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A study on prevalence and determinants of Anemia Among Adolescent Girls in Urban Slums Rajapur Kalaburagi.

Dr Shivanand [1], Dr Shweta R Chapparbandi [2], Dr Pavan Kalasker [3], Dr Sampat Kumar [4*]

1,2: Assistant Professor, Department of Community Medicine, Mahadevappa Rampure Medical College -Kalaburagi.

3: Assistant Professor, Department of Community Medicine, GIMS – Kalaburagi.

4: Assistant Professor, Department of Pathology, Kodagu Institute of Medical Sciences, Madikeri , Kodagu - Karnataka

*Corresponding Author:Dr Sampat Kumar

Assistant Professor, Department of Pathology

Kodagu Institute of Medical sciences, Madikeri , Kodagu - Karnataka.

Email- sampath_spidey@rediffmail.com

Abstract

Background: Anemia is a significant public health issue affecting adolescent girls, particularly in low-income urban slum areas. This condition can lead to severe health consequences and impede overall development. The Urban Health Centre Rajapur in Mahadevappa Rampure Medical College, Kalaburagi, serves a population where the prevalence and determinants of anemia are not well-documented.

Objective: This study aims to determine the prevalence of anemia among adolescent girls in the urban slum area served by the Urban Health Centre Rajapur and to identify socio-economic, dietary, and environmental determinants contributing to anemia.

Methodology: A cross-sectional study was conducted with a sample of 300 adolescent girls aged 10-19 years from the urban slum area. Hemoglobin levels were measured using standard blood tests to assess anemia. Data on socio-economic status, dietary intake, and living conditions were collected through structured questionnaires. Statistical analyses were performed to determine the prevalence and identify significant determinants of anemia.

Results: The study found a high prevalence of anemia among the adolescent girls, with 65% of participants affected. Key determinants of anemia included inadequate dietary iron intake, with 70% of girls reporting insufficient iron-rich foods, poor socio-economic conditions characterized by low family income and limited access to healthcare, and suboptimal living environments marked by inadequate sanitation. These factors were significantly associated with lower hemoglobin levels.

Conclusion: Anemia is a prevalent issue among adolescent girls in the urban slum area, with several socio-economic and environmental factors contributing to its high rates. Addressing these determinants through targeted interventions, improved dietary practices, and better living conditions is crucial for reducing anemia and improving overall health outcomes in this population.

Keywords: Anemia, Adolescent Girls, Urban Slums, Socio-economic Determinants, Public Health

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Introduction

Anemia among adolescent girls is a pressing public health concern, particularly in low-income urban slum areas. Anemia, characterized by insufficient hemoglobin levels, can lead to significant health issues, including impaired cognitive and physical development, increased susceptibility to infections, and reduced overall quality of life (1). The prevalence of anemia in these populations often exceeds that of the general population due to factors such as poor nutritional intake, inadequate healthcare access, and adverse living conditions (2).

In urban slum settings, these factors are exacerbated by socio-economic deprivation and environmental challenges, which can compound the risk of anemia (3). The Urban Health Centre Rajapur in Mahadevappa Rampure Medical College, Kalaburagi, serves a densely populated slum area where the prevalence and determinants of anemia among adolescent girls have not been comprehensively studied. Understanding these factors is critical for developing targeted interventions that can address both the symptoms and root causes of anemia (4). This study aims to fill this gap by determining the prevalence of anemia in this population and identifying key socio-economic, dietary, and environmental determinants.

Methodology

This cross-sectional study was conducted at the Urban Health Centre Rajapur, serving an urban slum area in Mahadevappa Rampure Medical College, Kalaburagi. The target population included adolescent girls aged 10-19 years residing in the urban slum. A sample size of 300 participants was determined using statistical methods to ensure representativeness and sufficient power for detecting significant associations. Hemoglobin levels were assessed through venous blood samples collected in a sterile environment. Anemia was classified based on WHO criteria, with hemoglobin levels below 12 g/dL indicating anemia (1). To explore determinants of anemia, structured questionnaires were administered to gather data on socio-economic status, including family income, education level, and employment status; dietary intake, focusing on the consumption of iron-rich foods; and living conditions, such as sanitation and housing quality. Data were analyzed using statistical software SPPS 16.0 to calculate the prevalence of anemia and to identify correlations between anemia and the various determinants. Chi-square tests and logistic regression analyses were employed to assess the significance of associations and to adjust for potential confounding variables. Ethical approval was obtained from the institutional review board, and informed consent was secured from all participants or their guardians.

Results

Table 1: Prevalence of Anemia

Parameter	Value	Explanation
Total Sample Size	300	Total number of adolescent girls in the study.
Prevalence of Anemia	65%	Percentage of participants diagnosed with anemia.

This table shows the overall prevalence of anemia among the study participants.

Table 2: Hemoglobin Levels

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Parameter	Value	Explanation
Mean Hemoglobin Level (g/dL)	10.5	Average hemoglobin level among participants.

This table presents the average hemoglobin levels observed in the study.

Table 3: Age Distribution

Age Group (Years)	Percentage	Explanation
10-12	20%	Proportion of participants aged 10-12 years.
13-15	35%	Proportion of participants aged 13-15 years.
16-19	45%	Proportion of participants aged 16-19 years.

This table outlines the age distribution of the adolescent girls in the study.

Table 4: Dietary Intake

Parameter	Value	Explanation
Percentage with Low Dietary Iron Intake	70%	Proportion of participants with insufficient iron intake.
Chi-Square Test (p-value)	0.02	Statistical significance of the association between dietary iron intake and anemia.

This table details the impact of dietary iron intake on anemia, including statistical significance.

Table 5: Socio-economic and Environmental Factors

Factor	Value	Explanation
Percentage Living in Poor Sanitation Conditions	60%	Proportion of participants living in inadequate sanitation conditions.
Percentage with Low Family Income	55%	Proportion of participants from low-income families.
Chi-Square Test (p-value)	0.03	Statistical significance of the association between poor sanitation, low family income, and anemia.
Logistic Regression (Odds Ratio)	2.5	Odds ratio for the likelihood of anemia associated with low dietary iron intake.
Logistic Regression (Odds Ratio)	1.8	Odds ratio for the likelihood of anemia associated with poor sanitation conditions.
Logistic Regression (Odds Ratio)	2.1	Odds ratio for the likelihood of anemia associated with low family income.

This table summarizes the influence of socio-economic and environmental factors on anemia, including statistical significance and odds ratios.

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Discussion

The study's finding of a 65% prevalence of anemia among adolescent girls in the urban slum area of Rajapur reflects a severe public health concern. The mean hemoglobin level of 10.5 g/dL indicates widespread anemia, which is consistent with other research showing high rates of anemia in similar socio-economic contexts (1,2). Anemia in adolescents can lead to diminished cognitive and physical development, making it critical to address the factors contributing to this condition (3).

The significant association between low dietary iron intake and anemia, with a p-value of 0.02, underscores the importance of nutrition in managing anemia. This study found that 70% of participants had inadequate iron intake, aligning with literature highlighting the link between poor dietary habits and anemia (4,5). Inadequate access to iron-rich foods is a common issue in low-income settings, where economic constraints limit the ability to purchase or consume such foods (6,7). Nutrition education and food supplementation programs are essential to improving dietary iron intake and addressing anemia in these communities (8).

The study also identified poor sanitation conditions and low family income as significant determinants of anemia, with p-values of 0.03 and odds ratios of 1.8 and 2.1, respectively. These results are supported by research indicating that socio-economic factors significantly influence health outcomes (9,10). Poor sanitation can exacerbate anemia through increased infections and parasitic diseases, contributing to chronic blood loss and nutritional deficiencies (11,12). Similarly, low family income restricts access to healthcare and nutritious food, further compounding the risk of anemia (13,14). Addressing these socio-economic and environmental determinants is crucial for effective anemia prevention and treatment (15).

The age distribution of the study population, with 45% of participants aged 16-19 years, highlights a critical period for targeted health interventions. Older adolescents are at a higher risk for anemia due to increased nutritional demands during growth spurts and potential lifestyle factors (16). Tailored health programs that address the specific needs of this age group, including education on nutrition and access to health services, are necessary to improve anemia outcomes (17).

In conclusion, the high prevalence of anemia among adolescent girls in urban slums underscores the need for comprehensive public health strategies. These should include improving nutritional intake, enhancing sanitation conditions, and addressing socio-economic barriers. Collaborative efforts involving health education, community support, and policy changes are essential to effectively combat anemia and enhance the overall health and development of adolescents in underserved areas (18,19).

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