ISSN: 0975-3583,0976-2833 VOL14, ISSUE5, 2023

Original Research Article

To estimate the prevalence of anaemia in the geriatric population in and around Jabalpur district and to prospectively study the various haematological patterns of anaemia in age group

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Abstract:

Background & Method: The aim of the study is to estimate the prevalence of anaemia in the geriatric population in and around Jabalpur district and to prospectively study the various haematological patterns of anaemia in age group.

Result: The representation of various symptoms shown by the anaemia elderly; being easy fatiguability the most common in around 76%, followed by shortness of breath, palpitation, headache & tinnitus. A small 3% elderly were immobile, bed ridden. 104(84%) elderly had more than one or combination of symptoms while only 20(16%) came up with a single symptom.

Showing etiologic distribution of anaemia elderly. Maximum number of anaemia elderly 28(23%) had Iron deficiency anaemia which had maximum no. due to nutritional deficiency. It was followed by Anaemia of chronic disease with 24(19%), then anaemia of chronic kidney disease in 21(17%). Around 18(14.5%%) had Vitamin B12 and folic acid deficiency was seen in 18 (14.5%) and 13(9.8%%) came up with anaemia of endocrine disorder, in which all were long standing diabetics.10(8.06%) showed haematological disorders while In around 10(8.06%), no specific cause of anaemia could be ascertained.

Conclusion: This study was aimed to search for the fact behind this generalised dictum that senility or old age comes with its varied presentation of anaemia. Symptoms like easy fatiguability, shortness of breath and weakness should not be attributed as just signs of aging and thorough investigations must be planned to identify their actual cause. It was found in my study that a single elderly can present with a single or multiple signs and symptoms of anaemia. In our study we concluded that anaemia in almost each elderly has a definable and treatable cause. Also, the haemoglobin levels must not vary due to age alone in the fit and fine elderly. A cause for the decrease in haemoglobin should always be sought after and anaemia must be typed in every elderly.

According to the data that show rising prevalence of elderly population, it is need of the hour that physicians should give greater attention to diagnose and treat the common causes of anaemia, that may lead to increased morbidity and mortality in this age group. Hence, my prospective study has documented that in most cases of anaemia in elderly there is a treatable cause present and it can be easily cured with early diagnosis and management. On the opposite end, failure to type and diagnose anaemia in early phase may lead to delayed diagnosis of potentially treatable causes and thus increased morbidity and mortality.

Keywords: prevalence, geriatric, haematological & anaemia.

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Study Designed: Observational Study.

1. Introduction

Geriatric anaemia is an important concern globally due to its high prevalence rate and its association with increased morbidity & mortality. Anaemia is defined as reduction in total circulating red cell mass below normal limits; thereby reducing the oxygen carrying capacity of blood leading to tissue hypoxia and decreased functional capacity. Especially, when it comes to the Geriatric population (>=60years of age), these effects are more severe and greatly hamper the quality of life[1].
The prevalence of anaemia according to NHANES III has been found to be 11% in men and 10.2% in women. In contrast to this, data recorded through various studies done in Indian scenario the prevalence rate is 67.09 %in Marathwada region, 68.5%in Karnataka region. A study done in USA has reported prevalence in the range of 8% to 44%, while in Germany the prevalence reported to be 66.3%[2].
The importance of this prospective study on geriatric anaemia becomes more significant especially after the Proclamation by United Nations General Assembly on 14th December, 2020 of declaring (2021-2030) as a UN Decade of healthy Aging (1). This proposal was endorsed by the 73rd World Health Assembly through written silence procedures on 3rd August 2020 and proposed for consideration of the proposal for the Decade by the United Nations General Assembly[3].
WHO predicts that by 2050, the population aged >=60years will be double, while those aged >=80 years will be around 400million. The share of population over the age of 60 is projected to increase from 8 per cent to nearly 20 per cent in 2050[4]. This extension of life span is looked upon as a triumph of medical advances, coming from access to better health facilities, but despite these great efforts, there are hot spots in medical practice where we are unknowingly underestimating the health ailments in aging population[5].

2. Material & Method

This prospective study of 1.5 years duration was conducted in Department of Pathology, NSCB Jabalpur after approval of institutional ethical committee.
Since the objective of this study was to evaluate the prevalence of anaemia in normal elderly population, hence the sampling was done from elderly residents of following old age home of Jabalpur:-

INCLUSION CRITERIA
1. Geriatric people aged (>=60years) irrespective of sex
2. For Haematological study anaemic patients with haemoglobin level <13gm/dl for Male and <12gm/dl for Females [According to WHO criteria]
3. Elderly volunteering to participate in the study and giving written informed consent.
4. Written informed consent was taken from all elderly to be enrolled in study.

EXCLUSION CRITERIA
1. Non anaemic geriatric people

2. Persons with any known haematological disorder.

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3. Person with history of blood transfusion/ Chemotherapy/ Radiotherapy within last 12 weeks.
4. Patient not willing to give consent or participate in the study.
5. Person already taking medication for anaemia or other haematological disorder.

3. Results

TABLE NO. 01: TABULAR REPRESENTATION OF AGE WISE DISTRIBUTION OF ELDERLY IN 3 GROUPS WITH MEAN AGE AND STANDARD DEVIATION

Group	Age group(years)	Frequency	Mean	SD	P-value
	(n=200)		age		
A.	60-69 years	122(61%)	63.88	3.02	F-ratio-
B.	70-79 years	62(31%)	73.45	3.16	384.82819
C.	80 years & above	16(08%)	82.87	3.51	P<0.0001
	Total	**200**	**68.37**		

Shows age wise distribution of elderly who were a part of my study. Out of total 200 elderly, maximum elderly were in age group of 60-69 years around 61%, followed by 31% in 70-79 years age, least in 80 years and above age group round 8%. Youngest elderly was 60 years old and oldest elderly was 91 years old forming the age range of 60 years to 91 years. The mean age in Group A, Group B, Group C was 63.88±3.02, 73.45±3.16 and 82.87 ±3.51 respectively. The f-ratio value is 384.82819.The mean difference is statistically significant with the p-value is <0.00001.

TABLE NO. 02: TABULAR REPRESENTATION OF DISTRIBUTION OF ELDERLY ACCORDING TO GENDER

Sex	Frequency	Percentage
Male	77	38.5%
Female	123	61.5%
Total	**200**	**100 %**

Shows gender wise distribution of elderly who were a part of my study. Female elderly were in majority around 61.5% which was almost double of male elderly around 38.5%. Male:Female ratio was 1:1.59.

TABLE NO. 03: OVERALL PROPORTION OF ANAEMIA MALE AND FEMALE

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	Male	Female	
Anaemia	41(53.2%)	83(67.5%)	p-value=0.0436
Non anaemia	36	40	

Chi square test , significant, p-value 0.0436 at p<.05. Proportion of anaemia males was 53.2% while anaemia females was 67.5%. The Chi square test is statistically significant, p value 0.0436

TABLE NO 4: TABULAR REPRESENTATION OF MOST COMMON PRESENTING COMPLAINS IN THE ANAEMIA ELDERLY

Presenting complains	Percentage
Easy fatiguability	93(75.7%)
Shortness of breath	49(39.8%)
Palpitation	35(29.2%)
Headache	23(18.6%)
Tinnitus	8(6.70%)
Immobility	4(3.00%)

The tabular representation of various symptoms shown by the anaemia elderly; being easy fatiguability the most common in around 76%, followed by shortness of breath, palpitation, headache & tinnitus. A small 3% elderly were immobile, bed ridden.

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TABLE NO. 5: TABULAR REPRESENTATION OF SINGLE VS MULTIPLE COMPLAINS IN ANAEMIA ELDERLY

No. of symptoms in anaemia elderly	**Frequency(N=124)**
Multiple symptoms(Combination of 2/3/4	104(84%)
symptoms)	
Single symptom	20(16%)
Total	124(100%)

104(84%) elderly had more than one or combination of symptoms while only 20(16%) came up with a single symptom.

TABLE NO. 6: TABULAR REPRESENTATION OF COMPARISON OF CLASSIFICATION OF ANAEMIA BASED ON PBS BETWEEN MY AND OTHER SIMILAR STUDIES

	Normocytic	**Microcytic**	**Macrocytic**	**Dimorphic**
	normochromic	**hypochromic**		
Srivastava et al	78.05%	11.60%	6.02%	4.24%
2013				
Pravin et al 2015	78.86%	11.11%	5.96%	4%
Dheeraj sharma et	53.30%	40%	6.60%	0
al 2015				
Munesh et al	19%	42%	13%	26%
2021				
My study 2022	55.00%	23%	14.00%	8%

This is a comparison chart between peripheral blood smear picture of various studies with my study. Except study by Munesh et al, all of them reported normocytic normochromic picture as the most common finding followed by microcytic hypochromic.

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TABLE NO. 7: TABULAR REPRESENTATION OF CLASSIFICATION OF ANAEMIA BASED ON ETIOLOGY

ETIOLOGY	Frequency	Percentage
Iron deficiency anaemia	28	23%
• GIT disorder	7	
• Nutritional	21	
Anaemia of chronic disease	24	19%
• Chronic liver disease	19	
• Chronic infections	4	
• Chronic inflammatory condition	1	
Chronic kidney disease	21	17%
Haematological disorder	10	8.06%
• MDS	1	
• CLL	1	
• CML	2	
• AML	1	
• NHL	4	
• ITP	1	
Folate/Vitamin B12 deficiency	18	14.50%
Anaemia of endocrine disorder	13	9.80%
Not specified/ Multifactorial disease	10	8.06%
Total	124	100%

Showing etiologic distribution of anaemia elderly. Maximum number of anaemia elderly 28(23%) had Iron deficiency anaemia which had maximum no. due to nutritional deficiency. It was followed by Anaemia of chronic disease with 24(19%), then anaemia of chronic kidney disease in 21(17%). Around 18(14.5%%) had Vitamin B12 and folic acid deficiency was seen in 18 (14.5%) and 13(9.8%%) came up with anaemia of endocrine disorder, in which all were long standing diabetics.10(8.06%) showed haematological disorders while In around 10(8.06%), no specific cause of anaemia could be ascertained.

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TABLE NO. 8: TABULAR REPRESENTATION OF COMPARISON OF ETIOLOGICAL CLASSIFICATION OF ANAEMIA BETWEEN MY AND OTHER SIMILAR STUDIES

	Guralnik et al. 2004	Tettamanti et al. 2010	Bhasin et al. 2011	Petrosyan et al. 2012	Dheeraj sharma et al 2015	Munesh et al	My study 2022
Anaemia of chronic disease	33.6	17	27	62.1	22.9	**21**	19
Iron deficiency anaemia	16	16	30	30.5	24.8	**36**	23
Anaemia of chronic kidney disease	12	15	21	17.8	12.4	**11**	17
Anaemia of endocrine disorder	-	-	-	-	0.9	-	9.8
Vitamin B12/Folic acid deficiency	14.3	10	5	38.9	2.9	**19**	14.5
Haematological malignancy	NA	7.4	6	6.3	20	2	8.06
Unexplained/ Multifactorial	24	26	2	8.4	8.6	**11**	8.06

This is a tabular representation of comparison between various studies along with my study.

4. Discussion

In my study, out of total 200 elderly, a total of 124 elderly around (62%) were found to be anaemia using the WHO classification of anaemia. This established the prevalence of anaemia in the elderly residents of Old age homes of Jabalpur to be 62%. In my study, maximum prevalence of anaemia elderly were in age group of 70-79 years around 69.3%, followed by age group of >80[6].

Years around 68.75% and least in age group 60-69years around 57.3%. A chi-square of independence showed that there was no significant association between age group of elderly and their anaemia status; p value is .24176, not significant at $p<0.05$. The results of prevalence of anaemia is in concordance with a study done by Pravin N Soni which showed prevalence of anaemia in elderly to be 67.09%.A similar prevalence was seen by Srivastava et al which found the prevalence of anaemic elderly to be to be 68.5%[7].

In my study the proportion of anaemia males was 53.2% while anaemia females was 67.5%. The Chi square test is statistically significant, p value 0.0436. Also in my study, each group shows anaemia females outnumbering the anaemia males; almost around double. Also, overall anaemia females are double the number of anaemia males in my study. This result is in corroboration to Pravin N Soni et al findings where proportions of anaemia in males was 64.74% and in females 70.58%. Similar result was given by Srivastava et al which showed

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proportion of anaemia females to be 69.8% that is greater than proportion of anaemia males that is 67.6%. While NHANES-IIIstudy has revealed prevalence of anaemia in 11% of men and 10.2% of women aged 65 years and older Another study done by Nissenson AR et al also revealed that prevalence of anaemia in geriatric age group has been 7.5% for males and 20% for females.

In my study, the mean haemoglobin in 60-69 years is 10.41±1.84, in 70-79 years is 10.50±1.78 and 10.81±1.44 in 80 years and above. There was no significant difference between the mean haemoglobin of the 3 age groups, with p-value 0.78*, not significant at $p<0.05$[8].

The mean haemoglobin of the 124 anaemia patients came out to be 10.4 gm/dl ± 1.78gm/dl with haemoglobin in range of 1.9gm/dl to 12.8gm/dl[9]. The mean haematocrit (Hct) value was 35.9±6.18%. In my study we tried to statistically correlate between the haematocrit values and haemoglobin values between the anaemia vs non anaemia elderly. The chi-square statistic is 49.6867. The p-value is <0.00001. The result is highly significant at $p<0.00001$.

Showing etiologic distribution of anaemia elderly. Maximum number of anaemia elderly 28(23%) had Iron deficiency anaemia which had maximum no. due to nutritional deficiency. It was followed by Anaemia of chronic disease with 24(19%), then anaemia of chronic kidney disease in 21(17%). Around 18(14.5%%) had Vitamin B12 and folic acid deficiency was seen in 18 (14.5%) and 13(9.8%%) came up with anaemia of endocrine disorder, in which all were long standing diabetics.10(8.06%) showed haematological disorders while In around 10(8.06%), no specific cause of anaemia could be ascertained.

5. Conclusion

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