

**PERCEPTION AND AWARENESS ABOUT ANEMIA AMONGST GENERAL
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ABSTRACT

This cross-sectional study was performed among 176 participants of male and female adults in Maharashtra, India. Among the participants, Male=56.25% & Female=43.75%. The percentage of age in years amongst the participants 18-30 years=93.75%, 31-40 years=3.98%, 41-50 years=1.70%, Above 50 years=0.57%. Their residence Urban=73.29%, Semi-Urban=17.61% & Rural=9.1%. The participants' level of education starting from 1st grade <=10=2.27%, 11-12=23.86%, 13-15=43.18%, >15=30.69%. Participants' occupation, Students= 84.1%, Service=11.36%, Self-Employed=2.27%, Other=2.27%. About 42.05% of them have not done blood test for last one year, 38.07% done only once, 19.88% done twice or more. 86.36% get blood tests done only when demanded by doctor. 82.38% take supplements. Among the participants 0.57% diagnosed heart disease, 2.84% Kidney Disease, 1.70% Diabetes, 3.97% High Blood Pressure, 90.92% did not have above mentioned conditions.

KEYWORDS: Anemia, Male and Female Populations, Maharashtra.**INTRODUCTION**

Anemia is characterized by hemoglobin (Hb) concentration being lower than a specific threshold^[1] & thus casting an impairment in meeting the oxygen demands of tissues. It is a major public health problem with around 1620 million people world-wide diagnosed with anemia. Anemia is continuously rising threat to not only present but also future generations as well as Indians are under high risk, especially adolescent girls.^[2] In reports published by the World Health Organization (WHO), it is claimed that anemia is a global health program, considering that around 25% of the population is affected with varying degrees of severity. The main factors that cause anemia are iron deficiency, infectious diseases or genetic factors. Red Blood Cells (RBC) & Hb

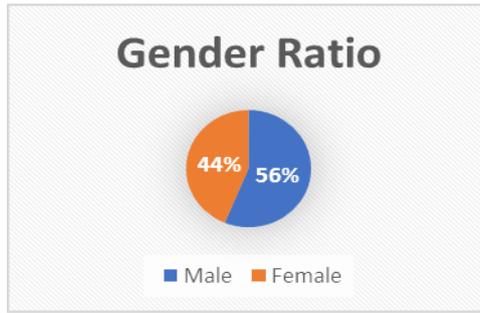
concentration levels decrease with anemia.^[3-8] This leads to a reduction in the function of the blood to transport oxygen to the peripheral tissues. The excessive reduction of the availability of oxygen supplied to the cells cause damage to vital organs. In severe cases blood transfusion is necessary.

MATERIALS AND METHODS

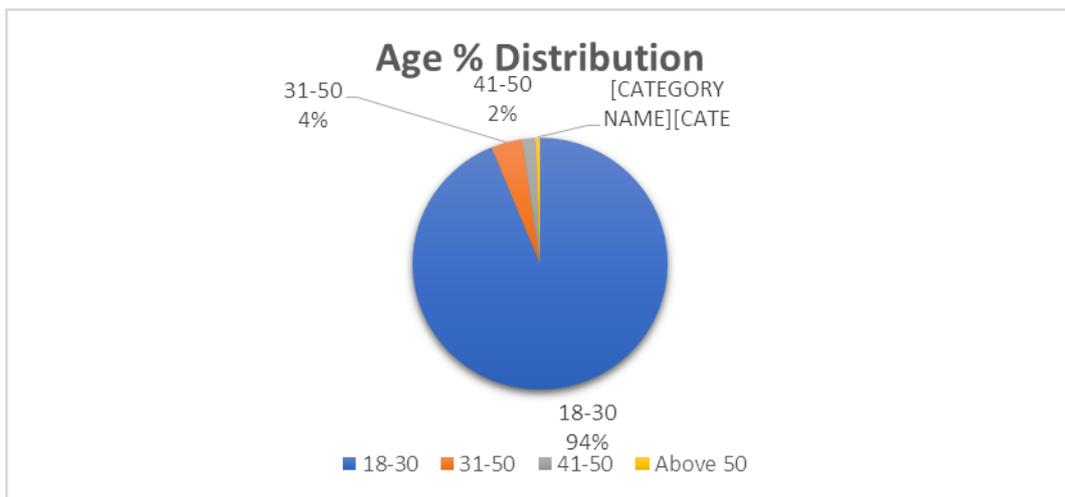
The cross-sectional study was conducted in Maharashtra, India. It was conducted by administering a pre-tested & pre-validated questionnaire via Google forms. The participants were 18 years old and above of either gender. Those who agreed to take part in this study were included. Statistical analysis were adapted to Microsoft Excel and Spreadsheet.

RESULTS AND DISCUSSION

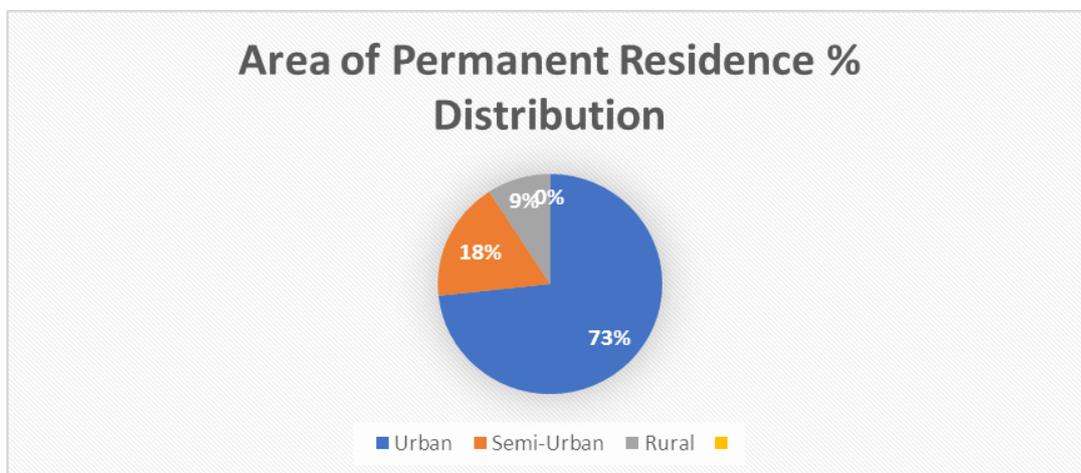
GENDER	Out of 176 Participants	Percentage
Male	99	56.25%
Female	77	43.75%



Age	Number	Percentage
18-30	165	93.75%
31-40	7	3.98%
41-50	3	1.70%
Above 50	1	0.57%

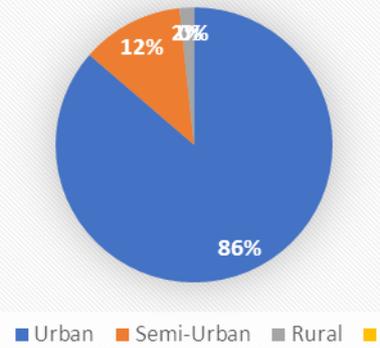


Area of Permanent Residence		
Urban	129	73.29%
Semi-Urban	31	17.61%
Rural	16	9.1%



Area of Current Residence		
Urban	152	86.36%
Semi Urban	21	11.94%
Rural	3	1.70%

Area of Current Residence % Distribution



Total Years Of YOUR Education starting from 1 st grade		
Years	Number	Percentage
<=10	4	2.27%
11-12	42	23.86%
13-15	76	43.18%
>15	54	30.69%

Total Years Of YOUR Father's Education starting from 1 st grade		
Years	Number	Percentage
<=10	27	15.34%
11-12	23	13.06%
13-15	49	27.84%
>15	77	43.76%

Total Years Of YOUR Mother's Education starting from 1 st grade		
Years	Number	Percentage
<=10	35	19.88%
11-12	38	21.6%
13-15	44	25%
>15	59	33.52%

Height In Cms		
Height Range	Number	Percentage
130-140	1	0.57%
141-150	9	5.11%
151-160	42	23.87%
161-170	50	28.4%
171-180	60	34.1%
181-190	14	7.95%

Weight in Kg		
Weight Range	Number	Percentage
20-30	1	0.57%
31-40	4	2.27%
41-50	25	14.2%
51-60	47	26.7%
61-70	35	19.9%
71-80	36	20.45%
81-90	19	10.8%
>91	9	5.11%

Your occupation		
Student	148	84.1%
Employed/Service	20	11.36%
Self Employed/Business	4	2.27%
Other	4	2.27%

Father's occupation		
Employed/Service	88	50%
Self Employed/Business	75	42.61%
Other	13	7.39%

Mother's occupation		
Home Maker	134	76.14%
Employed/Service	26	14.77%
Self Employed/Business	11	6.25%
Other	5	2.84%

No. of people staying in the same house as you		
<4	112	63.63%
5-6	48	27.27%
>7	16	9.1%

On WEEKDAYS, your leisure time is spent in mainly		
Indoors	82	46.59%
Outdoors	24	13.64%
Both	70	39.77%

On WEEKENDS, your leisure time is spent in mainly		
Indoors	63	35.80%
Outdoors	92	52.27%
Both	21	11.93%

In the past one year, how many times have you got your blood tested?		
Never	74	42.05%
Only once	67	38.07%
Twice or more	35	19.88%

Do you get blood tests done only when demanded by a doctor		
Yes	152	86.36%
No	24	13.64%

Are you taking any medication prescribed by your doctor		
Yes	132	75%
No	44	25%

Are you taking any vitamins / iron / calcium / mineral supplements prescribed by your doctor?		
Yes	145	82.38%
No	31	17.62%

Are you taking any medications on your own		
Yes	14	7.95%
No	162	92.05%

Are you taking any vitamins / iron / calcium / mineral supplements on your own		
Yes	27	15.34%
No	149	84.66%

Do you consume tobacco in any form?		
Yes	8	4.54%
No	168	95.46%

If yes, since		
<3 years	4	2.27%
4-6 years	2	1.13%
7+ years	3	1.7%
Not Applicable	167	94.9%

If yes, since		
<3 years	4	2.27%
4-6 years	2	1.13%
7+ years	3	1.7%
Not Applicable	167	94.9%

Do you consume alcohol in any form?		
Yes	30	17.04%
No	146	82.96%

If yes		
Daily	1	0.57%
2-3 times/week	2	1.13%
Occasionally	25	14.2%
Not Applicable	148	84.1%

If yes, since		
<3 years	20	11.36%
4-6 years	3	1.7%
7+ years	5	2.84%
Not Applicable	148	84.1%

Have you been diagnosed with any of the following conditions?		
Heart Disease	1	0.57%
Kidney Disease	5	2.84%
Diabetes	3	1.70%
High blood pressure	7	3.97%
None of the Above	160	90.92%

Are you currently taking treatment for any of the following conditions?		
Heart Disease	1	0.57%
Kidney Disease	5	2.84%
Diabetes	3	1.7%
High blood pressure	5	2.84%
None of the Above	162	92.05%

Please enter as per your daily diet				
	Daily	2-3 times/week	occasionally	Never
Green Leafy Vegetables	27(15.34%)	105(59.66%)	42(23.86%)	2(1.14%)
Salads	41(23.30%)	59(33.52%)	66(37.5%)	10(5.68%)
Citrus Fruits	35(19.89%)	57(32.39%)	78(44.32%)	6(3.4%)
Rice	85(48.3%)	60(34.09%)	23(13.07%)	8(4.54%)
Samosa/Vada pav	14(7.95%)	49(27.85%)	100(56.81%)	13(7.39%)
Burger, Pizza, Pasta	4(2.27%)	28(15.91%)	121(68.75%)	23(13.07%)
Carbonated Drinks	4(2.27%)	33(18.75%)	85(48.30%)	54(30.68%)
Red meat	2(1.14%)	27(15.34%)	46(26.14%)	101(57.38%)
Chicken	6(3.4%)	52(29.54%)	61(34.69%)	57(32.37%)
Fish	6(3.4%)	34(19.32%)	56(31.83%)	80(45.45%)

Egg	19(10.8%)	54(30.68%)	51(28.98%)	52(29.54%)
Farsan/Chivda with tea	22(12.5%)	43(24.43%)	73(41.48%)	38(21.59%)
Beans/Lentils	37(21.02%)	87(49.44%)	46(26.14%)	6(3.4%)

Do you perform any type of physical activities?

Yes	132	75%
No	44	25%

If yes

Daily	36	20.45%
2-3 times/week	53	30.11%
Occasionally	29	16.47%
Not Applicable	58	32.97%

If yes, since

<3 years	65	36.93%
4-6 years	19	10.80%
7+ years	24	13.63%
Not Applicable	68	38.64%

Do you feel breathlessness/shortness of breath on exercising?

Yes	127	72.15%
No	49	27.85%

Do you feel breathlessness/shortness of breath on climbing a flight of stairs

Yes	125	71.02%
No	51	28.98%

Do you have pale (yellowish)

Yes	12	6.81%
No	164	93.19%

Do you crave for ice / ice water / corn flour?

Yes	34	19.31%
No	142	80.69%

In warm weather, do you feel cold or experience cold hands & feet?

Yes	16	9.09%
No	160	90.91%

Are you aware that lowering of blood hemoglobin level causes anemia?

Yes	138	78.4%
No	18	10.22%
Not Sure	20	11.38%

What is your opinion regarding anemia?

Trivial condition not requiring treatment	9	5.11%
Moderate condition sometimes requiring medical treatment	86	48.86%
Potentially life-threatening condition requiring grade-dependent treatment	81	46.03%

In your opinion, if left untreated, can anemia cause complications or lead to other diseases?

Yes	134	76.13%
No	7	3.97%
Not Sure	35	19.9%

In your opinion, is anemia more common among males or females?		
Males	9	5.11%
Females	108	61.36%
Not Sure	59	33.53%

Are you aware that lowering of blood hemoglobin level causes anemia?		
Yes	125	71.02%
No	6	3.4%
Not Sure	45	25.58%

Do you experience any of the following symptoms?				
	Daily	2-3 times/week	occasionally	Never
Dizziness	9(5.11%)	8(4.54%)	45(25.59%)	114(64.76%)
Chest Pain	3(1.7%)	12(6.83%)	31(17.61%)	130(73.86%)
Headaches	7(3.98%)	18(10.23%)	76(43.18%)	75(42.61%)
Weakness	6(3.41%)	14(7.95%)	71(40.34%)	85(48.3%)
Insomnia	10(5.68%)	14(7.95%)	40(22.73%)	112(63.64%)
Light Headedness	7(3.98%)	12(6.82%)	36(20.45%)	121(68.75%)
Irregular Heartbeats	2(1.14%)	10(5.68%)	19(10.8%)	145(82.38%)
Easily fatigued	12(6.82%)	18(10.23%)	47(26.70%)	99(56.25%)
Lethargy	13(7.39%)	28(15.91%)	59(33.52%)	76(43.18%)
Sleepiness	24(13.64%)	25(14.20%)	63(35.80%)	64(36.36%)

Do you make efforts to include iron-rich and multi-nutrient rich foods in your daily diet?		
Yes	127	72.15%
No	49	27.85%

Are you willing to make people more aware about anemia in whatever way you can?		
Yes	160	90.9%
No	16	9.1%

In this cross-sectional study total number of participants are 176. Male=56.25%, Female=43.75%. Among the age groups 18-30 years=93.7%, 31-40 years=3.98%, 41-50 years=1.70% & Above 50 years=0.57%. Their permanent residence are Urban=73.29%, Semi-Urban=17.61%, Rural=9.1%. Among the participants Students=84.1%, Employed=11.36%, Self-Employed=2.27% & other occupations=2.27%. As per Caroline B^[9] & Michael Getal^[10] Anemia in heart failure is complex and multifactorial. In the present study 82.38% reported that they are taking vitamins/iron/mineral supplements prescribed by their doctors. Among the participants 0.57% = diagnosed Heart Disease, 2.84%=Kidney disease, Diabetes=1.70%, High BP=3.97%. The study of Jessica B & others^[11], and Jaya Pathak etal^[12] revealed that patients Diabetes Mellitus Type 2 are at a higher risk of suffering from Anemia. W S Shiferaw^[13] & Neeta B^[14] reported that Chronic Kidney disease significantly associated with Anemia. Anat G-Guili & others^[15], V Masilamani & others^[16] revealed that smoking affects erythropoiesis, Iron supplementation is recommended for all Chronic Kidney disease. Obeagu EI^[17] & the work of Amare D et al^[18] reported anemia of nutritional origin is acquired problem caused by diets that lack sufficient quantity of bio-available essential haematopoietic nutrients. In the present study the participants reported that they consume daily Green leafy vegetables(15.34%), Salads(23.30%),

Citrus fruits(19.89%), Rice(48.3%), Samosa/Vadapav(7.95%), Burger/Pizza/Pasta(2.27%), Fish(3.4%), Egg(10.8%), Chivda with tea(12.5%), Beans(21.02%). Tobacco Consumption 4.54%. The work of E Aritonang et al^[19] & Shah M A W etal^[20] reported that there is a link between smoking & alterations in haematological parameters. The participants reported that of 17.04% of them consume alcohol. Raka Jain et al^[21] & Poralla S et al^[22] revealed that Anemia is predominant feature among alcoholics.

CONCLUSION

The findings suggest that the government should plan to develop strategies for both rural and urban people & plan health awareness programs to improve dietary practices, compliance with supplements. There is a need to develop effective counselling strategies. Regular screening is important to rule out Anemia. Iron rich food & the food that enhance iron absorption to be added in daily diet. Supplements of iron and folic acid will go a long way to reduce Anemia.

REFERENCES

1. Lemia et al. Anemia and it's associated factors among Adolescents in Kuwait. Scientific Report, 2020; 10: 5857.
2. A K Chauhan & others. A cross-sectional study of anemia among urban & rural adolescent girls in

- district Ambala, Haryana. *International Journal of Med. Sci & public health*, 2019; 8(7): 494-497.
3. World Health Organization. *Assessing the Iron Status of Populations: Report of a Joint World Health Organization For Disease Control and Prevention*; WHO: Geneva, Switzerland, 2004; ISBN 978-92-4-1596107.
 4. De Benoist, B.; Cogswell, M.; Egli, I.; McLean, E. *Worldwide Prevalence of Anemia 1993-2005; WHO Global Database of Anemia*; WHO: Geneva, Switzerland, 2008.
 5. McLean, E.; Cogswell, M.; Egli, I.; Wojdyla, D.; De Benoist, B. *Worldwide prevalence of Anemia, WHO Vitamin and Mineral Nutrition Information System, 1993-2005. Public Health Nutr.*, 2009; 12: 444-454. [CrossRef][PubMed]
 6. World Health Organization *Micronutrient Deficiencies*. Available online: <http://www.who.int/nutrition/topics/ida/en> (accessed on 21 May 2020)
 7. World Health Organization *Reducing Risks, promoting healthy life*. In *The World Health Report*; WHO: Geneva, Switzerland, 2002.
 8. Patel, K.V. *Epidemiology of Anemia in Older Adults. Semin. Hematol*, 2008; 45: 210-217. [CrossRef][PubMed]
 9. Caroline Barakat-Haddad. *Prevalence of High Blood Pressure, Heart Disease, Thalassemia, Sickle Cell Anemia, Iron-deficiency Anemia & Iron Deficiency Anemia among the UAE adolescent population. Journal of Environmental & Public Health*, 2013; 13: 1-10.
 10. Michael G et al. *Anemia in heart failure Patients*, 2012; 54: 1-9.
 11. Jessica B & others. *Anemia in patients with Type 2 Diabetes Mellitus. Anemia*, 2015; 1-7.
 12. Jaya Pathak & others. *Anemia in Type 2 Diabetes Mellitus in absence of Renal Insufficiency. International Journal of Contemporary Medical Research*, 2019; 6(11): 15-17.
 13. W S Shiferaw et al. *Risk Factors for Anemia in Patients with Chronic Renal Failure: A Systemic Review & Meta-Analysis. Ethiopia Journal of Health Sci*, 2020; 309(5): 1-16.
 14. Neeta B & others. *Anemia in Patients with Chronic Kidney Disease. Diabetes Spectrum*, 2008; 21: 12-15.
 15. Anat G-Guili & others. *Iron Deficiency Anemia in Chronic Kidney Disease. Acta Haematologica*, 2019; 142: 44-50.
 16. V Masilamani et al. *Smoking induced Hemolysis: Spectral & Microscopic investigations. Scientific Reports*, 2016; 6: 1-7.
 17. Obeagu E I. *A Review on Nutritional Anemia. International Journal of Advanced Multidisciplinary Research*, 2018; 5(4): 11-15.
 18. Amare D et al. *Nutritional Iron Deficiency Anemia: Magnitude and it's Predictions among School age children, Southwest Ethiopia: A community based cross-sectional study. Plosone*, 2014; 9(12): 59-61.
 19. E Aritonang et al. *Relationship between chewing Tobacco & Haemoglobin level in Lactating mother in Karo district, Indonesia. Earth & Environmental Science*, 2021; 709: 1-8.
 20. Shah M A W et al. *Correlation between Anemia & Smoking: Study of patients visiting different outpatient department of Integral Institute of Medical Science & Research, Lucknow. National Journal of Physiology, Pharmacy & Pharmacology*, 2020; 10(2): 149-154.
 21. Raka Jain & others. *Haematological changes in Alcohol & Substance Use Disorders- An overview. International Archives of Substance Abuse and Rehabilitation*, 2020; 2(1): 1-6.
 22. Poralla S et al. *Study of Haematological manifestations among Alcoholics in Tertiary Care Hospital. International Journal of Scientific Study*, 2018; 6(3): 135-140.