

## Effectiveness of Structured Education with Telephone Support (SETS) on knowledge on Anaemia among Antenatal Women

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### Abstract

Anaemia during pregnancy is a worldwide problem. Iron deficiency and folate deficiency are considered as two important causes for nutritional anaemia. During pregnancy there is an increase in the iron and folate requirements, therefore, the likelihood of presenting iron and folate deficiency is high, if there is no supplementation during pregnancy. The objective of this study was to evaluate the effectiveness of structured education with telephone support (SETS) on knowledge on anaemia among antenatal women. An Experimental pretest posttest control group design was used for this study in which 100 antenatal women of 20-30 weeks of gestation from antenatal outpatient department of tertiary care hospital were selected using consecutive sampling technique. A structured questionnaire to assess knowledge on anaemia was used. Structured education on first day followed by telephonic support once in 3 days for a period of 3 months for the study group and routine care for the control group was given. The study revealed around 50% of the antenatal women were anaemic and knowledge level improved after structured education with telephone support. Structured Education with Telephone Support had a positive effect on improving knowledge on anaemia among antenatal women. The nurses must conduct periodic analysis of antenatal women's knowledge on anaemia and adherence to iron folate supplementation and educate them throughout their pregnancy period for their compliance with the medication.

**Keywords:** Anaemia; Pregnant women; knowledge on anaemia; SETS

## Introduction

Anaemia during pregnancy is a worldwide problem. Iron deficiency and folate deficiency are considered as two important causes for nutritional anaemia. During pregnancy there is an increase in the iron and folate requirements, therefore, the likelihood of presenting iron and folate deficiency is high, if there is no supplementation during pregnancy. The complications of anaemia are pre-eclampsia, intermittent infection, heart failure, preterm labour during pregnancy, uterine inertia, postpartum haemorrhage, and shock during labour.

The Food and Agriculture Organization of the United Nations, Rome (2017) Agenda for Sustainable Development and the UN Decade of Action on Nutrition 2016–2025 call on all countries and stakeholders to act together to end hunger and prevent all forms of malnutrition by 2030. It is estimated that almost one-third (33 percent) of women of reproductive age worldwide suffer from anaemia, which also puts the nutrition and health of many children at risk.

According to the WHO, Global Health Observatory Data Repository/World Health Statistics, it is estimated that prevalence of anaemia among pregnant women was 40.1% worldwide and in India it accounted for 50.1% in 2020 with a decline from 53.5% in 1990. (WHO, 2020). WHO Global nutrition targets for 2025, awaits 50% reduction of anaemia in women of reproductive age group. Iron deficiency anaemia is an important public health problem in the Eastern Mediterranean Region. It is estimated that more than one third of the population in the region is anaemic. Pregnant women and young children are mostly at risk: about 50% of pregnant women and 63% of children under-5 have iron deficiency anaemia. Recent data on anaemia rates in preschool children, pregnant women and women of childbearing age show no improvement in the overall situation.

In a prospective study conducted at Finland among 38,381 pregnant women, 8,198 women had anaemia during their pregnancy. From the birth register data which was linked with data in the register for reimbursement for medication for asthma, it was found that male offspring born to the mild anaemic mothers had more asthma than the babies born to mothers who had normal haemoglobin levels. (Harju, 2018). Anaemia during pregnancy has been associated with adverse outcomes including maternal and perinatal mortality, pre-term delivery, and low birth weight. According to the systematic review and meta - analysis done from 48 randomized trial with 17,793 women and 44 cohort studies done with 1,851,652 women to assess the association of maternal anaemia and prenatal iron use revealed that the use of iron increased the maternal haemoglobin from 4.59 (95% confidence interval 3.72) to 5.46g/dl. (Haider, 2013)

The National Family Health Survey revealed that among the children aged 6-59 months 58.6% were anaemic and 53.2% of non-pregnant women had anaemia. The pregnant women with anaemia under the age group of 15 to 49 years were 50.4%. In Tamil Nadu 55% of women were anaemic, among which pregnant women accounted for 44.4%. It is recommended to give daily oral iron and folic acid supplementation with 30 mg to 60 mg of elemental iron and 400 µg (0.4 mg) of folic acid for pregnant women to prevent maternal anaemia, puerperal sepsis, low birth weight, and preterm birth; Intermittent oral iron and folic acid supplementation with 120 mg of elemental iron and 2800 µg (2.8 mg) of folic acid once weekly for pregnant women to improve maternal and neonatal outcomes, if daily iron is not acceptable due to side-effects, and in populations with an anaemia prevalence among pregnant women of less than 20%. (WHO, 2020).

Krupp et al. (2018) interrogated a prospective cohort study to assess the relationship between anaemia and socioeconomic and health-related factors among 1,675 pregnant women from 2009 to 2012 at 144 rural village of Mysore, India. The study revealed 66.9% of them to have anaemia which was associated with lower household income ( $p=0.022$ ) and lower education among spouses ( $p=0.021$ ). Women living in a household where others had control over household decision-making had lower odds of moderate/severe anaemia (Adjusted Odds Ratio: 0.602; 95% Confidence Interval: 0.37-0.97) as compared to women who shared decision-making power with others in the household.

## Methods and Materials

An Experimental pretest posttest control group design was used for this study. 100 Antenatal women 50 in the study group and 50 in the control group who are in 20 to 30 weeks of gestation and attending antenatal OPD of Sri Ramachandra Hospital were taken as samples based on inclusion criteria using consecutive sampling technique. Antenatal women who were having pregnancy complications like (polyhydramnios, oligohydramnios), having psychiatric problems and who were not using mobile phones were excluded from the study. An approval to conduct the study at antenatal OPD of Sri Ramachandra Hospital was obtained from Principal, College of Nursing, the Head of the Obstetrics and Gynaecology department, Medical Director and Department Head in Nursing. Then an approval to conduct a study was obtained from ethics committee for student's project (Ethical reference number - CSP/18/APR/68/99). Confidentiality was maintained throughout the study. Further to selection, the pregnant women were made to sit comfortably in the chair at the room provided within the AN OPD and the researcher established a rapport with the study subjects. The purpose of the study was explained, written consent was obtained from participants prior to data collection. Random allocation of participants to study and control groups was done using lottery method. Data on background variables and their knowledge on anaemia were collected using interview technique respectively from both the groups prior to the intervention.

### *Instruments*

The instrument consisted of two parts.

Part I background variable questionnaire.

Part II structured questionnaire on knowledge on anaemia.

#### *Part I: Background variable questionnaire*

It consisted of two sections.

##### *Section A*

Demographic characteristics of antenatal women. It included information about the participant's age, education, occupation, type of family, family income, dietary pattern.

##### *Section B*

Maternal variables it consisted of information about first antenatal visit, obstetrical history - gravida, para, live children, weeks of gestation, abortion, high risk during present and past pregnancy, haemoglobin level at present.

#### *Part II: Questionnaire on Knowledge on anaemia*

The knowledge regarding anaemia questions were developed by the researcher for this study to measure the knowledge regarding general awareness about anaemia (4 items), investigations and treatment (6 items), prevention and complications of iron deficiency anaemia (5 items). It consisted of structured interview schedule and had 15 multiple choice questions.

### *Scoring and interpretation*

The total mark for knowledge regarding anaemia questionnaire was 15. One mark was given for every correct answer and score of zero was given for every wrong answer. The scores ranged as follows.

Adequate knowledge - a score from 76 to 100%.

Moderately adequate knowledge - a score from 51 to 75%.

Inadequate knowledge - a score from 0 to 50%.

### Data collection procedure

Eight to ten subjects were interviewed each day. Each participants was interviewed separately and privately. The interview lasted for 20 to 30 minutes. The structured laptop assisted teaching, pamphlet and discussion imparting detailed information about anaemia was given to the study group participants. Telephonic reminders by voice calls once in every three days on consumption of iron and folic acid tablets given for a period of 3 weeks to the antenatal women of the study group. The antenatal women in the control group received the routine antenatal care given by the health care professionals. Posttest was conducted for the participants after 21 days of intervention. The pamphlet regarding anaemia was issued to the antenatal women in the control group after posttest.

### Results

The antenatal women's knowledge on anaemia during pretest in the study group showed that 18% had adequate knowledge, 46% had moderately adequate knowledge and 36% had inadequate knowledge and in the control group only 16% had adequate knowledge, 54% had moderately adequate knowledge and 30% had inadequate knowledge. Posttest results revealed that in the study group 78% had adequate knowledge, 22% had moderately adequate knowledge and none had inadequate knowledge and in the control group only 20% had adequate knowledge, 52% had moderately adequate knowledge and 28% had inadequate knowledge. Table 2 describes that the chi square value revealed presence of a statistically significant difference at  $p < 0.001$  level. The pretest knowledge mean score was 5.74 with SD 4.18 for the study group and 4.70 with SD 1.82 for the control group and independent t test value was 1.613 showed no significant difference between the groups. In the posttest, knowledge mean score was 12.20 with SD 2.41 for the study group and 4.90 with SD of 1.50 for the control group. Table 1 depicts that the overall mean difference was 1.04 and SD was 2.36 among the study group and control group during pretest and independent t test value was 18.184 which was highly significant at  $p < .001$  level.

Knowledge	Study Group (n = 50)	Control Group (n = 50)	Mean difference	Independent t test
	M ± SD	M ± SD		
Pretest	5.74 ± 4.18	4.70 ± 1.82	1.04	1.613 .11
Posttest	12.20 ± 2.41	4.90 ± 1.50	7.3	18.184 .000***

\*\*\* p < .001

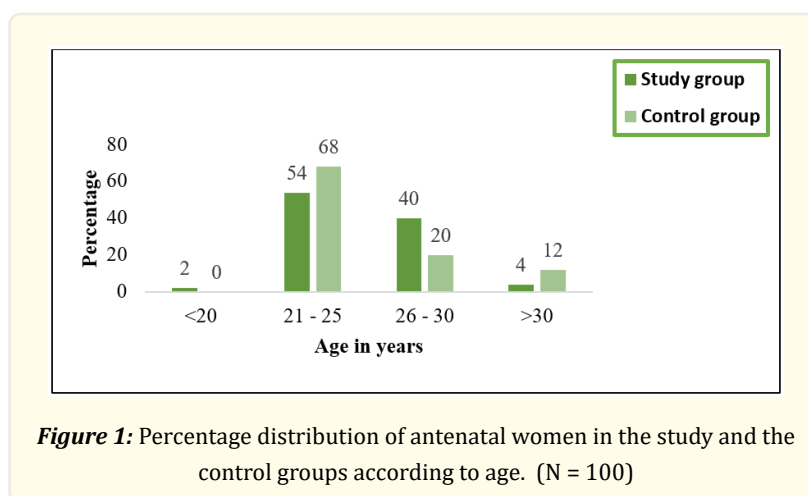
**Table 1:** Comparison of Level of Knowledge on Anaemia among Antenatal Women in the Study and the Control Groups during Pretest and Posttest (N=100).

Knowledge	Study group (n = 50)		Control group (n = 50)		Chi square and p value
	n	%	n	%	
<b>Pretest</b>					
Adequate (76 - 100 %)	9	18	8	16	.65 .72
Moderately Adequate (51 - 75 %)	23	46	27	54	
Inadequate (0 - 50%)	18	36	15	30	

<i>Posttest</i>					34.50 .000***
Adequate (76 - 100 %)	39	78	10	20	
Moderately Adequate (51 - 75 %)	11	22	26	52	
Inadequate (0 - 50%)	0	0	14	28	

\*\*\* p < .001

**Table 2:** Comparison of Pretest, Posttest Mean Score of Knowledge among Antenatal Women between the Study and the Control Groups (N= 100).



**Figure 1:** Percentage distribution of antenatal women in the study and the control groups according to age. (N = 100)

## Discussion

In the study group 54% of the antenatal women were in the age group of 21-25 years and in the control group 68% of the antenatal women were in the age group of 21-25 years. (Figure 1). More than half of the antenatal women in both the groups were graduates. Regarding occupation, majority of the antenatal women in the study group 72% and 90% in the control group were housewives. In the study group around 42% of the antenatal women had total family income range above Rs.15,000 per month. In the control group 50% of the antenatal women had total family income ranging from Rs.10,000 to Rs.15,000 per month. Regarding the disorders in present pregnancy, 18% of the women in both the study and control groups had hyperemesis gravidarum and about 8% of them in the study group and 10% of them in the control group had the same disorder in their previous pregnancy. Prevalence of anaemia was 50% in the present study which was similar to the study conducted by Vindhya et al (2019) with a 33.9% prevalence of anaemia among pregnant women attending a public sector hospital in Bangalore, South India. 78% took one iron tablet 100mg and 20% consumed two iron tablets 200mg in a day. Antenatal women in both the study and the control groups were non vegetarians. These findings are also consistent with the study done by Gebremariam, Tiruneh & Abate (2019) in Debre Tabor General Hospital Ethiopia who found that among 241 pregnant women included in the study only 107 were adherent to iron folate supplementation and 52% had knowledge on iron folate supplementation and only 39% received counselling regarding iron folate supplementation.

Regarding the first antenatal visit antenatal women in both the study group and the control group had registered in the first trimester. More than half of the antenatal women in the study and control groups were primigravida. Most of the antenatal women in both the study and the control groups were in their 27 to 30 weeks of gestation. Among the antenatal women in both the groups majority had no history of abortion. The antenatal women's knowledge on anaemia during pretest was assessed by structured knowledge questionnaire and it was found that in the study group only 18% had adequate knowledge, 46% had moderately adequate knowledge and

36% had inadequate knowledge and in the control group only 16% had adequate knowledge, 54% had moderately adequate knowledge and 30% had inadequate knowledge. The study results were well supported by a cross sectional study by Latha, Shruthi, Mahesh (2016) conducted a cross sectional study at PHC Devarayasamudra, Kolar, Karnataka, among 50 pregnant women attending antenatal clinic to find the knowledge and practices regarding anaemia and its prevention. The study results revealed that 66% of the women to be anaemic, 54% of the women received Iron Folic Acid (IFA) tablets from PHC and among those who received IFA tablets 40% of the women never consumed it. Among the pregnant women 52% had no knowledge on consumption of iron rich foods.

Posttest results revealed that in the study group 78% had adequate knowledge, 22% had moderately adequate knowledge and 0% had inadequate knowledge and in the control group only 20% had adequate knowledge, 52% had moderately adequate knowledge and 28% had inadequate knowledge. The chi square value revealed that there was a statistically significant difference at the  $p < 0.001$ . (Table 1) A prospective observational, community-based study conducted among 446 pregnant women to estimate the prevalence of anaemia among pregnant women and to associate it with the maternal and fetal outcomes brought to light that 35.6% had maternal and fetal morbidity. Anaemia (63%) was one of the pregnancy related complications. They recommend that early diagnosis and treatment of anaemia should be given priority. (Ravishankar, 2018).

### Limitations of the study

- Generalization of study results is not possible as single setting was used.
- Long term effects of SETS could not be measured.
- Only one posttest was conducted on the 21st day after intervention.

### Conclusion

Structured Education with Telephone Support had a positive effect on improving knowledge on anaemia among antenatal women. If SETS is being implemented it can prevent anaemia among women during pregnancy. The present study has shown that 36% of the antenatal women had inadequate knowledge regarding anaemia. The nurses must conduct periodic analysis of antenatal women's knowledge on anaemia and educate them throughout their pregnancy period for their compliance with the medication. The study can be done in community setup with larger sample size and comparison between primigravida mothers and multigravida mothers can be done.

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