

Effect of Counseling on Knowledge Regarding Anaemia, Iron Folic Acid Tablets, Deworming and Anti-natal Care Visits of Pregnant Women from Jaipur City, Rajasthan, India

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ABSTRACT

Background and objectives: Knowledge regarding anaemia, IFA tablets, deworming and anti-natal care (ANC) visits of pregnant women is of paramount importance in improving maternal and foetal outcomes. The present study was conducted to determine the effectiveness of individual and group counseling on the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and ANC visits.

Methods and study design: Cross-sectional data was obtained from 130 pregnant women coming to Anganwadi centres at Idgaon and Hida ki Mori in Zone III of Jaipur city. The subjects were divided into 2 groups: Group A (individual counseling) and Group B (group counseling). A structured questionnaire was used to assess the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and ANC visits at pre intervention. Counseling was used as a tool for intervention. After counseling, the responses of the subjects were collected using the same questionnaire at post intervention. Means and standard deviations were calculated. Paired 't' test was applied on pre and post intervention data to ascertain the effect of counseling in improving the knowledge of pregnant women.

Results: The results had shown that the pregnant women had poor knowledge regarding anaemia, IFA tablets and deworming. It was also revealed that at post intervention there were significant improvements in the mean marks regarding anaemia, IFA tablets, deworming and ANC visits and total mean marks of pregnant women of Group A and Group B who had received individual and group counseling, respectively.

Conclusion: These findings suggest that both counseling methods, i.e. individual and group were effective in significantly improving the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and ANC visits.

Key Words : Knowledge, Counseling, Pregnant women, anaemia, Iron folic acid tablets, Deworming, Anti-natal care visits

INTRODUCTION

Anaemia is a global public health concern, afflicting adolescent girls, women of reproductive age, pregnant women and children in low and middle income countries. The most common nutritional cause of anaemia is iron deficiency. However, non nutritional causes of anaemia include parasitic infestations (malaria, hookworm infestation), genetic conditions (thalassaemia, sickle cell trait) and environmental factors (poor sanitation, unsafe

drinking water, inadequate personal hygiene) (WHO, 2020).

The NFHS-5 (2019-21) survey had indicated that more than half (52.2%) of the pregnant women (15-49 years) were anaemic (Hb < 11.0 g/dl) in India. In Rajasthan, 46.3% pregnant women (15-49 years) were anaemic (Hb < 11.0 g/dl), including 41.4% in urban and 47.5% in rural areas (NFHS-5, 2019-2021).

The knowledge regarding anaemia, iron rich foods and the importance of iron supplementation during

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pregnancy was found to be lacking in pregnant women (n=316, age 20-29 years) coming to Sri Manakula Vinayagar medical college hospital, Puducherry. The authors were of the view that the pregnant women should be counseled and motivated at regular intervals to consume iron and folic acid tablets, they should be dewormed during pregnancy and that there should be provision of toilet facilities in all households. Such practices according to the authors would help in reducing anaemia in pregnant women (Nivedita and Shanthini *et al.*, 2016). Education through a pictorial handbook and counseling on anaemia was found to have a positive impact on knowledge, food frequency score, intake of number of IFA tablets (iron and folic acid) and daily iron intake from foods of anaemic pregnant women (n=70, age 20 years or above) from Indonesia (Nahrisah *et al.*, 2020).

Poor knowledge and practices regarding IFA supplementation was reported in pregnant women (n=108) in the third trimester of pregnancy from West Bengal. The authors suggested that counseling and motivation sessions would help in reducing the incidence of anaemia during pregnancy (Augustine *et al.*, 2018).

Parasitic infestation is the main cause of anaemia during pregnancy in developing countries (Roberts *et al.*, 2011). Antenatal care is considered as a pivotal tool in reducing the causes of still birth and complications in pregnancy and in making the pregnancy period more favorable (WHO, 2016). The present study was conducted to find out the effectiveness of individual and group counseling on the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and anti-natal care (ANC) visits.

METHODOLOGY

Study designs and sampling :

The present study was a cross-sectional study conducted at 25 Anganwadi centres at Hida Ki Mori and Idgaon, in Zone III of Jaipur city. One hundred and thirty pregnant women in the age group of 20-34 years were enrolled in the study through purposive sampling method.

Procedure:

Data collection was conducted from November, 2017 to February, 2019. The subjects were divided into 2 groups: Group A (individual counseling) and Group B (group counseling) comprising of 65 pregnant women in

each group. Baseline knowledge of pregnant women of Group A and Group B regarding anaemia, IFA tablets, deworming and ANC visits was collected through a structured questionnaire at pre intervention. Counseling was used as a tool for intervention. The pregnant women of Group A were counseled individually using a power point presentation providing information related to anaemia, IFA tablets, deworming and ANC visits during the home visits. However, the pregnant women of Group B were counseled in 2 groups with the help of the same power point presentation through a projector at 2 Anganwadi centres. After a time interval of 5 to 10 days, the responses of the pregnant women were collected using the same questionnaire, at post intervention.

Measurement:

Demographic information on age, level of education, occupation, religion and their total mean monthly household income of pregnant women was collected. A structured questionnaire was used to assess the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and ANC visits. The questionnaire comprised of 32 questions, out of which 12 questions were related to anaemia (symptoms of anaemia, percentage of anaemic pregnant women in India, haemoglobin level of pregnant women, total number of haemoglobin investigations, weeks in which haemoglobin investigations are done, interval between two haemoglobin investigations, reasons for anaemia during pregnancy, which nutrient deficiency leads to anaemia, adverse effects of anaemia on pregnant women and their foetus, food items to be included to decrease iron deficiency, food items which decrease iron absorption and food items which increase iron absorption), 6 questions were related to IFA tablets (benefits of taking IFA tablets, month of starting IFA tablets, color of IFA tablets, IFA tablet composition, percentage of women taking prescribed doses of IFA tablets and total number of days prescribed for taking IFA tablets), 6 questions were related to deworming (side effects of worm infestation, tablet for deworming, composition of deworming tablet, month in which deworming tablet should be given, number of tablets to be taken and measures to avoid worm infestation) and 8 questions were related to ANC visits (total number of ANC visits, investigations done during ANC visits, major alarming signs to report to hospital during pregnancy, number of doses of TT (tetanus toxoid) vaccinations, interval between two vaccinations, total

sleeping hours at night, total resting hours at day time and ideal weight gain during pregnancy).

Analysis:

All the data were consolidated on excel sheets. Means and standard deviations were calculated. Paired t test (Gupta, 2005) was applied on pre and post intervention data to check the effect of counseling on pregnant women regarding their knowledge on anaemia, IFA tablets, deworming and ANC visits.

RESULTS AND DISCUSSION

The mean age of pregnant women was 24.6 ± 3.79 years. About 5 % women were illiterate and 84.6 % of pregnant women had received some form of education. Most of the women (86.9%) were housewives and remaining 13.1% were working as maids, tailors, sales women or taking tuitions, etc. Half of the subjects (50.0 %) were Hindus and 50.0 % were Muslims. The mean monthly household income was Rs. $22,376 \pm 17,052$ (Table 1).

The mean marks of pregnant women of Group A at post intervention regarding anaemia were significantly higher than the mean marks of women at pre intervention with regards to all the questions related to anaemia (Table 2). A similar pattern had emerged for mean marks of knowledge of pregnant women on IFA tablets (Table 3),

Table 1 : Demographical detail of pregnant women

Demographical details	Pregnant women (n=130)
Mean age (years)	24.6 \pm 3.79
Education	
Illiterate	6 (4.6)
Read and write	14 (10.8)
Primary school (I-V)	26 (20.0)
Middle (VI-VIII)	42 (32.3)
Secondary (X)	13 (10.0)
Higher secondary (XII)	11 (8.5)
Under graduate	10 (7.7)
Post graduate	8 (6.1)
Occupation	
Housewives	113 (86.9)
Tailors	3 (2.3)
Bangle makers	3 (2.3)
Anganwadi workers	2 (1.5)
Tuition teacher	1 (0.8)
Maid	1 (0.8)
Clerical job	1 (0.8)
Sales women	1 (0.8)
Others	5 (3.8)
Religion	
Hindu	65 (50.0)
Muslim	65 (50.0)
Mean total monthly household income (Rs)	22,376 \pm 17,052

Mean \pm SD. Figures in parentheses denote percentages. Others include=Making hole in stones (nagina), knife and lock packing, mala maker, dona maker and sticking stone (nagina) on kurtis.

Table 2 : Comparison of mean marks of pregnant women of the Group A regarding their knowledge of anaemia at pre and post intervention

Sr. No.	Anaemia	Marks of pregnant women of Group A				Paired 't' test value
		Mean marks at pre intervention (n=65)	% marks	Mean marks at post intervention (n=65)	% marks	
1.	Symptoms of anaemia (TM=4)	0.8 \pm 0.70	20	3.0 \pm 0.90	75	19.258*
2.	Percentage of anaemic pregnant women in India (TM=1)	0.0 \pm 0.17	0	0.7 \pm 0.45	70	11.568*
3.	Haemoglobin level of pregnant women (TM=1)	0.3 \pm 0.47	30	1.0 \pm 0.17	100	10.426*
4.	Total number of haemoglobin investigations (TM=1)	0.2 \pm 0.39	20	0.8 \pm 0.42	80	8.931*
5.	Weeks in which haemoglobin investigations are done (TM=4)	0.4 \pm 1.06	10	2.0 \pm 1.78	50	7.472*
6.	Interval between two haemoglobin investigations (TM=1)	0.0 \pm 0.24	0	0.7 \pm 0.47	70	9.809*
7.	Reasons for anaemia during pregnancy (TM=4)	0.2 \pm 0.40	5	2.5 \pm 1.22	63	15.123*
8.	Which nutrient deficiencies lead to anaemia (TM=1)	0.3 \pm 0.47	30	0.9 \pm 0.31	90	8.896*
9.	Adverse effects of anaemia on pregnant women and their foetus (TM=2)	0.5 \pm 0.53	25	1.4 \pm 0.70	70	8.581*
10.	Food items to be included to decrease iron deficiency (TM=4)	0.8 \pm 0.88	20	3.0 \pm 1.02	75	13.276*
11.	Food items which decrease iron absorption (TM=2)	0	0	0.6 \pm 0.48	30	10.802*
12.	Food items which increase iron absorption (TM=2)	0	0	0.6 \pm 0.70	30	7.081*

Mean \pm SD. TM= Total marks.

*Significant at 5% level of significance.

Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 3 : Comparison of mean marks of pregnant women of the Group A regarding their knowledge of IFA tablets at pre and post intervention

Sr. No.	IFA tablets	Marks of pregnant women of Group A				Paired 't' test value
		Mean marks at Pre intervention (n=65)	% marks	Mean marks at Post intervention (n=65)	% marks	
1.	Benefits of taking IFA tablets (TM=2)	0.0± 0.17	0	0.6± 0.70	30	6.506*
2.	Month of starting IFA tablets (TM=1)	0.8± 0.43	80	1.0± 0	100	4.568*
3.	Color of IFA tablets (TM=1)	0.8± 0.40	80	1.0± 0	100	4.000*
4.	IFA tablet composition (TM=1)	0.0± 0.12	0	0.4± 0.49	40	6.539*
5.	Percentage of women taking prescribed doses of IFA tablets (TM=1)	0.1 ±0.26	10	0.6± 0.48	60	9.190*
6.	Total number of days prescribed for taking IFA tablets (TM=1)	0.3± 0.45	30	0.9± 0.31	90	9.809*

Mean ± SD.

IFA=Iron folic acid tablets,

TM= Total marks.

*Significant at 5% level of significance.

Table value of paired 't' test at 5 % of significance at infinity is 1.645.

deworming (Table 4) and ANC visits (Table 5). Hence, it was observed from the results that individual counseling was instrumental in significantly augmenting the mean marks of knowledge regarding anaemia, IFA tablets, deworming and ANC visits of pregnant women.

The mean marks of pregnant women of Group B at post intervention regarding anaemia were significantly higher than the mean marks of pregnant women at pre intervention (Table 6). A similar picture was evident with the mean marks of knowledge on IFA tablets (Table 7), deworming (Table 8) and ANC visits (Table 9) of pregnant women. Hence, here again, it became apparent that group counseling brought about significant increases in the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and ANC visits. It was also noticed that there were improvements in the percentage marks of pregnant women regarding anaemia, IFA tablets,

deworming and ANC visits in both the groups, *i.e.*, in Group A and Group B.

At post intervention, significant improvements in the total mean marks regarding knowledge on anaemia, IFA tablets, deworming and ANC visits of Group A and Group B were observed (Table 10). Thereby, suggesting that both the counseling methods, *i.e.* individual and group counseling were effective in raising the knowledge of pregnant women. The data on percentage total marks revealed that the pregnant women had secured less than 15% marks in knowledge related to anaemia and deworming (Table 10). The subjects had fared better in their knowledge on IFA tablets (29 to 37 %) and even better on ANC visits (51 to 52 %). It was clear that the subjects had poor knowledge on anaemia, IFA tablets and deworming. The total percentage marks were also less than 24 % at pre intervention. After counseling, the

Table 4 : Comparison of mean marks of pregnant women of the Group A regarding their knowledge of deworming at pre and post intervention

Sr. No.	Deworming	Marks of pregnant women of Group A				Paired 't' test value
		Mean marks at Pre intervention (n=65)	% marks	Mean marks at Post intervention (n=65)	% marks	
1.	Side effects of worm infestation (TM=4)	0.8± 0.88	20.0	2.2± 1.25	55	11.427*
2.	Tablet for deworming (TM=1)	0.0 ±0.17	0	0.6± 0.50	60	8.380*
3.	Composition of deworming tablet (TM=1)	0	0	0.4± 0.48	40	8.741*
4.	Month in which deworming tablet should be given (TM=1)	0.0± 0.12	0	0.5± 0.50	50	7.883*
5.	Number of tablets to be taken (TM=1)	0	0	0.8± 0.41	80	15.263*
6.	Measures to avoid worm infestation (TM=4)	0.3± 0.65	7.5	2.6± 1.35	65	14.005*

Mean ± SD.

TM= Total marks.

*Significant at 5% level of significance.

Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 5 : Comparison of mean marks of pregnant women of the Group A regarding their knowledge of ANC visits at pre and post intervention

Sr. No.	ANC visits	Marks of pregnant women of Group A				Paired 't' test value
		Mean marks at Pre intervention (n=65)	% marks	Mean marks at Post intervention (n=65)	% marks	
1.	Total number of ANC visits (TM=1)	0.2± 0.41	20	1.0± 0.17	100	13.984*
2.	Investigations done during ANC visits (TM=4)	3.8± 0.56	95	4.0± 0	100	2.858*
3.	Major alarming signs to report to hospital during pregnancy (TM=4)	1.0± 0.91	25	3.2± 0.78	80	17.848*
4.	Number of doses of TT vaccinations (TM=1)	0.7± 0.45	70	1.0± 0.12	100	4.410*
5.	Interval between two vaccinations (TM=1)	0.5± 0.50	50	0.9± 0.26	90	6.347*
6.	Total sleeping hours at night (TM=1)	0.4± 0.49	40	1.0± 0.17	100	8.135*
7.	Total resting hours at day time (TM=1)	0.4± 0.49	40	1.0± 0	100	9.190*
8.	Ideal weight gain during pregnancy (TM=1)	0.2± 0.37	20	1.0± 0.21	100	15.263*

Mean ± SD. ANC= Anti natal care, TM= Total marks.

*Significant at 5% level of significance. Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 6 : Comparison of mean marks of pregnant women of the Group B regarding their knowledge of anaemia at pre and post intervention

Sr. No.	Anaemia	Marks of pregnant women of Group B				Paired 't' test value
		Marks at Pre intervention (n=65)	% marks	Marks at Post intervention (n=65)	% marks	
1.	Symptoms of anaemia (TM=4)	0.8±0.36	20	2.9± 0.9	73	18.230*
2.	Percentage of anaemic pregnant women in India (TM=1)	0.0± 0.12	0	0.4± 0.48	40	5.814*
3.	Haemoglobin level of pregnant women (TM=1)	0.4± 0.49	40	0.9± 0.26	90	20.911*
4.	Total number of haemoglobin investigations (TM=1)	0.0± 0.12	0	0.4± 0.48	40	5.768*
5.	Weeks in which haemoglobin investigations are done (TM=4)	0.4± 0.96	10	1.5± 1.77	38	4.937*
6.	Interval between two haemoglobin investigations (TM=1)	0.0± 0.17	0	0.3± 0.44	30	4.360*
7.	Reasons for anaemia during pregnancy (TM=4)	0.2± 0.54	5	2.7± 0.90	68	21.004*
8.	Which nutrient deficiencies lead to anaemia (TM=1)	0.2± 0.37	20	0.5± 0.50	50	5.768*
9.	Adverse effects of anaemia on pregnant women and their foetus (TM=2)	0.3± 0.49	15	1.6± 0.54	80	14.942*
10.	Food items to be included to decrease iron deficiency (TM=4)	0.6± 0.76	15	3.1± 0.88	78	19.146*
11.	Food items which decrease iron absorption (TM=2)	0.0± 0.12	0	0.5± 0.50	25	7.175*
12.	Food items which increase iron absorption (TM=2)	0.0± 0.12	0	0.4± 0.63	20	5.492*

Mean ± SD. TM= Total marks.

*Significant at 5% level of significance. Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 7 : Comparison of mean marks of pregnant women of the Group B regarding their knowledge of IFA tablets at pre and post intervention

Sr. No.	IFA tablets	Marks of pregnant women of Group B				Paired 't' test value
		Mean marks at Pre intervention (n=65)	% marks	Mean marks at Post intervention (n=65)	% marks	
1.	Benefits of taking IFA tablets (TM=2)	0.9± 0.39	45	1.2± 0.69	60	12.688*
2.	Month of starting IFA tablets (TM=1)	0.9± 0.29	90	1.0± 0	100	2.548*
3.	Color of IFA tablets (TM=1)	1.0± 0.17	100	1.0± 0	100	1.389*
4.	IFA tablet composition (TM=1)	0.1± 0.26	10	0.2± 0.43	20	3.266*
5.	Percentage of women taking prescribed doses of IFA tablets (TM=1)	0	0	0.3± 0.47	30	5.768*
6.	Total number of days prescribed for taking IFA tablets (TM=1)	0.5± 0.50	50	1.0± 0.17	100	7.401*

Mean ± SD. IFA =Iron folic acid tablets, TM= Total marks.

*Significant at 5% level of significance. Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 8 : Comparison of mean marks of pregnant women of the Group B regarding their knowledge of deworming at pre and post intervention

Sr. No.	Deworming	Marks of pregnant women of Group B				Paired 't' test value
		Mean marks at Pre intervention (n=65)	% marks	Mean marks at Post intervention (n=65)	% marks	
1.	Side effects of worm infestation (TM=4)	0.6± 0.84	15	2.0± 0.88	50	11.371*
2.	Tablet for deworming (TM=1)	0.0± 0.21	0	0.3± 0.46	30	4.748*
3.	Composition of deworming tablet (TM=1)	0.0± 0.17	0	0.2± 0.37	20	3.205*
4.	Month in which deworming tablet should be given (TM=1)	0	0	0.3± 0.47	30	5.768*
5.	Number of tablets to be taken (TM=1)	0	0	0.8± 0.42	80	14.617*
6.	Measures to avoid worm infestation (TM=4)	0.3± 0.77	7.5	2.6 ±1.02	65	18.144*

Mean ± SD.

TM= Total marks.

*Significant at 5% level of significance.

Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 9 : Comparison of mean marks of pregnant women of the Group B regarding their knowledge of ANC visits at pre and post intervention

Sr. No.	ANC visits	Marks of pregnant women of Group B				Paired 't' test value
		Mean marks at Pre intervention (n=65)	% marks	Mean marks at Post intervention (n=65)	% marks	
1.	Total number of ANC visits (TM=1)	0.4± 0.5	40	0.9± 0.24	90	7.883*
2.	Investigations done during ANC visits (TM=4)	3.8± 0.37	95	4.0± 0	100	3.613*
3.	Major alarming signs to report to hospital during pregnancy (TM=4)	1.5± 0.86	38	2.6± 1.06	65	8.585*
4.	Number of doses of TT vaccinations (TM=1)	0.7± 0.47	70	1.0± 0.17	100	4.978*
5.	Interval between two vaccinations (TM=1)	0.3± 0.47	30	0.8± 0.41	80	7.401*
6.	Total sleeping hours at night (TM=1)	0.1± 0.29	10	1.0± 0.12	100	22.894*
7.	Total resting hours at day time (TM=1)	0.0 ±0.17	0	1.0± 0.12	100	36.061*
8.	Ideal weight gain during pregnancy (TM=1)	0.2± 0.37	20	0.8 ±0.37	80	9.902*

Mean ± SD.

ANC= Anti natal care, TM= Total marks.

*Significant at 5% level of significance.

Table value of paired 't' test at 5 % of significance at infinity is 1.645.

Table 10 : Comparison of mean marks of pregnant women of Group A and Group B regarding their knowledge of anaemia, IFA tablets, deworming and ANC visits at pre and post intervention

	Marks obtained by pregnant women					Paired 't' test value
	Total mean marks at Pre intervention	% marks	Total mean marks at Post intervention	% marks	Increase in mean scores	
Anaemia (TM=27)						
Group A	3.8±3.15	14.1	17.2±5.17	63.7	13.42	22.697*
Group B	3.1±3.02	11.5	15.1±6.39	55.9	12.00	20.965*
IFA Tablets (TM=7)						
Group A	2.0±1.04	28.6	4.5±1.41	64.3	2.64	12.087*
Group B	2.6±0.95	37.1	4.7±1.39	67.1	2.02	14.216*
Deworming (TM=12)						
Group A	1.1±1.39	9.2	7.0±2.93	58.3	5.90	20.003*
Group B	1.0±1.44	8.3	6.2±2.73	51.6	5.25	19.612*
ANC visits(TM=14)						
Group A	7.3±2.05	52.1	13.0±1.07	92.9	5.73	23.266*
Group B	7.1±1.85	50.7	12.1±1.55	86.4	4.95	23.755*
Total Marks(TM=60)						
Group A	14.2±5.08	23.7	41.8±9.19	69.7	27.47	27.374*
Group B	13.7±6.08	22.8	38.0±11.18	63.3	24.25	27.631*

Mean ± SD.

IFA =Iron folic acid tablets, ANC= Anti natal care, TM= Total marks.

*Significant at 5% level of significance.

Table value of paired 't' test at 5 % of significance at infinity is 1.645.

percentage marks in all the four areas were higher than 50 % and the total percentage marks were about 63-70 % in both the groups. Although the percentage increase in total marks of Group A was slightly better than that of Group B, the difference was not much, therefore, both individual and group counseling were considered to be effective.

Discussion:

The results of the present study had indicated that the pregnant women had secured less than 52 % marks at pre intervention suggesting that the subjects had poor knowledge on anaemia, IFA tablets and deworming. Assessment of knowledge of pregnant women coming to Sri Manakula Vinayagar medical college hospital, Puducherry had revealed that there was lack of knowledge regarding anaemia, iron rich foods and the importance of iron supplementation during pregnancy (Nivedita and Shanthini *et al.*, 2016). The results, therefore, support those of the present study. A comparable study also found out that the knowledge on benefits of IFA supplementation was poor among pregnant women (Ng'ethe *et al.*, 2021). In another study, about 13.5 % of the pregnant women had high knowledge on anaemia, while 58.4 % and 28.1 % had moderate and low knowledge, respectively (Appiah *et al.*, 2020). Poor knowledge regarding IFA supplementation of pregnant women was found to be significantly associated with lower age, low educational status and lower per capita income in a study conducted at Singur, West Bengal (Augustine *et al.*, 2018). However, it has also been reported that 85.6 % of the pregnant and post natal women from Kathmandu had adequate knowledge regarding IFA supplementation (Mishra and Tiwari, 2020). About 66 % of pregnant women from Indonesia had good knowledge regarding consumption of iron tablets while 33.8 % had poor knowledge (Aulianingrum *et al.*, 2020).

Frequency percentage of IFA knowledge variables of pregnant Indonesian women had shown that knowledge was high regarding benefits, and when/how to consume IFA tablets, but low on the side effects of IFA tablets. The subjects who had participated in the interpersonal communication campaign had higher knowledge of the following: IFA benefits, IFA side effects, how to consume IFA, when to consume IFA, iron rich foods benefits, and consequences of iron deficiency (Gamboa *et al.*, 2020). A health education program had improved the knowledge of pregnant women of Egypt regarding folic acid

supplementation; the percentage of pregnant women having good knowledge had increased from 18 to 56 %, having satisfactory knowledge from 19 to 22 % and those having poor knowledge had decreased from 63 to 22 % (Mohamed *et al.*, 2016).

Integrated Pictorial Handbook Education and counseling had significantly improved the knowledge of anaemia score in anaemic pregnant women from Indonesia (Nahrisah *et al.*, 2020). However, in the present study individual and group counseling were effective in significantly improving the knowledge of pregnant women regarding anaemia, IFA tablets, deworming and ANC visits.

Conclusion:

The pregnant women of the present study had poor knowledge about anaemia, IFA tablets and deworming. After individual and group counseling there were significant increases in the mean marks of all the four aspects and the mean total marks. Thereby, suggesting that both the counseling methods *i.e.* individual and group counseling were effective in improving the knowledge of pregnant women. Furthermore, the results indicated that there is a need of counseling to improve the knowledge of women regarding anaemia, IFA tablets, deworming and ANC visits during pregnancy.

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