This chapter deals with the discussion of the study with appropriate literature review, statistical analysis, objectives of the study and hypotheses. The aim of the present study was to assess the effectiveness of structured teaching programme and dietary supplementation in prevention of anemia among women of reproductive age group in selected community.

Nutritional anemia is highly prevalent in the developing countries especially among women of child-bearing age, adolescent girls and lactating women. It is estimated to affect nearly one-half of non-pregnant women in developing countries. The populations of developed countries are not by any means completely free of anemia, and a significant percentage of women of child-bearing age (estimated between 4 and 12 per cent) suffer from anemia. Iron deficiency anemia is the most widespread deficiency affecting all age group of people irrespective of gender, cast, creed and religion.

According to Park (2015), In India, this silent emergency is rampant among women belonging to reproductive age group (15-49 years) and low socio-economic strata of the population. Women lose a considerable amount of iron especially during menstruation. Some of the other factors leading to anemia includes hookworm infestations. In addition multipara mothers who had close intervals between each pregnancy become anemia due to the additional
demands of the rapid pregnancies and loss of blood during each delivery.

The researcher introduced herself to the subjects. The Data collection procedure was explained to the subjects saying that the data will be kept confidential and will be used only for research purpose. The subjects were told about the freedom of withdrawing from the study at any time and informed written consent was obtained.

Initially, the researcher conducted a pretest for all the three groups – control group, experimental groups I and II. The pretest scores helped the investigator to assess the knowledge level of the subjects about the prevention of anemia by using the structured interview guide. The five point Likert scale was used to assess the attitude level, and the observational check list was used to assess the practice of the subjects about the prevention of anemia. Deworming was done for all the subjects soon after pretest. A single dose of Albendazole 400mg was administered.

Immediately after the pretest, a structured teaching programme was given to the experimental groups I and II using flash cards. But for the control group no structured teaching programme was given. A posttest was conducted on the 15th day for all the three group with the same questions tool to assess the knowledge and attitude.

The investigator started the intervention of dietary supplementation for the experimental groups I and II immediately after conducting the posttest.
After 90 days posttest was done for the control group without giving any intervention.

The investigator administered the dietary supplementation of 100 gm of cooked drumstick leaves (*Moringa oleifera*) in the form of poriyal to the subjects belonging to the experimental group-I, on namely Monday, Wednesday and Friday in the afternoon for three days a week for 90 days from April 2013 to September 2013. The scheduled is enclosed in (Appendix No. VII).

In the same way for the experimental group-II, the investigator administered a dietary supplementation of 100 gm of cooked cauliflower leaves for a period of 90 days from October 2013 to March 2014. The dietary supplementation for this group was given for three days a week, on the alternative days, namely Tuesday, Thursday and Saturday. After 90 days posttest was conducted. The practice level was assessed after 90 days for all 3 groups using the same tool. General physical examination were done to assess the signs of anemia. Blood test was done to assess the haematological variables.

The finding of the study are discussed as follows:

**Demographic Characteristics of the Subjects in all three group for the study**

The present study in Table 1 revealed that out of 195 samples, 30(46.2%) of the subjects in the experimental group-I, 32(54.3) in the experimental group-II and 27 (45%) in the control group were found to be anemic between the age of 15-25 years.
Kalpana (2012) estimated that the prevalence of anemic was found to be 78.75% among children between 13-17 years in Chennai. Also (Mamta, 2014) reported that the prevalence of anemia was 52.5% among the age group of 15-25 year old children. A similar study conducted by (Madhuchanda Goswam 2005-2006) among women of the 20-24 years showed that women were having high risk for anemia (P=0.320, O.R.(95% C.I)=1.509 (0.671, 3.390).

Sinha (2013) reported that out of 3,859 subjects, 67.2% women among reproductive age group were anemic, 13.7% was found at the age of 25-29 years. The present study also revealed that 27(41.5%) in experimental group-I, 27(30%) in experimental group-II and 26(43.3%) in the control group of the subjects were found to be anemic in the age group of 25-35years.

In regard to education out of 195 samples, 41(63.1%), 45 (64.3%) and 26(43.3%) of the subjects in the experimental group-I, II and in the control group were illiterate. In totals 112 out of 195 (57.4%) were illiterate whereas (Shweta Upadhyay, 2011) reported that out of 151 anemic subjects 35(71.42%) of them were found to be illiterate.

In the present study 52 (80%) of them in the experimental group-I, 54(77.1%) in the experimental group-II and 46 (75%) of the subjects in control group were coolie. Tarvinderjeet Kaur (2012) reported that more than half (56.19%) of the anemic subjects were from the families engaged in agriculture, agricultural labour or non agricultural labour.
In relation to their family income out of 195 samples selected for the study 56 (86.2%), 59 (84.3%) and 53 (88.3%) of the subjects in the experimental group-I, II and in the control group had their family income of Rs. 2000 and less. The findings, similar to the study conducted by Nirmala and Sathya (2011) show that 30.1% students whose family income was Rs. 1000-1500, 211.5% of the students who family earned a monthly income of Rs. 1501-2000 were found to be anemic.

The present study showed that 12 (18.5%) in the experimental group-I, 16 (22.9%) in the experimental group-I and 11 (18.3%) in the control group belonged to nuclear families and 53 (81.5%) of them in the experimental group-I, 54 (77.1%) in the experimental group-II and 49 (81.7%) in the control group belonged to joint family. The findings are similar to the findings of (Mamta, 2014) that 28 (70.0%) of them belonged to joint family.

In the present study most of the subjects, 64 (98.6%) from the experimental group-I, 69 (98.6%) of the subjects from experimental group-II and 60 (100%) of them from the control group were non-vegetarian. But the study findings of Rakesh Kumar Singh, (2012) were not similar to those of the present study. It was found that though the women sometimes consumed non-vegetarian food, they were less anemic than the other categories of women like never and take non-vegetarian food at least once in a week.

Ruhi Varghese (2013) revealed that 31.7% of the women of reproductive age group obtained information and knowledge from
mass media, 21.7% from books, 18.3% of respondents from Peer Group and 28.3% of them from health workers. **Rakesh Kumar Singh, (2012)** stated that women who do not have exposure to mass media were more anemic (2.0%) than those who had exposure to mass media (1.7%). But in the present study 58 (89.2%) of the subjects in the experimental group-I, 60(85.7%) in the experimental group-II and 46(76.7%) of the subjects in the control group got information through the television. Five (7.7%) of experimental group-I, 7 (10%) of experimental group-II and 5 (8.3%) of the subjects in the control group received information through radio. Though they have received information on prevention of anemia, it was unfortunate to note that they were found to be anemic.

**Menstrual history of the subjects in all three groups**

Table 2 shows the menstrual history of the subjects; Nearly 44(67.6%) of the subjects in the experimental group-I, 45 (64.3%) of them in the experimental group-II and 34 (56.7%) of them in the control group attained menarche between the age of 13-15 which was found to be anemic. **Roshina et al., (2013); Sajneetha and Krishnaprabha (2015); Singh (2008) and Vanisha (2012)** reported that majority of the subjects attained menarche between the age of 13-16 yrs with 90% in experimental group and 100% in the control group.

In the present study in terms of menstrual cycle, 52 (80%) of them in the experimental group-I, 60 (85.7%) of them in the experimental group-II and 51 (85%) of the subjects in the control
group had regular menstrual cycle. Twenty per cent in the experimental group-I, 10(14.3%) in the experimental group-II and 9(15%) in the control group had irregular menstrual cycle. But (Sajneetha and Krishnaprabha, 2015). Reported that 45% had regular menstrual cycle and 55% had irregular menstrual cycle in their study.

In the present study 11(17%) of them in the experimental group-I, 8(12%) of them in the experimental group-II and 20(33%) of them in the control group had menstrual flow for 4 days. Campbell et al. (1997) also reported similar finding that the duration of menstrual blood flow for majority of subjects was ranging from 3 to 4 days.

Thirty one (47.7%) of the subjects in the experimental group-I, 38 (54.3%) for the experimental group-II and 18 (30%) in the control group used 1-2 pads per day and 29 (44.6%) in the experimental group-I, 27 (38.6%) in the experimental group-II and 29 (48.3%) in the control group used 3 pads per day. But it was supporting to note that Dundar (2010) also documented that usage of more than 2 pads per day and also noted that duration of menstrual bleeding more than 5 days were found as risk factors for anemia. But according to the present study none of them had on bleeding for more than 5 days.
Obstetrical variables of the subjects in all three groups

Table 3 shows that nearly 42 (64.6%) of the subjects in the experimental group-I, 51 (72.9%) in the experimental group-II and 39 (65%) of the subjects in the control group were married between the age of 18 to 23 years. Regarding the age at first pregnancy, 47 (72.3%) of the subjects in the experimental group-I, 53 (75.7%) in the experimental group-II and 42 (70%) of the subjects in the control group had their first pregnancy between the age of 24 and 29 years. Majority of the subjects 42 (64.6%) in the experimental group-I, 45 (64.3%) in the experimental group-II and 37 (61.7) in the control group had a gap of 2-3 years between each pregnancy. The present study revealed that 53 (81.5%) of the subjects in the experimental group-I, 58 (82.8%) in the experimental group-II and 41 (68.3%) of the subjects in the control group had more than two children. But Ghimre (2013) reported that out of 197 subjects 34.5% of them had two children. Shweta, et al., (2011) reported that 17.48% of them had two children and 52.39% of the family had 3-4 children per couple.

Table 4 shows the body weight of the subjects in all three groups. The average weight before intervention was found to be 51.1±8.77 in the experimental group-I, 48.1±6.22 in the experimental group-II and 52.9±4.55 in the control group. But after the dietary supplementation the means score was found to have increased to 52.58 in the experimental group-I, 50.25 in the experimental group-II and 52.28±6.16 in the control group.
The above mean values were compared using one-way ANOVA test. Paired ‘t’ test revealed that the ‘t’ value of 4.90 The significant p-value inferred that before intervention the average weight of the subjects in group-II was less than the average weight of the other two groups, which was statistically significant at p<0.001 level which needs further comparison later. Idohou-Dossou, et al., (2011) showed none of the groups gained weight during 3 months. However, the average weight lost was less important in the Moringa group (-0.8 ± 2.1 kg) than in the control group (-1.2± 2.3 kg), but the difference was not significant (p<0.45).

Table 4 shows body mass index of the subjects in all three groups. The average body mass index before intervention was found to be 21.1kgs, 19.9kgs and 22.6kgs respectively for experimental group-I, II and control group. The above mean values were compared using one-way ANOVA test. The significant value inferred that before intervention, the average body mass index of the subjects in group-II were lesser than the average body mass index of the other two groups. Which was statistically significant at p<0.001 level which needs further comparison.

The first objective of the study was to assess the effectiveness of structured teaching programme in terms of knowledge, attitude and practice in prevention of anemia among the women of reproductive age group before and after intervention.

Table 6 shows the pretest level of knowledge of the subjects on meaning and causes of anemia of the experimental group-I
before structured teaching programme. Sixty one 61(93.8%) of the subjects had inadequate knowledge, 3(4.7%) of the subjects had moderately adequate knowledge and only 1(1.5%) of the subjects had adequate knowledge on meaning and causes of anemia. But after structured teaching programme in the experimental group-I (table 7), majority 57(87.7%) of the subjects had adequate knowledge and only 8(12.3%) of the subjects had moderately adequate knowledge. None of the subjects had inadequate knowledge. Imunticha (2015) explored knowledge among the rural women regarding the cause, manifestations of IDA and ways to prevent IDA and reported that 55% of age group of women had inadequate knowledge which might have prevented them from seeking early treatment and adopting preventive measure.

Regarding the pretest knowledge level on signs and symptoms of anemia in the experimental group-I, 47 (72.3%) of the subjects had inadequate knowledge, 11 (16.9%) of the subjects had moderately adequate knowledge and only 7 (10.8%) of the subjects had adequate knowledge on signs and symptoms of anemia. But after structured teaching programme in the experimental group-I (table 7), majority 57 (87.7%) of the subjects had adequate knowledge and only 8 (12.3%) of the subjects had moderately adequate knowledge. None of them had inadequate knowledge.

Fifty 50 (76.9%) of the subjects had inadequate knowledge, 14 (21.6%) of the subjects had moderately adequate knowledge and only 1(1.5%) of the subjects had adequate knowledge on treatment
of anemia in the pretest. But after structured teaching programme in the experimental group-I (table 7), majority 53 (81.6 %) of the subjects had adequate knowledge and only 12 (18.4%) of the subjects had moderately adequate knowledge. None of them had inadequate knowledge on treatment of anemia.

In the experimental group-I, 51(78.5%) of the subjects had inadequate knowledge, 12(18.5%) of the subjects had moderately adequate knowledge and only 2(3%) of the subjects had adequate knowledge on prevention of anemia. Reeshma (2015) also reported that 55.8% of the participants had inadequate knowledge on prevention of anemia. The present study revealed that after structured teaching programme (table 7), majority 53 (81.7%) of the subjects had adequate knowledge, 7(10.7%) the subjects had moderately adequate knowledge and only 5(7.6%) of the subjects had inadequate knowledge.

Table 12 shows that the paired ‘t’ test was used to compare the pretest and posttest on meanings and causes of anemia (‘t’ value= 27.28), signs and symptoms (‘t’ value= 26.20), treatment (‘t’ value= 21.40), and prevention of anemia (‘t’ value= 19.62) which was statistically significant at p<0.001 level. In conclusion the subjects in the experimental group-I who had the structured teaching programme via flash card teaching on different aspects of anemia had a positive impact on their knowledge score of the subjects in the posttest.
The pretest level of knowledge of the subjects on meaning and causes of anemia in experimental group-II showed that 64 (91.3%) of the subjects had inadequate knowledge, 5 (7.2%) of the subjects had moderately adequate knowledge and only 1 (1.5%) of the subjects had adequate knowledge on meaning and causes of anemia. But after structured teaching programme in the experimental group-II (table 7), majority 60 (86%) of the subjects had adequate knowledge, 7 (10%) of the subjects had moderately adequate knowledge and only 3 (4%) of the subjects had inadequate knowledge. Mamta (2014) stated that 52.5% had inadequate knowledge regarding causes of anemia.

In the experimental group-II, 57 (81.4%) of the subjects had inadequate knowledge, 9 (12.8%) of the subjects had moderately adequate knowledge and only 4 (5.8%) of the subjects had adequate knowledge on signs and symptoms of anemia. But after structured teaching programme in the experimental group-II (table 7), majority 65 (92.9%) of the subjects had adequate knowledge and only 5 (7.1%) of the subjects had moderately adequate knowledge. None of them had inadequate knowledge. Mamta (2014) stated that 52.5% had inadequate knowledge on signs and symptoms of anemia.

In the experimental group-II, 52 (74.4%) of the subjects had inadequate knowledge, 17 (24.2%) of the subjects had moderately adequate knowledge and only 1 (1.4%) of the subjects had adequate knowledge on treatment of anemia. But after structured teaching
programme in the experimental group-II (table 7), majority 62 (88.6%) of the subjects had adequate knowledge and only 8 (11.4%) of the subjects had moderately adequate knowledge. None of them had inadequate knowledge on treatment of anemia. Mamta (2014) also stated that 52.5% had inadequate knowledge on treatment of anemia.

Regarding the pretest knowledge level of the subjects on prevention of anemia in the experimental group-II, 52 (74.3%) of the subjects had inadequate knowledge, 16 (22.9%) of the subjects had moderately adequate knowledge and only 2 (2.8%) of the subjects had adequate knowledge on prevention of anemia. But after structured teaching programme in the experimental group-II (table 7), majority 54 (77.3%) of the subjects had adequate knowledge, 10 (14.2%) the subjects had moderately adequate knowledge and only 6 (8.5%) of the subjects had inadequate knowledge.

Table 12 shows that improvement in knowledge on signs and symptoms (‘t’ value = 26.20), treatment (‘t’ value = 21.41), and prevention of anemia (‘t’ value = 19.62) were statistically highly significant at p<0.001 level which indicated that the structured teaching programme was very effective in improving the knowledge level of the subjects on prevention of anemia. Yekza, et al., (2008) assessed the level of awareness about causes, prevention and treatment of iron deficiency anemia among women of reproductive aged between 18-45 years. The study findings revealed that 49.1%
had knowledge about iron rich diet and only 42.7% had inadequate knowledge on cause of anemia.

Among the control group, 58 (96.7%) of the subjects had inadequate knowledge, 2 (3.3%) of the subjects had moderately adequate knowledge and none of them had adequate knowledge on meaning and causes of anemia. In the posttest (Table 7) when compared to the pretest knowledge, only negligible number of subjects showed difference in their knowledge gain after a duration of 15 days without any intervention. Inadequate knowledge continued to prevailed among 49(81.7%) of the subjects. Moderately adequate knowledge was found in 9(15%) of the subjects and only 2(3.3%) of them had adequate knowledge. Also, 46 (76.7%) of the subjects had inadequate knowledge, 11 (18.3%) of the subjects had moderately adequate knowledge and only 3 (5%) of the subjects had adequate knowledge on signs and symptoms of anemia. But in the posttest (table 7), 43(71.6%) of the subjects had inadequate knowledge, 11(18.4%) of the subjects had moderately adequate knowledge and 6 (10%) of them had inadequate knowledge.

Regarding the treatment of anemia in the control group, 49 (81.7%) of the subjects had inadequate knowledge, 11 (18.3%) of the subjects had moderately adequate knowledge and none of them had adequate knowledge on treatment of anemia. But in the posttest (table 9) showed that 45(75%) of the subjects had inadequate knowledge, 11(18.4%) of the subjects had moderately adequate knowledge and 6 (10%) of them had adequate knowledge.
adequate knowledge and only 4(6.6%) of them had adequate knowledge on treatment of anemia.

Further posttest (table 7) showed that 43 (71.6%) of the subjects had inadequate knowledge, 12 (20%) the subjects had moderately adequate knowledge and only 5 (8.4%) of the subjects had inadequate knowledge on prevention of anemia.

While comparing (table 14) the pretest and posttest knowledge score on meanings and causes of anemia (‘t’ value = 1.43), signs and symptoms (‘t’ value = 1.47), treatment (‘t’ value = 0.69), and prevention of anemia (‘t’ value = 0.78) it was found statistically insignificant for different aspects of anemia.

Upadhyay (2011) shows that the knowledge on anemia among the women of 18 to 45 years age in three villages of Uttarakhand and revealed that 66.32% of the women had inadequate knowledge.

Regarding the pretest (table 22) attitude score of the subjects in the experimental group-I, 40(61.5%) of the subjects had unfavorable attitude, 18 (27.7%) of the subjects had favorable attitude and only 7(10.8%) of the subjects had most favorable attitude towards prevention of anemia, whereas in the posttest attitude of the subjects 40(61.5%) of the subjects had most favorable attitude, 19(29.2%) of the subjects had favorable attitude and only 6(9.3%) of the subjects had unfavorable attitude towards prevention of anemia
While comparing the (Table 24) pretest and posttest attitude score of the subjects in the experimental group-I, it was found to be statistically significant at with ‘t’ value of 16.93 at p <0.001 level, it indicated that the intervention was found to be effective in improving the attitude of the subjects on prevention of anemia.

Regarding the pretest attitude of the subjects in the experimental group-II, 46(65.7%) of the subjects had unfavorable attitude, 22(31.4%) of the subjects had favorable attitude and only 2(2.9%) of the subjects had most favorable attitude towards prevention of anemia, but after structured teaching programme the attitude of the subjects 41(58.6%) of the subjects had most favorable attitude, 22(31.4%) of the subjects had favorable attitude and only 7(10%) of the subjects had unfavorable attitude towards prevention of anemia.

Table 25 shows the Paired ‘t’ test was used to compare the pretest and posttest attitude score of the subjects in the experimental group-II, which had a ‘t’ value of 9.49 which was found to be statistically significant at p <0.001 level, it indicated that the intervention was found to be effective in improving the attitude of the subjects on prevention of anemia.

Table 22 shows the pretest attitude of the subjects in the control group; 40(66.7%) of the subjects had unfavorable attitude, 18 (30%) of the subjects had favorable attitude and only 2 (3.3%) of the subjects had most favorable attitude towards prevention of
anemia, whereas in posttest showed that the attitude of the subjects 3(5 %) of the subjects had most favorable attitude, 6(10%) of the subjects had favorable attitude and 51(85%) of the subjects had unfavorable attitude towards prevention of anemia.

Table 26 shows the Paired ‘t’ test was used to compare the pretest and posttest attitude score of the subjects in the control group, which had a ‘t’ value of 6.68 which was found to be statistically significant at p <0.001 level’

The study findings of Das (2010) stated that during pretest 65% of them had unfavorable attitudes towards anemia, but after the structured teaching program 79% of them had most favorable attitude. Which consistent with the findings of the present study.

In the experimental group-I (table 28), 46 (70.7%) of the subjects had inadequate practice on cooking and hygienic practice, 17(26.3%) of the subjects had moderately adequate practice and only 2 (3%) of the subjects had adequate practice on cooking and hygienic practice. But in the posttest, 54 (83%) of the subjects had adequate practice, 6(9.4%) of the subjects had moderately adequate practice and only 5 (7.6%) of the subjects had inadequate practice in the experimental group-I. While (table 37,38,39) comparing all three groups ANOVA test reveals that there was no significance in practice related to cooking and hygienic practice, consumption of iron sources and intake of iron inhibitors on prevention of anemia. Therefore all groups was similar and comparable.
Table 34 shows the Paired ‘t’ test was used to compare the pretest and posttest practice score of the subjects in the experimental group-I, which had a ‘t’ value of cooking and hygienic practices (‘t’ value = 14.92), consumption of iron sources (‘t’ value = 28.18) and intake of iron inhibitors (‘t’ value = 17.07) which was found to be highly significant at p < 0.001 level.

Table 28 shows the pretest level of practice on cooking and hygienic practice of the subjects in the experimental group-II, 47 (67.2%) of the subjects had inadequate practice, 21 (30%) of the subjects had moderately adequate practice and only 2 (2.8%) of the subjects had adequate practice on cooking and hygienic practice. (Table 29) showed the posttest practice of the subjects in the experimental group-II, 60 (85.7%) of the subjects had adequate practice; 8 (11.5%) of the subjects had moderately adequate practice and only 2 (2.8%) of them had inadequate practice.

Regarding consumption of iron sources of anemia among the subjects, in the experimental group-II 63 (90%) of the subjects had inadequate practice, 5 (7.2%) of the subjects had moderately adequate practice and only 2 (2.8%) of them had adequate practices. Table 29 reveals that 61 (87.1%) of the subjects had adequate practice and 3 (4.3%) of the subjects had moderately adequate practice on cooking and hygienic practice.

Regarding the intake of iron inhibitors on anemia of the subjects in the experimental group-II, 34 (48.5%) of the subjects had
inadequate practice, 29(41.5%) of the subjects had moderately adequate practice and 7(10%) of the subjects had adequate practice, whereas the posttest (Table 29) revealed that 56(80%) of the subjects had adequate practice, 11(15.7%) of the subjects had moderately adequate practice on cooking and hygienic practice.

Table 33 shows the Paired ‘t’ test was used to compare the pretest and posttest practice score of the subjects in the experimental group-II, which had a ‘t’ value of cooking and hygienic practices (‘t’ value=22.57), consumption of iron sources (‘t’ value = 30.48) and intake of iron inhibitors (‘t’ value=26.82) which was found to be highly significant at p <0.001 level.

Table 34 showed the Paired ‘t’ test was used to compare the pretest and posttest practice score of the subjects in the control group, which had a ‘t’ value of cooking and hygienic practices (‘t’ value= 14.92), consumption of iron sources (‘t’ value = 28.18) and intake of iron inhibitors (‘t’ value= 17.07) which was found to be significant at p <0.001 level.

Geerligs (2003) made systematic reviews in Cochrane data base on the effect of Food prepared in iron cooking pots as an intervention for reducing anemia. The evidence from studies revealed that eating food prepared in iron pots increases the haemoglobin concentration of iron deficient individuals. The introduction of iron pots on improving their use in communities in developing countries for the preparation of food maybe a promising
innovative intervention for reducing iron deficiency and iron
deficiency anemia.

Worm infestation is a cause for anemia. In the present study, 61(93.8%) of women in experimental group-I and 63(90%) of women in experimental group-II are not aware about periodic deworming. Numerous Studies indicate the link between worm infestation and anemia. The link was first established in the nineteenth century (Perroncito, 1880), and during the subsequent 130 years, there have been numerous reviews of the extensive literature in this area (Layrisse & Roche 1964; Hotez et al., 2004). There is a direct relationship between the number of hookworms and individual harbors and the amount of intestinal blood lost attributable to the cause of anemia (Fleming, 2000).

Anemia, to a great extent, is caused by poor iron absorption from the diet. Several dietary factors can influence iron absorption. The study results concluded that 32(49.2%) in experimental group-I, 34(48.4%) in experimental group-II and 23(38.3%) in the control group had inadequate practice in consumption of tea, coffee, spicy foods and calcium rich foods. Zijp (2000) cited in the article that ascorbic acid, meat, fish and poultry are the iron enhancing factors. Tea and coffee (e.g., polyphenols, phytates), and calcium are the factors that inhibits iron absorption.

Tables 16, 17, 18, 19 & 20 compared the mean posttest knowledge score of the experimental group-I, experimental group-II and control group. The calculated ANOVA for different aspects of
anemia. In the basic concept of reproductive health \((F = 26.01, P < 0.001)\), meanings and cause of anemia \((F = 568.42, P = <0.001)\), signs and symptoms of anemia \((F = 777.17, P = <0.001)\), treatment of anemia \((F = 878.99, P = <0.001)\) and prevention of anemia \((F = 655.49, P = <0.001)\), As the mean knowledge score was statically significant at \(p<0.001\) level. Scheffe’s multiple comparison was applied. Based on the mean knowledge score on different aspects of anemia. In the experimental group-I, experimental group-II and control group there was significant difference among the three groups.

**Table 27** compared the mean post attitude score on prevention of anemia of the experimental group-I, experimental group-II and the control group which had an F ratio of 50.571 between the three groups which was found to be statistically significant at \(p<0.001\) level. Further Scheffe’s multiple comparison inferred that while comparing experimental group-I with experimental group-I, it was highly significant at \(p<0.001\) level. Likewise while comparing experimental group-I with the control group, it was also found to be highly significant at \(p<0.001\) level. But while comparing experimental group-II with control group, it was found to be non-significant.

**Table 35, 36 & 37** compared the mean posttest practice score of the subjects in the experimental group-I, experimental group-II and control group. The calculated ANOVA for different aspects of anemia, cooking and hygienic practices \((F=26.50,\)
P < 0.001), consumption of iron sources (F= 20.890, P < 0.001) and intake of iron inhibitors (F=10.506, P < 0.001) which was found to be highly significant at p<0.001 level.

**Manmeeet Kaur, et al., (2009)** reported out of 30 women in the intervention group compared to 14(46.7%) women in the control group (p < 0.001). All women (100%) in the intervention group could specify at least one correct cause of anemia and could identify a sign or symptom of anemia, whereas 73.3% and 46.6% women in the control group did not know the cause and signs and symptoms of anemia respectively (p < 0.001).

**The second objective of the study was to assess the effectiveness of drumstick (Moringa Oleifera) leaves supplementation in prevention of anemia among the women of reproductive age group**

According to the **table 39** while comparing pre and posttest value of the Hb g/dl, HCT%, MCVfl and MCHpg were found to be significant at p< 0.001 level and RBC dl and MCHCg/dl was found to be insignificant. while comparing the mean hemoglobin level it was higher in the experimental group-I 10.8gm+0.875gm/dl when comparing the control group 10.61gm+0.87/dl ANOVA test revealed that it was significant at p<0.001 level. Further Scheffe’s multiple comparison (table 44) showed that, while comparing experimental group-I with control group it was also found to be highly significant at p<0.001 level. It revealed that after dietary supplementation of drumstick leaves poriyal for three months it was found to be very
effective in improving the hemoglobin level of the subjects on prevention of anemia.

**Sindhu, Mangala and Sherry (2013)** reported that *Moringa oleifera* leaves (drumstick) were effective in treating the anemia. A weekly dose of 100gms of *Moringa oleifera* powder was given to the women of reproductive age group. After 3 months of therapy, there was a significant rise in haemoglobin gm/dl at p<0.001 level.

Further **Vanisha and Parul (2013)** demonstrated the antioxidant potential in green leafy vegetables which are rich sources of β-carotene, iron and other micronutrients. Twenty unmarried MIG women (18-25 years), consuming a typical Gujarati meal were purposively selected for the study and randomly divided into control and experimental groups (n=10 in each group). The latter group received dehydrated drumstick leaf powder (4g/day, 692 mcg beta carotene) for 25 days. Data on dietary habits, anthropometry, reproductive health and hematological indices were elicited. The efficiency of beta carotene from shade Dehydrated Drumstick Leaf (DDL) powder on the hematological indices of young women had a positive shift of anemic girls to the non-anemic category, a mild increase in Hemoglobin, a favorable change in the hematological indices and an increase in the normocytic normochromic cells. The study indicates that vitamin A beta carotene from DDL had a protective effect on iron availability from a typical Gujarati diet containing iron inhibitors. He also suggested
further studies on the effect on vitamin A and beta-carotene on anemic and non-anemic women for a longer duration.

**The third objective of the study was to assess the effectiveness of cauliflower leaves (*Brassica oleracea*) supplementation in prevention of anemia among the women of reproductive age.**

According to the table 40 while comparing pre and posttest value of the Hb g/dl, RBC dl, HCT%, MCVfl and MCHCg/dl were found to be highly significant at $p<0.001$ level and MCHpg was found to be significant at 0.05 level. While comparing the mean hemoglobin level 11.60gm/dL±0.72 which was higher in the experimental group-II when comparing with the experimental group-I 10.85gm/dL±0.87 and control group 10.61gm/dL±0.87. ANOVA test reveals that it was significant at $p<0.001$ level. Further Scheffe’s multiple comparison showed that, while comparing experimental group-II with experimental group-I and control group it was also found to be highly significant at $p<0.001$ level.

Therefore it was evident that cauliflower leaves supplementation was very effective in improving the hematological variables of the subjects on prevention of anemia. When compared to drumstick leaves supplementation.

The present study findings were supported by the study conducted by **Anupriya & Anita (2012)** that blood profile of the sports women at the end of three months with supplementation of functional beverage had significant ($p≤0.01$) increase in the hemoglobin level (Hbg/dl), haematocrit, mean corpuscular volume
(MCV fl) and mean corpuscular hemoglobin concentration (MCHCpg) of the subjects.

The findings of the present study also correlate with findings of the following study **Jemima & Bhavani (2004)** conducted a study to assess the efficacy of cauliflower greens preparation in improving blood hemoglobin level in selected adolescent girls. The mean hemoglobin levels before the feeding trail in both the control and experimental groups were found to be 10.32g/dl ± 0.93 and 10.6g/dl± 1.32 respectively. The mean hemoglobin levels after the feeding trail in the respective groups were found to be 10.3g/dl ± and 13.56g/dl ± 0.35 respectively. There was a significant (t.9.4, P<0.05) rise in the hemoglobin levels of the experimental group subjects after the feeding trail, which it indicated that the cauliflower leaves supplementation was found to be very effective in improving the hemoglobin level and the hematological variables of the subjects on prevention of anemia.

Table 41 showed to compare the pre and posttest value of the subjects in the control group on hematological variables of hemoglobing/dl (‘t’= 2.82), hematocrit % (HCT%) (‘t’= 0.57), mean cell volume (MCVfl) (‘t’=0.65), mean corpuscular hemoglobin (MCHpg) (‘t’=1.74) and mean corpuscular hemoglobin concentration (MCHCg/dl) (‘t’= 0.30), were found to be highly insignificant. But only and red blood cell was found to be significant at p< 0.001 level. But while comparing the mean hemoglobin level with experimental group-II 11.60 gm/dL ± 0.72 and with the experimental group-I
10.85 gm/dL ± 0.87 and control group 10.61 gm/dL ± 0.87. ANOVA test revealed that it was significant at p<0.001 level experimental group-I and experimental group-II. Further Scheffe’s multiple comparison showed that, while comparing experimental group-II with experimental group-I and control group it was also found that experimental group-I and experimental group-I were highly significant at p<0.001 level. Therefore it is evident that there was no significant increase in the control group.

Vasanthamani (2012) reported that cauliflower greens (Brassica oleracea) has a high amount of iron is underexploited in Tamil Nadu. It is very much true that the growth and development of a nation depends heavily on the status and development of women as they not only constitute the total population, but also influence the growth of remaining population. So the problems related to women deserve special attention. Therefore considering the iron content of cauliflower greens, which is rarely used by the people as food, was selected to find out its impact in improving the blood haemoglobin level of anaemic women of reproductive age group.

The forth objectives of the study was to compare the effectiveness of drumstick leaves and cauliflower leaves supplementation with the control group in prevention of anemia among women of reproductive age

Clinical variables

Table 42 shows that in the present study, it was observed that 23(35.4%) in the experimental group-I, 27 (38.6%) in the
experimental group-II and 19 (31.7%) of the subjects in the control group had Angular stomatitis. **Roshina (2013)** reported that 51.6% of the subjects had angular stomatitis in her study.

It was found that 30 (46.2%) in the experimental group-I, 32 (45.7%) in the experimental group-II and 37 (61.6%) in the control group had very pale conjunctiva. Thirty (46.2%) in experimental group-I, 23 (32.9%) in experimental group-II and 27 (45%) in the control group had normal tongue pink in colour and 12 (18.4%) in experimental group-I, 12 (17.1%) in experimental group-II and 9 (15%) in the control group had pale tongue which is a sign of anemia. Similar study findings of **Roshina (2013)** revealed that majority of the subjects 63.5% had normal tongue and 46.7% of the subjects had pale tongue.

The present study revealed that 26 (40%) in experimental group-I, 41 (58.6%) in the experimental group-II and 34 (56.7%) in the control group had normal gums. The present study revealed that in total of 97 out of 195 (49.7%) of the subjects had paleness of nail beds, whereas 50.3% had normal shaped and pink coloured nails in all three groups. Certain clinical findings such as pallor of conjunctiva, nail beds, lips, oral mucosa, had been used in the diagnosis of anemia by **(Strobach et al. 1988)**.

Table 43 shows the clinical variables of the subjects in all the three groups. In case of dyspnea 38 (58.5%) of the subjects in the experimental group-I, 31 (44.3%) of them in the experimental
group-II and 23 (38.3%) of the subjects in the control group had dyspnea. Satish, et al., (2014) study results supported the present study findings that 50% of the subjects had difficulty in breathing during normal work.

Thirty seven (57%) of them in the experimental group-I, 39 (55.7%) of them in the experimental group-II and 27 (45%) of the subjects in the control group had palpitation. Forty one (63%) of them in the experimental group-I, 42 (60%) of them in the experimental group-II and 27 (45%) of the subjects in the control group had fatigue. Mamta (2014) assessed the clinical signs of anemia and found that 22(55%) of them had fatigue. According to UNICEF, (2002) fatigue, irritability, weakness, shortness of breath and decreased appetite were signs and symptoms of anemia.

Tables 44, 45, 46, 47 48 & 49 compared the mean posttest knowledge score of the subjects in the experimental group-I, experimental group-II and control group. The calculated ANOVA for hematological variables of the subjects. In the hemoglobin (F = 76.94, P = <0.001), red blood cell (F = 43.19, P=<0.001), hematocrit (F=8.49, P=<0.001) and mean corpuscular hemoglobin concentration (F = 8.81, P < 0.001) were found to be highly significant at P < 0.001 level, whereas in the mean cell volume (F = 0.938, P =0.393) and mean corpuscular hemoglobin (F =0.84, P =0.433) were found to be insignificant. Scheffe’s multiple comparison was applied. Based on the hematological variables on prevention of anemia. In the experimental group-I, experimental
group-II and control group there was significant difference among the three groups.

Table 51 shows the comparison of selected menstrual history with posttest body mass index of the subjects in all the three groups.

To compare the effect of selected variables such as number of days of menstrual flow, number of pads used per day, problem during periods among the subjects in the three groups with posttest body mass index score ANCOVA (F ratio = 9.130) was calculated which had a significant 'P' value of <0.001. Further, to find out which of the groups differs, LSD (least significant difference) multiple comparison test has been applied. The result inferred that control group subjects are having higher BMI value than the two intervention groups, and there is no significant difference between the two experimental groups.

Table 52 shows the comparison of selected menstrual history with posttest hemoglobin score of the subjects in all the three groups.

To compare the effect of selected variables such as number of days of menstrual flow, number of pads used per day, problem during periods among the subjects in the three groups with posttest hemoglobin score ANCOVA (F ratio = 77.067) was calculated which had a significant at P < 0.001. Further, to find out which of the groups differs, LSD (least significant difference) multiple
comparison test has been applied. The result inferred that the experimental group-II subjects had higher hemoglobin level than the experimental group-I and control group subjects and there was no significant difference between the two groups.

Table 53 shows the comparison of selected menstrual history with posttest red blood cell score of the subjects in all the three groups.

To compare the effect of selected variables such as number of days of menstrual flow number of pads used per day, problem during periods among the subjects in the three groups with posttest red blood cell score ANCOVA (F ratio = 46.103) was calculated which had a significant at p< 0.001. Further, to find out which of the groups differs, LSD (least significant difference) multiple comparison test has been applied. The result inferred that experimental group-II subjects had higher red blood cell count than the experimental group-I and control group, and there was no significant difference between the two groups.

Table 55 shows the comparison of selected menstrual history with posttest hematocrit score of the subjects in all the three groups.

To compare the effect of selected variables such as number of days of menstrual flow, number of pads used per day, problem during periods among the subjects in the three groups with posttest hematocrit, ANCOVA (F ratio = 9.123) was calculated which had a
significant at p<0.001. Further, to find out which of the groups differs, LSD (least significant difference) multiple comparison test has been applied. The result inferred that experimental group-II subjects had higher hematocrit count than the experimental group-I and control group, and there was no significant difference between the two groups.

The findings of Minakshi Rai (2015) also indicate that the overall pretest mean knowledge score of adolescent girls was 13.81±3.67 and posttest mean knowledge score of was 22.71±2.35. The posttest mean knowledge score is significantly greater than the pretest mean knowledge score. So the structured teaching programme was effective in improving the knowledge of adolescent’s girls.

Communication involves the transfer of information between people including ideas, emotion, knowledge and skill. The components of communication include sender, receiver educational factors, socio cultural factors, patterns of communication, perception and understanding (Hubley, 1993). In health communication the sender affects the receiver. Educational factors affect both sender and receiver.

Many women lack information on their own health and risk factors. Women are often the main health providers in the family and are eager to get information that is relevant to the needs and experience will help in taking care of their family. In India health
aids and community health nurses have a greater influence on women’s knowledge than clinical nurses. So the health worker and community health nurse are expected to possess up to date knowledge on anemia and its prevention. This allows them to focus on more achievable messages, empowering women to take care of themselves and their family by using the existing dietary sources and prevent anemia.

**Hypotheses testing**

Hypothesis 1 stated that there was a significant difference in the pretest and posttest knowledge, attitude and practice score of the subjects exposed to structured teaching programme on prevention anemia. From the above result it is proved that the structured teaching programme through flash card teaching was effective in improving the knowledge and attitude of the subjects on prevention of anemia. Hence hypothesis $H_1$ is accepted.

Hypothesis 2 stated that there will be a significant difference in the pretest and posttest on hematological variables (at $p < 0.001$ level). Therefore, it is proved that supplementation was very effective in improving the hematological variables. Hence, hypothesis $H_2$ is accepted.