Official Study Title

Pharmacist-Led Intervention in the Management of Anemia Among Pregnant Women: A Randomized Controlled Trial

ClinicalTrials.gov Identifier

NCT Number: Not yet assigned.

Date of Document: 21 August 2026

Study Information

Study Type: Randomized Controlled Trial

Study Population: Pregnant women diagnosed with anemia

Study Setting: District Chakwal, Punjab, Pakistan

Sample Size: 100 participants

Study Intervention

Pharmacist-Led Educational Intervention

Participants in the intervention group receive structured pharmacist-led educational counseling in addition to routine antenatal care. The counseling focuses on anemia management, medication adherence, appropriate medication-taking practices, medication-related problems, management of commonly experienced adverse effects, and the importance of continuing prescribed treatment during pregnancy.

Study Outcomes

The study assesses changes in medication adherence and hemoglobin concentration from baseline to post-intervention assessment. Hemoglobin concentration is measured in g/dL.

Study Title

Pharmacist led intervention in the management of anemia among pregnant woman-a randomized controlled trial

Brief Summary

Anemia is a major public health problem among pregnant women, particularly in low- and middle-income countries. It is characterized by a reduction in hemoglobin concentration or the oxygen-carrying capacity of the blood, which may be insufficient to meet the physiological needs of the body. Maternal anemia is associated with an increased risk of adverse maternal and fetal outcomes. Despite the high prevalence of anemia among pregnant women, poor medication adherence and inadequate understanding of prescribed therapy may limit treatment effectiveness. Pharmacists can play an important role in providing medication-related education, improving patients' understanding of their treatment, identifying barriers to adherence, and promoting appropriate medication use. However, evidence on pharmacist-led educational interventions to improve medication adherence and hemoglobin levels among anemic pregnant women in Pakistan remains limited. Therefore, this randomized controlled trial will be conducted to evaluate the effect of a structured pharmacist-led educational intervention on medication adherence and hemoglobin levels among anemic pregnant women in District Chakwal, Punjab, Pakistan.

A total of 100 eligible pregnant women diagnosed with anemia will be recruited and randomly allocated. Participants in the intervention group will receive a structured pharmacist-led educational intervention in addition to routine care. Medication adherence and hemoglobin levels will be assessed at baseline and after the intervention. The study will determine whether pharmacist-led educational counseling improves medication adherence and hemoglobin levels.

Data will be analyzed using IBM SPSS Statistics version 26. A paired-sample t-test will be used to compare changes in continuous variables, particularly hemoglobin levels, between baseline and post-intervention assessments. McNemar's test will be used to assess changes in paired categorical variables, including medication adherence where appropriate. A p-value of <0.05 will be considered statistically significant.

Study Objective

The primary objective of this study will be to evaluate the effect of a pharmacist-led educational intervention on medication adherence and hemoglobin levels among pregnant women diagnosed with anemia.

Secondary Objectives

The study will also aim to:

1. Assess medication adherence among anemic pregnant women before and after the pharmacist-led educational intervention.
2. Determine changes in hemoglobin levels following the pharmacist-led educational intervention.
3. Compare medication adherence between the pharmacist-led intervention group and the routine-care control group.
4. Compare changes in hemoglobin levels between the intervention and control groups.
5. Determine whether improvement in medication adherence will be associated with improvement in hemoglobin levels.

Study Design

The study will employ a single arm **randomized controlled trial** design with a parallel-group allocation.

Eligible participants will be randomly assigned to either:

- **Intervention group:** Pharmacist-led educational intervention plus routine care.

Baseline assessments will be conducted before the intervention, and outcome assessments will be conducted after the predefined follow-up period.

Study Population

The study population will comprise pregnant women diagnosed with anemia who will be receiving antenatal care in District Chakwal, Punjab, Pakistan.

Sample Size

A total of **100 pregnant women** will be recruited for the study.

Intervention

Pharmacist-Led Educational Intervention

Participants allocated to the intervention group will receive a structured pharmacist-led educational intervention. The pharmacist will provide individualized education regarding anemia, the importance of adherence to prescribed medications, appropriate medication-taking practices, possible medication-related problems, management of commonly experienced adverse effects, and the importance of continuing the prescribed treatment during pregnancy.

The pharmacist will also address participants' questions and potential barriers to medication adherence. Educational materials will be provided where appropriate. The intervention will be designed to improve participants' knowledge and understanding of anemia treatment and encourage adherence to prescribed therapy.

Primary Outcomes

Medication Adherence

Medication adherence will be assessed at baseline and after completion of the intervention.

The primary outcome will be the **change in medication adherence from baseline to post-intervention assessment**.

Hemoglobin Level

Hemoglobin concentration will be measured at baseline and following the intervention.

The primary outcome will be the **change in hemoglobin concentration (g/dL) from baseline to post-intervention assessment**.

Secondary Outcomes

The secondary outcomes will include:

- Change in participants' medication adherence.
- Change in hemoglobin concentration.
- Proportion of participants demonstrating improved medication adherence.
- Proportion of participants demonstrating improvement in hemoglobin levels.
- Association between medication adherence and hemoglobin improvement.

Eligibility Criteria

Inclusion Criteria

Participants will be eligible for inclusion if they:

- Will be pregnant women diagnosed with anemia.
- Will be receiving antenatal care in the study setting.
- Will be receiving pharmacological treatment for anemia.
- Will meet the predefined hemoglobin criteria for anemia.
- Will be willing to participate in the study.
- Will provide informed consent.

Exclusion Criteria

Participants will be excluded if they:

- Will not meet the predefined criteria for anemia.
- Will have medical conditions that may substantially influence hemoglobin levels, where applicable.
- Will be unable to participate in the educational intervention.
- Will be unable to complete the required follow-up assessment.
- Will decline to provide informed consent.

Data Collection

Baseline demographic and clinical information will be collected from eligible participants before randomization or intervention according to the study protocol.

Medication adherence and hemoglobin levels will be assessed at baseline. Following implementation of the pharmacist-led educational intervention and completion of the predefined follow-up period, the same outcomes will be reassessed.

Statistical Analysis

Data will be entered and analyzed using **IBM SPSS Statistics version 26**.

Descriptive statistics will be used to summarize demographic and clinical characteristics of the participants. Continuous variables will be presented using appropriate measures of central tendency and dispersion, while categorical variables will be presented as frequencies and percentages.

A **paired-sample t-test** will be used to compare baseline and post-intervention hemoglobin levels where the assumptions for the test will be satisfied.

McNemar's test will be used to assess changes in paired categorical medication-adherence outcomes where appropriate.

Between-group comparisons will be conducted using appropriate statistical tests according to the distribution and measurement level of the variables.

A **p-value <0.05** will be considered statistically significant.

Expected Significance

The study will provide evidence regarding the potential contribution of pharmacists to anemia management during pregnancy. If the pharmacist-led educational intervention will demonstrate improvement in medication adherence and hemoglobin levels, the findings may support the integration of structured pharmacist-led counseling into antenatal anemia-management services in Pakistan and other similar resource-constrained settings.