

Research Article



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ANAEMIA OCCURRENCE IN HEALTHY INDIAN MALE SUBJECTS: ASSESSMENT AND EVALUATION

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ABSTRACT

Background: The primary focus of anaemia and its eradication efforts is on females, with little knowledge about male subjects. Despite the fact that nearly three out of ten people are anemic, attempts to eradicate anaemia mostly focus on female subjects since anaemia is more common in girls than in boys. However, there is a dearth of information in the literature on anaemia in men in underdeveloped countries like India.

Aim: The purpose of the current study was to determine the prevalence of anaemia in male, healthy Indian volunteers.

Methods: Out of 1400 male patients between the ages of 18 and 59, 68 were evaluated in this study and were determined to be anemics. To analyze the anaemia and the impact of several variables on anemic state in healthy Indian male individuals, hemoglobin concentration was measured in each of these patients.

Result: Of the 1400 male individuals evaluated for the research, 48.86% (n=684) had anaemia. Mild, moderate, and severe anaemia were seen in 18.7%, 22.2%, and 7.86% of patients, respectively, based on Hb concentration.

Subjects with low and moderate incomes had greater rates of anaemia. Of the 924 participants who habitually drank tea, coffee, or smoke, 21.55% had severe anaemia, while 17.93% had mild anaemia. Severe and moderate anaemia were seen in 13% and 6% of the 308 individuals who drank alcohol, respectively.

Conclusion: Even though they are not regarded as a high-risk category, healthy-looking men from underdeveloped countries like India are just as susceptible to anaemia as women. Male individuals' vulnerability is thought to be influenced by a number of contributing variables, including food habits, lifestyle choices, and/or work-related limitations. Inadequate hygiene habits, tobacco use, coffee, and tea drinking might also exacerbate the problem.

These results highlight the necessity of concentrating on male anaemia in terms of both prevention and treatment.

Keywords: Males, industrial workers, alcoholism, anaemia, hemoglobin, and tobacco use

INTRODUCTION

In the Indian setting, anaemia is a prevalent clinical disorder that affects children, adolescents, and adult females. However, anaemia in male individuals continues to be a healthcare problem that has not received the necessary attention throughout time. According to earlier research, the incidence of anaemia varies by age group and area, ranging from 22% to 39%. According to published data, one out of ten males in India suffers from anaemia. Male anaemia burden requires equal attention since it impacts family care, labor productivity, economic growth, and general health.¹

Anaemia, which can be caused by a deficiency of one or more important components or nutrients as well as other environmental or habitual causes, is the word used to describe situations in which the hemoglobin level is lower than the normal count. Hemoglobin facilitates the movement of oxygen, which is necessary for the body to continue producing energy and oxidizing nutrients. Furthermore, an individual's general effectiveness and health are greatly impacted by the availability of iron. Lethargy, chronic weariness, recurrent illnesses, and a lack of drive are the key factors that impair an individual's productivity.²

When combined, these symptoms may lead to reduced productivity at work and have an impact on a country's economic development. Although there are a number of factors that may contribute to these symptoms, dietary inadequacies are a major factor. Iron is an essential micronutrient that is required in trace levels and is essential for hemoglobin formation. According to reports, variables including hemoglobinopathies, air pollution, vitamin B12 and folate deficiencies, and undiagnosed blood loss also have a significant influence.³

Numerous groups are always working to reduce the percentage of Indian girls who suffer from anaemia. Not much has changed over the years, despite several nutrition initiatives. Elimination of anaemia in females is the main focus. Male subjects, on the other hand, are not taken into account here. However, a large body of evidence indicates that the frequency of anaemia in men and women is equal.⁴ Therefore, the goal of the current study was to determine the prevalence of anaemia in male, healthy Indian volunteers.

MATERIALS AND METHODS

The goal of the current cross-sectional, descriptive, observational study was to determine the prevalence of anaemia in male, healthy Indian volunteers. The research participants came from the Institute's Department of Medicine. Prior to their involvement in the study, all individuals gave their written and verbal informed consent. Males between the ages of 18 and 59 who presented to the Department of Medicine and seemed to be in good health were evaluated for the research.

Participants who were younger than 18 or older than 60, receiving medical therapy that would change their hemoglobin levels, having filariasis, dengue, or malaria, having a terminal disease, having significant organ insufficiency, or having pre-existing blood problems were all excluded from the research. Women were also not included in the research. Following final inclusion, a structured questionnaire was used to gather demographic information from each individual.

The cyanmethemoglobin technique and the calorimeter method described by Dacie & Lewis⁵ were used to measure hemoglobin levels. Using the National Consultation on Control of Nutritional Anaemia in India, the subjects were then split into four groups: Normal (haemoglobin level >12.0 gm/dl), Mild Anaemic (haemoglobin level 10.1 to 12.0 gm/dl), Moderately Anaemic (haemoglobin level 8.0 to 10.0 gm/dl), and Severe Anaemic (haemoglobin level <8.0 gm/dl).^{6,7}

ANOVA, the chi-square test, the student's t-test, Fisher's exact test, the Mann Whitney U test, and SPSS (Statistical Package for the Social Sciences) software version 24.0 (IBM Corp., Armonk, NY, USA) were used to statistically evaluate the data collected from the study participants. A p-value of less than 0.05 was regarded as the significance level.

RESULTS

The goal of the current cross-sectional, descriptive, observational study was to determine the prevalence of anaemia in male, healthy Indian volunteers. Out of the 1400 male patients in the current investigation, 684 were determined to be anemic. The individuals ranged in age from 18 to 59.

To analyze the anaemia and the impact of several variables on anemic state in healthy Indian male individuals, hemoglobin concentration was measured in each of these patients. 51.1% (n=716) of the research participants had normal hemoglobin levels between 12 and 16 g/dl, indicating an occurrence of anaemia. 48.8% (n=694) of the study participants had a mean hemoglobin level of 11.1 ± 4.6 g/dl, 18.7% (n=262) had mild anaemia with a hemoglobin range of 10.1-12 g/dl, 22.2% (n=312) had moderate anaemia (Hb-8.1-10.1 g/dl), and 7.8% (n=110) had severe anaemia (<8 hemoglobin) (Table 1).

Based on income, the incidence of anaemia in healthy males was found to be 28.4% (n=398) in low-income individuals, 40.2% (n=160), 59.8% (n=238), 22.6% (n=90), 26.1% (n=104), and 11.06% (n=44) in normal, anemic, mild, and moderate anaemia, respectively. Normal, mild, moderate, and severe anaemia were observed in 45.4% (n=636), 64.7% (n=412), 35.2% (n=224), 12.8% (n=82), 16.9% (n=108), and 5.3% (n=34) of the study participants in the medium income group, respectively. Normal, mild, moderate, and severe anaemia were seen in 26.14% (n=366), 39.3% (n=144), 60.6% (n=222), 24.5% (n=90), 27.3% (n=100), and 8.7% (n=32) of the participants in the moderate income group, respectively (Table 2).

According to the study findings, 66% (n=924) of the study participants had a tobacco, coffee, or tea habit, and 11.4%, 15%, 18%, and 21.5% of the study participants had normal, mild, moderate, or severe anaemia, respectively (Table 3). Regarding the evaluation of the occurrence of anaemia among study participants who drank alcohol, 22% (n=308) of the 1400 study participants evaluated had an alcohol habit, whereas 2%, 1%, 6%, and 13% of the participants had normal, mild, moderate, or severe anaemia, respectively (Table 4).

DISCUSSION

Out of the 1400 male patients in the current investigation, 684 were determined to be anemic. The individuals ranged in age from 18 to 59. To analyze the anaemia and the impact of several variables on anemic state in healthy Indian male individuals, hemoglobin concentration was measured in each of these patients. 51.1% (n=716) of the research participants

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These results were similar to those of earlier studies by Ashish G et al. (2010) and Bonakdaran S et al. (2011), in which the authors evaluated participants with hemoglobin levels and demographic information comparable to the current research.

According to the study's findings, the incidence of anaemia in healthy men was 28.4% (n=398) in low-income individuals, whereas 40.2% (n=160), 59.8% (n=238), 22.6% (n=90), 26.1% (n=104), and 11.06% (n=44) of subjects had normal anaemia, mild anaemia, or moderate anaemia, respectively. Normal, mild, moderate, and severe anaemia were observed in 45.4% (n=636), 64.7% (n=412), 35.2% (n=224), 12.8% (n=82), 16.9% (n=108), and 5.3% (n=34) of the study participants in the medium income group, respectively.

Normal, mild, moderate, and severe anaemia were seen in 26.14% (n=366), 39.3% (n=144), 60.6% (n=222), 24.5% (n=90), 27.3% (n=100), and 8.7% (n=32) of the participants in the moderate income group, respectively. These findings aligned with those of Rao VG et al. (2003) and Beutler E et al. (2006), who found that the incidence of anaemia in healthy guys based on their income was similar to the current study's findings.

In terms of the prevalence of anaemia among study participants who smoked, drank coffee, or drank tea, 66% (n=924) of the participants had this habit, whereas 11.4%, 15%, 18%, and 21.5% of the participants had normal, mild, moderate, or severe anaemia, respectively.

These results were consistent with those of Charan J et al. (2012) and Ghosh S et al. (2013), who found that the incidence of anaemia among study participants who smoked, drank coffee, or drank tea was similar to the findings of the current investigation.

According to an analysis of the prevalence of anaemia among study participants with alcohol use, 22% (n=308) of the 1400 participants evaluated had alcohol use, whereas 2%, 1%, 6%, and 13% of the participants had normal, mild, moderate, or severe anaemia, respectively.

These findings were consistent with those of Kaur IP et al. (2014) and Trivedi DJ et al. (15) from 2011 and 2025, respectively, where the authors observed anaemia incidences equivalent to the current study in study participants who drank alcohol.

CONCLUSION

Within its limitations, the present study concludes that healthy looking males from developing nations as India have equal susceptibility to anaemia as females despite of not being considered a high-risk group. Vulnerability of male subjects is considered to be affected by various contributing factors as lifestyle choices, dietary habits, and/or occupational constraints. Also, poor sanitary practices, consumption of tobacco, coffee, and tea can make the condition worse. These findings emphasize the need for anaemia focus on males concerning its prevention and management.

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Anaemia group	Hemoglobin (g/dl)	Number (n)	Percentage (%)
Normal	12-16	716	51.1
Anaemia	11.1±4.6	684	48.8
Mild anaemia	10.1-12	262	18.7
Moderate anaemia	8.1-10.1	312	22.2
Severe anaemia	<8	110	7.8

Table 1: Anaemia incidence in the study subjects

Income group (Rs per month)	Number n (%)	Normal n (%)	Anaemia n (%)	Mild anaemia n (%)	Moderate anaemia n (%)	Severe anaemia n (%)
Low income (5000-9000)	398 (28.4)	160 (40.2)	238 (59.8)	90 (22.6)	104 (26.1)	44 (11.06)
Middle (9001-15000)	636 (45.4)	412 (64.7)	224 (35.2)	82 (12.8)	108 (16.9)	34 (5.3)
Moderate (above 15000)	366 (26.14)	144 (39.3)	222 (60.6)	90 (24.5)	100 (27.3)	32 (8.7)
Total	1400 (100)	716 (51.1)	684 (48.8)	262 (18.7)	312 (22.2)	110 (7.8)

Table 2: Anaemia incidence in healthy males based on income

Tobacco/coffee/tea habit (%)	Normal (%)	Mild anaemia (%)	Moderate anaemia (%)	Severe anaemia (%)
924 (66)	11.4	15	18	21.5

Table 3: Anaemia incidence in study subjects with Tobacco/coffee/tea habit

Alcohol habit	Normal (%)	Mild anaemia (%)	Moderate anaemia (%)	Severe anaemia (%)
308 (22)	2	1	6	13

Table 4: Anaemia incidence in study subjects with alcohol habit