

Research Paper



A study to assess the knowledge of adolescent girls about iron insufficiency and anemia

Mrs. Monika Devi NR^{*}

^{*}M.Sc. Nursing Medical Surgical Nursing Govt. Medical College and Hospital Jammu, J&K UT, India.

Article Info

Article History:

Received: 02 November 2022

Revised: 12 January 2023

Accepted: 19 January 2023

Published: 05 March 2023

Keywords:

Anemia

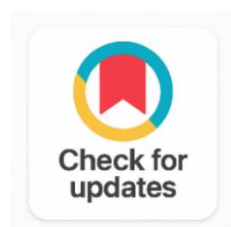
Food Frequency

Nutritional Challenges

Nutritional Disorder

Iron Deficiency

Folic Acid Supplement



ABSTRACT

Background: A lack of red blood cells messes up the bodys ability to reach physiological needs , and these needs can change a lot depending on a persons age. Iron deficiency is usually seen as the most common reason behind anemia, and it does a lot to disturb the physical functioning of individuals.

Objective: Anemia is seen in around 80–90% of adolescent girls , pregnant women , and preschool children. More than one fifth of the world population is affected by anemia , including about 5 million people in well developed countries. This study was done to judge what adolescent girls know, particularly about iron deficiency and anemia.

Method: A quasi experimental approach was used, with a one group post test type of layout where manipulation and evaluation of the experimental variables happened. A structured questionnaire was made as the main tool to check awareness of anemia and iron deficiency among adolescent girls. Data were collected from adolescent girls aged 12–18 years in Hoshiarpur. The participants were chosen depending on their ability to speak and understand English, and awareness was checked using structured questions.

Result: About 85.1% of the students fathers were educated, but mothers had a noticeably lower level of education. Only 12.8% of the parents were employed and also well educated. More than 62.9% of the students were from nuclear families , and around 76% came from middle class households. For nutrition, nearly 21% of students were underweight, and approximately 9% were overweight.

Conclusion: This study sort of showed a fairly high prevalence of anemia and iron lack among adolescent girls. The delay in timely action, together with worsening nutritional challenges, seems to push health outcomes toward anemia and iron deficiency. Overall, these results support the need for focused food related education and intervention programs for adolescent girls.

Corresponding Author:

Mrs. Monika Devi NR

M.Sc. Nursing Medical Surgical Nursing Govt. Medical College and Hospital Jammu, J&K UT India.

Email: monikasyal98@gmail.com

Copyright © 2023 The Author(s). This is an open access article distributed under the Creative Commons Attribution License, (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

1. INTRODUCTION

Anemia is a health condition of human body that is associated with reduction of red blood cells and oxygen carrying capacity. Deficiency of red cells in blood leads to making insufficient to reach physiological needs that varied regarding variability of a person's age. Iron deficiency is recognised as the most common factor of anemia that affected physical functionality of human beings. Iron deficiency and anemia caused due to improper consumption of nutritious food. This study is going to discuss research methodology for gaining knowledge about concerns of adolescent girls about anaemia and iron deficiency. Research about the nutritional knowledge of adolescent girl's mainly junior school students helps to provide a demographic profile for find out accurate results. This study emphasises suggesting an effective way to increase awareness among adolescent girls about iron deficiency, nutrition and anaemia.

1.1 Need for the study

Understanding anaemia and iron deficiency are required to reduce this increasing rate globally. This study emphasises learning about acute chronic information inherited and acquired disorders and parasitic infections that lead to an increasing rate of anaemia patients. According to estimation worldwide among anaemia patients, there has nearly 59100 perinatal death and 115000 maternal deaths. As cited by [1], anaemia patient's number is ranging from 80 to 90 per cent of adolescent girls, pregnant women and preschool children. More than $\frac{1}{5}$ of the world population is suffering from anemia and 5 million are located in well-developed countries. Anemia is also caused due to insufficient consumption of nutritious food and affects development and growth of well beings worldwide. As opined by [2], organising an Identifying number of adolescent girls and reaching their requirements is important for mitigating nutritional challenges and decreasing number of anaemia patients worldwide. Approximately 21% of Indians are adolescents that pimpls a serious condition of anaemia. As studied by [3], developed countries have to construct a community group for organising many health-related programmes to increase awareness about nutritional disorders. Governments of different c regions have to take look to make supplements for calories and protein requirements among vulnerable populations.

2. METHODOLOGY

- **Research Approach:** Quantitative research approach
- **Research Design:** Quasi-experimental research design with one group post-test design.
- **Research Setting:** Conducted in the high school of Hoshiarpur.
- **Population:** - Adolescent girls between the age of 12 to 18 years.
- **Sampling Technique:** Convenient sampling technique was used.
- **Sample Size:** Sample size for the study was 1100 adolescent girls between the age of 12 to 18 years.
- **Inclusive Criteria:** The study includes
- **Adolescent Girls Who:** Are studying in selected school, Hoshiarpur. Adolescent girl between the age group of 12-18years. Available at the time of data collection. Able to understand and speak English
- **Exclusive Criteria:** The study excluded Adolescent girls who are not studying in selected school, Hoshiarpur. Who are above the age group and less than 18 years. Not Available at the time of data collection. Not Able to understand and speak English Adolescent boys are excluded.

- **The Following Tools Were Used in the Study:** Socio-demographic characteristics. A self-structured questionnaire was developed

2.1 Method for Data Collection

Ethical And Administrative Permission Was Taken. Then Adolescent Girls Was Taken Based on Inclusion and Exclusion Criteria then Consent Was Taken from The Participants then Pre- Test Was Done –Regarding Knowledge of Iron Deficiency Anaemia Was Assessed then Teaching Was Given On (Regarding Iron Deficiency Anaemia, Risk Factors, Signs and Symptoms, Diagnostic Findings, Complications, Management and Prevention) Iron Deficiency Anaemia Post-test was done to assess the improvement in the knowledge of the adolescent girls about iron deficiency anaemia Methodology is an important segment of a research process that helps to guide researchers to follow a significant way to understand study. As observed by [4], systematics proceeding or research process based on a study about knowledge of adolescent girls about iron deficiency and anaemia that helps to identify problems to reach findings. Methodology is concerned to select sampling techniques, research design, research approach, tools of development and description. Methodology is associated with reliability, content validity, data collection and data analysis process and pilot study.

3. RESULTS AND DISCUSSION

Conducting a data collection method through asking questionnaires to school girls' students of Class IX and X helps to find out that maximum number of girls is 12 to 18 years age range. There are 1200 girls enrolled. As cited by [5], school authority has followed up on iron invention and glove acid supplements weakly to mitigate issues of anemia. End of this study it can find out those nearly 1100 students and 500 are girls on them. Conducting interviews with 50 adolescent girls has resulted that 15.6% of children belonging to uneducated and illiterate families. As opined by [6], approximately 85.1 % of students' fathers are educated and mothers are not educated enough. 12.8% of students' parents are employed and well educated. Above 62.9% of students belongs to the nuclear family and 76% of students has comes from a middle-class family. Considering the study, nearly 21% are underweight and approximately 9% of students are overweight. As researched by [7], the number of non-anaemic candidates is above 4.1% and 70.3% of candidates are belongs to a moderate level. This study about anemia of adolescent girls helps to assess that anaemia depends on a distinction between fatigue and gender. This analysis signifies that most anemic students' mother is not educated and students are in nine stranders in school. As observed by [8], finding of anemic student and mother education levels helps to determine that the prevalence of anemia is associated with exploring education about iron deficiency and nutritional disorders over people. Unemployed parents are responsible for increasing anaemic patients because they are unable to provide nutritious foods for their children that lead to creating an iron deficiency. However, as argued by [9], employment statutes of further are not recognised as a significant element in causing anemia. Apart from that, it can be analysed that nearly 35% of students with anaemia and nutritional disorders belong to a joint family. Moreover, 17% of anemic patients belong to a lower and middle-class family that implies socio-economic consortium is related to iron deficiency and increased in anaemic patients. Here, 24% of students complained of less concentration and 74% of students of fatigue. According to [10], a change in haemoglobin level of adolescent girls leads to increased anemic petitions in this community that can be happened due to inadequate diet plans and issues with food supplements.

3.1 Discussion

Anaemia is one of global public health concerns that affect both growing and developed nations. This has been analysed in this research study about an increasing rate of Anemia in adolescents. As cited by [11], considering the use of adverse health consequences, it can be found within a survey report of WHO those sates globally, 1.62 billion people are affected by anaemia. An estimated approximately 36% population in developing nations is affected by this disease. It can be significantly noticed that problem of anaemia by affecting approximately 305 million that is nearly 25.4% of school children mainly adolescents.

According to [12], lack of awareness among parents especially mothers faced with this type of problem due to lack of knowledge about this disease poor educational status, unhealthy food habits, low iron bioavailability diet, and poor nutritional practices can cause a lack of iron within the body of adolescence of an individual. Infections and lack of RBC are some factors associated with lower haemoglobin statuses noticed among children. As observed by [13], anaemia has a negative impact on a body of an individual that facilitates physical work ability and mental along with cognitive function and has an adverse impact on adolescence. Haemoglobin is very important for functional growth within a human body. This has a deficiency that reduces level of oxygen and tissues of an individual. Apart from this anaemia affects cardiac functions of an individual. As described by [14], developing poverty in nation helps to implement issues of an insufficient and inadequate diet of adolescent girls that can help to reduce number of amenic patients. As per a report from Canada, there are about more than 5% of children are suffering from iron deficiency. Health Corporation has recommended exclusive breastfeeding in their first six months in health terms fact as brasset feeding milk is one of the best foods for a child's optimal growth. As explained by [2], there is merely providing folic acid and iron supplements in health care and school centres that are not solving these issues. As researched by [15], these community members living with family and parents, health workers, and neighbours are needed to be educated and informed regarding their health benefits and the various side effects of folic acid and iron supplementations in pregnant women and adolescents. There are various strategies provided to create awareness based on this topic.

Table 1. Sociodemographic Variables among Adolescent Girls about Iron Insufficiency and Anaemia. N = 1200

S.No	Demographic Variables		Frequency	Percentage
1.	Age in years	10-18years	1100	100
2.	Standard of education	Secondary	600	54
		Higher secondary	500	46
3.	Religion	Hindu	800	72
		Muslim	100	9
		Christian	200	18
4.	Educational status of the father	Illiterate	300	27
		Primary education	700	63
		Secondary education	100	9
5.	Educational status of the mother	Illiterate	400	36
		Primary education	500	45
		Secondary education	100	9
		Degree and above	100	9
6.	Fathers' occupation	Un employed	50	4
		Self employed	250	22
		Private job	700	63
		Government job	100	9
7.	Mothers occupation	House wife	600	54
		Self employed	200	18
		Private job	250	22
		Government job	50	4
8.	Fatuity incotne per tmonth?	Rs 5000/- -8000/	750	68
		8000/--10000/-	150	13
		Greater than Rs10000/-	200	18
9.	Diet pattetll	Vegetarian	650	59
		Non vegetarian	350	31
		Mixed	100	9

10.	Source of information	Television	450	40
		School	250	22
		News paper	200	18
		Health care professional.	200	18
11.	Place of residence	Slum	200	18
		Rural	500	45
		Urban	400	40
12.	Age at menarche	< 10 years	350	31
		10-11 years	250	22
		12-14 years	300	27
		15-18 years	200	18
13.	Mensūal cycle	Regular	700	63
		Irregular	400	37
14.	Duration of menstrual cycle	< 3 days	500	45
		3-4 days	400	37
		>4 days	200	18

This Table 1 include age group up to 10 to 18 years that is (100%) has been participated in this survey. Standard of educations is between secondary (54%) and higher secondary has been noticed that is 46%. Economic status of mother and father is also been discussed here that include. This Table 1 also analysed several others gaps.

3.2 Limitations

Limitation of this study is associated with several consequences that include laboratory variables and the bloodstream. As cited by [6], a lack of additional laboratory variables leads to insufficiency to identify and examined levels of "methylmalonic acid" and "homocysteine". Analysis of the amount and level of "methylmalonic acid" and "homocysteine" helps to understand the deficiency level of iron and vitamin B12 in human blood. Lack of analysed "methylmalonic acid" and "homocysteine" is a significant limitation in this study that makes obstacles to physical experiments to reach an empirical finding. Second limitation is an inability to measure the bloodstream. According to a report on anaemia, high-level bloodstream might be a caused consequence of anemia. However, as understood by [16], examining and studying the bloodstream is impossible for a huge number of the population in this nation that impacts on findings of studies about the knowledge of adolescent girls regarding deficiency of iron and vitamin. This presentation is about limitations in a study of different causes and ways to measure anemia helps to increase awareness of adolescent girls. However, according to [3], this study is unable to increase awareness among adolescent girls in rural areas adequately. Apart from that, it can be stated that community peoples and governments have to find out the correlation between the indirect and directed reason of anemia and iron deficiency in the human body, especially in adolescent girls helps to find out a significant way and strategic place to prevent increased of patients across the nation.

3.3 Recommendations

Poverty is a significant component that is causing iron deficiency and anemia. These problems are increasing regularly globally for increasing population and development of nations. As cited by [17], a collaboration of different industries such as education, agriculture, health and local community enables to prevention of nutritional disorders with a strategic development process that involves increasing variability of nutritious foods, treatment and awareness among people. Diet modification is a remarkable way to mitigate nutrition-related disorders that involve increased bio-available iron consumption and diversification in diet. As observed by [12], increasing awareness among people and masses helps to deliver modified meals for people that also implement through improving supplement process of governments.

Integration of primary health care organisation is required for providing supplements of medicine maintaining composition of iron in human body for girls through conducting health programme access different school and college. As opined by [11], a collaboration of different industries and governments leads to take initiative to construct "peer education programs", "adolescent-friendly health centres", "management of childhood illness", "menstrual hygiene schemes", and deworming. Those programmes contribute to increased health awareness for adolescent girls in access nation that includes concern about ideal deficiency, anemia, nutritional disorders and infection. As researched by [15], "Food fortification programs" is important to start for consulting an adequate iron diet for girls. Legislation process of food fortification has to regulate to mitigate adulterating with quality assurance and food control systems. Providing folic acid and iron supplements by different health care centres helps to solve this problem a little range for that controlling increased of population is required to gain adequate results. As argued by [18], community members namely health workers, family, and society peoples have to provide proper education about side effects and causes of iron deficiency and nutritional disorders for mitigating these issues. Moreover, folic acid and iron supplements are also associated with several side effects for pregnant women that signify a reduction in consumption. Consumption of iron and folic acid supplements by [19] pregnant adolescents can be reduced through increasing awareness and providing education sessions for community people.

4. CONCLUSION

This research has revealed a huge range of prevalence of anemia and iron deficiency among adolescent girls. Lack of intervention and increased of nutritional challenges lead to increased health consequences regarding anaemia and iron deficiency. This study has suggested effective community involvement and collaboration of different sectors such as agriculture, food, health and education sector enables to reduce increased of anemia through influencing awareness for adolescent girls over a nation. This research study fused on iron deficiency which can lead to caused Anaemia. This research helps an individual to understand the needs and requirements of anaemia in daily life. This research condition also talks about including iron-rich food. In the diet of adolescents, it includes several incidences that are also mentioned within this research study Mustard leaf, powder milk, a gram of maize, and red meat have a high iron component. These are the effective things and requirements that have to be included within the diet chart of adolescents.

Acknowledgments

The authors have no specific acknowledgments to make for this research.

Funding Information

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Mrs. Monika Devi NR	✓	✓	✓	✓		✓		✓	✓	✓	✓			

C : Conceptualization

M : Methodology

So : Software

Va : Validation

Fo : Formal analysis

I : Investigation

R : Resources

D : Data Curation

O : Writing - Original Draft

E : Writing - Review & Editing

Vi : Visualization

Su : Supervision

P : Project administration

Fu : Funding acquisition

Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

Ethical Approval

Not Applicable.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

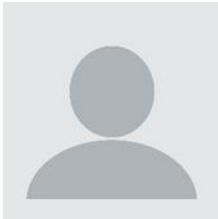
REFERENCES

- [1] A. Aggarwal, A. Aggarwal, S. Goyal, and S. Aggarwal, 'Iron-deficiency anemia among adolescents: A global public health concern', *International Journal of Advanced Community Medicine*, vol. 3, no. 2, pp. 35-40, 2020. doi.org/10.33545/comed.2020.v3.i2a.148
- [2] M. Singh, R. A. Honnakamble, and O. P. Rajoura, 'Knowledge, attitude and practice change about Anemia after intensive health education among adolescent school girls of Delhi: an intervention study', *International Journal of Medicine and Public Health*, vol. 9, no. 3, 2019. doi.org/10.5530/ijmedph.2019.3.18
- [3] N. A. Hussein and M. M. A. Ouda, 'Life style risk factors of Iron deficiency Anemia among adolescents' girls', *International journal of Nursing didactics*, vol. 8, no. 10, pp. 18-28, 2018.
- [4] R. Renuga, S. Sivarajani, S. Jeevitha, and S. A. Kumar, 'A descriptive study to assess the knowledge, practice and attitude on iron deficiency anemia among adolescent girls at selected private school', *India. Indian Journal of Public Health Research & Development*, vol. 11, no. 3, pp. 404-408, 2020.
- [5] H. Zaqiyah Gusti Puspitasari, N. K. Alit Armini, R. Pradanie, and M. Triharini, 'Anemia prevention behavior in female adolescents and related factors based on Theory of Planned Behavior: A cross-sectional study. 2022. doi.org/10.20473/jn.v17i1.27744
- [6] M. S. Akhter et al., 'Iron Deficiency Anemia as a Factor in Male Infertility: Awareness in Health College Students in the Jazan Region of Saudi Arabia', *International Journal of Environmental Research and Public Health*, vol. 18, no. 24, 2021. doi.org/10.3390/ijerph182412866
- [7] M. A. Wiafe, C. Apprey, and R. A. Annan, 'Knowledge and practices of dietary iron and anemia among early adolescents in a rural district in Ghana', *Food Science & Nutrition*, vol. 9, no. 6, pp. 2915-2924, 2021. doi.org/10.1002/fsn3.2249
- [8] S. R. Putri, K. Kusnandar, and E. P. Pamungkasari, 'The Effect Of Health Promotion Using Emo Demo Video On The Selection Of Food Contains Iron For Anemia Prevention In Adolescents: Study At Islamic Senior High School In Yogyakarta', *Media Gizi Mikro Indonesia*, vol. 13, no. 2, pp. 85-96, 2022. doi.org/10.22435/mgmi.v13i2.5924
- [9] R. Khan and S. Saleem, 'Association of anaemia with dietary practices in adolescent girls', *Pakistan Journal of Physiology*, vol. 14, no. 3, pp. 41-45, 2018.
- [10] S. Novelia and I. P. Sari, 'THE Analysis of Factors Associated with Anemia Among Adolescent Girls', *Nursing and Health Sciences Journal (NHSJ)*, vol. 2, no. 3, pp. 266-273, 2022. doi.org/10.53713/nhs.v2i3.142
- [11] S. Nabilah, H. E. Wardani, and R. W. Gayatri, 'Correlation of Menstrual Pattern, Nutritional Status and Level of Knowledge With the Incidence of Anemia on Teenage Girls', in *The 3rd International Conference on Sports Sciences and Health*, Atlantis Press, 2019, pp. 121-125.
- [12] S. Packirisamy, 'A Questionnaire-Based Online Survey On Knowledge And Awareness Of Anaemia Among Female Health-Care Professional Students In Tamilnadu', *Asian J Pharm Clin Res*, vol. 15, no. 8, pp. 114-118, 2022. doi.org/10.22159/ajpcr.2022.v15i8.44979
- [13] R. Rana and P. Kaur, 'Role of nutrition education in improving awareness among school going adolescent girls (14 to 17 years)', *Int J Home Sci*, vol. 5, pp. 10-12, 2019.

- [14] U. Sihotang, 'Awareness-Raising Program of Anemia Using Comics and Social Media for Teenage Girls', *Journal of Saintech Transfer*, vol. 4, no. 2, pp. 83-92, 2021. doi.org/10.32734/jst.v4i2.7790
- [15] Y. N. Lasamahu and S. Widati, 'Differences In Teenage Girls' knowledge And Attitude Before And After Being Exposed In Public Service Announcement Media Of" Iron Supplementation (Study at SMP Negeri 10 Surabaya)', *The Indonesian Journal of Public Health*, vol. 17, no. 2, pp. 252-263, 2022. doi.org/10.20473/ijph.v17i2.2022.252-263
- [16] A. Alami, S. B. Tavakoly Sany, H. Tehrani, E. Lael-Monfared, Z. Hosseini, and A. Jafari, 'The effect of educational intervention on iron and vitamin D consumption based on the theory of planned behaviour in Iranian adolescent girls: a quasi-experimental study', *International Journal of Health Promotion and Education*, vol. 57, no. 6, pp. 316-331, 2019. doi.org/10.1080/14635240.2019.1632732
- [17] C. Krosuru and P. L. Theresa, 'A Study to Assess the Knowledge of Adolescent Girls Regarding Iron Deficiency Anaemia in Selected School at Mangalagiri', *Asian Journal of Nursing Education and Research*, vol. 10, no. 2, pp. 219-223, 2020. doi.org/10.5958/2349-2996.2020.00047.6
- [18] Roche, M.L., Bury, L., Yusadiredja, I.N., Asri, E.K., Purwanti, T.S., Kusyuniati, S., Bhardwaj, A. and Izwardy, D., 2018. Adolescent girls' nutrition and prevention of anaemia: a school based multisectoral collaboration in Indonesia. *bmj*, 363. doi.org/10.1136/bmj.k4541
- [19] K. Mitkari, H. V. Wadgave, and S. J. Haralkar, 'Anemia in school-going adolescent girls of age between 11 and 16 years in rural area-A cross-sectional study', *International Journal of Medical Science and Public Health*, vol. 9, no. 9, 2020. doi.org/10.5455/ijmsph.2020.05060202021092020

How to Cite: Mrs. Monika Devi NR. (2023). A study to assess the knowledge of adolescent girls about iron insufficiency and anemia. *Journal of Nursing Research, Patient Safety and Practise (JNRPS)*, 3(1), 51-57. <https://doi.org/10.55529/jnrpsp.32.11.20>

BIOGRAPHIE OF AUTHOR

	Mrs. Monika Devi NR , holds a M.Sc. in Nursing with a specialization in Medical-Surgical Nursing from Government Medical College and Hospital, Jammu, Jammu and Kashmir, India. She is a nursing professional with academic and clinical interests in medical-surgical nursing, patient care, and healthcare education. Her professional work focuses on promoting quality nursing practice, improving patient outcomes, and strengthening evidence-based approaches to nursing care. She is committed to professional development and nursing research. Email: monikasyal98@gmail.com
---	---