

## The Study of prevalence of anaemia in newly diagnosed breast and gynaecological malignancies in pre and post-menopausal females.

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### Abstract

**Aim:** To study anaemia in newly diagnosed breast and gynaecological malignancies in pre and post menopausal females.

**Material and methods:** We conducted a prospective, cross sectional and observational study of anaemia in newly diagnosed breast and gynaecological malignancies in pre and post menopausal females. Association between categorical variables was calculated using Chi Square or Fischer Exact test. Association between continuous variables was calculated using Student T test.

**Results:** Among 55 female patients taken up for the study, 24 were premenopausal and 31 had reached menopause. The prevalence of anaemia in breast (51.6%) and gynaecological (45.1%) malignancies were significantly higher in postmenopausal females. Bleeding was most commonly found in gynaecological malignancy females, while it was significantly absent in breast carcinoma females. Microcytic anaemia (Iron deficiency or blood loss) was the commonest type in the study subjects (50.9%) followed by normocytic (Anaemia of chronic disease) anaemia (23.6%).

**Conclusion:** 31 among 55 female patients taken up for the study had reached menopause. The prevalence of anaemia in breast and gynaecological malignancies were significantly higher in postmenopausal females and bleeding was most commonly found in gynaecological malignancy. Microcytic anaemia was the commonest type in the study subjects followed by normocytic anaemia

### Introduction

Anaemia is defined as per WHO (World Health Organization) criteria, as blood haemoglobin (Hb) level <13 g/dL (<130 g/L) with a haematocrit (Hct) <39% in adult males and Hb<12 g/dL (<120 g/L) and Hct <37% in adult females. <sup>1</sup> Most susceptible population for development of anaemia are the pregnant females, children and the elderly individuals.

Anaemia is the commonest haematological abnormality in patients affected by malignancy with a prevalence of 40-64%. <sup>2</sup> Breast, colorectal, lung and cervical cancers are the most common among females, while lung, prostate and colorectal malignancies are the most common types of cancer in males. <sup>3</sup>

Cancer related anaemia (CRA) has a relevant influence on survival, disease progression, treatment efficacy, and the patients' quality of life is more frequently identified in individuals who have advanced stages of the disease. The incidence rates of Cancer-related-anaemia (CRA) ranges from 22.7% to 63% and increasing to 89% following chemotherapy. <sup>4,5</sup> Prevalence data of CRA vary depending upon many factors, including type of cancer, definition of anaemia (<9 g/dL vs. <11 g/dL), disease stage, and whether patients have been treated. <sup>6</sup>

Among females, breast cancer is by far the most common cancer both in developed and developing regions with an estimated 1.38 million new cancer cases diagnosed in 2008 (23% of all cancers) and ranks second overall (10.9% of all cancers). Survival rates of breast cancers are more in developed compared to developing countries but still is the most frequent cause of cancer death in women in both developing and developed countries. <sup>7</sup>

Cervical cancer is the third most common cancer in females after breast cancer. Overall, the mortality: inc

idence ratio is 52% and cervical cancer is responsible for 88% of deaths in developing countries. <sup>7</sup>

Risk factors for developing breast and gynaecological cancers are many but age is the most important risk factor in deciding the pre and post menopausal prevalence of anaemia in these cancers. Menopause does not cause cancer, but the risk of cancer increases as a woman ages. The main aim of this study is to evaluate the prevalence of anaemia in newly diagnosed breast and gynaecological malignancies in pre and post menopausal females.

### Material and methods

This is a prospective, cross sectional and observational study conducted in Department of Medicine, Dr.D. Y.Patil Medical College, Hospital and Research Centre, Pimpri, pune for a period of 2 years (August 2020 to September 2022). A total of 55 female patients who were newly diagnosed with breast and gynaecological cancers were included in the study.

Patients were divided into two groups based on their menopausal status as premenopausal and postmenopausal. Patients who had no evidence of menstrual blood flow since 12 months of period were considered as postmenopausal and the rest were considered as premenopausal and the patients with the natural menopause were only included in the study.

Approval was taken from the ethics committee before the commencement of the study and a fully informed and written consent was taken from the study participants after explaining the study's goal, procedures, risks and benefits in the native language. Appropriate data related to the study was collected from the study participants and their medical records.

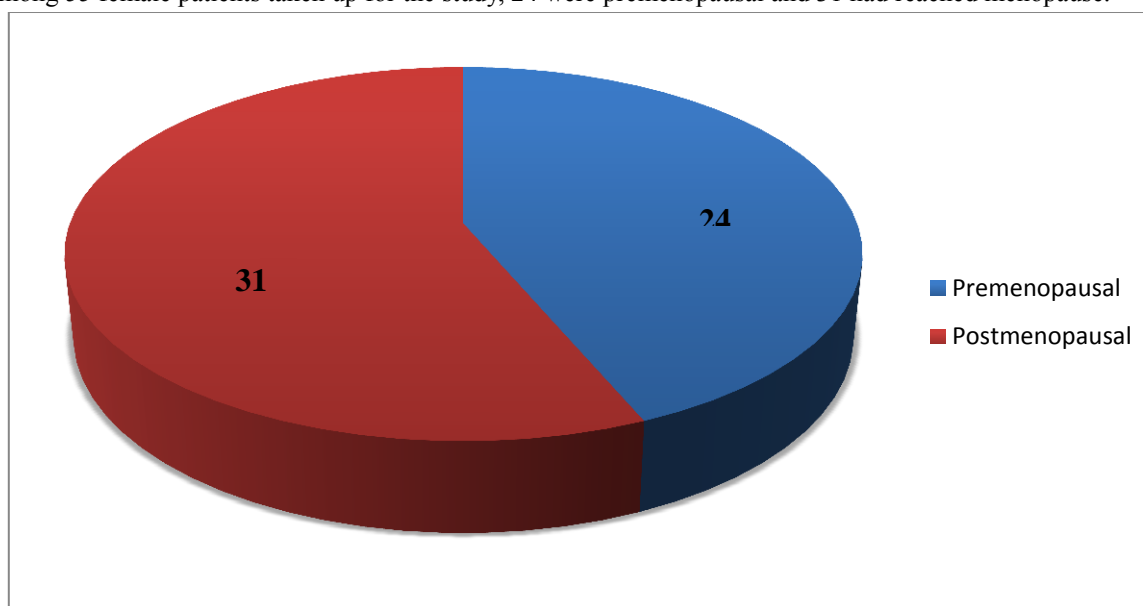
Statistical analysis was performed using EPI data (version 7.2) in Microsoft excel. Frequency and percentages were used to express the Categorical variables. The information was presented as counts, percentages. Association between categorical variables was calculated using Chi Square Test. The applied test was two-tailed with a P value of less than 0.05 considered as statistically significant.

### Results

**Table 1: Distribution of study subjects according to the menopausal stage**

Menopausal stage	Number of patients (n= 55)	Percentage (%)
Premenopausal	24	43.6
Postmenopausal	31	56.3

Among 55 female patients taken up for the study, 24 were premenopausal and 31 had reached menopause.



**Fig 1: Distribution of study subjects according to the menopausal stage**

**Table 2: Distribution of Site of malignancies according to the menopausal stage**

Site of malignancy	Premenopausal		Postmenopausal		Chi Square Test applied (Pvalue)
	Number	%	Number	%	
Breast	8	33.3	16	51.6	< 0.01,S
Gynaecological	8	33.3	14	45.1	<0.02,S
Others	8	33.3	1	3.2	<0.01,S

The prevalence of anaemia in breast (51.6%) and gynaecological (45.1%) malignancies were significantly higher in postmenopausal females compared to premenopausal females.

**Table 3: Distribution of bleeding manifestations according to the site of malignancies**

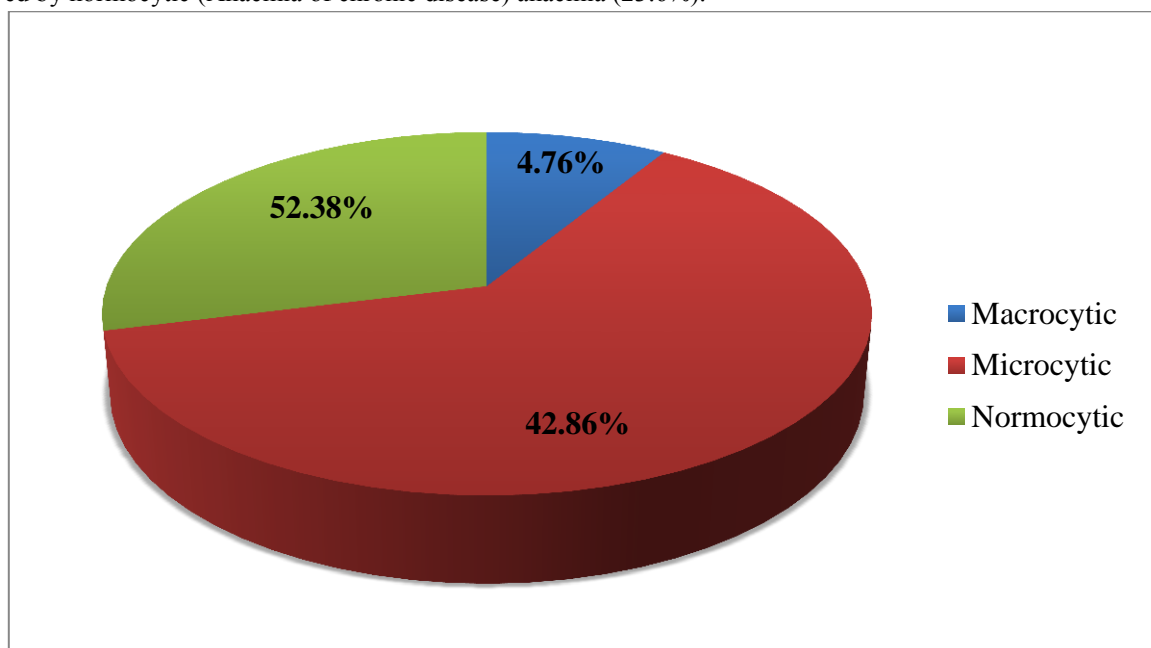
Bleeding	Breast		Gynaecological		Others		Chi Square Test applied(P value)
	Number	%	Number	%	Number	%	
Present	2	8.3	20	90.9	6	66.7	<0.00001,S
Absent	22	91.6	2	9.1	3	33.3	<0.00001,S

Bleeding was most commonly found in gynaecological malignancy females, while it was significantly absent in breast carcinoma females.

**Table 4: Distribution of the subjects based on morphological classification of anaemia on peripheral smear (n=105)**

Anaemia (MCV= 80- 100 fL))	Number of subjects(n =55)	Percentage (%)
Macrocytic(>100)	4	7.2
Microcytic(<80)	28	50.9
Normocytic (between 80 and 100 fL)	13	23.6

Microcytic anaemia (Iron deficiency or blood loss) was the commonest type in the study subjects (50.9%) followed by normocytic (Anaemia of chronic disease) anaemia (23.6%).



**Fig 2: Distribution of the subjects based on morphological classification of anaemia on peripheral smear**

## Discussion

The burden of communicable diseases is decreasing and the burden of non-communicable diseases, such as cancer, is increasing in low- and middle-income countries (LMICs).<sup>8</sup> By 2025, it's predicted that there will be 20 million cancer cases in LMICs.<sup>9,10</sup> Due to industrialisation, lifestyle changes, urbanisation and increasing life expectancy, there has been a significant rise in the incidence of Cancers in LMIC including India.<sup>11, 12</sup> Due to this, there is a significant change in the incidence and epidemiology of several cancers like breast, oesophageal stomach etc

Obese, post-menopausal females are at a higher risk of developing breast and endometrial cancers<sup>13</sup> Several studies have proven that the females have a higher prevalence of gynaecological and breast malignancies.<sup>4</sup>

In our study, post menopausal females having cancer related anaemia were more compared to premenopausal. Age increases the risk of developing cancer in women. A woman who attains a menopause after age 55 has an increased risk of ovarian, breast, and uterine cancers. A longer exposure of estrogen increases a woman's risk of breast cancers. Therefore, women who have experienced a natural menopause are more likely to develop cancer around as twice as high because of hormonal factors.

A similar study was conducted in India in 2014 among 100 females, 48 were premenopausal and 52 had reached menopause. Results of the study indicated that late menopause increases the risk of breast cancer.<sup>14</sup> Risk of breast cancer in postmenopausal women is lower than premenopausal women of the same age and childbearing pattern. Risk of cancer increases by almost 3% for each year older at menopause.<sup>15</sup> Early age at first full-term pregnancy (FP) is inversely related to breast cancer risk.<sup>16</sup>

Bleeding was most commonly found in gynaecological malignancy females, while it was significantly absent in breast carcinoma females. Hence, microcytic anaemia was more prevalent than normocytic anaemia in our study. In a study done by Kifle et al., normocytic anaemia was more common than microcytic anaemia.<sup>4</sup>

In 2018, the International Agency for Research on Cancer (IARC) reported that the cervical, ovarian and the endometrial tumours were the most common gynaecological cancers in women with mortality rates of 3.3%, 0.9%, and 1.9% respectively.<sup>9</sup>

The mainstay of treatment for the gynaecological cancers is chemotherapy and radiotherapy apart from surgical resection. In a recently concluded study done in Saudi Arabia on 107 women with gynaecological cancers and on treatment, it was found that anaemia was prevalent in 90.7% of the total cases. However, in the above study, they did not classify the anaemia into mild, moderate or severe based on the Haemoglobin values.<sup>17</sup>

## Conclusion

31 among 55 female patients taken up for the study had reached menopause. The prevalence of anaemia in breast and gynaecological malignancies were significantly higher in postmenopausal females compared to premenopausal females and bleeding was most commonly found in gynaecological malignancy, while it was significantly absent in breast carcinoma females. Because of bleeding being significant in the study, microcytic anaemia was the commonest type in the study subjects followed by normocytic anaemia.

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