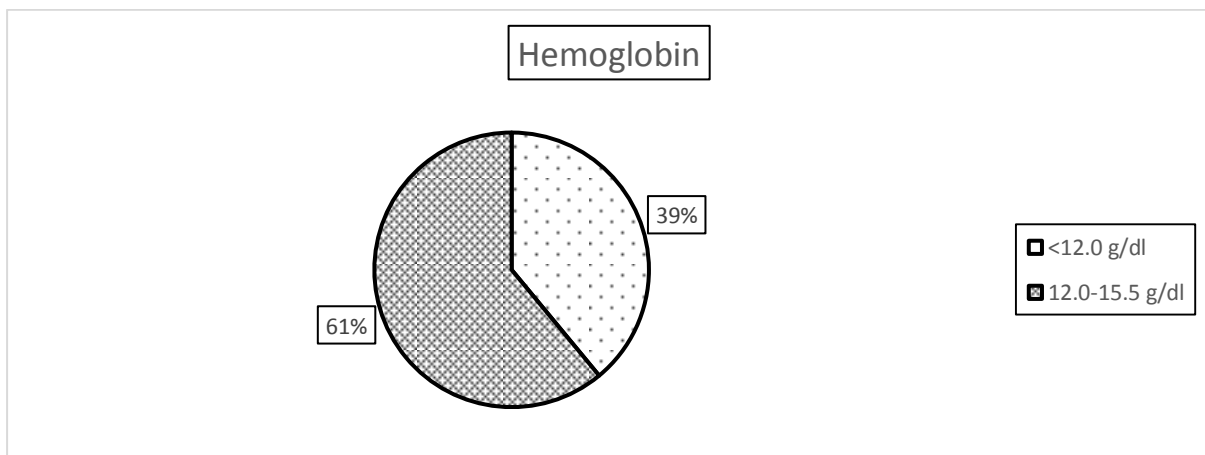


Table: 4 Average nutrient content per day by patient during chemotherapy.

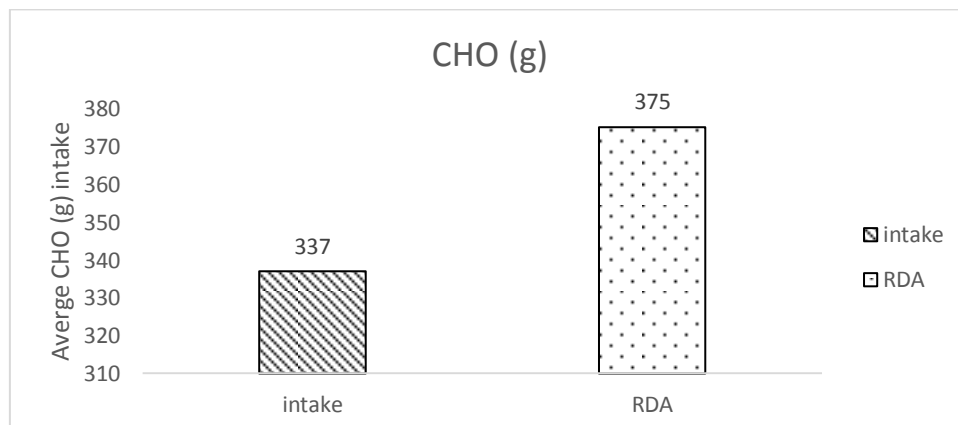
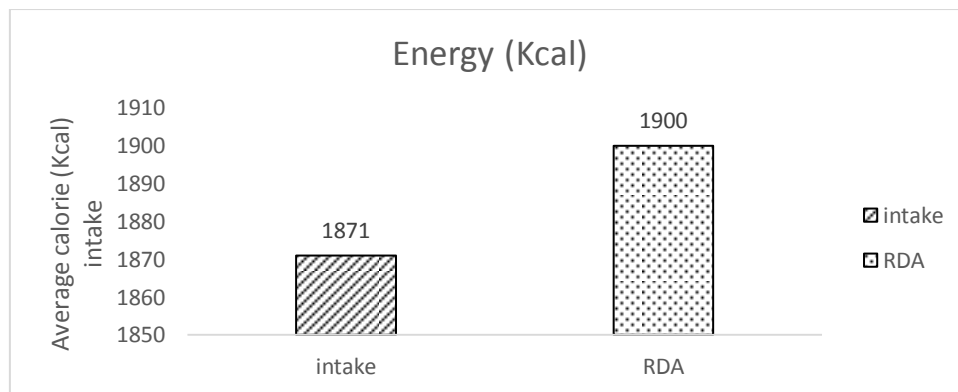
Nutrient	energy (Kcal)	CH O (g)	protei n (g)	Fat (g)	fibre (g)	calciu m (mg/d)	Iron (mg/d)	Retino l (µg/d)	Ascorbi c acid (mg/d)	Vitamin E (mg/d)
intake	1871	337	74	23.8	33.6	688	34.4	685	71	45
RDA	1900	375	55	25	25	600	21	600	40	15
difference	29	38	19	1.2	8.6	88	13.4	85	31	30

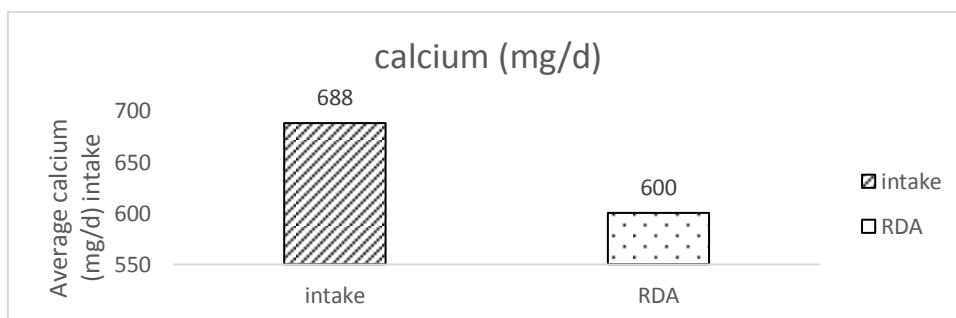
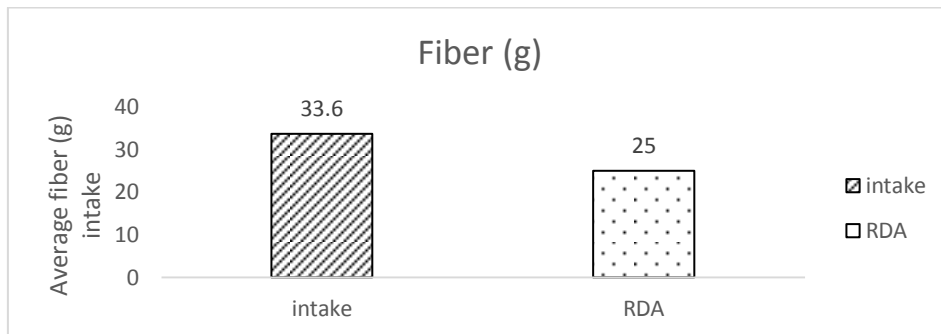
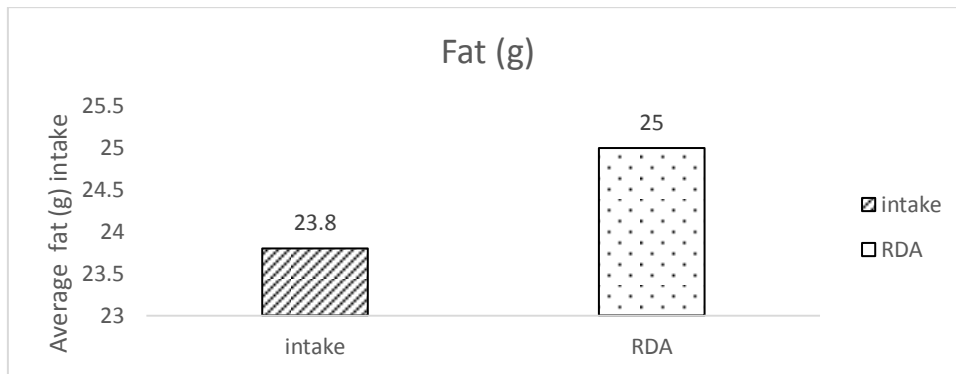
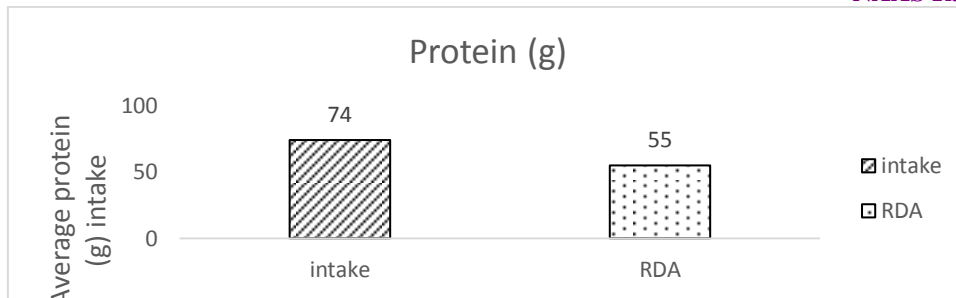


t-value (cal)	4.06	7.05 7	4.417	0.64 7	4.76 3	7.752	8.544	13.434	7.75	6.00
t-table	2.776	2.77 6	2.776	2.77 6	2.77 6	2.776	2.776	2.776	2.776	2.776
Result	S	S	S	NS	S	S	S	S	S	S

*Significant at 0.05 per cent level of significance

Table 4 shows the average value of nutrients intake by the selected respondents with respect to energy, carbohydrate, fat, protein, fibre, calcium, iron and retinol. After comparing all the average nutrients value with **ICMR, RDA (2010)** it was observed that Energy, Carbohydrate, fat were less than ICMR, RDA whereas, protein, fibre, calcium, iron, and vitamins were more than ICMR, RDA. It was found that, the mean daily intake of, RDA value, RDA value than normal woman. On applying t-test, significant difference was found between the intake and RDA for energy, carbohydrate, protein, fat, fibre, calcium, iron, vitamin and retinol.





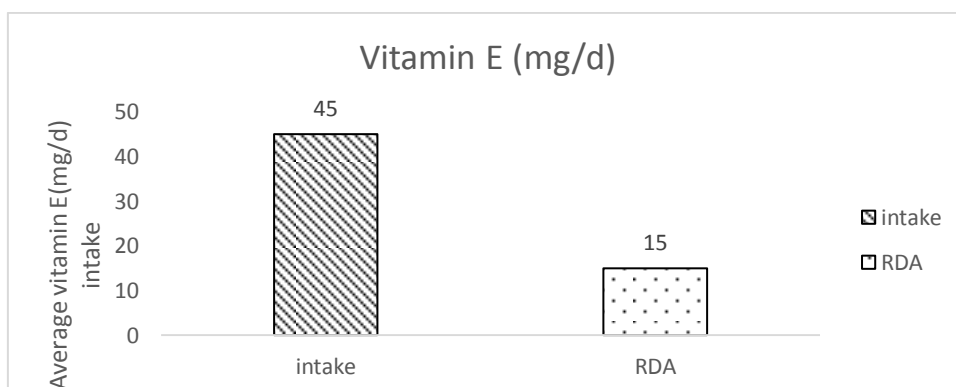
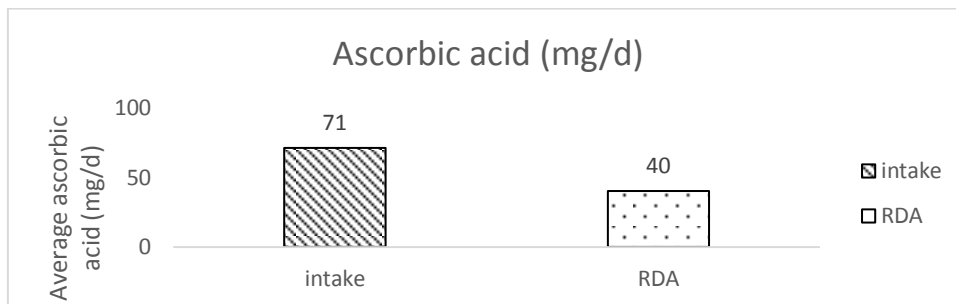
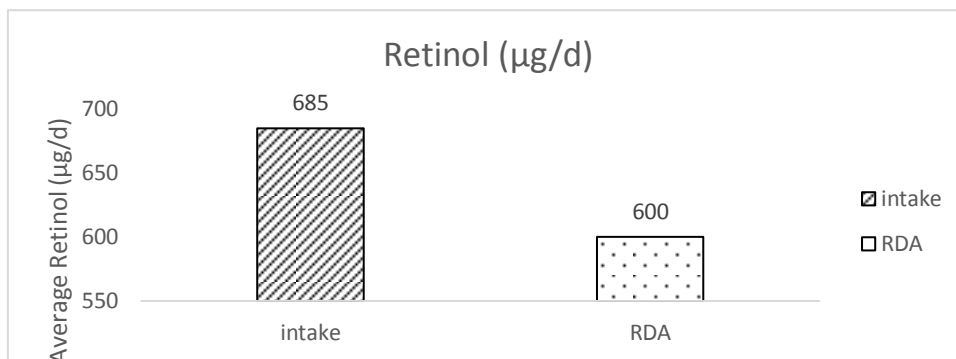
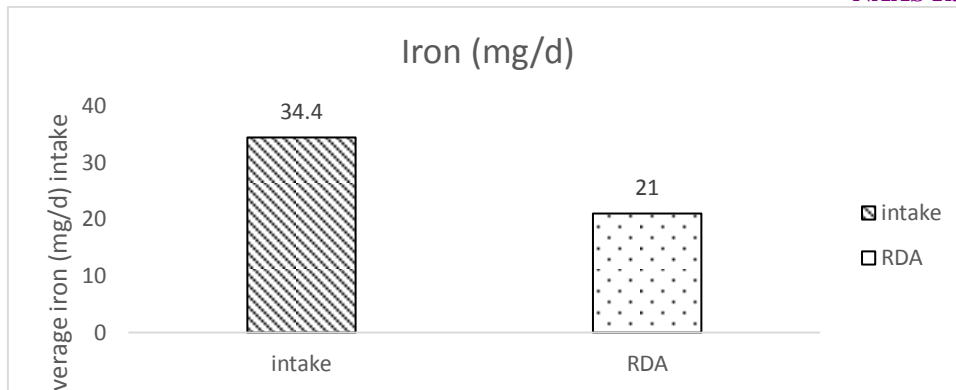
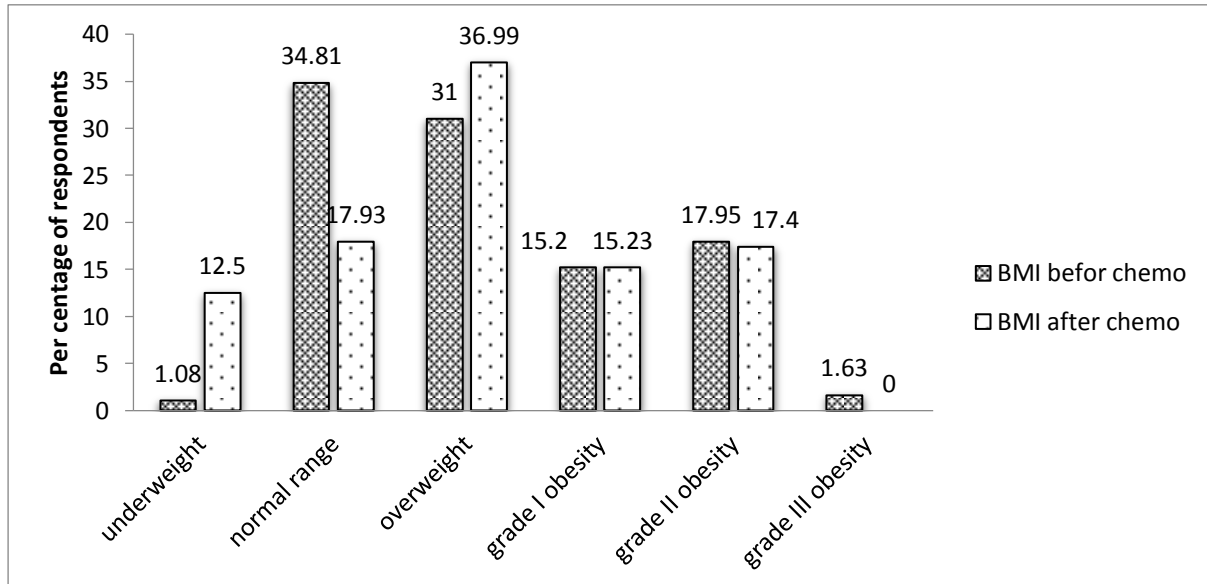




Table 5 Distribution of the patients according to the BMI.

S.No.	Particulars	Before		After	
		N=184	Per cent	N=184	Per cent
1	Underweight	2	1.08	23	12.5
2	Normal range	64	34.81	33	17.93
3	Overweight	57	31.0	68	36.99
4	Grade I obesity	28	15.23	28	15.23
5	Grade II obesity	30	16.30	32	17.4
6	Grade III obesity	3	1.63	0	0

Table 5 shows that out of total patients, before chemotherapy, 1.08 Per cent patients were underweight, 34.81 Per cent patients were normal, 31.0 Per cent patients were overweight, 15.23 Per cent patients were grade I obese, 16.30 Per cent patients were grade II obese, 1.63 Per cent patients were grade III obese, similarly, after chemotherapy, 12.5 Per cent patients were underweight, 17.93 Per cent patients were normal weight, 36.99 Per cent patients overweight, 15.23 Per cent patients were Grade I obese, 17.4 Per cent patients were Grade II obese, no patients were grade III obese. **According to Renehan *et al.* (2008)** increased body mass index (BMI) is associated with a significant increase in the risk of breast cancer, although with some differences in age and menopausal status. The association between being overweight (defined as a BMI of 25 to 29.9 kg/m²) or obese (BMI of 30 kg/m² or greater) and breast cancer incidence has been found in many studies. Most studies and meta-analysis showed an increased risk of breast cancer for postmenopausal women and an inverse association between obesity and survival after breast cancer. **According to Reeves *et al.* (2007)** several studies, including the Million Women Study, report that the risk of breast cancer decreases with increasing BMI with a linear relationship along the BMI scale starting from 20 kg/m².



CONCLUSION

- It is concluded that out of 184 patients, 66.84 per cent patients were diagnosed breast cancer at the age of 31-50 years. Study revealed that most of the patients had lump nodes, swelling, change in breast shape and unusual discharge rashes on their breast skin.
- Most of the patients 61 Per cent were hemoglobin level was normal i.e. (12.0-15.5 g/dl) and 39 Per cent patients were anemic (<12.0 g/dl).
- It was observed that Energy, Carbohydrate, fat were less than ICMR, RDA whereas, protein, fibre, calcium, iron, and vitamins were more than ICMR, RDA. It was found that, the mean daily intake of, RDA value, RDA value than normal woman.
- Most of the patients 64.16 per cent were overweight before chemotherapy and only 34.81 per cent were found in normal category whereas after the chemotherapy 69.62 per cent patients were found in overweight category. According to the finding all patients had been taking bland diet.



REFERENCES

- Hoare, T., Thomas, C. Biggs, A., Booth, M., Bradley, S. and Friedman, E. (1994).** Can the uptake of screening behavior by Asian women be increased? A randomized controlled trial of link worker intervention. *Journal of Public Health Medicine*, 16(2), 179-185.
- Jemal, A., Bray, F., Melissa, M.C., Jacques, F., Elizabeth, W., and Forman D. (2011)** Global cancer statistics. *CA Cancer J Clin.* ;61:69–90.
- Kailajarvi, M., Ahokoski, O., Virtanen, A., Salminen, E. and Irjala, K. (2000).** Alteration in laboratory test results during adjuvant breast cancer treatment. *Clinical hematology of laboratory Medicine*. 38(5):443-51
- National Cancer Institute.(2015).** Understanding Breast Changes: A Health Guide for Women. Available at: <https://www.cancer.gov/types/breast/understanding-breast-changes>
- Nandakumar, A. and National Cancer Registry Programme. (1990-96).** *Indian Council of Medical Research*, Consolidated report of the population based cancer registries, New Delhi, India
- P, somdatta., N, baridalyne centre for community medicine And AIIMS. (2008).** Awareness of breast cancer in women of an urban resettlement colony. 149-153; 45; 4
- Reeves, G.K., Pirie, K. and Beral, V. et al., (2007).** Cancer incidence and mortality in relation to body mass index in the million women study: cohort study *BMJ* 335 1134 DOI: 10.1136/bmj.39367.495995.AE PMID: 17986716 PMCID: 2099519
- Renehan, A.G., Tyson, M. and Egger, M. et al., (2008).** Body-mass index and incidence of cancer: a systematic review and metaanalysis of prospective observational studies *Lancet* 371 569–578 DOI: 10.1016/S0140-6736(08)60269-X PMID: 1828032
- Srilakshmi, B. (2014)** Nutrition Science, 7th Edition, *New Age International (P) limited*. Publisher, 2010, 417-440.
- Swaminathan, M. (2013)** Diet and Nutrition in India. Essentials of food and Nutrition. 2nd Edition