Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 28s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Effectiveness Of Cognitive Sensitization Programme on Realization and Practice Regarding Prevention of Anaemia Among Pregnant Women at Obstetrics and Gynaecology Department in Selected Hospitals, Bareilly, Uttar Pradesh- Randomized Control Trial

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Cite this paper as: Ngathem Chandrarekha, Dr. Lathamangeswari Chinnasamy, (2025) Effectiveness Of Cognitive Sensitization Programme on Realization and Practice Regarding Prevention of Anaemia Among Pregnant Women at Obstetrics and Gynaecology Department in Selected Hospitals, Bareilly, Uttar Pradesh- Randomized Control Trial, *Journal of Neonatal Surgery*, 14 (28s), 276-282

ABSTRACT

Background: Anaemia remains a significant public health issue among pregnant women in India. Cognitive behavioral approaches may enhance awareness and promote health practices for anaemia prevention.

Objectives: 1. To assess the level of realization and practice regarding prevention of anaemia among pregnant women in control and experimental group before intervention. **2.** To assess the level of realization and practice regarding prevention of anaemia among pregnant women in experimental group after one month with intervention and in control group without intervention. **3.** To evaluate effectiveness of cognitive sensitization programme on realization and practice regarding prevention of anaemia among pregnant women in experimental group. **4.** To correlate the realization and practice regarding prevention of anaemia among pregnant women in experimental and control group. **5.** To associate the Pre-test realization and practice regarding prevention of anaemia with selected demographic variables among pregnant women in experimental and control group.

Methodology: A randomized control trial was conducted with 20 pregnant women (10 experimental, 10 control) at selected hospitals in Bareilly, Uttar Pradesh. Data on demographic, clinical profiles, realization, practice, and hemoglobin levels were collected pre- and post-intervention. The experimental group received a structured cognitive sensitization intervention, while the control group received routine antenatal care.

Results: Significant improvements were observed in realization (mean increased from 14.4 to 24.6, $p = 0.001$) and practice (mean increased from 10.7 to 19.2, $p < 0.0001$) in the experimental group. Hemoglobin levels also improved over three months, with 20% achieving 12–13 g/dL compared to none in the control group.

Conclusion: The cognitive sensitization programme effectively enhanced both awareness and practices regarding anaemia prevention and showed a positive impact on hemoglobin levels

Keywords: *Anaemia, Pregnancy, Cognitive Sensitization, Health Education, Hemoglobin, Randomized Control Trial*

1. INTRODUCTION

Anaemia during pregnancy is a major public health concern in India, contributing significantly to maternal morbidity and adverse perinatal outcomes. According to the National Family Health Survey (NFHS-5), more than half of all pregnant women in India are anaemic, with the condition being particularly prevalent in northern states like Uttar Pradesh. Anaemia during pregnancy increases the risk of preterm birth, low birth weight, intrauterine growth restriction, and maternal mortality. Despite ongoing efforts through governmental programs such as the Anemia Mukt Bharat (AMB) initiative, challenges persist due to inadequate awareness, poor dietary habits, non-compliance with iron supplementation, and limited health education.

In this context, behavioral interventions that emphasize awareness, motivation, and consistent health practices are critical.

Cognitive sensitization is one such approach that seeks to enhance individuals' awareness, understanding, and application of health-related knowledge by targeting cognitive processes like perception, attention, and memory. When applied in antenatal care, cognitive sensitization may help pregnant women better understand the causes, consequences, and preventive strategies for anaemia, thereby encouraging sustained behavioral change.

This pilot study aims to evaluate the effectiveness of a cognitive sensitization programme in improving realization (awareness and understanding) and practice (health behaviors) related to anaemia prevention among pregnant women in selected hospitals of Bareilly, Uttar Pradesh. Through a randomized control trial design, this study assesses baseline and post-intervention changes in knowledge, behavior, and hemoglobin levels over a three-month period. The study not only examines the short-term efficacy of such an intervention but also explores its potential to be scaled up within existing maternal health services. By integrating cognitive principles into health education, this research aspires to offer a novel, evidence-based strategy to combat the high burden of maternal anaemia in India.,

NEED FOR THE STUDY

Anaemia remains a significant public health challenge in India, particularly among pregnant women. According to national health surveys, a large proportion of expectant mothers suffer from iron-deficiency anaemia, which increases the risk of maternal morbidity, preterm birth, low birth weight, and perinatal mortality. Despite various national programmes and iron supplementation schemes, the prevalence of anaemia continues to remain alarmingly high, indicating gaps in awareness, behavioral practice, and compliance with preventive measures.

Pregnancy is a critical period during which women are more receptive to health education and motivated to adopt healthier lifestyles. However, knowledge alone may not translate into practice unless it is reinforced through structured, targeted, and context-sensitive interventions. A cognitive sensitization approach, which aims to not only inform but also engage and motivate pregnant women through interactive education, can play a vital role in bridging this gap between knowledge and practice.

This pilot study was therefore necessary to evaluate the effectiveness of such a cognitive sensitization programme in improving both realization and practice related to anaemia prevention. The findings serve to inform health professionals, policymakers, and maternal health programmes about the potential impact of focused educational interventions on improving maternal outcomes and strengthening antenatal care strategies in resource-limited settings

2. AIM OF THE STUDY

To evaluate the effectiveness of cognitive sensitization programme on realization and practice regarding prevention of anaemia among pregnant women.

OBJECTIVES OF THE STUDY

1. To assess the level of realization and practice regarding prevention of anaemia among pregnant women in control and experimental group before intervention.

2. To assess the level of realization and practice regarding prevention of anaemia among pregnant women in experimental group after one month with intervention and in control group without intervention.

3. To evaluate effectiveness of cognitive sensitization programme on realization and practice regarding prevention of anaemia among pregnant women in experimental group.

4. To correlate the realization and practice regarding prevention of anaemia among pregnant women in experimental and control group.

5. To associate the Pre-test realization and practice regarding prevention of anaemia with selected demographic variables among pregnant women in experimental and control group.

HYPOTHESIS

1. Research Hypothesis (H_1):

- **H_1a:** There will be a significant improvement in the level of realization regarding the prevention of anaemia among pregnant women in the experimental group after the cognitive sensitization programme.
- **H_1b:** There will be a significant improvement in the level of practice regarding the prevention of anaemia among pregnant women in the experimental group after the cognitive sensitization programme.
- **H_1c:** There will be a significant difference in hemoglobin levels between the experimental and control groups after the intervention.
- **H_1d:** There will be a significant positive correlation between realization and practice regarding anaemia prevention in the experimental group.

2. Null Hypothesis (H_0):

- **H_0a:** There will be no significant improvement in the level of realization regarding the prevention of anaemia among pregnant women in the experimental group after the cognitive sensitization programme.
- **H_0b:** There will be no significant improvement in the level of practice regarding the prevention of anaemia among pregnant women in the experimental group after the cognitive sensitization programme.
- **H_0c:** There will be no significant difference in hemoglobin levels between the experimental and control groups after the intervention.
- **H_0d:** There will be no significant correlation between realization and practice regarding anaemia prevention in the experimental group.

Materials and Methods

Design: Randomized Control Trial (Pilot Study)

Setting: Obstetrics and Gynaecology Department, Selected Hospitals, Bareilly, Uttar Pradesh

Participants: 20 pregnant women (10 each in experimental and control groups)

Inclusion Criteria: Pregnant women in any trimester, willing to participate

Exclusion Criteria: History of chronic illness, unavailability for follow-up

Intervention:

- **Experimental Group:** Received cognitive sensitization programme
- **Control Group:** Received routine antenatal care
- **Data Collection Tools:** Structured questionnaire on realization and practice; clinical profile assessment; hemoglobin estimation
- **Statistical Analysis:** Descriptive and inferential statistics including *t*-test and Pearson correlation. Significance set at $p < 0.05$.

Limitations

- Small sample size (pilot study)
- Short follow-up duration (3 months)

Recommendations

- Replication with larger sample
- Integration of sensitization modules in ANC visits
- Long-term impact assessment on maternal and fetal outcomes

Data Collection Procedure

The data collection for this **Randomized Controlled Trial** was conducted in a systematic and phased manner at selected hospitals in Bareilly, Uttar Pradesh. The procedure was as follows:

1. Sampling and Group Allocation

- A total of **20 pregnant women** were selected using **random sampling techniques**.
- Participants were randomly assigned to two groups:
  - **Experimental Group (n=10)** – received the cognitive sensitization programme.
  - **Control Group (n=10)** – received standard care without intervention.

2. Pre-Test Assessment

- **Baseline data** was collected from both groups before the intervention.
- **Tools used:** Structured questionnaires and checklists assessing:
  - **Level of realization** regarding anaemia prevention.
  - **Level of practice** regarding dietary and health behaviors.
  - **Hemoglobin levels** and **clinical profiles** (e.g., antenatal visits, BMI, obstetric history).

- Demographic data was also collected (age, education, income, occupation, etc.).

3. Intervention (for Experimental Group only)

- The experimental group received a **Cognitive Sensitization Programme**, which included:
  - Educational sessions on anaemia causes, prevention, diet, and compliance.
  - Interactive discussions and counseling tailored to local needs.
- The control group continued routine antenatal care with no added intervention.

4. Post-Test Assessments

- Assessments were repeated at two intervals post-intervention:
  - **7 days after the intervention**
  - **1 month after the intervention**
- Variables reassessed: realization level, practice level, and hemoglobin status.
- A final **hemoglobin measurement** was conducted at the **3rd month** to assess sustained impact.

Data Analysis: The data collected was analyzed using both descriptive and inferential statistical methods:

- **Descriptive statistics** such as frequency, percentage, mean, and standard deviation (SD) were used to describe demographic variables, clinical profiles, levels of realization, levels of practice, and haemoglobin levels.
- **Inferential statistics** were applied using *t-tests* to compare pre- and post-intervention results, and Pearson correlation (r) was used to examine relationships between realization and practice.

Research Findings

A. Realization Levels

- **Experimental Group:**
  - Pre-intervention: 60% had average realization.
  - Post-intervention (1 month): 40% excellent, 60% good realization.
  - **Mean increased** from 14.4 to 24.6; **SD decreased** from 6.04 to 3.66.
  - **t = 3.6, p = 0.001** → Statistically significant improvement.
- **Control Group:**
  - Minor improvement from 50% good realization to 70% over 1 month.
  - No participants reached excellent realization.
  - **Mean increased** from 13.6 to 16.4; less statistically impactful.

B. Practice Levels

- **Experimental Group:**
  - Pre-intervention: 70% good practice, 30% average.
  - Post-intervention (1 month): 100% excellent practice.
  - **Mean increased** from 10.7 to 19.2; **SD decreased** to 0.42.
  - **t = 8.06, p < 0.0001** → Highly significant change.
- **Control Group:**
  - Gradual improvement: 30% reached excellent practice after 1 month.
  - **Mean increased** from 12.3 to 13.7; **SD increased**, suggesting inconsistent improvement.

C. Hemoglobin Levels

- **1st Month:**
  - Experimental group: 40% had Hb 10–11 g/dL; none had Hb >11 g/dL.
  - Control group: 30% had Hb 10–11 g/dL; 30% still in 6–7 g/dL range.

- **3rd Month:**
    - Experimental group: 20% reached 12–13 g/dL (normal), 50% had 10–11 g/dL.
    - Control group: 90% remained in the 8–9 g/dL range; no improvement to higher levels.

D. Correlation Findings

- **Realization (Experimental vs. Control):**
    - r = 0.48, **p = 0.003** → Moderate, significant correlation.
- **Practice (Experimental vs. Control):**
    - r = 0.35, **p = 0.5** → Not statistically significant.

The cognitive sensitization programme led to significant improvements in both awareness (realization) and behavior (practice) toward anaemia prevention. It also positively impacted hemoglobin levels over a 3-month period, reinforcing the value of structured educational interventions in antenatal care.

3. RESULTS

1. Demographic and Clinical Profile

- Majority aged 26–30 years, above secondary education level
- Equal distribution of vegetarians and non-vegetarians in experimental group
- Predominantly service-based income
- All participants were married

2. Realization

- Experimental group: Mean realization score improved from 14.4 to 24.6 ($p = 0.001$)
- Control group: Modest increase from 13.6 to 16.4
- 40% reached “Excellent” realization post-intervention vs. none in control

3. Practice

- Experimental group: Mean score rose from 10.7 to 19.2 ($p < 0.0001$)
- All reached “Excellent” level by 1 month
- Control group: Minor improvement to 13.7

4. Hemoglobin Levels

- Experimental group: Increase in participants with Hb ≥ 10 g/dL by 3rd month
- Control group: No improvement; 90% remained in 8–9 g/dL range

5. Correlation

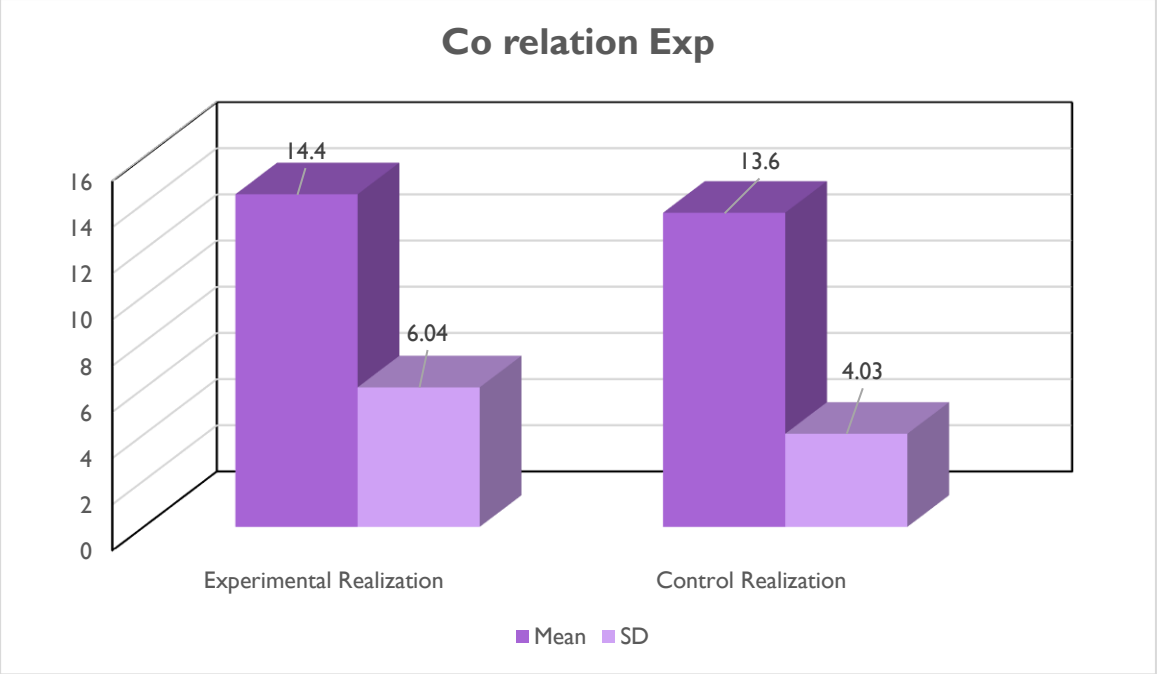
- Significant correlation between realization and practice in experimental group (r = 0.48, $p = 0.003$)

4. DISCUSSION

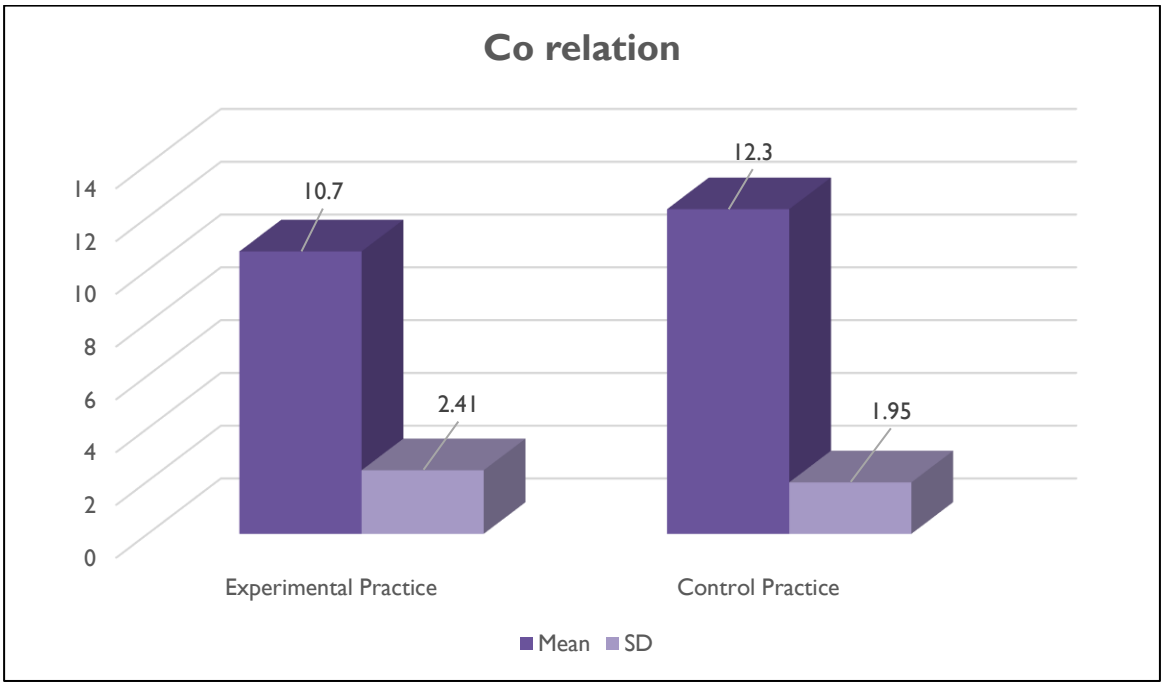
These findings highlight the crucial role of targeted health education in improving maternal health outcomes. The cognitive sensitization programme significantly enhanced knowledge and translated it into action, as shown by both behavioral and physiological improvements. The control group’s limited progress underscores the importance of structured interventions beyond routine antenatal care. The programme's success suggests its potential applicability at scale in community health settings, particularly in low-resource areas where anaemia in pregnancy remains a significant concern.

Table 1: To correlate the realization and practice regarding prevention of anaemia among pregnant women in experimental and control group.

Co relation	Mean	SD	r value	p value	Remark
Experimental Realization	14.4	6.04	0.48	0.003	S
Control Realization	13.6	4.03			



Co relation Exp	Mean	SD	r value	p value	Remark
Experimental Practice	10.7	2.41	0.35	0.5	NS
Control Practice	12.3	1.95			



5. CONCLUSION

The pilot study demonstrated that the Cognitive Sensitization Programme was highly effective in enhancing both realization and practice regarding anaemia prevention among pregnant women. Significant improvements were observed in the experimental group compared to the control group across multiple parameters. Realization levels improved from

predominantly average pre-intervention to good and excellent levels post-intervention, with a statistically significant increase in mean scores and reduced variability. Similarly, practice levels showed a marked transition, with all participants in the experimental group achieving excellent levels one month after the intervention. This was supported by a high t-value and extremely significant p-values, indicating the intervention's substantial impact.

Furthermore, hemoglobin levels in the experimental group improved over the three-month period, with 20% reaching near-normal levels (12–13 g/dL) by the third month, while the control group showed minimal change. The findings confirm that structured, cognitive-based health education can lead to sustained behavioral and physiological improvements in maternal health. The absence of such positive change in the control group reinforces the importance of targeted interventions. Overall, the study supports the scalability of the programme as a viable public health strategy for combating anaemia in pregnant women, particularly in resource-constrained settings.

6. SUMMARY

The pilot study faced challenges such as limited time with participants due to ANC schedules and difficulty ensuring consistent follow-up, particularly at the 3-month mark. Data analysis was constrained by the small sample size, limiting statistical power, and variability in hemoglobin levels due to dietary and physiological factors. Maintaining inclusion and exclusion criteria was also difficult, especially excluding chronic illness cases due to inconsistent histories, and some participants were lost to follow-up. Despite these limitations, the methodology proved feasible and effective, and the cognitive sensitization programme showed strong potential, instilling high confidence for larger-scale implementation.

Conflict of Interest: The authors certify that they have no involvement in any organization or entity with any financial or non-financial interest in the subject matter or materials discussed in this paper.

Funding Source: "There is no funding Source for this study

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