AN OBSERVATIONAL STUDY ON ETIOLOGY AND CLINICAL PROFILE OF PATIENTS WITH ANEMIA IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Millions of individuals worldwide suffer from anaemia, a common and complex health problem that presents serious obstacles to public health. Anaemia is characterized by a decrease in the quantity of red blood cells or the concentration of ha'emoglobin. This lowers the blood's ability to transport oxygen, which causes weariness, weakness, and other clinical symptoms. Anaemia can be caused by a variety of factors, including acute or chronic blood loss, hereditary problems, chronic illnesses, and dietary deficiencies. Comprehending the fundamental reasons and clinical manifestations of anaemia is essential for proficient identification, handling, and therapy of impacted individuals. In order to improve diagnosis precision, therapeutic approaches, and patient care in general, this observational research investigates the etiology and clinical characteristics of anemia patients in a tertiary care setting. **Methods and Material:** This was an observational study conducted on 100 patients at general medicine department of the Trident Multispecialty Hospital, Perecherla, Guntur, Andhra Pradesh. A specially created patient data collecting form was used to record patient demographic information, such as name, age, sex, in-patient/out-patient department number, and weight. Every day, the patients' treatment plan, diagnosis, laboratory results, clinical history, and prescriptions for discharge were documented in the patient data collecting form. Following data entry into a Microsoft Excel spreadsheet, statistical analysis was performed using fundamental statistical processes to get frequencies and percentages. **Results:** Our research revealed that anaemia results from blood loss from various sources. There were more cases of anaemia in females (59 cases) than in boys (41 cases). The majority of cases involved 24 patients between the ages of 36 and 45, which makes sense given that people in this age range frequently experience blood loss, accidents, poor diets, and malnutrition. We found that the leading causes of anaemia include malnutrition (6 instances), chronic disease (28 cases), surgery (17 cases), prolonged blood loss (9 cases), and nutrition (16 cases). Anaemia severity is classified as mild (25 instances), moderate (50 cases), and severe (25 cases) based on test data. The majority of clinical symptoms are body pains (47 cases), fever (28 cases), vomiting (18 cases), itching (9 cases) etc. The prescription distribution consisted of 20 cases of tablets of iron folic acid, 46 cases of B-complex, 25 cases of tablets of methylcobalamine, 31 cases of tablets of multivitamin, 34 cases of syrup iron folic acid, and 34 cases of injection iron sucrose. **Conclusion:** We can draw the following conclusions based on all of our observations of the subjects: Anaemia can lengthen hospital stays when combined with other comorbidities. Due to menstrual blood loss and poor nutritional habits, women are more likely than males to develop anaemia. Patients in rural areas had a higher prevalence of moderate-to-severe anaemia because they were less aware of the signs of anaemia and the availability of health care facilities (for routine testing and check-ups). The majority of patients were hospitalised as a result of not having regular general health examinations (at least once a year) and not understanding the warning signs and symptoms. For a variety of reasons, the majority of patients are neither accessible nor fully aware of the counselling portion.

KEYWORDS: Anaemia, Haemoglobin, Clinical profile, Etiology, Iron-deficiency.

INTRODUCTION

Millions of individuals worldwide suffer from anaemia, a common and complex health problem that presents serious obstacles to public health. Anaemia is characterized by a decrease in the quantity of red blood cells or the concentration of haemoglobin. This lowers the blood's ability to transport oxygen, which causes weariness, weakness, and other clinical symptoms. Anaemia can be caused by a variety of factors, including acute or chronic blood loss, hereditary problems, chronic illnesses, and dietary deficiencies. Comprehending the fundamental reasons and clinical manifestations of anaemia is essential for proficient identification, handling, and therapy of impacted individuals.[1,2,3]

Comprehensive anemia research is best done at tertiary care hospitals, which offer modern diagnostic tools and specialized medical care. These facilities frequently serve a broad patient base with complicated and severe illnesses, providing a rare chance to watch and examine different anemia etiological variables and clinical symptoms.[4,5,6]

There are many different causes of anaemia, and they can differ greatly depending on geographic location, underlying medical issues, and demographics. The main causes are genetic abnormalities, chronic illnesses, and nutritional deficits. Developing focused intervention techniques requires an understanding of the prevalence and interaction of these factors within a particular group. An optimal environment for a thorough investigation of these causative variables is a tertiary care hospital that serves a varied patient population with complicated medical requirements.[7,8,9]

A thorough comprehension of anaemia's clinical manifestations and test results is necessary for an accurate diagnosis. Differences in the underlying aetiology-influenced symptoms and lab results require a more comprehensive approach to diagnosis. This research can help improve diagnostic criteria and the accuracy of anemia diagnosis by methodically examining the clinical characteristics of anemic patients in a tertiary care context. This will improve patient outcomes.[10,11]

Finding and treating anemia's underlying causes is essential to its effective treatment. Considering the wide range of etiologies of anemia, a one-size-fits-all strategy is frequently insufficient. Extensive observational research can reveal relationships and patterns that guide customized care regimens. This study provides insights that can help physicians choose the right therapeutic interventions to improve patient care. These interventions can range from sophisticated therapies for hereditary anaemia's to nutritional supplements.[12,13]

The significant frequency of anaemia highlights the need for ongoing study, particularly in vulnerable populations including children, pregnant women, and the elderly. The results of this observational study can contribute to the body of knowledge already in existence by offering important information on the epidemiology of anaemia in the setting of tertiary care. Planning and policy-making in public health are critical to lowering the prevalence of anaemia and enhancing population-level health outcomes.[13,14]

Even though anaemia has been the subject of several research, detailed data unique to tertiary care settings are still lacking. By offering thorough insights into the aetiology and clinical characteristics of anaemia patients in such a specialized healthcare setting, our study seeks to close this knowledge gap. In doing so, it might draw attention to particular issues and intervention possibilities that are relevant to tertiary care facilities.

In order to sum up, this observational research of the clinical profile and aetiology of anaemia patients at a tertiary care hospital is crucial to improving our knowledge of this complicated illness. It might increase the precision of diagnoses, customize treatment plans, improve patient outcomes, and add significant knowledge to the field of public health.[15,16]

AIM

The main aim of this study to assess the etiology and clinical profile of patients with anemia in a tertiary care hospital.

OBJECTIVES

1. To assess the demographics and clinical features in patients with anaemia
2. To assess the etiological profile in patients with anaemia
3. To identify the severity of anaemia
4. To assess the laboratory parameters, complications and their prognostic implications among patients with anaemia.
5. To perform patient counselling

METHODOLOGY

Ethical Approval: The study was initiated after the clearance of institutional ethics committee.

Study Site: This research was carried out at general medicine department of the Trident Multispecialty Hospital, Perecherla, Guntur, Andhra Pradesh.

Study Duration: The study is conducted for a 6 months period from December 2021-May 2022.

Study Design: This is an observational study.

Sample Size: 100 Patients were enrolled into this study.

Study method: Interviews or patient case files were used to gather data from each patient. Every patient's data was gathered, recorded, and assessed for the purposes of the research. The research involved the enrolment of 100 patients. A specially created patient

data collecting form was used to record patient demographic information, such as name, age, sex, in-patient/out-patient department number, and weight. Every day, the patients' treatment plan, diagnosis, laboratory results, clinical history, and prescriptions for discharge were documented in the patient data collecting form.

STUDY CRITERIA
Inclusion Criteria
• Patients of above 18 years of age.
• Anaemic Patients with or without any underlying diseases (Like CKD, heart failure, diabetes mellitus, Arthritis.etc) are included.
• Both in-patients and outpatients are included in the study.

Exclusion Criteria
• Infants (< 1yr), Toddlers aged below 4 years are excluded to participate in the study.

• Patients attending below 18 years are excluded in the study.

Statistical Analysis
Following data entry into a Microsoft Excel spreadsheet, statistical analysis was performed using fundamental statistical processes to get frequencies and percentages. Information on statistical trends was analyzed using IBM-Statistical Social Sciences Package (IBM-SPSS) 20.0. The statistical significance of the population-based difference between and among the individuals was discounted in the two independent samples, t-unpaid samples, respectively. Reports of descriptive summary statistics must be presented as (minimum, maximum), either as mean ± SD or as median. The normality of the distribution was ascertained using the normal probability plot for both descriptive and inferential statistical methods (normal P-P).

RESULTS
1. SUBJECT CHARACTERISTICS

SUBJECT CHARACTERISTICS		NO. OF PATIENTS	PERCENTAGE
Age	18-25	14	14%
	26-35	11	11%
	36-45	24	24%
	46-55	22	22%
	56-65	8	8%
	66-75	10	10%
	76-85	6	6%
	85-95	5	5%
Gender	Male	41	41%
	Female	59	59%
Education Status	Literate	45	45%
	Illiterate	55	55%
Locality	Rural	56	56%
	Urban	44	44%
Dietary status	Vegetarian	40	40%
	Non-vegetarian	49	49%
	Mixed	11	11%
Marital Status	Married	77	77%
	Unmarried	23	23%
Occupational status	Daily wage worker	17	17%
	Software professional	12	12%
	House wife	22	22%
	Student	18	18%
	9-5 worker	20	20%
	Retired	11	11%

Table 1 displays the patient distribution based on several characteristics. The patients in this study are split into the following age groups: 18–26 (14%), 26–35 (11%), 36–45 (24%), 46–55 (22%), 56–65 (8%), 66–75 (10%), 76–85 (6%) and 86–95 (5%). There were more female cases (59) than male cases (41). In terms of educational status, 55% of cases were illiterate, whereas 45% of cases were literate. There are 56 cases from rural areas and 44 from urban areas. Thirty-three cases remain single, while the remaining 77 are married. Out of the 100 subjects, 17 are employed on a daily basis, 22 are housewives, 18 are students, 12 are software professionals, 20 are 9–5 workers, and 11 are retired.

2. ANAEMIA – SEVERITY, CAUSES AND CLINICAL FEATURES RELATED DATA

Anaemia Related Data		No. of patients	Percentage
Anaemia Severity	Mild	25	25%
	Moderate	50	50%
	Severe	25	25%
Blood Loss	No Blood loss	62	62%
	Heavy menstrual bleeding	7	7%
	Hematochezia	4	4%
	Surgery	19	19%
	Accident	8	8%
Cause Of Anaemia	Nutrition	16	16%
	Chronic blood loss	9	9%
	Surgery	17	17%
	Malignancy	6	6%
	Chronic disease	28	28%
	No caused found	25	25%
Clinical Features	Fatigue	85	85%
	Abdominal pain	31	31%
	Bleeding	22	22%
	Tiredness	91	91%
	Giddiness	61	61%
	Pallor	41	41%
	Fever	28	28%
	Body pains	47	47%
	Vomiting	18	18%
	Itching	9	9%
	Breathlessness	90	90%
	Palpitations	7	7%

Table 2 shows that Anaemia severity is classified as mild (25 instances), moderate (50 cases), and severe (25 cases) based on test data. Blood loss occurs in eight cases of accidents, 19 cases of surgeries, 4 cases of Hematochezia, 7 cases of heavy menstrual blood loss, and the remaining 62 patients who have never experienced blood loss. We found that the leading causes of anaemia include malnutrition (6 cases), chronic disease (28 cases), surgery (17 cases), prolonged blood loss (9 cases), and nutrition (16 cases). The majority of clinical symptoms are body pains (47 cases), fever (28 cases), vomiting (18 cases), itching (9 cases), breathlessness (90 cases), palpitations, and exhaustion (85 cases), abdominal pain (31 cases), bleeding (22 cases), tiredness (91 cases), giddiness (61 cases), pallor (41 cases), and body pains (47 cases)

3. ANAEMIA – COMORBID CONDIIONS

Comorbid conditions	No. of patients	Percentage
Hypertension	8	8%
Heart failure	6	6%
Kidney failure	6	6%
Typhoid	4	4%
Infection	10	10%
GI disease	18	18%
Liver cirrhosis	5	5%
Cholelithiasis	3	3%
PCOS	9	9%
Cancer	6	6%
Hypothyroidism	5	5%
Arthritis	9	9%
Diabetes mellitus	4	4%
Ovarian cyst	4	4%
others	3	3%

A total of 100 cases were studied, and the distribution of these cases included 8 cases of hypertension, 6 cases of heart failure, 6 cases of kidney failure, 4 cases of typhoid, 10 cases of infection, 18 cases of GI disease, 5

cases of liver cirrhosis, 3 cases of cholelithiasis, 9 cases of PCOS, 6 cases of cancer, 5 cases of hypothyroidism, 9

cases of arthritis, 4 cases of diabetes mellitus, 4 cases of ovarian cyst, and Other conditions.

4. ANAEMIA – HOSPITAL STAY AND TREATMENT RELATED DATA

Anaemia – Hospital stay & Treatment Related Data		No. of patients	Percentage
Patient Type	In Patient	76	76%
	Out Patient	24	24%
Hospital stay	≤ 1 week	53	53%
	> 1 week	20	20%
	1 month	3	3%
	No hospital stay	24	24%
Treatment Choice	Non-Pharmacological Therapy	23	23%
	Pharmacological Therapy	10	10%
	Both	76	76%
Prescription treatment	Tablet Iron folic acid	20	20%
	B-complex	46	46%
	Tab. Methylcobalamine	25	25%
	Tab Multivitamin	31	31%
	Syrup Iron folic acid	34	34%
	Injection Iron sucrose	34	34%
Blood transfusion	1 Unit	22	22
	2 Units	21	21
	3 Units	6	6
	> 3 Units	3	3
	No Blood Transfusion	48	48

Table 4 displays the distribution of patients by type: outpatients (24 cases) and inpatients (76 cases). Less than or equal to one week (53 cases), more than one week (20 cases), one month (3 cases), and no hospital stay (53 cases) make up the distribution of hospital stays. The percentage of patients receiving pharmaceutical therapy are 10 cases followed by non-pharmaceutical therapy are 23 cases and both (76 cases). The prescription distribution consisted of 20 cases of tablets of iron folic acid, 46 cases of B-complex, 25 cases of tablets of methylcobalamine, 31 cases of tablets of multivitamin, 34 cases of syrup iron folic acid, and 34 cases of injection iron sucrose. Instances of blood transfusion include those involving one unit (22 instances), two units (21 cases), three units (six cases), more than three units (three cases), and no blood transfusion (about 48 cases).

5. ANAEMIA – PATIENT COUNSELLING AND UNDERSTANDABILITY

Patient Counselling and Understandability	No. of patients	Percentage
Counselling - Performed	81	81%
Counselling - Not performed	19	19%
After counselling – Patient Understood his/her condition completely and able to remember drugs	50	50%
After counselling – Patient Understood the disease condition only	17	17%
Cannot remember the drugs	14	14%

Table 5 demonstrates that out of the 100 cases, 81 patients underwent counselling. Of these, 50 patients were able to memorise the medications and comprehend the disease, 17 patients could only comprehend the disease's condition, 14 patients were unable to recall the medications and were unaware of the medical condition, and 19 patients were unable to attend the counselling session.

DISCUSSON
Anaemia is defined as a reduction in the total number of red blood cells (RBCs), haemoglobin, or oxygen-

carrying capacity of the blood. The symptoms of slow-onset anaemia are often nonspecific and can include weakness, fatigue, dyspnea, and difficulty exercising.

Our research revealed that anaemia results from blood loss from various sources. There were more cases of anaemia in females (59 cases) than in boys (41 cases). The majority of cases involved 24 patients between the ages of 36 and 45, which makes sense given that people in this age range frequently experience blood loss, accidents, poor diets, and malnutrition. 56 cases come from rural areas, with 44 cases coming from urban areas.

Distribution of cases by occupation: out of 100 subjects, 17 are daily wage workers, 22 are housewives, 18 are students, 12 are software professionals, 20 are 9–5 employees, and 11 are retirees. Of the 100 instances studied, 77 were married, while the remaining 33 were single. 45% of the cases are literate, and 55% are illiterate. The respondents have a variety of food choices (11%) and are vegetarians (40%) and non-vegetarians (49%).

We found that the leading causes of anaemia include malnutrition (6 instances), chronic disease (28 cases), surgery (17 cases), prolonged blood loss (9 cases), and nutrition (16 cases). We identified 25 cases in 100 patients that had no known cause. The majority of the 100 subjects in our study had the following clinical features: body pains (47 cases), fever (28 cases), vomiting (18 cases), itching (9 cases), breathlessness (90 cases), palpitations (7 cases), fatigue (85 cases), abdominal pain (31 cases), bleeding (22 cases), tiredness (91 cases), giddiness (61 cases), pallor (41 cases), and body pains (47 cases). Based on their test results, the anaemia severity in the patients among 100 individuals is classified as light in 25 cases, moderate in 50 cases, and severe in 25 cases. Out of the 100 patients, eight had blood loss from an accident, nine had blood loss from surgery, four had Hematochezia, seven had excessive menstrual blood loss, and the remaining 62 cases involved people who had never experienced blood loss. Among the 100 participants, there were 76 cases of in-patients and 24 cases of out-patients.

In addition to anaemia, the 100 subjects in our study have the following comorbidities: typhoid (4 cases), infection (10 cases), gastrointestinal diseases (18 cases), cholelithiasis (3 cases), liver cirrhosis (5 cases), pcos (9 cases), cancer (6 cases), hypothyroidism (5 cases), arthritis (9 cases), diabetes mellitus (4 cases), ovarian cyst (4 cases), and other diseases (3 cases). A total of 53 cases ($\leq$ 1 week), 20 cases (> 1 week), 3 cases (1 month), and 24 cases (no hospital stay) have been hospitalised. Out of 100 individuals, 48 cases had no blood transfusions; 22 cases had one unit; 21 cases received two units; 6 cases received three units; and 3 cases received more than three units of blood transfusion.

Of the 100 patients, non-pharmacological treatment is recommended in 21 cases due to the patient's age and haemoglobin levels, which can be supported and treated by lifestyle modifications. In 9 cases, however, the patient is entirely on IV supplements and the patient's condition does not lend itself to lifestyle modifications. Only pharmaceutical therapy was used in the other 70 cases; non-pharmacological and pharmaceutical treatment was given in these cases due to the existence of other severe comorbidities, age limits, etc. Iron folic acid (20 cases), t.b.complex (46 cases), t. Methylcobalmin (25 cases), syp. Iron folic acid (34 cases), inj. Iron sucrose (34 cases), and t.multivitamin (31 cases) are among the prescriptions that are given.

Out of 100 individuals, 81 cases had patient counselling completed; in the remaining 19 cases, patient variables prevented patient counselling from being completed. By using reverse questioning, we were able to test the subjects' level of understandability. Of these, 50 subjects understood anaemia, prescribed medications, lifestyle changes, dietary changes, and other topics completely; 17 subjects understood anaemia, lifestyle changes, etc., but were unable to memorise medication information; 14 subjects failed to understand any of the topics covered during patient counselling; and 19 subjects were unable to attend patient counselling sessions. Patient counselling is essential to a patient's health because it helps them understand their illness, their prescriptions, and how to ask a clinical chemist any questions they may have. This aids in their quick recuperation and improved health condition management. Additionally, it will be beneficial to give patients counselling materials and patient brochures

CONCLUSION
Based on our observations, chronic disease, blood loss, and poor nutrition are the main causes of anaemia in our participants. The typical clinical manifestations include pallor, exhaustion, and dyspnea. A majority of the participants come from rural backgrounds. Blood transfusions were observed in most cases, and hospitalisation rates were high along with related comorbidities.

We can draw the following conclusions based on all of our observations of the subjects:
- Anaemia can lengthen hospital stays when combined with other comorbidities.
- Due to menstrual blood loss and poor nutritional habits, women are more likely than males to develop anaemia.
- Patients in rural areas had a higher prevalence of moderate-to-severe anaemia because they were less aware of the signs of anaemia and the availability of health care facilities (for routine testing and check-ups).
- The majority of patients were hospitalised as a result of not having regular general health examinations (at least once a year) and not understanding the warning signs and symptoms.
- For a variety of reasons, the majority of patients are neither accessible nor fully aware of the counselling portion.

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