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RESEARCH ARTICLE

ASSESSMENT OF KNOWLEDGE, PREVALENCE AND SEVERITY OF ANAEMIA IN TERTIARY CARE HOSPITAL: A CROSS SECTIONAL OBSERVATIONAL STUDY

Pradeep Battula, *Neelambari, A. and Adnan Ahmed Khan, S.

Department of Pharmacy Practice, CES College of Pharmacy, Kurnool, AP, India – 518218

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ABSTRACT

Background: Anaemia is a major public health problem throughout the world with annual prevalence of 400 million. The prevalence rates are higher in developing countries like India especially affecting children, adolescents and women. **Objectives:** The main objective of the study to assess the prevalence, severity of anaemia and also knowledge regarding anaemia among the hospitalised subjects in tertiary care hospital. **Materials and Methods:** A cross sectional observational study was conducted on anaemic patients. Questionnaire and information from subjects was collected based on study criteria in designed proforma, final diagnosis with system of involvement was documented. The data was subjected to descriptive analysis by using Microsoft Excel. **Results:** Out of 350 subjects, 280 cases were diagnosed with anaemia according to haemoglobin levels. Overall prevalence and incidences percentage of anaemia among the subjects found to be 80% and 78% respectively. Mild anaemia was found to be mostly seen in all categories. In view of knowledge, 62% were having poor knowledge regarding anaemia. The overall mean score was 4.99 concerning knowledge. **Conclusion:** The prevalence of anaemia tends to higher in developing countries. There is a higher prevalence and incidences among the subjects were observed. There is a need of awareness progress like health education and seminars should be conducted at regular intervals.

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INTRODUCTION

Anaemia is a common haematological abnormality and is the one of the major health problem in developed and developing countries. The risk of anaemia not only effects the growth and function but also impairs the immune function and cellular response and also increase the susceptibility to infection. Anaemia is also associated with risk of mortality and increased hospitalisation, reduced quality of life and decreased physical function of the body. In infant's iron deficiency anaemia is the leading causes of morbidity and mortality. According to WHO, anaemia was classified into three degree: Mild, Moderate, Severe. Normal values of haemoglobin were 10-11.9 g/dl (Mild), 7.0-9.9 g/dl (Moderate) and <7.0 g/dl (Severe). Globally anaemia affects 1.62 billion people, which corresponds to 24.8% of population (WHO, 1993). It is the indicator of iron deficiency, so it is estimated that the prevalence of iron deficiency is 2.5 times that of anaemia. The estimated prevalence of anaemia in developing countries is 39% in children <5 years, 48% in children 5-14 years, 42% in women 15-59 years, 30% in men 15-59 years and 45% in adults >60years (WHO, 2001 and Zimmermann, 2005).

***Corresponding author: Neelambari, A.**
Department of Pharmacy Practice, CES College of Pharmacy, Kurnool, AP, India – 518218

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According to National Family Health Survey 2005-2006 (NFHS-3), a household survey aimed of having national and state representative data on population health and nutrition, the prevalence of anaemia was 70% in children aged 6-59 months, 55% females aged 15-49 years and 24% in males aged 15-49 years.[4] India facing a serious public health problem, with the prevalence of >40%. Anaemia is also an indicator for the poor nutrition and health with major consequences in the human health as well as for the socio-economic development of the population. This study was aimed to describe the prevalence and severity of anaemia and also knowledge regarding anaemia among the subjects.

MATERIAL AND METHODS

The present study was cross sectional observational study which was conducted in a Super Speciality Hospital; Kurnool for a period of 6 months from August to January. A total 350 subjects were included in this study as per inclusion and exclusion criteria. Our inclusion criteria includes patient who are diagnosed with low haemoglobin levels, Region (rural and urban area), age>18 yrs and either gender is considered. Patient with history of HIV, accidental cases, poisoning cases, pregnancy and lactation condition. Patient who are not willing to participate were excluded from the study.

All the patients were informed about the work and written informed consent was taken from each patient. A special designed proforma was prepared to collect information regarding their demographic data, past medical and medication, family and surgical history, co-morbidities, diagnosis from each subject. The assessment Questionnaire consisted of 21 questions. The score was given as 1 for 'Yes' and 0 for 'No'. The minimum score was 0 and maximum score was 21.The data collected through interview process and lab reports of haemoglobin from case sheet. The data was subjected to descriptive analysis by using Microsoft Excel.

RESULTS

In this study, out of 350 participants 201(57%) were males and 149(43%) were females. All the subject's age group was in between 18 to 90 years. As per the age distribution, more subjects were enrolled in the age group between 41 to 50 years. There were 76(22%) in age group of 41 to 50 years, 73(21%) in age group of 21 to 30 years, 58(17%) in age group of 31 to 40 years, 50(14%) in age group of 51 to 60 years as well as 48(14%) in 61 to 70 years and finally 22(6%) in age group of 71 to 80 years. Only 12(3%) subjects were in the age group of 18 to 20 years and 11(3%) 81 to 90 years. In this study, out of 350 study participations were included among them 102(29%) were rural and 248(71%) were urban. Out of 350 study participants were included among them 238(68%) were literate and 112(32%) were illiterate. And out of 350 study participants were included among them 322(92%) were mixed type (both vegetarian and Non-vegetarians) and 28(8%) were vegetarians. In total 350, 201 study participants were males among them 66(33%) were smokers and 135(67%) were Non-smokers**.** In total 350, 201 study participants were males among them 34(17%) were alcoholic and 167(32%) were Non-alcoholic.

Table 1. Prevalence of severity of anaemia

Severity Type	No of Subjects
Normal	70 (20%)
Mild	168 (48%)
Moderate	89 (25%)
Severity	23 (7%)
Total	350 (100%)

Table 2. Subjects knowledge regarding anaemia

Knowledge Score	No. of Subjects
Poor(0-5)	215 (62%)
Average(6-10)	59 (17%)
Good(11-15)	61 (17%)
Excellent(16-21)	15 (4%)
Total	350 (100%)

In this study, 275 study participants were tested for blood grouping among them 102(37%) were belongs to O +ve blood group, 86(31%) were belongs to A +ve blood group, 34(12%) were belongs to B+ve blood group, 18(7%) were belongs to AB- ve blood group, 16(6%) were belongs to AB+ ve blood group , 8(3%) were belongs to A-ve blood group , 6(2%) were belongs to O-ve blood group and 5(2%) were belongs to B-ve blood group. out of 350 study participants 97(28%) were house-wives, 50 (14%) were workers ,46(13%) were job holders, 37(11%) were No jobs ,33(9%) were business ,30(9%) were farmers, 29(8%) were students,16(5%) were teachers and 12 (3%)were drivers. Out of 350 study participants 91(62%) having single morbidities diseases, 45(31%) having double morbidities diseases and 10(7%) having multi co-morbidities. In this study, the major system of illness was ascertained based on the final diagnosis written in records. Majority of the subjects are had infectious diseases followed by blood disorders and cardiovascular diseases.131 (37%) of them had infectious disease. 59(17%) of them had blood disorders. 45(13%) of them had cardiovascular disease.

Table 3. Highest score, overall Mean, Mean %and SD knowledge regarding anaemia among subjects

Knowledge score	Highest score	Mean	Mean%	SD
Overall valve	21	4.99	23.76	5.74

Gastrointestinal, CNS, renal, respiratory, others, hormonal disease and cancers were 30(8%), 27(8%), 20(6%), 13(4%), 8(2%) and 4(1%) respectively. In 350 study participants 280(80%) were anaemic and 70 (20%) were Non-anaemic. It was found that 148(73.6%) males were anaemic and 32(21.4%) females were anaemic. out of 201 males 103(51.2%) had mild anaemia, 39(19.4%) had moderate anaemia, 6(3%) had severe anaemia and 53(26.4%) were with normal haemoglobin. Out of 149 females 65(43.6%) had mild anaemia, 50(33.6%) had moderate anaemia, 17 (11.4%) had severe anaemia and 17(11.4%) were with normal haemoglobin. In 350 study subjects – In age group of 41 to 50 years , 35(46%) subjects had mild anaemia ,16(21.1%) subjects had moderate anaemia,7(9.2 %) had severe anaemia and 18(23.7%) had normal haemoglobin.. In age group of 81 to 90 years, 4(36.4%) subjects had mild anaemia, 4(36.4 %) subjects had moderate anaemia, 1(9.1 %) had severe anaemia and 2(18.1%) had normal haemoglobin. In our study, It was found that 88(86.2%) rural were anaemic and 192(77.4%) were anaemic. out of 102 rural 41(40.2%) had mid anaemia, 39(38.2%) had moderate, 8 (7.8%) had severe anaemia and 14(13.7%) had normal haemoglobin. Out of 248 urban 127 (51.2%) had mild anaemia, 50(20.2%) had moderate anaemia , 15(6 %) had severe anaemia and 56(22.6%) had normal haemoglobin. In this study, it was found that 176(73.9%) literate were anaemic and 104(92 %) illiterate were anaemic. out of 238 literate - 116(48.7%) had mild anaemia, 49(20.6%) had moderate anaemia, 11(4.6%) had severe anaemia and 62 (26.1%) are with normal haemoglobin. Out of 112 illiterate, 52(44.4%) had mild anaemia, 40 (35.7%) had moderate anaemia, 12(10.7%) had severe anaemia and 8(7.1%) were with normal haemoglobin. In our study, it was found that 255(79.2%) mixed subjects were anaemic and 25(89.2 %) vegetarians were anaemic. out of 322 subjects - 155(48.1%) had mild anaemia, 80 (24.8%) had moderate anaemia, 20(6.2 %) had severe anaemia and 67(20.8%) were with normal haemoglobin. Out of 28 vegetarians -13(46.4%) had mild anaemia, 9(32.1%) had moderate anaemia, 3(10.7%) had severe anaemia and 3(10.7 %) were with normal haemoglobin. In our present study, it was found that 50(75.7%) smokers were anaemic and 98(72.6%) Non-smokers were anaemic. Out of 66 smokers - 37(56.1%) had mild anaemia, 11 (16.7%) had moderate anaemia, 2(3%) had severe anaemia and 16(24.2%) are with normal haemoglobin. Out of 135 Non-smokers- 66(48.9%) had mild anaemia, 28(20.7%) had moderate anaemia, 4(3 %) had severe anaemia and 37(27.4%) are with normal haemoglobin. In this study, it was found that 24(70.6 %) alcoholic were anaemic and 124(74.2%) Non-alcoholic were anaemic. Out of 34 alcoholic 13(38.2%) had mild anaemia, 8(23.5%) had moderate anaemia, 3(8.8%) had severe anaemia and 10(29.4%) were with normal haemoglobin.

Table 4. Association between grades of anaemia and other variables

S. No	Variables	Total No Of Cases (N=350)	Anaemic				Non Anaemic	Prevalence (%)
			Mild	Moderate	Severe	Total		
1	Gender							
	Males	201	103	39	6	148	53	42.28
	Females	149	65	50	17	132	17	37.71
2	Age							
	18-20	12	2	4	3	9	3	2.57
	21-30	73	35	14	0	49	24	14
	31-40	58	33	7	4	44	14	12.57
	41-50	76	35	16	7	58	18	16.57
	51-60	50	27	17	1	45	5	12.85
	61-70	48	25	16	3	48	4	13.71
	71-80	22	7	11	4	22	0	6.28
	81-90	11	4	4	1	9	2	2.57
3	Residence							
	Rural	102	41	39	8	88	14	25.14
	Urban	248	127	50	15	192	56	54.85
4	Education							
	Literate	112	116	49	11	176	62	50.28
	Illiterate	238	52	40	12	104	8	29.71
5	Diet type							
	Mixed	322	155	80	20	255	67	72.85
	Vegetarian	28	13	9	3	25	3	7.14
6	Smoking status	(n=201)						
	Yes	66	37	11	2	50	16	24.87
	No	135	66	28	4	98	37	67.16
7	Alcoholic use	(n=201)						
	Yes	34	13	8	3	24	10	9.71
	no	167	90	31	3	124	43	47.71
8	occupation							
	Jobs	46	22	6	3	31	15	8.85
	Teachers	16	6	6	0	12	4	3.42
	Drivers	12	7	0	0	7	5	2
	Farmers	30	11	12	4	27	3	7.71
	House-wives	97	44	35	11	90	7	25.71
	Workers	50	28	6	1	35	15	10
	Students	29	12	6	3	21	8	6
	Business	33	19	6	0	25	8	7.14
	No Jobs	37	19	12	1	32	5	9.14
9	Blood grouping	(n=275)						
	A+ve	86	39	21	4	64	22	23.27
	A-ve	8	7	0	0	7	1	2.54
	B+ve	34	15	8	7	30	4	10.90
	B-ve	5	3	2	0	5	0	1.81
	AB+ve	16	7	4	2	13	3	4.72
	AB-ve	18	9	3	1	13	5	4.72
	O+ve	102	55	2	4	80	22	29.09
	O-ve	6	2	1	0	3	3	1.09
10.	Co-morbidities	(n=146)						
	Single	91	47	30	2	79	12	54.10
	Double	45	23	12	6	41	4	28.08
	multi	10	4	4	1	9	1	6.16
11.	System of illness							
	Respiratory	13	6	5	1	12	1	3.4
	GI	30	17	7	1	25	5	7.1
	Infectious	131	61	24	7	92	39	26.3
	CNS	27	13	9	2	24	3	6.9
	Cardiovascular	45	28	11	0	39	6	11.1
	Renal	20	3	11	5	19	1	5.4
	Hormonal	8	3	3	1	7	1	2
	Blood	59	29	13	6	48	11	13.7
	Cancer	4	1	2	0	3	1	0.85
	Others	13	7	4	0	11	2	3.14

Out of 167 Non-alcoholic- 90(53.9%) had mild anaemia, 31(18.6%) had moderate anaemia, 3(1.8%) had severe anaemia and 43(25.7%) were with normal haemoglobin. In our present study, it was found that the subject who are having O +ve blood grouping have mild degree of anaemia when compared to other blood groups. In our present study, it was found that house-wives have high degree of mild anaemia when compared to other working fields. In our present study, it was found that the subjects who are having single co- morbidities have high mild degree of anaemia compared to double and multi-co-morbidities.

In our present study, it was found that the subjects who are admitted due to infectious diseases have high degree of mild anaemia when compared to respiratory, gastro, CNS, renal, hormonal, blood disorders, cancers and other diseases. All the information which was given in Table 4. The Prevalence of anaemia was found to be 80% [280/350×100] where as incidence of anaemia was found to be78% [274/350×100]. The prevalence of mild anaemia was 48%, moderate anaemia was 25% and severe anaemia was 7%. Only 20 % subjects were normal as shown in Table 1. Regarding the knowledge assessment more than half of the subjects had poor knowledge

regarding anaemia, 17% had average and good knowledge. Only 4%subjects had excellent knowledge regarding anaemia as show in Table 2. Overall mean knowledge score was 4.99±5.74 with highest score of 21 as shown in Table 3.

DISCUSSION

Anaemia is the one of the most under diagnosed condition, if it is left untreated can have many serious complications like cardiovascular diseases and compromised immune function. Anaemia is common in all age groups especially in children, pregnancy, women who are at reproductive age and also due to chronic disease like diabetes mellitus, infectious disease, cancer, renal diseases etc. Anaemia is an indicator of poor nutrition and poor health with major consequence of health as well as for the social and economic development of population (WHO, 2011). Anaemia is associated with increases mortality risk and the treatment appears to improve survival, decreases the hospital admission, reduces functional impairment and increases the quality of life. It is based on the WHO criteria that the country where the prevalence is more than 40% is considered as severe category of public health importance whereas in many developed countries like Australia, Canada and most of the European countries the incidences is less than 15%. The incidences is alarmingly high in some African countries with more than 70% (The Global Prevalence of Anaemia, 2016). The recent report of NFHS-4 (National family health survey 4, 2015, 2016) shows it is still high in India. Overall prevalence and incidence of among the study participants was found to be 80% and 78% and mostly the subjects were falling under the mild category of anaemia. As per knowledge, about 62% of subjects having poor knowledge. In our study, we found that out of 350 subjects, 280 subjects were diagnosed with anaemia. Thus, the prevalence of mild anaemia was significantly high (48%) and it was attributed due to environmental factors, nutritional and socioeconomic factors. In our study the proportions of mild, moderate and severe anaemia was 48%, 25.42%, 6.57% respectively.

In our study the prevalence of severe anaemia was significantly low and the prevalence of anaemia was 80%. When compared to Nasina Queshi et al., the prevalence of anaemia was 43.48% (Nasrin, 2015). So, in our study the prevalence was more when compared to the Nasina Queshi et al., A significant greater proportion males were reported anaemia more than the females. On comparison with the Sanjay Kumar Gupta et al., had conclude that anaemia was common in females than males (Gupta, 2014). In our present study, as per age distribution more than half the subjects were mild anaemia was found higher in age group of 41-50 years (16.57%) when compared to other age groups. A similar study conducted by Sathya P et al., reported that the moderate and severe anaemia was found to be higher in age groups between 21-40 years (Sathya, 2017). In our present study, the prevalence of anaemia was more in urban (54.85%) when compared to rural (25.14 %) area and also prevalence of anaemia was more in literates (50.28%) when compared to an illiterate (29.7%) that to mild anaemia was common in both residences wise and education levels. It shows that, life style modifications, socio-economic factors and other conditions may causes higher prevalence in urbans and literates. In our present study, the prevalence of anaemia was more in Non-smokers (67.16%) when compared to smokers (24.87%). And also prevalence of anaemia was more in the subjects who are not taking alcohol (47.71%) compared to the subjects who are taking alcohol (9.71%). Mild anaemia was most commonly seen. In Non smokers and non- alcoholics we observed that minimal level of anaemia that is may be due to the collection and availability of the data. In our present study anaemia was common in subjects who are taking both vegetarian and Non-vegetarian (mixed) (72.85%) when compared to the subjects who are taking only vegetarian (7.14%). It is mainly due to the lack of intake of iron and poor bioavailability of dietary iron which was derived from both animal (liver, fish, sea foods, poultry) and plant (grains, beans, vegetables, dried fruits and seeds) sources. In Kamal Mahajani et al., they conclude that prevalence of anaemia was high in vegetarian when compared to non-vegetarians.[10] In our present study, the prevalence s of anaemia was more in subjects who are having O+ve (29.09) blood group when compared to other blood groups. Because number of cases were more of O+ve blood group. A similar study conducted by the Vermapratima et al., reported that anaemia was seen in O blood group (Verma Pratima, 2012). In our present study, the prevalence of anaemia was more in house-wives (25.71%) when compared to other fields, especially mild anaemia was seen. A study conducted by the Sathya P et al., reported that around half of house-wives were moderately anaemic (Sathya, 2017). The prevalence of anaemia was more in the subjects who are suffering from single co-morbidities (54.1%) when compared to double (28.08%) and multi (6.16%) co-morbidities respectively as we observed in the study. Anaemia and infectious diseases are the major health burden in developing countries. In infectious diseases, the protein factor hepcidin which is synthesized and released interferes with the bioavailability of iron (Shaw, 2011 and Kim, 1999). In our present study, out of 350 cases, 131 (37%) subjects were admitted in the hospital due to infectious diseases, among them 92 (70.2%) subjects were anaemic. In a study done by Herbert J et al., concluded that T-cell immunity is slightly impaired in iron deficiency and these changes can be corrected by oral iron supplements (Krantman, 1960 and Ekiz, 2005). As per knowledge part concerned, about 62 % of subjects were having poor knowledge regarding anaemia and overall means score was 4.99. On comparison with Mamta, L Tamphasana Devi et al., reported that 52.5% of subjects were having average knowledge, the overall mean score was 6.92 (Mamta, 2014). Awareness programs should be done at regular basis Health education, seminars and CPE should be conducted at regular intervals. The limitation of the Study lacks detailed investigation of the morphological appearances of RBC to differentiate anaemia. We did not observer an increase in haemoglobin concentration in subjects during study period due limited follow-up. Further new investigation studies are needed for aetiology of anaemia among the subjects.

Conclusion

Anaemia is the most common disease condition but merely ignored in the developed and developing countries. Our study highlights the fact that there was a higher prevalence (80%) and incidence (78%) of anaemia. Mild anaemia was common in all categories. Most of the subjects have poor knowledge regarding the anaemia. It indicates that awareness programmes needed to educate the subject. The clinical pharmacist play a key role in creating awareness and to spread the knowledge related to prevention and control of anaemia.

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