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Evaluation of Diagnosis and Treatment of Anemia in Pregnancy in Different Healthcare Systems of Azad Kashmir

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ABSTRACT:

According to the World Health Organization (WHO), anemia is the most common disease, affecting more than 1.5 billion people worldwide. Anemia during pregnancy is the most common form of malnutrition in the world and is the eighth leading cause of death in developing countries leading to the low birth weight, which is in turn an important risk factor for infant mortality.Study Aim: To assess awareness and pharmacotherapy suggested for anemia during pregnancy in different healthcare systems of AJK. Methodology: A descriptive study was conducted from February 2024 to August 2024 to include 100 pregnant women that came to different healthcare systems of AJK. Tool:Personal data, lab tests, prescriptions. Results: Microsoft word and SPSS were used to plot graphs and analyzed data we took the data of 100 pregnant women (which includes 100 prescriptions, 100 lab reports who were anemic and our study shown that highest percentage of anemia in pregnant women age group between 25-30years which is 56% and lowest is 3% observed in age group above 35 years, anemia among women having 2nd and 1st trimester pregnancy was higher 61% and 24% respectively. We analyzed percentage of mild, moderate and severe deficiency anemia in pregnant women which was 30% and 49% while 21% showed severe iron deficiency anemia moreover this study shown the dietary recommendations in prescriptions which is only 36%. According to our study most prescribed drug in district in different healthcare systems of AJK is Iberet which is 17% and lowest prescribed drugs are Fengent and Sangobion which are 3% each and the most prescribed Multivitamin is Cal-D which is 34% and lowest prescribed multivitamin is Calmom which is only 1%. Only 8% antiemetic was prescribed in 100 patient

Key words: Anemia, Pregnancy, Azad Kashmir, Hematocrit, Hemoglobin, Complete Blood Count, Serum Ferritin, Folic Acid, Iron deficiency, Mean Corpuscular Volume (MCV), Multivitamins, Red Blood Cells

I. INTRODUCTION;

Anemia during pregnancy is defined by the WHO as a hemoglobin (Hb) concentration below 11 g/dL. It shares similar symptoms with other forms of anemia, including fatigue, weakness, poor focus, and general lethargy. Anemia is a global health issue that poses serious risks during pregnancy, including low birth weight, premature birth, and fetal deformities. The condition arises from a deficiency in red blood cells (RBCs), which reduces the body's oxygen-carrying capacity. RBC production relies on nutrients like iron, folic acid, and vitamin B12, and deficiencies in these can lead to anemia (Chowdhury, 2014). Pregnancy-related anemia increases the health risks for both mother and baby and can lead to societal and financial burdens (Karami, 2022).Globally, anemia in pregnancy remains a public health challenge, with 14% prevalence in high-income countries and up to 51% in low-income countries (Pasaribu, 2023). Factors contributing to anemia in developing countries include iron, folate, and vitamin B12 deficiencies, along with infections like malaria and HIV (Stephen, 2018). Anemia can lead to complications like excessive blood loss during childbirth, susceptibility to infection, and even heart failure or death if Hb levels drop below 4 g/dL (Azmi, 2022).Diagnosis typically involves a complete blood count to assess Hb levels, mean cell volume, and other indicators. In more complex

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cases, bone marrow tests and serum ferritin levels may be evaluated to determine iron stores (Al-Khaffaf, 2020).Management involves screening for anemia in the first trimester and throughout pregnancy. While dietary changes alone are insufficient to treat iron-deficiency anemia, iron supplements, often taken with vitamin C for better absorption, are recommended (Pavord, 2011). Severe anemia may require intravenous iron therapy, especially when oral supplements fail or rapid iron replenishment is needed (Kashif, 2024).Complications from untreated anemia include risks for both the mother, such as preeclampsia and preterm labor, and the fetus, including low birth weight and cognitive impairments later in life (Benson, 2022). Non-pharmacological treatments, including nutritional interventions like red spinach, moringa, and honey, have shown effectiveness in managing anemia during pregnancy (Azu, 2023).

II. LITERATURE REVIEW;

Pregnancy-related anemia is a major global health issue, especially in underdeveloped countries, where it significantly contributes to low birth weight, maternal morbidity, and mortality. This condition increases the risk of newborn mortality, highlighting its public health importance (Judith Angelitta Noronha, 2012). Several studies on anemia during pregnancy highlight the importance of iron supplementation. A 1993 report by the European Commission noted that while iron storage is the natural way to meet the high iron needs of pregnancy, most women lack sufficient stores. Therefore, daily iron supplements are recommended during the second half of pregnancy to meet these increased demands. Various health organizations support nutritional interventions for anemia during pregnancy. In countries like the USA, Denmark, and Sweden, oral iron supplementation is widely recommended. U.S. health authorities advise a daily intake of 30 mg of ferrous iron starting from the first prenatal visit until birth. In contrast, the Danish National Board of Health and Nutrition recommends a higher dosage of 50–70 mg per day from 20 weeks of gestation until delivery, while individual iron prophylaxis is discouraged. (Milman, 2008). Meeting the high iron needs during pregnancy is challenging, particularly in developing countries. Iron requirements vary by trimester: in the first trimester, iron needs decrease due to the absence of menstruation, saving around 160 mg. In the second trimester, increased blood and plasma volume demand approximately 450 mg of iron. The third trimester, with the fetus growing, requires about 270 mg. Overall, pregnant women need an average daily intake of 4-6 mg of iron during the second and third trimesters. (Kayode O, 2012). During pregnancy, women need 2 to 2.8 mg of iron daily, but to meet this, they must consume 20 to 48 mg of dietary iron. However, estimates for total iron needs during pregnancy vary, with a median of 790 mg. Since it is difficult to meet these needs through diet alone, particularly in developing countries where iron-rich foods are scarce, regular iron supplementation has been proven highly beneficial. (TH, 2000). In areas where pregnancy-related anemia is a major concern, pregnant women, including adolescents, should start daily supplementation with 60 mg of elemental iron and 400 µg of folic acid as early as possible. This supplementation should continue throughout pregnancy and for six months postpartum to maintain adequate iron levels. This regimen helps reduce maternal anemia, increases maternal hemoglobin levels, and improves newborn birth weight. (Grace H. Tang, 2024). Worldwide strategies to prevent and manage iron deficiency anemia during pregnancy include iron supplementation and educating women on health and nutrition. In countries like Malaysia, iron supplements are provided free of charge through government health programs, along with health education to encourage a diet rich in iron. Oral iron replacement is the most common treatment, but intravenous iron, such as iron sucrose, is used in severe cases where oral therapy fails, despite the risks of adverse reactions with intravenous iron. In Pakistan, intravenous iron is effective but reserved for specific cases. (Hasneezah Hassan, 2020). Research shows that women who eat meat two or more times a week, a good source of heme iron, generally have higher hemoglobin levels. However, for malnourished women, improved diets during pregnancy might not be enough to correct anemia if they start pregnancy with low iron reserves. (Amina Bukhari, 2022). Diagnosing anemia in pregnancy can be challenging due to physiological changes like hemodilution, which lowers hemoglobin levels naturally. Markers such as mean corpuscular volume (MCV) and hemoglobin (Hb) levels are not always reliable indicators of iron deficiency during pregnancy due to these physiological changes. (Maureen M.Achebe, 2017) Ferritin levels reflect total body iron reserves and are the most reliable indicator of iron deficiency during pregnancy. Ferritin typically decreases

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throughout pregnancy, peaking between weeks 35-38, then rising before delivery. A ferritin level of 12 ng/mL is only 25% sensitive in detecting iron deficiency, but levels at or below 30 ng/mL can diagnose iron deficiency with 92% sensitivity and 98% specificity. Ferritin is a better marker of iron insufficiency than serum iron or transferrin saturation. Ferritin levels above 100 ng/mL suggest sufficient iron storage and a low risk of anemia in the absence of other conditions. (Guyatt GH, 1992)

III. METHODOLOGY

The study investigates anemia in pregnancy within various healthcare systems in Azad Jammu and Kashmir (AJK) using a retrospective approach. Data was collected from February to August 2024 through prescription and lab reports from multiple hospitals, including public sector hospitals and private clinics. The study involves random and convenience sampling techniques.

Key Components:

1. **Sampling Technique**:
   - Random and convenience sampling from hospital prescriptions and lab reports.
2. **Patient Information/Demographics**:
   - Includes patient details like age, gender, weight, marital status, and medical history.
3. **Chief Complaints**:
   - Primary reasons for seeking medical attention, based on the symptoms reported by patients.
4. **History of Patient Illness (HOPI)**:
   - A discussion of symptoms and disease progression reported by medical staff, aiding in treatment decisions.
5. **Past Medical History**:
   - Information on any prior illnesses or hospitalizations relevant to the diagnosis.
6. **Laboratory Data**:
   - Includes tests such as hemoglobin, MCV, hematocrit, and iron levels for disease diagnosis.
7. **Data Collection**:
   - Prescriptions and lab reports were obtained from various hospitals to evaluate pharmacotherapy and awareness of anemia during pregnancy.
8. **Study Duration**:
   - Data was collected from February to August 2024.
9. **Aims and Objectives**:
   - **Main Objective**: Generate data from 100 prescriptions, targeting women aged 21-35, focusing on anemia in pregnancy.
   - **Specific Objectives**: Evaluate drug therapy, effectiveness of iron supplementation, dietary measures, and laboratory tests.
10. **Inclusion Criteria**:Only prescriptions for anemia in pregnancy will be considered.
11. **Exclusion Criteria**:Excludes prescriptions for other diseases and treatments unrelated to anemia.
12. **Sample Size**:Approximately 100 prescriptions.
13. **Data Analysis**:Data will be analyzed using SPSS, with graphical representations created in MS Excel.
14. **Study Parameters**:Includes diagnosis, drug strength, number of drugs prescribed, and therapy duration.
15. **Lab Tests**:Tests include hemoglobin, MCV, hematocrit, and iron levels.

IV. RESULT

4.1 Age of patient

Age of Patient	Frequency	Percentage (%)
20-25	27	27.0
25-30	56	56.0
30-35	14	14.0
Above 35	3	3.0
Total	100	100

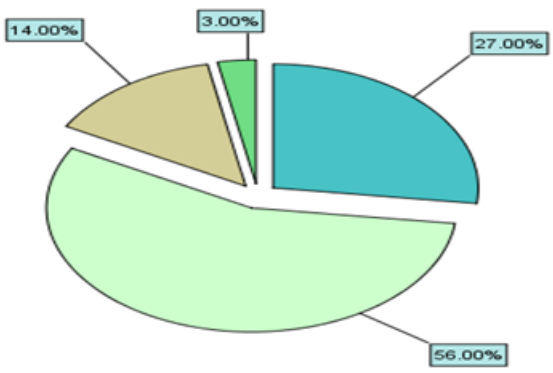

Table (4.1) and Graph (4.1) showing the different age groups

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In graph no.1, we assessed prevalence of anemia in women .This study represents that anemia was more prevalent in age group (25-30) that is 56.00%. The least prevalence was shown in age group (above 35) that is only 3% because there were least pregnancies in that age group.

4.2 Trimester of patient

Trimester of Patient	Frequency	Percentage (%)
1st Trimester	24	24.0
2nd Trimester	61	61.0
3rd Trimester	15	15.0
Total	100	100

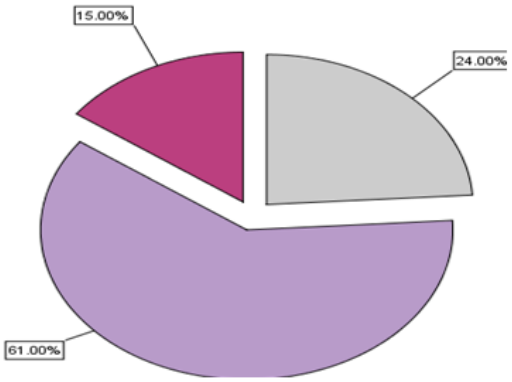

Table (4.2) and Graph (4.2) showing the trimester of patient having anemia in pregnancy:

Women with 2nd trimester of pregnancy accounted for 61.00%, this means that anemia is most common in 2nd trimester.

4.3 Hemoglobin level of patient

Hb Level of Patients(g/dl)	Frequency	Percentage (%)
7-8.9	21	21.0
9-9.9	49	49.0
10-11	30	30.0
Total	100	100

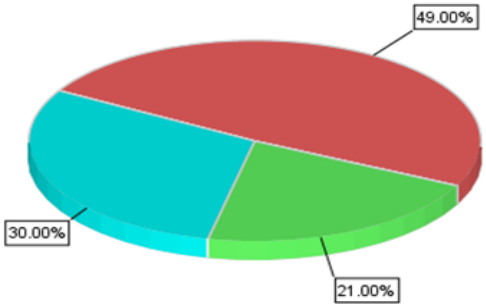

Table (4.3) and Graph (4.3) showing the Haemoglobin level of patient having anemia in pregnancy:

Standard range of Hb in female: 12-15g/dl. In this graph we analyzed the percentage of mild moderate and severe anemia in pregnant women which was 30%, 49% and 21% respectively.

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4.4 MCV value of patient

MCV value(fl)	Frequency	Percentage (%)
61-70	29	29.0
71-80	62	62.0
81-90	9	9.0
Total	100	100

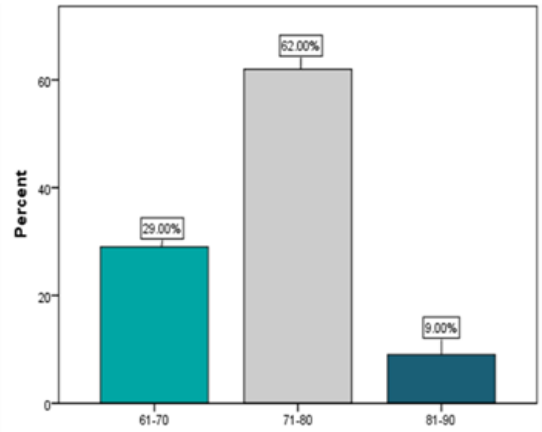

Table (4.4) and Graph (4.4) showing MCV value of patient having anemia in pregnancy:

This graph shows the values of MCV in pregnant women with anemia with their respective percentages. The maximum percentage is 62.00% that is observed between 71-80fl and the number of women having MCV 61-70 are 29.00% and 81-90fl are 9.00%.

4.5 Hematocrit level of patient

Hematocrit level	Frequency	Percentage (%)
24-28	34	34.0
29-33	59	59.0
Above 33	7	7.0
Total	100	100

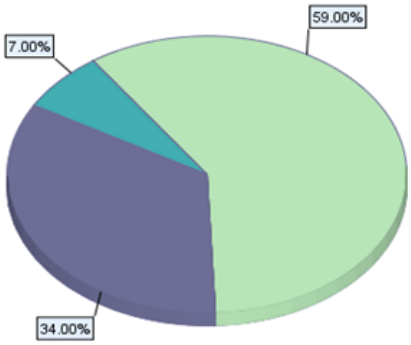

Table (4.5) and Graph (4.5) showing hematocrit level of patient having anemia in pregnancy:

This graph shows that 34% patients have hematocrit level of range 24-28.While 59% and 7% patient have hematocrit range of 29-33 and above 33 respectively.

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4.6 Iron Supplements

Iron supplement(Fefolvit)	Frequency	Percentage (%)
Not prescribed	83	83.0
Prescribed	17	17.0
Total	100	100

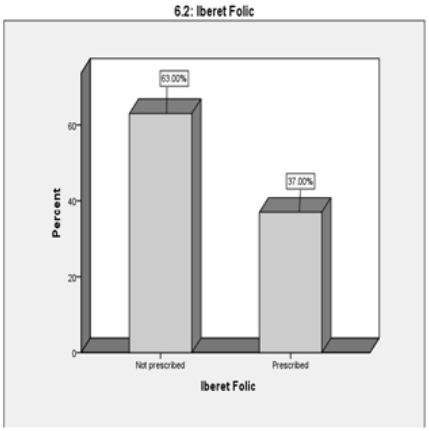

Table (4.5) and Graph (4.5) Showing iron supplement (Fefolvit) prescribed to patient:

Fefolvit (ferrous sulphate and folic acid) was prescribed to 17 patients out of 100.

4.6.1 Iberet Folic

Iron supplement (Iberet folic)	Frequency	Percentage (%)
Not prescribed	63	63.0
Prescribed	37	37.0
Total	100	100

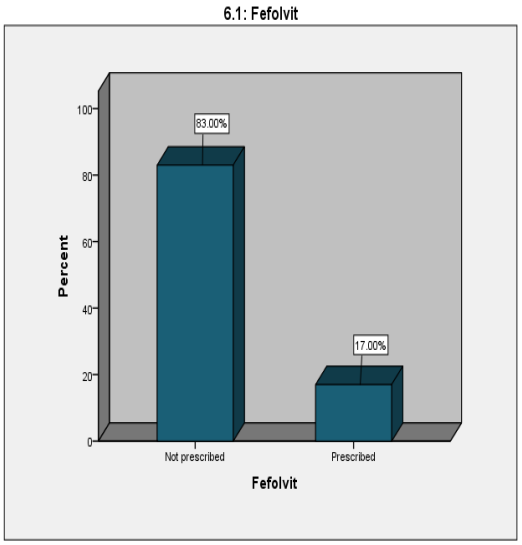

Table (4.6) and Graph (4.6) showing iron supplement (Iberet Folic) prescribed to patient:

Iberet Folic (Iron, folic acid, vitamin c and B complex) was prescribed to 37 patients out of 100.

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4.6.2 Sangobion

Iron supplement (Sangobion)	Frequency	Percentage (%)
Not prescribed	97	97.0
Prescribed	3	3.0
Total	100	100

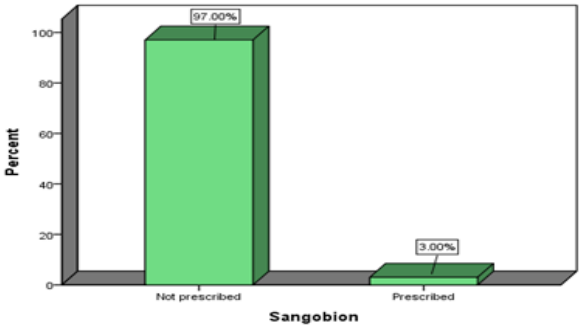

Table (4.7) and Graph (4.7) showing iron supplement (Sangobion) prescribed to patient:

Sangobion (Iron+ B complex) was prescribed to 3 patients out of 100.

4.6.3 Venofer

Iron supplement (Venofer)	Frequency	Percentage (%)
Not prescribed	92	92.0
Prescribed	8	8.0
Total	100	100

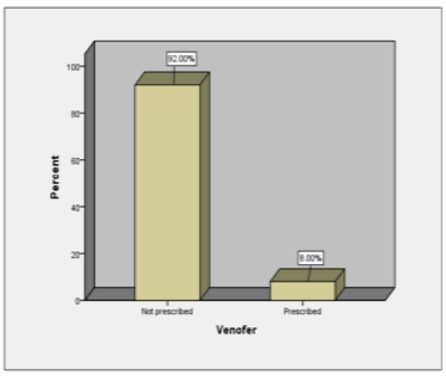

Table (4.8) and Graph (4.8) showing iron supplement (Venofer) prescribed to patient:

Venofer (Iron sucrose) was prescribed to 8 patients out of 100

4.6.4 Foli-4

Iron supplement (Foli-4)	Frequency	Percentage (%)
Not prescribed	93	93.0
Prescribed	7	7.0
Total	100	100

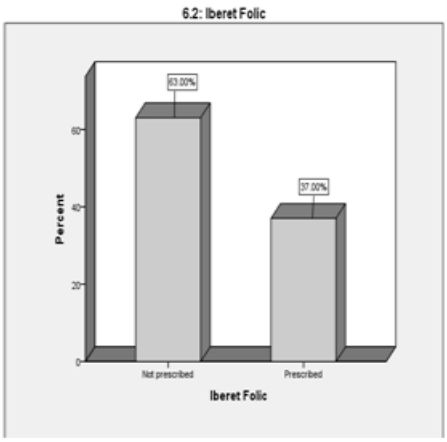

Table (4.9) and Graph (4.9) showing iron supplement (Foli-4) prescribed to patient:

Foli-4(Quaterfolic) was prescribed to7 patients out of 100.

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4.6.5 Polymalt

Iron supplement (Polymalt)	Frequency	Percentage (%)
Not prescribed	85	85.0
Prescribed	15	15.0
Total	100	100

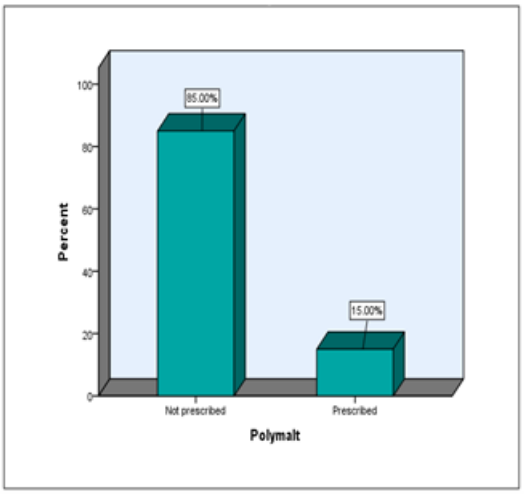

Table (4.10) and Graph (4.10) showing iron supplement (Polymalt) prescribed to patient:

Polymalt (Iron [Ill] hydroxidepolymaltose complex) was prescribed to 15 patients out of 100.

4.6.6 Risofer

Iron supplement (Risofer)	Frequency	Percentage (%)
Not prescribed	87	87.0
Prescribed	13	13.0
Total	100	100

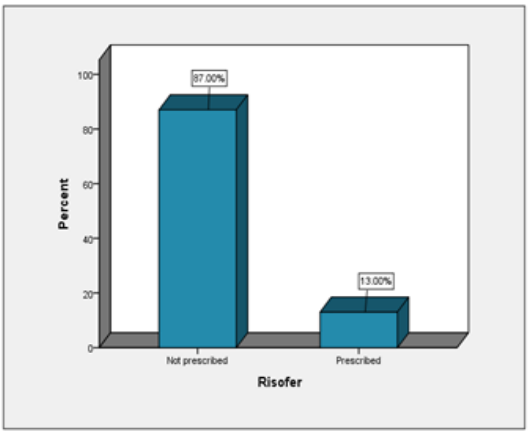

Table (4.11) and Graph (4.11) showing iron supplement (Risofer) prescribed to patient:

Risofer (Iron bisglycinate with folic acid) was prescribed to 13patients out of 100.

1Fengent

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Iron supplement (Fengent)	Frequency	Percentage (%)
Not prescribed	97	97.0
Prescribed	3	3.0
Total	100	100

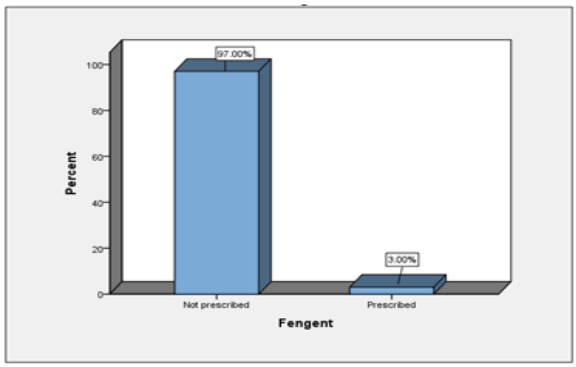

Table (4.12) and Graph (4.12) showing iron supplement (Fengent) prescribed to patient:

Fengent (Iron bisglycinate) was prescribed to 3 patients out of 100.

4.6.7 Besleri

Iron supplement (Besleri)	Frequency	Percentage (%)
Not prescribed	83	83.0
Prescribed	17	17.0
Total	100	100

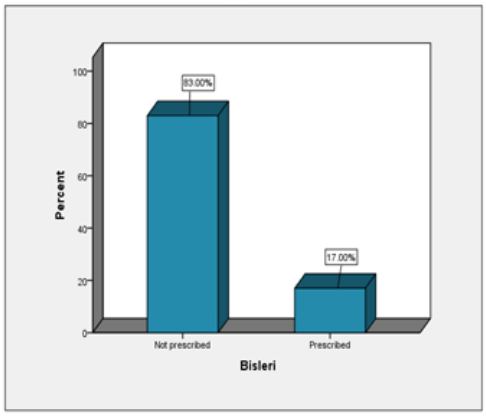

Table (4.13) and Graph (4.13) showing iron supplement (Bisleri) prescribed to patient:

Bisleri (Iron [Ill] hydroxide polymaltose complex) was prescribed to 17 patients out of 100.

4.6.8 Ferrinject

Iron supplement (Ferrinject)	Frequency	Percentage (%)
Not prescribed	94	94.0
Prescribed	6	6.0
Total	100	100

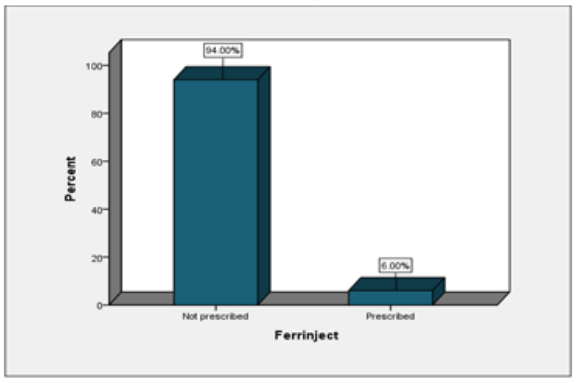

Table (4.14) and Graph (4.14) showing iron supplement (Ferrinject) prescribed to patient:

Ferrinject (Ferric carboxymaltose) was prescribed to 6 patients out of 100.

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4.6.9 Cal-D

Multivitamin (Cal-D)	Frequency	Percentage (%)
Not prescribed	66	66.0
Prescribed	34	34.0
Total	100	100

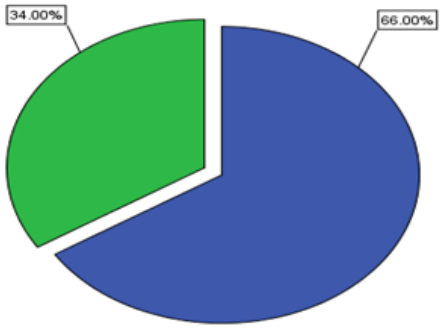

Table (4.15) and Graph (4.15) showing multivitamin (Cal-D) prescribed to patient:

Cal-D (Calcium+ vitamin D3) was prescribed to 34 patients out of 100.

4.6.10 TCD-1000

Multivitamin (TCD-1000)	Frequency	Percentage (%)
Not prescribed	95	95.0
Prescribed	5	5.0
Total	100	100

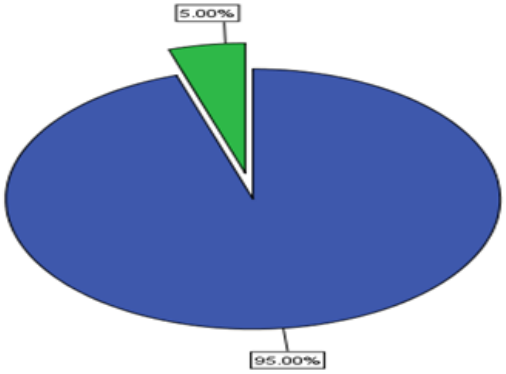

Table (4.16) and Graph (4.16) showing multivitamin (TCD-1000) prescribed to patient:

TCD-1000(Calcium+ vitamin D3) was prescribed to 5 patients out of 100.Zincal-D (Calcium+ vitamin D3) was prescribed to 28 patients out of 100.

Multivitamin (Zincal-D)	Frequency	Percentage (%)
Not prescribed	72	72.0
Prescribed	28	28.0
Total	100	100

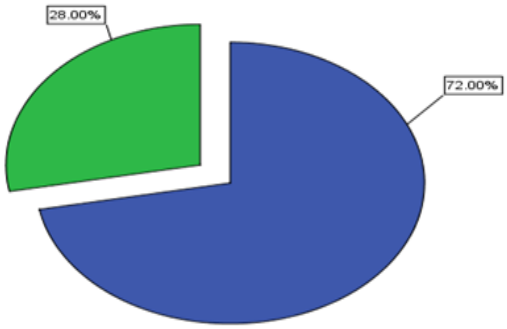

Table (4.17) and Graph (4.17) showing multivitamin (Zincal-D) prescribed to patient:

Multi-vitamin (Zincal-D) frequency & percentage for not-prescribed (72 %) and percentage (28 %)

4.6.11 Calmo

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Multivitamin (Calmom)	Frequency	Percentage (%)
Not prescribed	99	99.0
Prescribed	1	1.0
Total	100	100

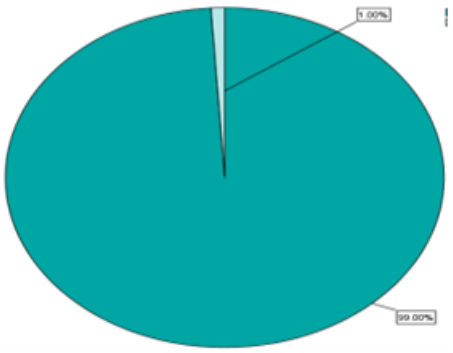

Table (4.18) and Graph (4.18) showing multivitamin (Calmom) prescribed to patient:

Calmom (Calcium+ vitamin D3) was prescribed to 1 patient out of 100.

4.6.12 Sglndrop-D

Multivitamin (Sglndrop-D)	Frequency	Percentage (%)
Not prescribed	97	97.0
Prescribed	3	3.0
Total	100	100

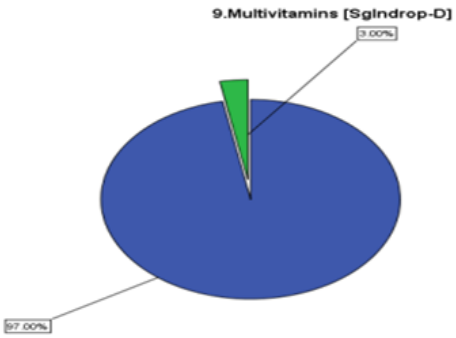

Table (4.19) and Graph (4.19) showing multivitamin (Sglndrop-D) prescribed to patient

Sglndrop-D [VitaminD3 (cholecalciferol)] was prescribed to 3 patients out of 100

Specific Dietary Treatment

Specific Dietary Treatment	Frequency	Percentage (%)
Not Recommended	64	64.0
Recommended	36	36.0
Total	100	100

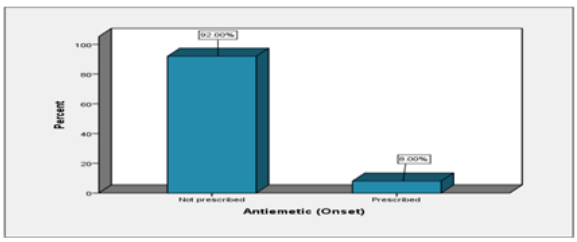

Table (4.20) and Graph (4.20) showing specific dietary treatment recommended to patient:

In this graph we studied the number of dietary recommendations in prescriptions represented in the form of percentages. Prescriptions containing dietary recommendations were 36% out of 100 patients and dietary recommendations were not found in 64% of prescriptions.

4.8 Anti-Emetic (onset)

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Anti-Emetic(Onset)	Frequency	Percentage (%)
Not Recommended	92	92.0
Recommended	8	8.0
Total	100	100

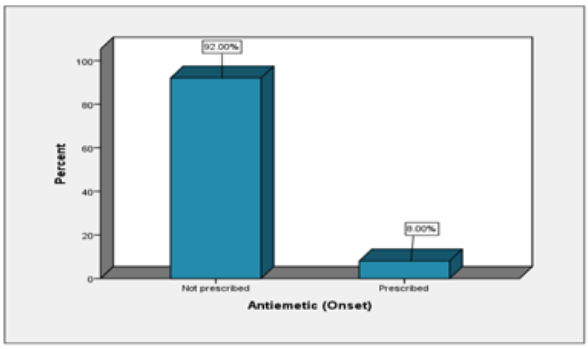

Table (4.21) and Graph (4.21) showing Anti-emetic (Onset) prescribed to patient:

According to our study only 8% anti-emetics were prescribed in 100 patients.

V. DISCUSSION:

According to the World Health Organization (WHO), anemia is the most common disease, affecting more than 1.5 billion people worldwide. Anemia during pregnancy is the most common form of malnutrition in the world and is the eighth leading cause of death in developing countries leading to the low birth weight, which is in turn an important risk factor for infant mortality. Anemia in pregnancy, defined by WHO as hemoglobin (Hb) <11 g/dL, is a major global health issue, affecting maternal and fetal health. It results from reduced oxygen-carrying capacity due to insufficient red blood cells (RBCs). Key factors include micronutrient deficiencies, parasitic infections, and chronic illnesses. Severe anemia can lead to adverse outcomes like low birth weight, preterm birth, and maternal complications. **Clinical Symptoms**: Common: Fatigue, weakness, irritability, and reduced work tolerance. Severe cases: Edema, glossitis, angular stomatitis, and congestive heart failure. **Laboratory Tests**: **Complete Blood Count (CBC)**: Low Hb, mean cell volume (MCV), mean cell hemoglobin (MCH), and hypochromic microcytic RBCs. **Bone Marrow Iron**: Gold standard but invasive. **Serum Ferritin**: Reliable for iron stores in the absence of inflammation. **ManagementScreening**: WHO recommends Hb monitoring during the first trimester, at 24–28 weeks, and 36 weeks. Physiological anemia should be differentiated from pathological anemia. **Dietary Interventions**: Iron-rich foods: Red meat, fish, and chicken (heme iron absorbed more efficiently). Supplements like iron with vitamin C for enhanced absorption. Avoid antacids and certain drugs when taking iron supplements. **Pharmacotherapy**: **Oral Iron**: Ferrous sulfate, ferrous fumarate, and iron hydroxide polymaltose. **IV Iron**: For severe cases or those unresponsive to oral therapy. Administered in hospital settings due to potential allergic reactions **Non-Pharmacological Approaches**: Red spinach, moringa, honey, and fortified foods. Avoidance of fluoride in food and water. **ComplicationsNeonatal Risks**: Low birth weight, preterm birth, fetal distress. **Maternal Risks**: Preterm labor, placental abruption, preeclampsia, and increased ICU admissions. **Offspring Risks**: Cognitive disorders, intellectual disabilities, and iron deficiency. **Global Efforts and Insights** Nutritional programs in developing countries (e.g., India) provide iron and folic acid supplements. Effective therapies include fortified foods, moringa, and fermented soybeans. Public health measures should focus on screening, dietary counseling, and enhanced healthcare access. **Conclusion** Comprehensive management of anemia during pregnancy requires early diagnosis, effective pharmacological and nutritional interventions, and public health initiatives to reduce the burden and improve maternal and neonatal outcomes. Pregnancy-related anemia is a significant global public health concern, particularly in underdeveloped nations, where it contributes to increased risks of low birth weight, maternal morbidity, and elevated newborn mortality rates (Judith Angelitta Noronha, 2012). According to the World Health Organization (WHO), anemia in pregnancy is defined as a hemoglobin (Hb) concentration below 11 g/dL. This condition arises from deficiencies in essential nutrients such as iron, folate, and vitamin B12, as well as from chronic infections like malaria, hookworm, tuberculosis (TB), and HIV (Chowdhury S, 2014; Rina Doriana Pasaribu, 2023). Anemia prevalence among pregnant women varies globally, with developed nations reporting

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around 14% and underdeveloped regions experiencing rates as high as 51% (Grace Stephen, 2018). In Sub-Saharan Africa, inadequate dietary intake of iron is the primary cause, exacerbated by high physiological iron demands during pregnancy and increased blood volume (Kayode O, 2012) Diagnosing anemia in pregnancy involves clinical assessments and laboratory tests. Common symptoms include fatigue, weakness, and irritability, though mild to moderate cases may remain asymptomatic. Diagnostic tools include Complete Blood Count (CBC), which detects low Hb, mean cell volume (MCV), and mean cell hemoglobin (MCH). Serum ferritin is a reliable indicator of iron stores, with levels below 30 ng/mL indicating iron deficiency with high sensitivity and specificity (Ahmad Al-Khaffaf, 2020; Maureen M. Achebe, 2017) Management guidelines recommend routine screening for anemia in the first trimester, at 24–28 weeks, and again at 36 weeks of gestation (Rimpy Tandon, 2018). Treatment primarily involves iron supplementation: **Oral Iron Supplements**: Ferrous sulfate, ferrous fumarate, and iron hydroxide polymaltose complexes are commonly used. Effective absorption is enhanced when taken on an empty stomach with vitamin C, avoiding simultaneous intake of antacids (S Pavord, 2011). **Intravenous Iron Therapy**: Reserved for severe cases or when oral supplements are ineffective. While effective, IV iron can cause moderate side effects like rash and, rarely, severe allergic reactions (Muhammad Kashif, 2024). In addition to pharmacotherapy, dietary interventions are crucial. Iron-rich foods such as red meat, fish, and poultry are recommended, though dietary changes alone are often insufficient to meet the increased iron demands during pregnancy (Theodora Dedo Azu, 2023) **India**: Launched the National Nutritional Anemia Prophylaxis Program in 1973, providing folic acid and iron supplements to pregnant women. Despite initial low compliance due to inadequate healthcare infrastructure, efforts have been made to improve screening and supplementation protocols (Ramachandran, 2021). **Malaysia**: Integrates iron supplementation with comprehensive health education to enhance dietary intake and supplement adherence among pregnant women (Hasneezah Hassan, 2020). **Pakistan**: Emphasizes the use of oral iron supplements as the first line of treatment, with intravenous iron reserved for specific cases due to potential adverse effects (Amina Bukhari, 2022). Unmanaged anemia during pregnancy can lead to severe complications: **Neonatal Risks**: Low birth weight, preterm birth, and fetal distress. **Maternal Risks**: Preterm labor, placental abruption, preeclampsia, maternal shock, and increased ICU admissions. **Offspring Risks**: Cognitive and intellectual disabilities, as well as iron deficiency (Ashley E. Benson, 2022). **Dietary and Supplementation Insights** Studies indicate that regular iron supplementation significantly improves maternal hemoglobin levels and reduces the incidence of anemia. However, adherence to supplementation programs is often hindered by factors such as poor healthcare infrastructure and lack of awareness. Nutritional therapies, including the use of red spinach, moringa, honey, and fortified foods, have shown effectiveness in managing anemia when combined with supplementation (Grace H. Tang, 2024; Naila Baig-Ansari, 2009). **Methodology:** This study examines anemia in pregnancy in various healthcare systems within Azad Jammu and Kashmir (AJK), with data collected between February and August 2024. The study is retrospective, relying on prescription-based data to assess the diagnosis, prevention, and treatment of pregnancy-related anemia. **Sampling Technique:** The study includes data from prescriptions and lab reports of pregnant women diagnosed with anemia, collected using: **Random Sampling Convenience Sampling. Patient Information/Demographics:** Data on patient characteristics will be gathered, including: Name, Gender, Age, Area of residence, Marital status, Weight, Family history, and Living conditions. **Chief Complaints (C/C):** The main symptoms or reasons a patient seeks medical attention, which will guide the treatment approach. **History of Patient Illness (HOPI):** A brief description of the patient's symptoms, provided by the house officer or trainee medical officer, outlining the disease's severity and onset to determine appropriate treatment. **Past Medical History:** Information on previous illnesses or hospitalizations that could influence the current diagnosis and treatment plan. **Laboratory Data:** Test results used to confirm the final diagnosis of anemia, such as: Hemoglobin levels Mean Corpuscular Volume (MCV) Hematocrit levels Serum ferritin and iron tests **Data Collection:** Prescriptions and lab reports were collected from various public sector hospitals in AJK, including Munazza Hospital, Anwar Memorial, Zubaida Maternity Hospital, Ali Imran Hospital, and Amna Hospital. **Study Duration** Data collection occurred from February 2024 to August 2024 **Aims and Objectives: Main Objective**; To generate data

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from approximately 100 prescriptions of pregnant women aged 21-35 years. To study anemia prevention and treatment within AJK's healthcare systems. **Specific Objectives**: To evaluate the drug therapy used for treating pregnancy-related anemia. To assess the effectiveness of iron supplementation for anemia management. To analyze dietary and preventive measures implemented for anemia during pregnancy. To assess laboratory tests used for diagnosing anemia. **Inclusion Criteria:** Retrospective study design. Only prescriptions related to anemia in pregnancy will be included. Clinical prescriptions from hospital data. **Exclusion Criteria:** Prescriptions for diseases other than anemia. Therapies not related to pregnancy-related anemia. **Sample Size;** Approximately 100 prescriptions of pregnant women diagnosed with anemia. **Data Analysis;** Data will be analyzed using SPSS software, with graphical representations created using MS Excel. Percentages will be calculated using statistical methods. **Study Parameters:** Diagnosis of anemia in pregnancy Drug strength prescribed Number of drugs prescribed Duration of therapy **Laboratory Tests.** The following tests will be included: Hemoglobin levels Mean Corpuscular Volume (MCV). Hematocrit levels Iron studies. This methodology aims to provide insights into the current practices for managing anemia during pregnancy in AJK, highlighting both therapeutic and diagnostic approaches used in local healthcare settings.Graph & table 4.1 shows the age distribution of 100 patients: **20-25 years (27%)**: Over a quarter of the sample. **25-30 years (56%)**: The majority, reflecting higher healthcare needs. **30-35 years (14%)**: A smaller proportion, indicating a decline. **Above 35 years (3%)**: Minimal representation. The **25-30 age group** dominates, with fewer patients in older age categories. Graph & table 4.2 provides a breakdown of 100 patients by trimester during pregnancy: 1st Trimester (24%): This group represents nearly a quarter of the patients, indicating moderate healthcare engagement during the early stages of pregnancy. 2nd Trimester (61%): The majority of patients, accounting for 61%, fall into this category, suggesting heightened healthcare needs or routine checkups during the mid-pregnancy period. 3rd Trimester (15%): Comprising 15%, this group shows fewer patients in the later stages of pregnancy, potentially due to the transition to specialized care or delivery preparations. The data highlights that the 2nd trimester is the most common period for healthcare visits, with fewer patients in the 1st and 3rd times. Graph & table 4.3 shows standard range of Hb in female: 12-15g/dl. In this graph we analyzed the percentage of mild moderate and severe anemia in pregnant women which was 30%, 49% and 21% respectively. Graph & table 4.4 shows the values of MCV in pregnant women with anemia with their respective percentages. The maximum percentage is 62.00% that is observed between 71-80fl and the number of women having MCV 61-70 are 29.00% and 81-90fl are 9.00%.Graph & table 4.5 shows that 34% patients have hematocrit level of range 24-28.While 59% and 7% patient have hematocrit range of 29-33 and above 33 respectively.This graph shows that 34% patients have hematocrit level of range 24-28.While 59% and 7% patient have hematocrit range of 29-33 and above 33 respectively. Graph & table 4.6 Fefolvit (ferrous sulphate and folic acid) was prescribed to 17 patients out of 100.Graph & table 4.7 illustrates that Sangobion (Iron+ B complex) was prescribed to 3 patients out of 100.Graph & table 4.8 Venofer (Iron sucrose) was prescribed to 8 patients out of 100.Graph & table 4.9 Foli-4(Quaterfolic) was prescribed to7 patients out of 100.Graph & table 4.10 Polymalt (Iron [Ill] hydroxidepolymaltose complex) was prescribed to 15 patients out of 100.Graph & table 4.10 Polymalt (Iron [Ill] hydroxidepolymaltose complex) was prescribed to 15 patients out of 100.Graph & table 4.11 Risofer (Iron bisglycinate with folic acid) was prescribed to 13patients out of 100. Graph & table 4.12. Fengent (Iron bisglycinate) was prescribed to 3 patients out of 100.Graph & table 4.13 Bisleri (Iron [Ill] hydroxide polymaltose complex) was prescribed to 17 patients out of 100. Graph & table 4.14 Ferrinject (Ferric carboxymaltose) was prescribed to 6 patients out of 100.Graph & table 4.15 Cal-D (Calcium+ vitamin D3) was prescribed to 34 patients out of 100.Graph & table 4.16 TCD-1000(Calcium+ vitamin D3) was prescribed to 5 patients out of 100.Zincal-D (Calcium+ vitamin D3) was prescribed to 28 patients out of 100.Graph & table 4.17 shows Multi-vitamin (Zincal-D) frequency & percentage for not-prescribed (72 %) and percentage (28 %). Graph & table 4.18 Calmom (Calcium+ vitamin D3) was prescribed to 1 patient out of 100. Graph & table 4.19 Sglndrop-D [VitaminD3 (cholecalciferol)] was prescribed to 3 patients out of 100. Graph & table 4.20 Prescriptions containing dietary recommendations were 36% out of 100 patients and dietary recommendations were not found in 64% of prescriptions.Graph & table 4.21 r study only 8%

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anti-emetics were prescribed in 100 patients.Significance

Anemia in pregnancy is a major public health issue in Azad Kashmir, contributing to adverse maternal and fetal outcomes like preterm birth, low birth weight, and maternal mortality. **Prevalence and Epidemiology** High prevalence in low-resource areas due to nutritional deficiencies, parasitic infections, and inadequate antenatal care. Disparities in rural vs. urban regions. **Diagnosis** Hemoglobin <11 g/dL as per WHO criteria. Limited access to diagnostic tools and trained personnel in rural areas. **Treatment Approaches Nutritional Interventions**: Iron and folic acid supplements. **Pharmacological Interventions**: IV iron or blood transfusions for severe cases. **Dietary Counseling**: Encouraging iron-rich diets. **Healthcare Systems Public Sector**: Affordable but plagued by resource shortages. **Private Sector**: Better infrastructure but less accessible to low-income groups. **Traditional Medicine**: Culturally accepted but lacks standardized protocols. **Challenges** Low awareness, socio-cultural barriers, and unequal resource distribution. **Recommendations** Strengthen antenatal care and screening programs. Ensure consistent availability of supplements and medications. Train healthcare providers and raise community awareness. Integrate evidence-based traditional medicine practices. A multidisciplinary approach addressing systemic gaps, resource inequities, and socio-cultural barriers can enhance anemia management during pregnancy in Azad Kashmir, improving maternal and child health outcomes.

Future Prospective Benefits to the Scientific Community

Research on anemia in pregnancy within Azad Kashmir's healthcare systems offers transformative benefits to the scientific community:

1. **Understanding Anemia**: Provides region-specific data and enables global comparisons of anemia's prevalence, causes, and outcomes.
2. **Diagnostics**: Promotes low-cost, portable diagnostic tools and improved screening guidelines for low-resource settings.
3. **Evidence-Based Treatments**: Optimizes anemia management through effective protocols, integrating nutrition, and modern medicine.
4. **Healthcare Delivery**: Develops adaptable models for low-resource regions and demonstrates public-private partnership efficacy.
5. **Technology Integration**: Advances telemedicine and AI for anemia risk prediction and prenatal care improvements.
6. **Public Health Policies**: Offers evidence for scalable, sustainable interventions aligning with global health goals like SDGs.
7. **Multidisciplinary Research**: Encourages cross-disciplinary collaboration and builds local research capacity.
8. **Education and Training**: Develops training modules for global adaptation, enhancing healthcare provider skills.
9. **Research Dissemination**: Establishes best practices through high-impact publications, influencing global maternal health.

Conflict Of Interest

The authors has find no Conflict of Interest

VII. CONCLUSION:

The current study comes to the conclusion that although patients are provided conventional treatment drugs, some patient's conditions are not improving because of inadequate patient education and doctors limited time spent with each patient. Most of the time, lab reports are not completed, and tests that are required to diagnose anemia in pregnancy are not performed because the necessary facilities and equipment are not available. However, the majority of doctors are overworked and brand aware, which prevents them from providing their patients the attention they need. Another finding from our study was that the medications were prescribed under their brand names, with little to no generic prescribing. This is a poor practice because it is costly and the similarity of the brand names can cause misunderstanding and result in the patient receiving the incorrect medication. All of these issues suggest that more doctors should be hired, that prescription drugs should be given under their generic names rather than brand names to avoid brand consciousness, that laboratory checks and balances should be implemented, and that hospitals should be provided with all the tools and facilities necessary to ensure that all tests are performed correctly in order to diagnose pregnant women's anemia and begin appropriate therapy. Given that anemia is the most prevalent illness among pregnant women, it is advised that patients get close observation and a nutritious diet in order to improve their quality of life and achieve therapeutic results. Therefore, in addition to the prescriber, a dietitian and a pharmacist should be

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present to make sure that patients understand the risks and side effects of the medication and that a balanced diet and appropriate action should be taken.

REFERENCE

[1]. Ahmad Al-Khaffaf, F. F. (2020). Diagnosis of anemia in pregnancy. Journal of Laboratory and Precision Medicine, 5 (9), 515-540
[2]. Amina Bukhari, S. A. (2022). Treatment Efficacy of Oral and Intravenous Iron Delivery Routes for Anemic Pregnant Women. Pakistan Journal of Medicine and Health Sciences, 16 (8), 739-741
[3]. Ashley E. Benson, J. J. (2022). The incidence, complications, and treatment of iron deficiency. Eurpeon Journal of Haematology,109 (6), 633-642
[4]. Chowdhury S, R. M. (2014). Anemia in pregnancy. Medicine Today, 26 (1), 49-52
[5]. Grace H. Tang, M. S. (2024). Iron deficency anemia among women ; An issue of health equity. Amrican Journal of Hematology, 64 (8), 1492-1499
[6]. Grace Stephen, M. M.-P. (2018). Anemia in pregnancy. Tropical Medicine and International Health, 6 (1), 33-39
[7]. Guyatt GH, O. A. (1992). Labortory diagnosis of anemia; an overview. J Gen International Medicine, 3 (1), 17-24
[8]. Hasneezah Hassan,. D. (2020). The effectiveness of theory-based intervention to improve haemoglobin levels among women with anaemia in pregnancy. Medicine Journal of Malaysia, 75(4), 627-633
[9]. Jeffrey N. Bone, M. B. (2022). Anemia in pregnancy. pregnancy and childbirth, 12 (4), 444-454
[10]. Judith Angelitta Noronha, ,. E. (2012). Anemia in Pregnancy—Consequences and Challenges.South Asian Federation of Obstetrics and Gynecology, 4 (1), 64-70
[11]. Kayode O, O. a. (2012). Preventive Treatments of Iron Deficiency Anaemia in Pregnancy. Hindawi Publishing Corporation, 3 (1), 328-331
[12]. Malik Goonewardene, A. H. (2012). Anemia in Pregnancy. Clinical Obstretics and Gynaecology, 26 (1), 3-24
[13]. Maureen M.Achebe, A. G.-G. (2017). How I treat anemia in pregnancy. The American Socitey of Hematology, 129 (8), 940-949
[14]. Milman, N. (2008). Prepartum anaemia: prevention and treatment. National Library of Medicine, 87 (12), 949-959
[15]. Mohammadmahdi Karami, M. C. (2022). Global Prevalence of Anemia in Pregnant Women. Maternal and Child Health Journal, 26 (2), 132-139
[16]. Muhammad Kashif, N. Y. (2024). Management of iron deficiency anemia during pregnancy. WHO Global Anemia Estimates, 11 (2), 396-408
[17]. Naila Baig-Ansari, S. H. (2009). Anemia prevalence and risk factors in pregnant women in an urban area of Pakistan. National Librarory of Medicine, 29 (2), 155-164
[18]. Peace, J. M. (2021). Anemia in pregnancy: pathophysiology, diagnosis, and treatment. International anesthisiology clinics, 59 (3), 15-21
[19]. Pharmakidies, S. S. (2000). Anemia in pregnancy. Annals New York Academy of Sciences, 14 (8), 125-136
[20]. Putu Doster Mahayasa, I. G. (2022). Iron Deficiency Anemia Treatment in Pregnancy. European Journal of Medical and Health Sciences, 21 (6), 730-737
[21]. Ramachandran, P. (2021). Prevention & management of anaemia in pregnancy. National Library of Medicine, 154 (1), 12-15
[22]. Rimpy Tandon, A. J. (2018). Management of Iron Deficiency Anemia in Pregnancy. National Library of Medicine, 34 (2), 204-215
[23]. Rina Doriana Pasaribu, E. S. (2023). Anemia in pregnancy. Journal of Public Health, 42 (1), 1-9
[24]. S Pavord, B. M. (2011). UK guidelines on the management of iron deficiency in Pregnancy. British Committee for Standards in Haematology, 188 (6), 819-830
[25]. TH, B. (2000). Iron requirements in pregnancy and stratgies to meet them. American Journal of Clinical Nutrition, 72 (8), 413-426
[26]. Theodora Dedo Azu, E. A.-B. (2023). Anemia in pregnancy. Global Health Observatory, 22 (9), 203-209
[27]. Ummi Azmi, Y. P. (2022). Risk Factors of Anemia in Pregnant Women. Journal for Quality in Public Health, 6 (5), 1-7