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# Statistics on Prevalence of Anaemia in Adults with Respect to Age, Gender and Religion : A Study of Jammu city

KEYWORDS: Prevalence, Adult, Anaemia Morbidity and Mortality

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**ABSTRACT** *The present study was designed to assess the prevalence of anaemia according to age, gender and Religion among the apparently healthy adults of Jammu city. The young population, both males and females with age group 20-50 years from Jammu city, were studied for the prevalence of anaemia. The prevalence of anaemia in young females in the present study was 49.23% mild, 20% moderate and 1.15% severe anemia cases were included. Females were observed more in moderate and severe anaemia cases in the age group of 20-29 years which may be due to sedentary activities, poor dietary intake and reproductive problems than the females in the age group of 30-39 years.. The male respondents were having better in haemoglobin profile than the females. Large population studies are needed to find out the cause and the type of anaemia along with other risk factors in all the age group irrespective of sex. In fact anaemia is a basic predictor of many diseases, therefore larger study should be conducted to know the actual prevalence of anaemia at national level.*

**1. Introduction :**

India is facing a grave public health problem, with the prevalence of anaemia in India being > 40%. Anaemia is an indicator of poor nutrition and poor health with major consequences for the human health, as well as for the social and economic development of a population. Anaemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. It occurs at all stages of the life cycle, but is more prevalent in pregnant women, adolescents and young children. In 2002, iron deficiency anaemia (IDA) was considered to be among the most important contributing factors to the global burden of disease (World Health Organization 2002). It is generally assumed that 50% of the cases of anaemia are due to iron deficiency, but the proportion may vary among population groups and in different areas according to the local conditions [WHO 2001]. The main risk factors for IDA include a low intake of iron, poor absorption of iron from diets high in phytate or phenolic Compounds and compounds, and period of life when iron requirements are especially high (i.e. growth and pregnancy). Among the other causes of Anaemia, heavy blood loss as a result of menstruation, or parasite infections such as hookworms, ascaris, and schistosomiasis can lower blood haemoglobin (Hb) concentrations. Acute and chronic infections, including malaria, cancer, tuberculosis, and HIV can also lower blood Hb concentrations. The presence of other micronutrient deficiencies, including vitamins A and B12, folate, riboflavin, and copper can increase the risk of anaemia. Furthermore, the impact of haemoglobinopathies on anaemia prevalence needs to be considered within some populations. Anaemia is an indicator of both poor nutrition and poor health. The most dramatic health effects of anaemia, i.e., increased risk of maternal and child mortality due to severe anaemia, have been well documented [WHO 2002; Scholl et.al 1994 and Bothwell 1981].

In the adult population, anaemia is a risk factor for cardiovascular health and early death. In addition, it also causes fatigue and leads to negative impact on cognitive and physical functions as well as on the quality of life [ Gabrilove 2005]. Most of the existing studies point out that anaemia among women causes increased risk of low birth weight, inadequate iron stores for the newborn, higher risk of maternal morbidity and mortality as well as a decline in mental concentration and physical activity [Gillespie& Johnson 1998 and Tojata et.al 2006]. Although it was believed that a decline in haemoglobin levels might be a normal consequence of ageing, evidence has accumulated that anaemia does reflect poor health and increased vulnerability to adverse outcomes in older persons [Guralink et.al 2004]. As the elderly population is rising, the prevalence of anaemia is also expected to rise sharply in the future. Prevalence of anaemia in South Asia is among the highest in the world, reflecting overall high rates of malnutrition [Vendt et al 2007].

World Health Organization (WHO) definitions for Anaemia differ by age, sex, and pregnancy status as follows: for children 6 months to 5 years of age Anaemia is defined as a Hb level < 11g/dL, children 5–11 years of age Hb < 11.5 g/dL, adults males Hb < 13 g/dL; non-pregnant females Hb < 12g/dL, and pregnant females Hb < 11g/dL [WHO, 2001]. Severe Anaemia is defined as Hb < 7.0 g/dL [WHO, 2001]. Because iron deficiency Anaemia is the leading cause of Anaemia in the developing world, Anaemia and iron deficiency Anaemia are often used interchangeably. There are, however, mild-to-moderate forms of iron deficiency in which the host is not yet anemic, but tissues are functionally iron deficient [Bruner et.al, 1996]. In addition, although iron deficiency accounts for most of the Anaemia that occurs in underprivileged environments, multiple other causes exist independently or coexistent with this micronutrient deficiency.

**2. Materials and Methods:**

**Study Design:**

This is study, conducted in Jammu city with age between 20-50 years. It included 600 (six hundred) individuals from the community by random numbers for blood sampling. A structured Performa was filled by each subject to collect the information regarding their personal, family, medical, as well as dietary history. Hemoglobin estimation of all sample individual was done by sahlis method with the help of technicians. Anaemia was defined as the hemoglobin of less than 13 g/dl in males and less than 12 g/dl in females [MHFW 1998 AND Seshadri 1999]. Mild Anae-

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mia was defined as hemoglobin level of 10-12.9 g/dL in males and 10-11.9 g/dL in females, moderate Anaemia was defined as hemoglobin level of 7-9.9 g/dL and severe Anaemia was defined as hemoglobin level of less than 7g/dL both among males and females respectively [Malhotra et.al 1998]. The patient's Hb level was compared with age-based norms to diagnose Anaemia.

**Statistical analysis:**
The statistical analysis was performed using different statistical softwares namely SISTAT, SPSS and STATISTICA for appropriate results. Results are expressed as the Chi square, mean and percentages. A value of P<0.0001 was considered to be statistically significant.

**3. Result:**
The prevalence of anaemia in adult male and females in the age group of 20-50 years (n-600) with respect to the gender and age in Jammu city has been presented in (Table-1 & 2). The prevalence of anaemia in young females in the present study was 49.23% mild, 20% moderate and 1.15% severe anaemia cases were included. Females were observed more in moderate and severe anaemia cases in the age group of 20-29 years may be due to sedentary activities, poor dietary intake and reproductive problems than the females in the age group of 30-39 years. The male respondents were having better in haemoglobin profile than the females.

**Table- 1: Number and percentage prevalence of Anaemia (g/dl) among male and female**

| Hb (g/dl) | Hb of >12gm% | Hb of <12gm% | | | $\chi 2$ |
|---|---|---|---|---|---|
| (N=600) | | Mild | Moderate | Severe | |
| Female(N=260) | 76(29.23) | 128(49.23) | 53(20) | 3(1.15) | 16.46* |
| Male(N=340) | 160(47.05) | 117(34.41) | 60(17.64) | 3(0.88) | |

**Mild=11.9-10 in Female, 12.9-10 in male, Moderate=9.9-7 in both, Severe=<7 in both, df=1, * significant at 0.01, p <0.005**

**Table- 2: Prevalence of Anaemia in male and female according to age group**

| Hb (g/dl)in | Hb of >12gm% | Hb of <12gm% | | | $\chi 2$ |
|---|---|---|---|---|---|
| Female Age group (N=260) | | Mild | Moderate | Severe | |
| 20-29 | 30(11.53) | 20(7.69) | 30(11.53) | 25(9.61) | 17.42* |
| 30-39 | 22(8.46) | 30(11.53) | 28(10.76) | 4(1.53) | |
| 40-50 | 36(13.53) | 24(9.39) | 11(4.14) | 0 | |
| Males Age Group (N= 340) | | | | | |
| 20-29 | 18(5.29) | 65(19.11) | 21(6.12) | 2(0.58) | 21.95* |
| 30-39 | 71(20.88) | 42(12.24) | 28(8.23) | 0 | |
| 40-50 | 50(14.70) | 31(9.11) | 12(3.49) | 0 | |

**df=1, * significant at 0.01, p <0.005**

**Table-3: correlates and prevalence of Anaemia with education and religion**

| Educational status | No of cases (N=600) | Anaemic cases | Non Anaemic cases | $\chi 2$ |
|---|---|---|---|---|
| Illiterate | 50(8.33) | 37 | 13 | 132.4* |
| Just literate | 53(8.83) | 41 | 12 | |
| Primary | 80(13.33) | 57 | 23 | |
| Middle | 95(15.83) | 78 | 17 | |
| High School | 89(14.83) | 41 | 48 | |
| Sr.secondary | 120(20.0) | 36 | 84 | |
| Graduation | 113(18.83) | 24 | 89 | |
| Educational status | No of cases (N=600) | Anaemic cases | Non Anaemic cases | $\chi 2$ |
| Religion | | | | |
| Hindu | 139(39.24) | 37 | 6.08 | 18.12* |
| Muslim | 183(30.05) | 57 | 9.36 | |
| Christian | 50(8.21) | 78 | 12.81 | |
| Sikh | 90(14.78) | 41 | 6.73 | |
| Jain | 138(35.72) | 36 | 5.91 | |

The prevalence of Anaemia also showed significant association with religion among sample group. 139(39.24%) were Hindu , Muslims 183 (30.05%), Christians 50(8.33%), Shikh 90 (14.78 %) and Jains 138 (35.72%). Almost equal number of sample were anaemic in Jains and Hindus

**4. Discussion**
In the present piece of research, the overall prevalence of Anaemia was more than the global prevalence. In the present study the prevalence of anaemia was 49.23% mild, 20% moderate and 1.15% severe anaemia. In a study among the adolescent girls of Nepal, the prevalence of Anaemia (68.8%) was found to be lower than the Indian females in the present study (70.1). In another study, the prevalence of Anaemia in the 16-70 years age group among males was 44.3% [Malhotra amd Kumari et.al 2004].

Further, it was also found that there was more prevalence of Anaemia among sample belonging to Hindu and jain religion. Another reason which we did not explore was the type of diet which was consumed by the study population, as evidence indicated a higher prevalence of anaemia among children who had a vegetarian diet, because vegetarian diets are a poor source of iron [Christoffel 1981 and Dagnelie et.al 1989].Verma et al also found a higher prevalence of anaemia among the vegetarian than the non-vegetarian schoolgirls (66% vs. 38%)[ Verma et.al 1999]. In developing countries such as India, the poor bio-availability of dietary iron, coupled with a low intake of iron which was derived from animal foods, is a major aetiological fac-

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tor for anaemia [Kaur et.al].The present study thus brings out the fact that the problem of Anaemia was related to a wider population than the traditionally considered groups of the pregnant females, lactating females and children. Studies have shown that Anaemia was an indicator of poor nutrition and poor health, with major consequences on the human health as well as on the social and economic development [McGregor &Ani 2001 and Schauer & Zlotkin 2003].

In our study the prevalence of anaemia in young males and females in north Indian population was relatively higher as compared to the national standards. The study highlights the fact that the prevalence of anaemia was more in the younger age groups, in the lower socio-economic groups and in subjects with a sedentary life style. Therefore we need to go for well planned, systematic and large-scale studies by using standardized methodologies to estimate the prevalence of anaemia as well as the cause of anaemia at the community level among males and females in all age groups, with an accurate evaluation of the socio-economic status and the representation of the different regions of India. A comprehensive study, including anthropometric data, biochemical data, clinical signs and dietary intake data will give a better insight into the situation and more importantly, it will help in devising interventions for the prevention and the treatment of anaemia, which should be directed towards all members of the community, irrespective of age and sex.

The present study found a high prevalence of anaemia in both males and females in the population of Jammu city. In fact Anaemia is a basic predictor of many diseases, therefore larger study should be conducted to know the actual prevalence of Anaemia at national level.

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