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A case study of Human iron deficiency Anaemia in different age groups from Ujjain (M.P.) India

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Abstract

Iron deficiency Anaemia is the most common case of nutritional Anaemia worldwide and is a public health problem in developing countries; characterized by abnormal red cell count (MCV, MCHC). Iron deficiency Anaemia associated with fatigue, skin paleness, weakness etc. The aim of the study is to determine the risk factors for iron deficiency Anaemia among population of Ujjain district (M.P.). Both male and female iron deficient patients were studied from the SS hospital and CHL applo hospitals during Jan. 2012 to Dec. 2012. A group of 6828 patients were studied for iron deficiency Anaemia in different age groups. A total of 4549 female and 2279 males were studied. Information was collected about sex, socioeconomic level. It is inferred that the percentage of anaemia is more in women compared to men.

Key words : Iron deficiency, human, Ujjain, age group.

Introduction :

Iron deficiency (ID) is the most common cause of nutritional Anaemia worldwide and is a public health problem in developing countries (Mohammad i1yas and Mohmoood Qureshi , 2012). Iron deficiency anaemia is a global health concern affecting children, women and the elderly, whilst also being a common comorbidity in multiple medicalconditions.[10] The number are staggering, 2 billion people of the world's population are anemic due to iron deficiency. A lack of the mineral iron in diet is the most common cause of Anaemia. The formation of red blood cells and hemoglobin requires iron. Without enough iron red blood cells may be too small, and their number insufficient. Easily absorbed form of iron called "Heme iron" from many animal proteins such as beef, turkey, tuna, pork, chicken, seafood and eggs. Iron deficiency Anaemia will be prevented by adequate dietary

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intake of iron such as green leafy vegetables, spinach, coriander leaves, drumsticks leaves, radish leaves, vegetables such as a beet root, drumstick, cereals like ragi, barley, rice (raw milled), legumes like gram dhal, soya bean, nuts and oil seeds vegetarian foods such as beans dark green leafy vegetables. Consuming vitamin c along with iron however, enhances its absorption. In the absence of the required blood iron concentration, blood cannot carry oxygen effectively and normal functioning of every cell in the body will be affected. Because of the recycling of iron, only a small amount of iron is needed by the body.

Material and Methods

In the present study of iron deficiency Aneamic patients was done in the R.D. Gaardi Medical College Ujjain and in SS and CHL hospitals, in Ujjain (MP). India. Experiment was done by taking blood from patients for estimating Hb. and R.B.cs. (MCV, MCHC) was measured by C.B.C. method. A group of 6828 patients were studied for iron deficiency Anaemia in different age groups. A total of 4549 female and 2279 males were studied. Information was collected about, socioeconomic level.

Sample preparation: Blood samples were collected by finger stick. The finger end lightly pressed using a rocking motion to stimulate blood flow. Two or three drops of the blood is collected directly in to the cuvettes. Results were recorded by automated analyzers using complete blood counter method.[4].

Statistical analysis : Probabilities of significant differences in the mean of Anaemia patients from different survey reports were determined according to student's t- test confidence limit were set at P= <.001 **.**

Result :

The present study done in exclusive hospitals; R.D. Gardi Medical College, 'CHL Apollo' and 'ss hospital' in 'Local Human population' in Ujjain M.P. India, during Jan. 2012-to Dec. 2012 years. Data were collected for different age groups, sex R.B.Cs. etc. A complete data set in 'Local Human population, categorized in; children [1-10], teenager age [11-20], younger age [21-30], [31-40], pre older [41-50], older age [51-60] and oldest age [61-70], [71-80] years. The commonest age group affected by iron deficiency Anaemia was found from 21-30 age years (table -1). And next higher cases are found in children of 1-10 yrs age group. Iron deficiency Anaemia prevalence was lower in boys than girls. In Socio-demographic profile of male & female iron deficiency Anaemia ; in Ujjain MP India, Jan.2012 to Dec.2012, show Socio-demographic factors classified into three groups. (A) Socio-economic status. (B) Religion. (C) Rural and Urban population.

(A) ***Socio-economic status :*** divided into four classes- I richest, II richer, III middle, and IV poorer, the highly significant class III is middle and the total no. of patients was 1867. Table-3

(b) ***Category :*** belongs to two groups Urban and Rural population, the no. of iron deficiency Anaeamia among **Rural area were: 4927 i.e. 72%** and **Urban area were: 1895 i.e. 27.75%** Fig. -4.

(c) *Religion :* main Indian religions are; I among Hindus total iron deficient Anaemic patients were: 3902, II among Muslim: 1684 and III among others: 1233, out of total 6828 iron deficiency Anaemia . iron deficiency Anaemia in religious groups are highly significant in female than in male Fig.- 5.

Table 1. Reveals the Anaemic condition in male patients, based upon R.B.cs count in different age groups, year, 2012 in Ujjain district

Age group	MCV	MCHC	Total
1-10	179	166	345
11-20	146	157	303
21-30	355	415	770
31-40	113	125	238
41-50	89	103	192
51-60	77	88	165
61-70	65	78	143
71-80	55	68	123
TOTAL	1079	1200	2279

Table- 2 Reveals the iron deficiency Anaemic condition in female patients, based upon R.B.cs count; also shows female vs. male P Values, in different age groups ,during year 2012 in Ujjain district.
(MCV normal value female 90 fl (femtoliter) male normal value 80 fl)
(MCHC normal value female 30-34gHb/100 ml, male 30-34 g Hb /100ml)

Age group	MCV Mean corpuscular volume	MCHC Mean corpuscular haemoglobin concentration	Total	female vs. male p values
1-10	455	468	923	p>0.001
11-20	335	415	750	p>0.001
21-30	632	753	1385	p>0.001
31-40	115	315	430	p>0.001
41-50	173	203	376	p>0.001
51-60	165	175	340	p>0.001
61-70	86	110	196	p>0.01
71-80	72	77	149	p>0.01
Total	2033	2096	4549	p>0.001

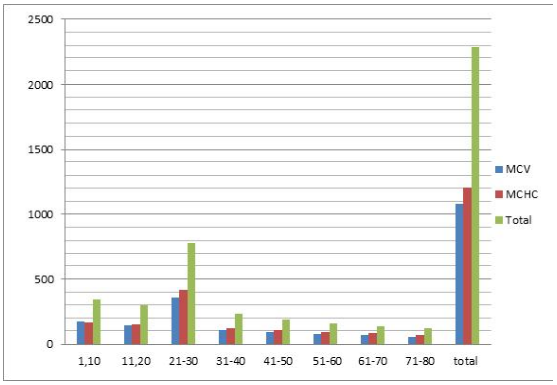


Fig. 1 the data of male iron deficient Anaemic patients, in different age groups in the year 2012.

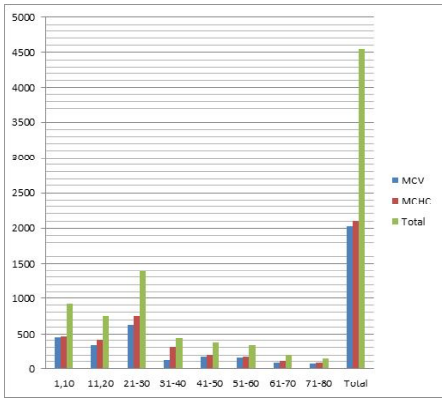


Fig. 2 the data of female iron deficient Anaemic patients, in different age groups in the year 2012

Table-3. Shows Socio-demographic; a) socioeconomic status b) rural and urban population c) religions profile in "Local Human population" of iron deficient Anaemic patients; in Ujjain MP India, during years Jan 2012 to Dec 2012 .

a) Socioeconomic status

Variables Socioeconomic status	male	female	female vs. male p values
class -1	350	735	P>0.01
class-2	435	860	P>0.001
class-3	869	1867	P>0.001
class-4	625	1135	P>0.001
Total	2279	4597	P>0.001

b) Rural and urban population

Variables	male	female	female vs. male p values
Rural	1482	3445	P >0.001
Urban	791	1104	P >0.001
Total	2279	4549	P >0.001

c) Religions

Variables	male	female	female vs. male p values
Hindus	1035	2876	P >0.001
Muslims	738	946	P >0.01
Others	506	727	P >0.01
Total	2279	4549	P >0.001

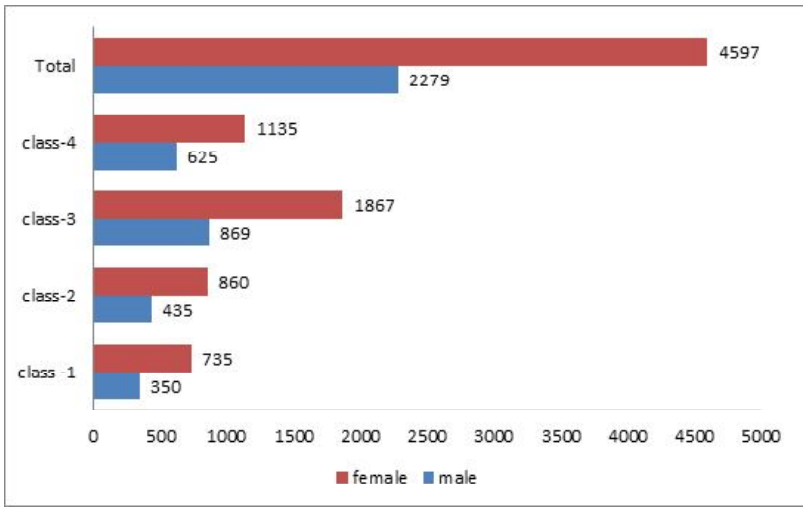
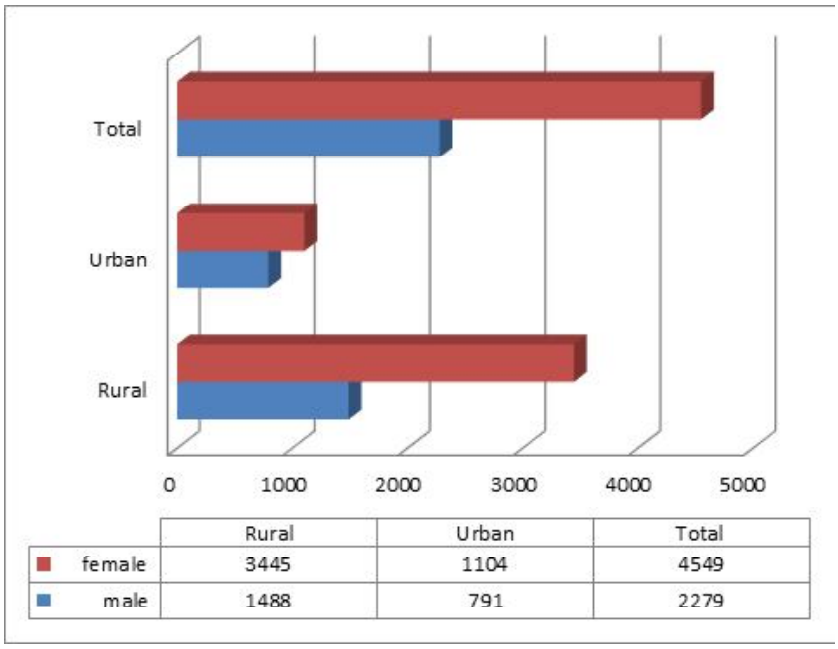
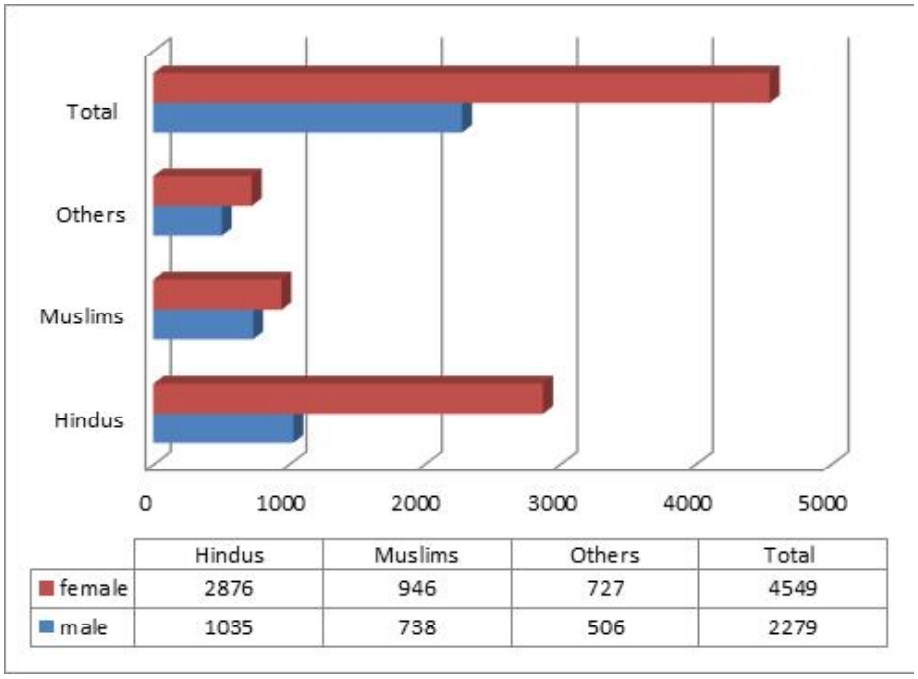


Fig. 3 Shows comparative male Vs female iron deficiency Aneamic patients in socio economic status; class-I, class-II, class-III, class-IV, in Ujjain district, years 2012.



	Rural	Urban	Total
female	3445	1104	4549
male	1488	791	2279

Fig. 4 shows comparative male Vs female Aneamic patients in rural and urban area in Ujjain district, during year 2012.



	Hindus	Muslims	Others	Total
female	2876	946	727	4549
male	1035	738	506	2279

Fig. 5 Shows comparative male Vs female iron deficient Anaemic patients in religion groups; Hindus, Muslims and Others in Ujjain district, since 2012

Discussion

W.H.O.[8] considered that, Iron deficiency is the most common single cause of Anaemia worldwide, accounting for about half of all Anaemia cases. It is more common in women than in men. Three stages of iron deficiency are (a) First stage characterized by decreased storage of iron without any other detectable abnormalities. (b) An intermediate stage of "latent iron deficiency", that is, iron stores are exhausted, but Anaemia has not occurred yet. Its recognition depends upon measurement of "serum ferritin" levels. "This stage is the most widely prevalent stage in India "and (c) The third stage is that of "overt iron deficiency" when there is a decrease in the concentration of circulating hemoglobin due to impaired hemoglobin synthesis[6].

There was significant difference in anemia Prevalence between women and men (P>0.001). i. Among the various causes of Anaemia, "nutritional deficiencies" are believed to be of foremost importance, and worldwide, most common being" iron deficiency. ii. We are facing the major problem of "high population growth" in Ujjain, India like in other developing countries. Resources are inadequate which badly affect the socio-economic development of the country as a whole. iii. Low literacy rate, poor hygiene, and limited health care are the key problems leading to a variety of nutritional deficiencies. The problem is of more serious concern and magnitude in 'infants' and 'children'.

WHO reported that around the world, IDA is most effective in children and women especially in nonindustrial zed countries, IDA associated with dietary factor such as low consumption of red meat, vegetables, cereals and fruits (Golan *et al*., 1998).

Iron deficiency was one of the major public health concern in preschool children and pregnant women in the developing countries[7] According to third national health and nutrition survey USA 1988 to 1994 reported that iron deficiency is higher among children those belong to poverty level; iron deficiency Anaemia is mainly problem for poor class as majority of the patients belong to very low socioeconomic status (Mohmad illyas Mohmoood Qureshi *et al*., 2012). In India the prevalence of Iron deficiency anemia in children (6-59 months) is reported as56% , most common due to nutritional iron deficiency.[11]. ID prevalence was higher in 1- to 4-y-old children (31.9%; 95% CI: 31.0%,32.8%) and adolescent girls (30.4%; 95% CI: 29.3%, 31.5%) but lower in adolescent boys and 5-to 9-y-old children (11%-15%). (Bharati Kulkarni 1, Rajini Peter *et.al* 2021).

Kumar Dharmender[5] reported that iron deficiency anemia is serious health problem in school going children. In his study shows high prevalence of iron deficiency anemia (31.6%) in adolescent school going children of district Srinagar in Kashmir valley. Iron deficiency Anaemia is widely prevalent amongst women and children in India. Goyle *et al*.[3].

Present study was done among the "Ujjain hospitals. Out of 6828 iron deficient patients, 4549 were females and 2279 were males; and their percentage 66.67% and 33% respectively.IDA was found to be much more common among females than males, especially in the 21-30 age groups.

During the present study socioeconomic status includes: urban/rural areas, religion, and economic status. Iron deficiency Anaemia cases were about 55% more in both male and female rural population in comparison to urban population.

Conclusion :

The survey was carried out from Nov.2010 to Jan. 2011. A complete data set of age group: - (0-10; 11-

20; 21- 30; 31-40; 41-50; 51-60; 61-70; 71-80) was studied. The percentage of anaemia is more in women compared to men. In all of 500women were studied, mild anaemic are 156, moderate anaemic are 226, severe anaemic are 118. The commonest age group affected by anaemia was found from 21-30.

Scope of future: - Anaemia in human being is grooving fast in India and also in Ujjain district, for so many reasons, therefore the present study provides important data, to the Govt. and other agencies so as to control this problem in future in India and also launch some special program to prevent Anaemia.

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