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ASSESSMENT OF NUTRITIONAL ANAEMIA IN RELATION TO DIETARY INTAKE AMONG NEWLY DIAGNOSED BREAST CANCER WOMEN OF PATHAN ETHNICITY IN DISTRICT PESHAWAR

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Abstract

Background: *Cancer patients frequently have nutritional anaemia, especially iron deficiency anaemia, which can have a negative impact on their quality of life and treatment outcome. The most common cancer diagnosed in Pakistan and worldwide in females is breast cancer, whose management results are further complicated by delayed detection and restricted access to supportive care. Patients with breast cancer may have anemia for a variety of reasons, such as long-term inflammation, poor absorption, and a diet rich in iron, folate, and vitamin B12.*

Methodology: *This cross-sectional study was conducted in the surgical B ward, Khyber Teaching Hospital, Peshawar. A sample of 110 newly diagnosed non-invasive breast cancer were selected randomly based on written consent patients, were investigated for the ABCD method of nutritional assessment. Data were collected using a self-constructed questionnaire. Demographic, anthropometric and biochemical parameters were recorded. Dietary intake was assessed using a 24-hour recall and compared with the RDA.*

Results: *The results reveal that the majority of participants were from join family system, with a predominance of lower-income households. Non-menopausal women had a mean age (37.49 ± 7.19) years, while menopausal women had a mean age of 58.89 ± 7.101) years. The mean body mass index (BMI) of un menopause women (26.980 ± 4.1151), suggesting a higher prevalence of overweight and obesity. A mean BMI of (30.395 ± 5.5512) were found in menopausal women, which further supports the problem of overweight and obesity in this population. The mean random blood sugar level in non-menopausal women was (129.7313 ± 49.41831), whereas the mean for menopausal women was (154.4773 ± 34.91417). According to a complete blood count (CBC) study, menopausal women had a higher mean haemoglobin (HGB) level of (6.6030 ± .66900) than non-menopausal women, with the former having a mean HGB level of (9.4636± 1.70718), suggesting a large prevalence of anaemia. The C-Reactive protein, having mean and standard deviation of un menopause and menopausal women 5.34± 4.16), (5.4816 ± 2.28956) was found, which indicates a systematic pro-*

inflammatory state within the bodies of the patients. The dietary record showed the carbohydrates, which is recorded with a mean consumption of (292.2455 ± 103.92201), and this value is higher than the recommended amount of carbohydrates which is (225-325g/day), fats (103.09 ± 28.25), exceeding the RDA (45–75 g. Among water-soluble vitamins, B12, folic acid, and vitamin C were below or near requirements. Mineral analysis revealed insufficient calcium, zinc, iron and iodine intake. These findings suggest an imbalance in nutrient intake, with excessive fat and sugar consumption and deficiencies in several essential vitamins and minerals, potentially increasing the risk of non-communicable diseases such as breast cancer.

Conclusion: *Females of Pathan ethnicity who have recently been diagnosed with breast cancer in the Peshawar district have a high prevalence of nutritional anaemia, which is significantly correlated with low dietary iron intake. The necessity of early nutritional evaluation and dietary therapy in this susceptible group is highlighted by these findings.*

INTRODUCTION

Cancer is a complex and life-threatening disease characterized by the uncontrolled growth and spread of abnormal cells. It is a major public health concern worldwide, with millions of new cases diagnosed each year [1]. Breast cancer is the most prevalent cancer in women and a major contributor to cancer-related death among all cancer types. Breast cancer is caused by several risk factors, such as environmental exposures, lifestyle choices, hormone imbalances, and genetic predisposition [2].

Globally, the prevalence of breast cancer varies, with significant differences between industrialized and developing nations. In Pakistan, breast cancer is the most frequently diagnosed cancer among women, accounting for nearly 25% of all female cancer cases [3]. The nation has one of the highest incidence rates of breast cancer in Asia, with over 40,000 fatalities and 90,000 new cases per year [6].

High death rates are a result of late diagnosis, ignorance, and restricted access to medical facilities. On a global scale, breast cancer affected approximately 2.3 million women in 2020, making it the most prevalent cancer worldwide, surpassing lung cancer for the first time in incidence rates [5]. Developed countries have a higher illness burden because of improved screening systems, but lifestyle changes, urbanization, and a lack of preventative healthcare are causing an increase in cases in developing countries [6].

Cancer patients frequently suffer from anaemia, a disorder marked by low hemoglobin levels or insufficient red blood cells. It can result from chronic inflammation, nutritional deficiencies, or the direct impact of cancer on bone marrow function [7]. Anemia in breast cancer patients is often associated with malnutrition, blood loss, and myelo suppression brought on by chemotherapy [8].

Anemia affects billions of people globally and is a serious global health concern. According to the World Health Organization (WHO), approximately 29.9% of women of reproductive age and 39.8% of children under five years suffer from anemia, making it one of the most common nutritional deficiencies globally [9]. Because of poor food habits, parasite infections, chronic illnesses, and insufficient healthcare services, anemia is more common in low- and middle-income countries [10].

1. Methodology

1.1. Study design

is study examined the probable dietary and non-dietary risk factors among newly diagnosed breast cancer Pashtun female's patients of Khyber Pakhtunkhwa, Pakistan. A sample of 110 newly diagnosed non-invasive breast cancer were selected randomly based on written consent patients, were investigated for the ABCD method of nutritional assessment. This study was conducted in the surgical B ward, Khyber Teaching Hospital Peshawar, from October 2022 to January 2023. The study was approved by the ethical approved committee No.

485/H.ECO of the College of Home Economics, University of Peshawar.

1.2. Location of Study
This study was conducted at Khyber Teaching Hospital Peshawar, surgical unit, ward B. Investigate a newly analyzed or diagnosed breast cancer patients.

1.3. Sample Size
A sample of 110 females with newly diagnosed breast carcinoma were randomly selected at KTH, Peshawar. Inclusion criteria was newly diagnosed breast cancer females.

1.4. Mode of Data Collection
A self-constructed questionnaire and standardized semi quantitative FFQ were developed to attain required data.

1.5. Demographic Data
Demographic section included: name, age, marital status, husband occupation, no. of children, residential area, total family income, and family system.

1.6. Anthropometric Measurement:
2.6.1 Age: The age of all the respondents was taken in years.

2.6.2 Height: Height was measured by the height board or measuring scales. The patient stood straight against the height board, touching her heels near the board. Height was measured without shoes.

2.6.3 Weight: The Weight of all the respondents was taken in kilograms through a weight machine. The respondents were asked to remove any heavy materials from their pockets or remove any heavy items of clothing or apparel. The scale was put on a hard, even surface, no carpeting. Respondents were asked to stand still barefoot, with weight distributed evenly on both feet.

2.6.4 body mass index (BMI): It is pronounced as Body Mass Index. BMI was calculated through weight and height. The formula to discover the BMI is:

BMI= weight in (kg)/ (height in inches) 2 x 703

2.6.5 Skin Fold Thickness:
With the help of skin-fold calipers triceps of the patient were measured.

2.6.6 Mid Upper Arm Circumference (MUAC):
MUAC was determined by measuring the mid-upper arm of all the respondents through anthrotape.

2.6.7 Waist to Hip Ratio
Waist to hip ratio was taken by measuring the hip, then the waist and then both the values are divided together to determine the waist to hip ratio of all the respondents.

Formula
WHR= Waist Circumference/ Hip Circumference

2.6.8 Body Fat Percentage
The body fat percentage was calculated through the biochemical impedance analyzer (Omron Body Composition Monitor) The respondents were asked to remove any heavy metals from pockets. They were directed to stand straight and hold the liver with hands straight forward making a 90 angle.

2.7 Biochemical Analysis
Biochemical data was collected aimed to investigate or assess the different values including blood, complete blood count (CBC)and C-Reactive Protein (CRP)

2.8 Dietary Assessment
The dietary evaluation was point by point assessment of an individual's food intake. The respondents were asked for their food intake in the previous 24 hours for the purpose of nutrients intake.

2.9 Statistical Analysis
Data were analyzed by using Statistical Package for Social Sciences (SPSS) version 20 for entering and analysis of collected data. Descriptive statistics was used to determine frequencies, mean and standard deviation for different variables. For comparison of means on way ANOVA was used to find out differences between mean variables.

2. RESULT ANA DISCUSSION

Table 1: Demographic Data of Non-Menopausal Women

Frequency	YES (%)	Percent
Joint family system	49	73.1
Nuclear family system	18	26.9
married	64	95.5
unmarried	3	4.5
businessman	5	7.5
shopkeeper	11	16.4
Lawyer	2	3.0
teacher	11	16.4
labour	28	41.8
other	9	13.4

The socio-demographic characteristics of the study participants are shown in Table 1. The results reveal that the majority (73.1%) of our study participants were living in a joint/extended family system, while the others (26.9%) lived in a nuclear system.

The marital status of the respondents showed that 95.5% women were married while 4.5% were unmarried. The table also show the occupation of the respondents' husband. The majority of the husbands of the study participants were labourers (41.8%), while 16.4% were shopkeeper, 16.4% were doing teaching jobs, 7.5% were businessmen, 3.0% were lawyers, and 13.4% were engaged in low paid jobs. This shows that majority of the participants belonged to an extended family background with lower income per month.

Table 2: Demographic data of Non-Menopaused women

Parameters	Range	Mean ± SD (P value)
Number of children	0 - 9	3.48 ± 1.85 (0.285)
Total family income	1800 - 30000	16000.00 ± 91. 52 (0.589)
Residential area	**Frequency**	**Percent (%)**
Urban area	46	68.7
Rural area	21	31.3

The type of family and residential background of the patients is given in Table 2. The number of children of the respondent was shown to be the highest 9 and the lowest 0 having a mean and standard of (3.48 ± 1.853). The family income of the respondent varied from 1800 to 30000, having a mean and standard of (16000.00 ± 9105.260) according to the occupation of family members. The place of residence of the respondents showed the highest percent i-e 68.7% of the respondents lived in an urban area, while 31.3% lived in the rural area.

Table 3: Anthropometric data of Non-Menopausal women

Parameters	RANGE	Mean ±Std. Deviation	P value	Reference Values
Patient age (years)	18 -48	37.49 ± 7.191	-------	------
Height of patient (cm)	150.00 -170.00	159.0194 ±5.61565	0.210	159 cm
Weight of patient (kg)	50.00 - 95.00	67.6716 ± 11.40	0.541	59 kg

Body Mass Index	19.5 – 38.1	26.980 ± 4.15	0.157	18.5-24.9
Mid Upper Arm Circumference (cm)	11.00 - 36.00	22.4776 ± 7.55	0.077	12.5 - 13.5 cm
Waist to Hip Measurement	.20 – 1.3	.871 ± .2143	0.047	0.9 or lower
Skin Fold Thickness	14.00 - 45.00	25.85 ± 7.09	0.336	
General Body Fat Percentage	20.00 - 49.00	35.29 ±7.45	0.308	21-33 %
Visceral Body Fat Percentage	3 – 14	8.03 ±2.59	0.01	1-9

Anthropometric data of breast cancer patients is illustrated in Table 3. The results showed that the mean age of the study population was (37.49 ± 7.191) years, with a range (18 - 48) years. The average height was (159.0194 ±5.61565) cm, with a range of (150.00 - 170.00) cm, the average weight was (67.67± 11.40) kg, with a range of (50.00 - 95.00) kg. The average BMI was (26.98 ± 4.11 kg/m2, with a range of (19.5 – 38.1) kg/m2, which showed that the majority of our study participants were overweight/obese. Similarly, the average MUAC was (22.4776 ± 7.55457), with range values (11.00 - 38.00). Furthermore, the mean WTH ratio was (.871 ± .2143), with a range of (.20 - 1.30). The average skin fold thickness was (25.85 ± 7.09) with range values (14.00 - 45.00. The Average general body fat per cent of all the participants was (35.2970 ±7.45), with a range of (20.00 - 49.00). On the other hand, average visceral body fat per cent was (8.03 ±2.594), with range values (3 -14). The anthropometry showed that a big problem is overweight and obesity.

Table 4: Biochemical data of Non-Menopausal women

Tests	Range	Mean± Std. Deviation	P value	Reference Values
Age	18-48	37.49 ± 7.191	----------	----------
Random blood sugar	100-455.00	129.7313 ± 49.41831	0.989	<70-140
CBC tests				
white blood cells	4.0 - 9.6	7.84 ± 1.11	0.020	4-11
RBC	3.00-6.90	5.06 ± 1.05	0.664	4-6
HGB (g/dl)	5.00-8.00	6.60 ± .66	0.049	11.5-17.5 g/dl
HCT (%)	17.00-36.00	28.17 ± 5.24	0.786	36-54 %
MCV (fl)	39.0-69.9	55.52 ± 8.93	0.036	76-96 fl
MCH	20.00-35.00	26.50 ± 3.55	0.454	27-33
MCHC (g/dl)	20.00-39.90	33.04 ± 3.67	0.710	33-35 fl
PLT(%)	123.00-401.00	284.94. ± 69.65	0.745	150-450 %
MPV (fl)	6.00-33.50	9.63 ± 1.58	0.006	7.2-11 fl
NUET(%)	16.00-75.50	58.80 ± 10.83	0.657	40-75 %
LYMP(%)	16.50-52.00	29.64 ± 7.34	0.025	20-45 %
MONO %	2.20-12.00	6.68 ± 1.93	0.418	2-10 %
CRP	.31-16.00	5.34± 4.16	0.032	<5.0

Table 4 shows the biochemical data of the sample. Which showed that in the given sample at age 18-48 the minimum blood glucose was 100 and 455 was maximum and it's mean and Standard deviation (129.73 ± 49.418). complete blood count (CBC) the data showed that white blood cells is (4.0-9.6) and its mean and standard deviation is (7.847 ± 1.1195) while the reference value is 4-11. RBC range from (3.0 - 6.90) while the reference value is 4-6. Hemoglobin level mean value is (6.6030 ± .66900)

while the reference value is 11.5-17.5 hemoglobin level showed that it was quite be low from normal range. The range of HCT is 17.00 – 36.00 and its mean and standard deviation is (28.1761 ± 5.24194) while the reference value is 36-54, there is difference between mean cell volume range of the patient and reference value that is 39 -69.9, 76-96 respectively, the range of mean cell hemoglobin is (20.00 – 35.00) and its mean and standard deviation is (55.52 ± 8.93) while the reference value is 27-33, the range of MCHC is (20.00 – 39.90) and its mean and standard deviation is (33.04 ± 3.67) while the reference value is (123 – 422),the range of PLT is and its mean and standard deviation is (284.94. ± 69.65) while the reference value is 150-450, the range of MPV is 6.00 – 33.00 and its mean and standard deviation is (9.63 ± 1.58) while the reference value is 7.2-11, the range of NUET is 16.00 – 75.50and its mean and standard deviation is (58.80 ± 10.83) while the reference value is 40-75, the range of LYMPH is 16.50 – 52.00 and its mean and standard deviation is (29.64 ± 7.346) while the reference value is 20-45, the range of MONO is 2.20 – 12.00 and its mean and standard deviation is (6.68 ± 1.93) while the reference value is 2-10.

Al Khamees M, et al (2023) stated that premenopausal women with low serum iron levels had a higher likelihood of positive breast cancer screening results. Specifically, for every unit decrease in serum iron, the odds of a positive screening test decreased by 10% (OR = 0.9, 95% CI 0.86–0.97) [11].

CRP indicates the degree of inflammation in the body. The analysis of results revealed that the average CRP value of the participants was (5.34± 4.16), with range values (.31 - 16.00).

Asegaonkars. S et al, (2015) stated that CRP levels can be higher than normal if there is inflammation or infection in the body. women diagnosed with invasive breast cancer who had higher CRP levels [12].

Table 5: Anaemia status of Non-Menopausal women

HGB g/dl	No of patients	Percent
5-6	47	70.1
7-8	19	28.4
9-10	1	1.5
11-12	0	0

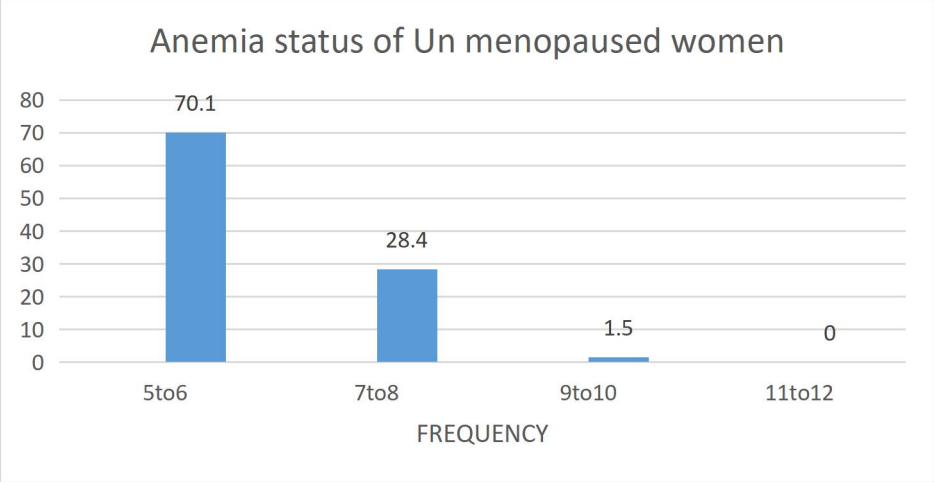

Figure 1: Prevalence of anaemia among the Non-Menopausal women

The anaemia status of non-menopausal women is shown in this table 5 and graph 1. As per their hemoglobin (HGB) levels. With hemoglobin values ranging from 5 to 6 g/dL, the data shows that the majority of women (47 patients, 70.1%) suffer from severe anemia. 19 women, or 28.4% of the total,

have moderate anemia, falling into the 7-8 g/dL range. Hemoglobin levels in the 11–12 g/dL range, which is generally regarded as normal, are absent in all women, and just one (1.5%) had levels between 9 and 10 g/dL, indicating mild anemia. The prevalence of severe to moderate anemia in non-menopausal women is significantly higher, as this table demonstrates.

Table 4.A: Demographic data of menopausal women

Frequency	NO	Percent
Joint family system	35	79.5
Nuclear family system	9	20.5
married	35	79.5
unmarried	9	20.5
businessman	1	2.3
shopkeeper	5	11.4
lawyer	0	0
teacher	2	4.5
labour	26	59.1
other	4	9.1

The socio-demographic characteristics of the study participants are shown in table 4.A. The results reveal that majority (79.5%) of our study participants were living in an joint/extended family system while the others (20.5%) lived in nuclear system.

The marital status of the respondents showed that 79.5% women were married while 20.5% were unmarried. The table also show the occupation of the respondents' husband. The majority of the husbands of the study participants were labourers (59.1%), while 11.4% were shopkeeper, 4.5% were doing teaching jobs, 2.3% were businessmen, and 9.1% were engaged in low paid jobs. This shows that majority of the participants belonged to an extended family background with lower income per month.

Table 6: Demographic data of menopausal women

Parameters	Range	Mean ± SD (P Value)
Number of children	0 - 12	3.48 ± 1.853 (0.069)
Total family income	1800 - 30000	16240.91 ± 10.48 (0.033)
Residential area	**Frequency**	**Percent** (%)
Urban area	33	75.0
Rural area	11	25.0

Number of children of the respondent were shown the highest 12 and the lowest 0 having a mean and standard of (3.48 ± 1.853). The family income of the respondent varied from 1800 to 30000 having a mean and standard of (16240.91 ± 10609.481) according to the occupation of family members.

The place of residence of the respondents show the highest percent i-e 75% of the respondents live in urban area, while 25% live in rural area.

Table 7: Anthropometric data of menopausal women

Parameters	RANGE	Mean ±SD	P value	Reference Values
Patient age (years)	50-73	58.89 ± 7.10	-------	----------
Height of patient (cm)	150.00 - 175.00	158.86 ±5.68	0.236	159 cm
Weight of patient (kg)	50.00 - 108.00	77.95 ± 15.02	0.005	59 kg
Body Mass Index	19.5 – 41.7	30.39 ± 5.55	0.093	18.5-24.9
Mid Upper Arm	17.00 - 38.00	26.97 ± 7.57	0380	12.5 - 13.5 cm

Circumference (cm)				
Waist to Hip Measurement	.70 – 1.40	0.9566 ±0 .11	0.317	0.9 or lower
Skin Fold Thickness	14.00 - 40.00	28.16 ± 7.32	0.000	
General Body Fat Percentage	25.00 - 55.00	39.90±7.93038	0.044	21-33 %
Visceral Body Fat Percentage	5-15	11.05 ± 2.719	0.428	1-9

Anthropometric data of breast cancer patients is illustrated in Table 5. The results showed that mean age of the study population was (58.89 ± 7.101) years, with range (50 - 73) years. The average height was (158.86 ±5.683) cm, with range (150.00 – 175.00) cm, average weight was (77.95 ± 15.02) kg, with range (50.00 - 108.00) kg. The average BMI was (30.39 ± 5.55) kg/m2, with range (19.5 – 41.7) kg/m2, which showed that majority of our study participants were overweight/obese. Similarly, the average MUAC was (26.97 ± 7.57), with range values (17.00 - 38.00). Furthermore, the mean WTH ratio was (0.95 ± .11), with range (0.70 - 1.40). The average skin fold thickness was (28.16 ± 7.32) with range values (14.00 - 40.00). The Average general body fat percent of all the participants was (39.90 ±7.93), with range (25.00 - 55.00). On the other hand, average visceral body fat percent was (11.05 ± 2.71), with range values (5 - 15). The anthropometry showed that a big problem is overweight and obesity.

Table 8: Biochemical record of Menopausal women

Tests	Range	Mean± Std. Deviation	P value	Reference Values
Age	50-73	58.89 ± 7.101	----------	----------
Random blood sugar	100-246	154.47 ± 34.91	0.094	<70-140
CBC tests				
white blood cells	6.0 - 9.8	7.93 ± 1.17	0.132	4-11
RBC	3.02-6.60	4.62 ± .82	0.006	4-6
HGB (g/dl)	5.00-11.2	9.46± 1.70	0.165	11.5-17.5 g/dl
HCT (%)	19.00-35.00	25.69 ± 4.46	0.716	36-54 %
MCV (fl)	39.0-69.2	54.06 ± 8.25	0.643	76-96 fl
MCH	19.90-33.30	26.36 ± 2.96	0.079	27-33
MCHC (g/dl)	10.50-39.90	33.00 ± 4.36	0.000	33-35 fl
PLT(%)	182.00-401	305.31 ± 57.11	0.565	150-450 %
MPV (fl)	6.813.80	10.07 ± 1.52	0.104	7.2-11 fl
NUET(%)	17.00-79.20	46.38± 16.14	0.597	40-75 %
LYMP(%)	18.50-45.10	32.02 ± 8.06	0.580	20-45 %
MONO %	3.00-10.70	6.57± 1.62	0.096	2-10 %
CRP	.98-11.50	5.48 ± 2.28	0.152	<5.0

Table 6 shows the biochemical data of the sample. Which showed that in the given sample at age 50-73 the minimum blood glucose was 100 and 455 was maximum and it's mean and Standard deviation (154.47 ± 34.914). complete blood count(CBC) the data showed that white blood cells is (6.0-9.8) and its mean and standard deviation is (7.93 ± 1.17) while the reference value is 4-11. RBC range from (3.02 - 6.60) while the reference value is 4-6. Hemoglobin level mean value is (9.46± 1.70) while the reference value is 11.5-17.5. The range of HCT is 19.00 – 35.00 and its mean and standard deviation is (25.6977 ± 4.46774) while the reference value is 36-54, there is difference between mean cell volume range of the patient and reference value that is 45-87.4, 76-96 respectively, the range of mean cell

hemoglobin is (19.90 – 33.00) and its mean and standard deviation is (26.36 ± 2.966) while the reference value is 27-33, the range of MCHC is (10.50 – 39.90) and its mean and standard deviation is (33.00 ± 4.36) while the reference value is (33-35),the range of PLT is 182.00-4 and its mean and standard deviation is (305.31 ± 57.11) while the reference value is 150-450, the range of MPV is 6.00 – 33.00 and its mean and standard deviation is (10.07 ± 1.525) while the reference value is 7.2-11, the range of NUET is 17.00 – 79.20 and its mean and standard deviation is (46.38 ± 16.14) while the reference value is 40-75, the range of LYMPH is 18.50 – 45.00 and its mean and standard deviation is (32.02 ± 8.06) while the reference value is 20-45, the range of MONO is 3.00 – 10.70 and its mean and standard deviation is (5.48 ± 2.28) while the reference value is 2-10.

CRP indicates the degree of inflammation in the body. The analysis of results revealed that the average CRP value of the participants was (5.4816 ± 2.28956), with range values (.98 – 11.500).

Ahmadi-abhari S, (2013) Stated that 95% of individuals between the ages of 40 and 79 had CRP levels less than 9.8 mg/L, with a median level of 1.6 mg/L. Given that it is lower than the mean CRP level discovered in the current investigation, this suggests that the individuals have a higher level of systemic inflammation [13].

Table 9: Anemia status of Menopausal women

HGB g/dl	No of patients	Percent
5-6	6	9.0
7-8	9	13.4
9-10	14	20.9
11-12	15	22.4

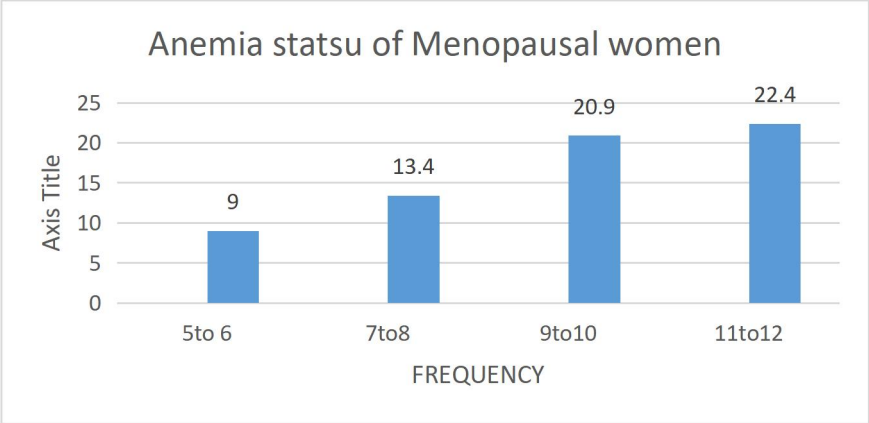

Figure 2: Prevalence of Anaemia among Menopausal Women

The anaemia status of menopausal women is shown in table 6.B and graph according to their hemoglobin (HGB) levels in g/dL, as well as the number of patients and their % representation. 6 women (9%) have hemoglobin levels in the most severe category for anemia, which is between 5 and 6 g/dL. 9 women (13.4%) have moderate anemia, with hemoglobin values ranging from 7 to 8 g/dL. A greater proportion, 14 women (20.9%), have anemia levels between 9 and 10 g/dL, indicating a less severe form. the largest group comprises 15 women (22.4%) with hemoglobin levels between 11 and 12 g/dL, which is closer to the normal range but still qualifies as mild anemia. Women's bodies may adjust to hormonal changes as they get closer to menopause, which could result in less severe anemia and more stable iron levels. Additionally, despite the changes that occur after menopause, some women may have compensatory mechanisms that assist maintain normal hemoglobin levels.

Table 10: Nutrients intake Patterns of the respondents

Nutrients	Range	Mean ±SD	P-value	RDA
Calories	1012.00 4832.00	2420.08 ± 69.19	.864	2,200kcal/day
Protein	16.00 - 39.50	26.41 ± 5.58	.360	50-60mg/day
Fats	63.00 - 201.00	103.09 ± 28.24	.542	45-75gm/day
Folic acid (B9)	.00 - 423.00	162.01 ± 83.75	.479	250mg/day
Vitamin B12	.00 - 6.50	2.06± 1.86	.193	2.4mcg/day
vitamin C	.00 - 414.50	33.25 ± 45.94	1.000	75-90mg/day
Iron	6.00 - 19.70	11.83± 3.29	.597	18 mg/day
Zinc	1.90-20.10	10.93± 6.26	.501	12mg/day
Iodine	.00 - 248.0	57.70± 48.94	.756	150mg/day
Calcium	8.60 - 1586.00	503.56 ± 316.18	.3330	1100mg/day

The nutrient intake patterns of the respondents is given in Table 10. Among the macro nutrients the major source of energy was fats with and standard deviation (103.09 ± 28.24) the RDA of fats is (45-75grams/day) and the mean is higher value of recommended range. Protein consumption as recorded with mean and standard deviation 26.41 ± 5.58 which showed the protein sources in the diets were lowerthan its RDA (50-60mg/day. The third macronutrient, carbohydrates as calculated showed a mean consumption of 292.24 ± 103.92 and this value is higher than the recommended amount of carbohydrates which is (225-325g/day). Francheschi, stated that high intake of dietary fats and carbohydrates and other energy sources and various macronutrient intake increase the risk of breast cancer [14]. Vitamin B12 with a mean and standard deviation of 2.06±1.86, was also lower than its RDA(2.4mcg/day). The intake of mean vitamin C (33.25 ± 45.94) was much lower than its RDA of 75-90mg/day. Francheschi stated that lower intake of Vitamin A, E, C and carotene can increase the risk of breast cancer development, while a diet rich in several micronutrients was associated with significantly lowered risk of breast cancer[11]. Mineral intake of the respondent showed that the mean Calcium consumption (503.56± 316.184) was very low as compared to its RDA is 1100mg/day. The mean iron intake (11.83 ± 3.29) was much lower than the recommended amount (18 mg/day). The mean zinc intake (10.93±6.26) was also lower than its RDA (12 mg/day).). The mean iodine intake (57.70± 48.94) was much lower than its RDA (150mg/day). Abedgawad stated that low intake of some minerals i.e., calcium, phosphorus and magnesium, can lead to cause development of breast cancer [12]. The findings of the current study aligned with many other studies which described an association between iron and cancer development[6,7]; however, whether iron association with carcinogenesis is more in iron deficiency or iron overload remains controversial [13-15]. Iron imbalance may contribute to all aspects of cancer growth including initiation, microenvironment, and metastasis [16]. A large cohort of studies established that around 40% of all cancer patients were anemic when diagnosed with cancer [17]. Although this is surprisingly a high percentage, it might be large due to the typical association of anaemia with chronic disease or BMI involvement [18]. Therefore, a contributing role for iron deficiency in tumorigenesis cannot be overlooked. Breast cancer is the most common cancer type among Pakistani Women who are mostly diagnosed at the ages between 40 and 59 years like other studies [18, 19]. The diagnosis of breast under the age of 45 years has been shown to have lower survival rate and higher recurrence [20]. Its occurrence in young women is more likely to be in a higher histological grade and metastasize to other organs more readily, with a poor prognosis [21]. Premenopausal women usually suffer from iron deficiency due to repeated loss of blood during their menstrual cycles in addition to more aggressive forms of breast cancer [22]. This suggests that ID may be a risk factor in breast cancer aggressiveness in young patients [23]. Although many studies have identified dietary iron as a potential factor that increases the risk of some cancers, its association with breast cancer is controversial. In addition, there is a scarcity

of data about iron biomarkers in breast cancer research [24-25]

Conclusion:

This first of nature cross-sectional study investigated the relationship between blood iron levels, dietary nutrients, and the risk of developing breast cancer in both premenopausal and postmenopausal patients. The cohort showed a high prevalence of anemia, which was more pronounced in both the premenopausal and postmenopausal groups. Iron imbalance is a unique physiological condition in women that can impact health before, during, and after menopause. There is a possibility that iron deficiency may contribute to the high recurrence of breast cancer in premenopausal women. Understanding how iron imbalance affects breast cancer could lead to adjunct treatments, potentially benefiting patients by reducing recurrence and incidence and improving overall survival.

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