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HEALTH-SEEKING BEHAVIOUR FOR ANEMIA SYMPTOMS AND ITS DETERMINANTS IN RURAL AND URBAN HARYANA: A COMMUNITY-BASED STUDY

Dr Sushil Kumar Singh[1], Dr Amar Nath Singh[2], Dr Jatin Prajapati[3], Dr Nandini Verma[4]

[1] Public Health Specialist, Armed Forces Medical Services (under Ministry of Defence), Haryana, India.
[2] Associate Professor, Department of Community Medicine, RIMS Raniganj, West Bengal, India.
[3] Post Graduate Student, Department of Community Medicine, RNT Medical College, Udaipur, Rajasthan, India. (ORCID: https://o rcid.org/0009-0004-7298-4499)
[4] Post Graduate Student, Department of Obstetrics and Gynaecology, Maulana Azad Medical College, New Delhi, Delhi, India. (ORCID: https://orcid.org/0009-0009-6017-8402)

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Corresponding Author:

Dr Sushil Kumar Singh
Public Health Specialist, Armed Forces Medical Services (under Ministry of Defence), Haryana, India.

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ABSTRACT

Background: Anemia remains a major public health problem in India, with significant morbidity and reduced quality of life. Health-seeking behavior for anemia-related symptoms plays a crucial role in early diagnosis and management but remains inadequately explored, particularly in community settings.
Objectives: To assess health-seeking behavior for anemia-related symptoms and its determinants among adults in rural and urban field practice areas of a tertiary care hospital in Haryana.
Methods: A community-based cross-sectional study was conducted from January to June 2025 among 450 adults (225 rural, 225 urban) selected using multistage sampling. Data were collected using a pretested semi-structured questionnaire assessing socio-demographic characteristics, anemia-related symptoms, health-seeking behavior, and awareness. Statistical analysis was performed using SPSS. Chi-square test and logistic regression were applied to identify significant associations and predictors.
Results: Overall, 60.0% of participants reported at least one anemia-related symptom, with a significantly higher prevalence in rural areas (64.4% vs 55.6%, p=0.048). Among symptomatic individuals, 66.7% sought treatment; however, only 45.2% demonstrated appropriate health-seeking behavior. Urban participants showed significantly better practices compared to rural counterparts (56.0% vs 35.9%, p=0.001). Financial constraints, lack of awareness, and accessibility issues were major barriers, particularly in rural areas. Higher education, better socioeconomic status, urban residence, and adequate awareness were significant predictors of appropriate health-seeking behavior, with awareness being the strongest predictor (AOR=2.50, p<0.001).
Conclusion: Health-seeking behavior for anemia-related symptoms remains suboptimal, especially in rural populations. Strengthening awareness, improving accessibility, and addressing socioeconomic barriers are essential to enhance timely healthcare utilization and reduce anemia-related morbidity.

Keywords: *Anemia; Health-seeking behavior; Rural-urban differences; Awareness; Community study; Haryana.*

INTRODUCTION

Anemia remains one of the most significant public health problems worldwide, affecting both developing and developed countries, with major consequences for human health as well as social and economic development. According to the World Health Organization, anemia is defined as a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiological needs, which vary by age, sex, altitude, smoking status, and pregnancy status

[1]. Globally, anemia affects approximately 1.62 billion people, corresponding to nearly one-quarter of the world's population, with the highest burden seen in low- and middle-income countries [2].

In India, anemia continues to be a major public health concern despite various national programs and interventions. The findings of National Family Health Survey (NFHS-5) indicate that anemia prevalence remains alarmingly high among women, children, and even men, reflecting persistent nutritional deficiencies and systemic challenges [3]. Iron deficiency remains the most common cause, although other factors such as folate and vitamin B12 deficiencies, chronic infections, parasitic infestations, and genetic hemoglobin disorders also contribute significantly [4].

The clinical manifestations of anemia are often nonspecific and may include fatigue, weakness, dizziness, palpitations, and breathlessness. Due to the insidious onset and mild nature of symptoms in early stages, anemia frequently goes unrecognized and untreated, especially in community settings [5]. This leads to reduced work capacity, impaired cognitive performance, poor pregnancy outcomes, and increased morbidity and mortality [6]. Despite its high prevalence and impact, anemia is often underprioritized by individuals, particularly in rural and underserved populations.

Health-seeking behavior refers to the sequence of remedial actions that individuals undertake to rectify perceived ill-health. It is influenced by a complex interplay of socio-demographic, cultural, economic, and health system-related factors [7]. In the context of anemia, health-seeking behavior is particularly important because early recognition and timely treatment can significantly reduce complications and improve quality of life. However, studies have shown that individuals often delay seeking care or resort to self-medication and unqualified practitioners, especially in resource-limited settings [8].

In India, multiple initiatives such as Anemia Mukt Bharat under the National Health Mission aim to reduce the burden of anemia through preventive, promotive, and curative strategies [9]. These include iron and folic acid supplementation, deworming, behavior change communication, and strengthening of health services. However, the effectiveness of these interventions largely depends on community awareness, accessibility of services, and appropriate health-seeking behavior [10].
Rural–urban disparities further complicate the issue, as access to healthcare services, literacy levels, and socio-economic conditions vary significantly between these settings. Rural populations often face barriers such as limited healthcare infrastructure, transportation issues, and cultural beliefs, whereas urban populations may exhibit different patterns of healthcare utilization influenced by availability and affordability of private services [11]. Understanding these differences is essential for designing targeted interventions.

Despite the high burden of anemia, there is a relative paucity of community-based studies focusing specifically on health-seeking behavior for anemia-related symptoms, particularly comparing rural and urban populations. Most existing studies emphasize prevalence and biomedical aspects, with limited attention to behavioral and health system determinants [12]. Therefore, assessing health-seeking behavior and its associated factors is crucial to bridge this gap and inform public health strategies.

In this context, the present study aims to assess health-seeking behavior for anemia-related symptoms among adults in rural and urban field practice areas of a tertiary care hospital in Haryana and to identify the determinants influencing such behavior.

METHODOLOGY

Study Design and Setting: A community-based cross-sectional study was conducted in the rural and urban field practice areas attached to a tertiary care hospital in Haryana, India. These field practice areas cater to a defined population and are utilized for community-based teaching and service delivery.

Study Duration: The study was carried out over a period of six months from January 2025 to June 2025.
Study Population: The study population comprised adults aged ≥18 years residing in the selected rural and urban field practice areas for at least six months prior to the survey.

Sample Size and Sampling Technique: The sample size for the study was 450 participants, with equal representation from rural and urban areas (225 each). A multistage sampling technique was employed. In the first stage, villages (rural) and wards (urban) were selected randomly from the field practice areas. In the second stage, households were selected using systematic random sampling. From each selected household, one eligible adult was chosen using simple random selection. In case of non-availability or refusal, the next household was approached.

Inclusion and Exclusion Criteria
Inclusion criteria:
- Adults aged ≥18 years
- Residents of the study area for ≥6 months
- Individuals providing informed consent

Exclusion criteria:
- Individuals who were seriously ill or unable to respond
- Individuals with known severe psychiatric illness
- Non-consenting individuals

Study Tool and Data Collection: Data were collected using a pretested, semi-structured questionnaire administered through face-to-face interviews during house-to-house visits.
The questionnaire consisted of the following sections:

1. **Socio-demographic details** {age, sex, education, occupation, socioeconomic status assessed using the Modified BG Prasad Classification (updated for 2025 CPI)}
2. **Assessment of anemia-related symptoms** (fatigue, weakness, dizziness, palpitations, breathlessness, and pallor) experienced in the preceding three months
3. **Health-seeking behavior**, including type of healthcare provider consulted, time interval between symptom onset and consultation, and treatment practices
4. **Barriers to healthcare utilization**, including financial, accessibility, and sociocultural factors
5. **Awareness regarding anemia**, its causes, prevention, and dietary practices

Operational Definitions
- **Anemia-related symptoms:** Presence of one or more of the following symptoms in the past three months: fatigue, weakness, dizziness, palpitations, breathlessness, or pallor.
- **Appropriate health-seeking behavior:** Consultation with a qualified healthcare provider (government or private) within two weeks of symptom onset.
- **Inappropriate health-seeking behavior:** Delay of more than two weeks, self-medication, consultation with unqualified practitioners, or no treatment sought.
- **Assessment of Awareness:** Awareness regarding anemia was assessed using a set of structured questions covering causes, symptoms, prevention, and treatment of anemia. Each correct response was awarded one point. A composite awareness score was calculated, and participants scoring ≥50% of the total score were categorized as having *adequate awareness*, while those scoring <50% were considered to have *inadequate awareness*.

Statistical Analysis: Data were entered into Microsoft Excel and analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics were expressed as frequency, percentage, mean, and standard deviation. Inferential statistics were applied using the Chi-square test or Fisher's exact test (where appropriate) to assess associations between categorical variables. A binary logistic regression analysis was performed to identify independent predictors of appropriate health-seeking behavior. A p-value of <0.05 was considered statistically significant.

Ethical Considerations: Written informed consent was obtained from all participants prior to data collection. Confidentiality and anonymity of the participants were strictly maintained throughout the study.

RESULTS

A total of **450 participants** were included in the study, equally distributed between rural and urban areas. The majority of participants belonged to the 18–44 years age group, with a nearly equal gender distribution. Rural participants had comparatively lower educational and socioeconomic status than their urban counterparts (**Table 1**).

Table 1: Socio-demographic Characteristics of Study Participants (n=450)

Variable	Category	Rural n (%)	Urban n (%)	Total n (%)
Age (years)	18–29	72 (32.0)	80 (35.6)	152 (33.8)
	30–44	68 (30.2)	70 (31.1)	138 (30.7)
	45–59	52 (23.1)	45 (20.0)	97 (21.6)
	≥60	33 (14.7)	30 (13.3)	63 (14.0)
Gender	Male	110 (48.9)	118 (52.4)	228 (50.7)
	Female	115 (51.1)	107 (47.6)	222 (49.3)
Education	Illiterate	68 (30.2)	32 (14.2)	100 (22.2)
	Primary–Secondary	110 (48.9)	102 (45.3)	212 (47.1)
	Graduate & above	47 (20.9)	91 (40.5)	138 (30.7)
Socioeconomic Status	Lower	95 (42.2)	48 (21.3)	143 (31.8)
	Middle	102 (45.3)	120 (53.3)	222 (49.3)
	Upper	28 (12.4)	57 (25.3)	85 (18.9)

Overall, **60.0%** of participants reported at least one anemia-related symptom, with a significantly higher prevalence in rural areas (64.4%) compared to urban areas (55.6%) (**p = 0.048**). Fatigue/weakness was the most commonly reported symptom (**Table 2**).

Table 2: Prevalence of Anemia-related Symptoms (n=450)

Symptom	Rural n (%)	Urban n (%)	Total n (%)	p-value*
Fatigue/Weakness	118 (52.4)	102 (45.3)	220 (48.9)	0.12
Dizziness	72 (32.0)	58 (25.8)	130 (28.9)	0.14
Breathlessness	48 (21.3)	39 (17.3)	87 (19.3)	0.28
Palpitations	40 (17.8)	36 (16.0)	76 (16.9)	0.62
≥1 Symptom Present	**145 (64.4)**	**125 (55.6)**	**270 (60.0)**	**0.048**

*Chi-square test

Among symptomatic individuals (n=270), **66.7%** sought some form of treatment; however, only **45.2%** demonstrated appropriate health-seeking behavior. Urban participants showed significantly better health-seeking practices compared to rural participants (56.0% vs 35.9%, **p = 0.001**). Delayed care-seeking and non-treatment were significantly more common in rural areas (**Table 3**).

Table 3: Health-Seeking Behavior among Symptomatic Individuals (n=270)

Variable	Rural n (%)	Urban n (%)	Total n (%)	p-value*
Sought Treatment	88 (60.7)	92 (73.6)	180 (66.7)	0.02
Appropriate Behavior	52 (35.9)	70 (56.0)	122 (45.2)	0.001
Delay >2 weeks	63 (43.4)	38 (30.4)	101 (37.4)	0.02
No Treatment	57 (39.3)	33 (26.4)	90 (33.3)	0.02

*Chi-square test

Regarding healthcare utilization, rural participants predominantly accessed government facilities, whereas urban participants preferred private healthcare providers. Financial constraints, lack of awareness, and accessibility issues were the major barriers to care, with significantly higher prevalence in rural areas (**Table 4**).

Table 4: Type of Healthcare Facility and Barriers to Care (n=180)

Variable		Rural n (%)	Urban n (%)	Total n (%)	p-value*
Type of Facility	Government	40 (45.5)	30 (32.6)	70 (38.9)	0.04
	Private	28 (31.8)	50 (54.3)	78 (43.3)	
	Informal/Quack	20 (22.7)	12 (13.0)	32 (17.8)	
Barriers (multiple response)	Financial constraints	52 (59.1)	32 (34.8)	84 (46.7)	0.001
	Lack of awareness	48 (54.5)	28 (30.4)	76 (42.2)	0.001
	Accessibility issues	40 (45.5)	18 (19.6)	58 (32.2)	0.001

*Chi-square test

Appropriate health-seeking behavior was significantly associated with higher education, better socioeconomic status, and adequate awareness regarding anemia (**p < 0.01**) (**Table 5**).

Table 5: Factors Associated with Appropriate Health-Seeking Behavior (n=270)

	Variable	Appropriate n (%)	Inappropriate n (%)	p-value*
Education	Illiterate	18 (25.0)	54 (75.0)	0.001
	Primary–Secondary	56 (43.8)	72 (56.2)	
	Graduate & above	48 (61.5)	30 (38.5)	
SES	Lower	30 (30.6)	68 (69.4)	0.002
	Middle	62 (48.4)	66 (51.6)	
	Upper	30 (66.7)	15 (33.3)	
Awareness of Anemia	Adequate	72 (62.1)	44 (37.9)	0.001
	Inadequate	50 (32.5)	104 (67.5)	

*Chi-square test

On multivariate analysis, higher education (AOR=2.10), urban residence (AOR=1.80), adequate awareness (AOR=2.50), and higher socioeconomic status (AOR=1.90) were identified as independent predictors of appropriate health-seeking behavior (**Table 6**).

Table 6: Binary Logistic Regression Analysis for Predictors of Appropriate Health-Seeking Behavior

Variable	Adjusted OR	95% CI	p-value
Higher education	2.10	1.30–3.40	0.002
Urban residence	1.80	1.10–2.90	0.01
Adequate awareness	2.50	1.60–4.00	<0.001
Higher SES	1.90	1.20–3.10	0.005

DISCUSSION

The present community-based study assessed health-seeking behavior for anemia-related symptoms among adults in rural and urban field practice areas of Haryana. The findings highlight a substantial burden of self-reported anemia-related symptoms and significant gaps in appropriate healthcare utilization, particularly in rural settings.

In the current study, **60% of participants reported at least one anemia-related symptom**, with a significantly higher prevalence in rural areas. This is consistent with global and national estimates indicating a high burden of anemia and related symptomatology in low- and middle-income settings [2,3]. Similar community-based studies in India have reported a high prevalence of fatigue and weakness as common presenting complaints, often overlooked due to their nonspecific nature [5,12]. The higher symptom burden in rural populations may be attributed to poorer nutritional status, lower awareness, and limited access to healthcare services.

Despite a high prevalence of symptoms, only **66.7% of symptomatic individuals sought treatment**, and less than half demonstrated appropriate health-seeking behavior. This reflects a critical gap between perceived morbidity and healthcare utilization. Previous studies have also documented delayed or inappropriate care-seeking for anemia due to low perceived severity and normalization of symptoms [7,8]. In many communities, symptoms such as fatigue are often considered part of routine life rather than indicators of underlying pathology, leading to underutilization of formal healthcare services.

A key finding of this study was the **significant rural–urban disparity in health-seeking behavior**, with urban participants more likely to seek timely and appropriate care. This aligns with earlier research demonstrating better healthcare access, awareness, and service utilization in urban populations compared to rural counterparts [11,13]. Rural populations often face structural barriers such as distance to healthcare facilities, transportation issues, and dependence on informal healthcare providers, which contribute to delayed or inappropriate care-seeking.

The study also found that **government healthcare facilities were more commonly utilized in rural areas**, whereas urban participants showed a preference for private providers. This pattern has been consistently reported in Indian studies, where public healthcare systems serve as the primary source of care in rural areas, while urban populations rely more on private services due to perceived better quality and shorter waiting times [13,14]. However, reliance on informal or unqualified practitioners, particularly in rural areas, remains a concern and has implications for quality of care and treatment outcomes.

Barriers to healthcare seeking identified in this study—**financial constraints, lack of awareness, and accessibility issues**—were significantly more prevalent in rural populations. These findings are in agreement with previous literature, which highlights socioeconomic and informational barriers as major determinants of healthcare utilization in developing countries [7,15]. Financial limitations often lead to postponement of care, while lack of awareness regarding anemia and its consequences reduces the perceived need for timely intervention.

Education, socioeconomic status, and awareness emerged as significant determinants of appropriate health-seeking behavior. Participants with higher education and better socioeconomic status were more likely to seek appropriate care, which is consistent with findings from earlier studies [12,16]. Education likely improves health literacy and awareness, enabling individuals to recognize symptoms and seek timely medical attention. Similarly, higher socioeconomic status enhances the ability to afford healthcare services and reduces financial barriers.

Importantly, **awareness regarding anemia was identified as a strong independent predictor of appropriate health-seeking behavior**, as demonstrated in the logistic regression analysis. This finding underscores the critical role of health education and behavior change communication strategies in improving healthcare utilization. National initiatives such as Anemia Mukt Bharat emphasize awareness generation as a key pillar; however, the persistence of inadequate awareness in the present study suggests gaps in program implementation and outreach [9,10].

The findings of this study have important public health implications. Addressing anemia requires not only biomedical interventions but also strengthening community awareness and improving health-seeking behavior. Tailored interventions focusing on rural populations, improving accessibility of healthcare services, and enhancing health literacy are essential to bridge existing gaps.

Limitations: The present study has certain limitations. Being a cross-sectional study, causal relationships cannot be established. The assessment of anemia-related symptoms was based on self-reporting, which may be subject to recall bias and misclassification. Hemoglobin estimation was not performed, and hence clinical confirmation of anemia was not possible. Additionally, the study was conducted in field practice areas of a single tertiary care hospital, which may limit the generalizability of the findings to other settings.

Strengths: The study provides valuable community-based evidence on health-seeking behavior for anemia-related symptoms, with a comparative rural–urban analysis. The use of multistage sampling and inclusion of both behavioral and socio-demographic determinants enhances the robustness of the findings.

CONCLUSION

The present study highlights a substantial burden of anemia-related symptoms in the community, with significant gaps in appropriate health-seeking behavior, particularly in rural populations. Although a majority of symptomatic individuals sought some form of care, less than half demonstrated timely and appropriate healthcare utilization. Rural–urban disparities were evident, with rural residents facing greater barriers such as financial constraints, poor accessibility, and limited awareness. Education, socioeconomic status, and awareness regarding anemia emerged as key determinants of appropriate health-seeking behavior, with awareness being a strong independent predictor. These findings underscore the need for strengthening community-based interventions focusing on early symptom recognition, health education, and behavior change communication. Enhancing accessibility and affordability of healthcare services, especially in rural areas, is crucial. Integrating awareness strategies with existing national programs can improve timely care-seeking and contribute to reducing the burden of anemia and its associated complications.

DECLARATIONS

Funding: No external funding was received for this study.
Conflicts of Interest: The authors declare no conflict of interest.
Ethical Approval: The study was approved by the Institutional Ethics Committee of the concerned tertiary care hospital.
Informed Consent: Written informed consent was obtained from all participants prior to data collection.
Data Availability: Data supporting the findings of this study are available from the corresponding author upon reasonable request.

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