# Knowledge and Attitude of Pregnant Women about Iron Deficiency Anemia in Assist University Women Health Hospital, Egypt

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***Abstract:*** *Iron deficiency anemia has emerged as a main public health problem in all countries. WHO reported that 29% of all females in reproductive age group are diagnosed to have anemia.* ***Study aim:*** *To assess knowledge and attitude about iron deficiency anemia amongst pregnant women.* ***Methodology****: A descriptive study was conducted between September 2015 and March 2016 to include 400 pregnant women recruited during routine antenatal care in the antenatal clinic in Assiut University Women Health Hospital.* ***Tool****: Personal data, body math index, lab test , knowledge and attitude of women about anemia.* ***Results:*** *This study showed that 91.8% and 80.8% respectively of the studied women were housewives and from rural areas and 32.5% of them had iron deficiency anemia. The current study showed that 60% of participant had poor knowledge and 21.0% of them had negative attitudes about iron deficiency anemia with significant differences between knowledge of studied pregnant women and their age (p=0.003) and between attitude and level of education (P-value 0.011) also, between attitudes and anemia ( p=0.000)* ***Conclusion and recommendations:*** *The participants in general were less knowledgeable with positive attitude to iron deficiency anemia and nearly one third of women had iron deficiency anemia. To overwhelm iron deficiency anemia, health education should include antenatal care that focuses on intake of iron rich foods. The study recommended also increasing the awareness of pregnant women about anemia prevention through mass media.*
***Key words****: Knowledge, Attitudes, Pregnant Women, Iron Deficiency Anemia,*

## I. Introduction

Iron deficiency anemia consumes emerged as a main public health problem in all countries. Over 30% of the world's population had anemia; 4.3%-20% and 30%-48% respectively in developed and developing countries are affected by iron deficiency anemia. Globally, it is estimated that roughly 38% of pregnant females, 29% non-pregnant women, and 29% of all females of reproductive age are diagnosed to have anemia **(Pasricha et al., 2013, WHO, 2015 & Shahzad et al., 2017).** The prevalence of anemia in pregnant women varies significantly because of differences in socioeconomic situations, lifestyles, and health-seeking performances across different nations **(Gholamreza**, **2007 & Rashed et al., 2008).**

Anemia is considered to be the most common nutritional deficiency worldwide and in 95% of the cases, it is associated with poor diet intake **(McLean et al., 2009).** Also, **Perry, 2006** added that "about 90% of cases of anemia that occur during pregnancy are iron deficiency type**" (Zhang et al., 2009).** Although iron deficiency anemia can occur at any age, women from reproductive age group are particularly vulnerable to develop it due to increased nutritional demand during pregnancy **(Tahir et al.,2009).** Continuous practice of unhealthy food habits and patterns lead to serious effects upon nutritional status as well as overall health status of an individual **(Elhassan et al., 2013).**

Hemoglobin assessment is a reliable indicator for anemia screening **(Balci et al., 2013).** Anemia is a low level of hemoglobin in the blood, as showed by a decrease quality or quantity of red blood cells. The causes of maternal anemia are complex, including infections (malaria and helminthes infestations) nutrient deficits (iron, folic acid and vitamin $B^{12}$) and genetic factors **(Balarajan et al., 2011).**

Anemia has many causes. Direct causes can be largely categorized as poor deficient, or abnormal production of red blood cells; excessive destruction of red blood cells; and excessive loss of red blood cells. Contributing causes include insufficient dietary intake, dietary quality, hygiene, and health performances, adverse environmental situations; deficiency of health facilities **(Anemia prevention and control 2003)**. Socio economic status of the family, traditional dietary habits of the area, fear of gaining weight, and irregular eating ways were contributing factors towards progress of iron deficiency anemia among adolescents' females **(Balci et al., 2013).**

Factors accompanying with Iron deficiency anemia amongst pregnant females include parasite infestation, season**,** dietary habits**,** gestational age parity and number of pregnancy, geographic place**,** interval between pregnancies, educational level and smoking **(Zhang & Ananth, 2009 and Zhang et al., 2009).**

Iron deficiency anemia is one of the world's leading reasons of excessive bleeding and disability while excessive bleeding is the leading cause of maternal mortality and so is one of the greatest serious worldwide health problems **(WHO&UNICEF, 2007 & Kassa et al.,2017). Dutta, 2008** added that anemia is responsible for 20% of maternal death in developing countries. Also, it is considered one of the predisposing factors for premature delivery stillbirth and newborn death**,** and low birth weight **(Sukrat & Sirichotiyakul, 2006).**

Because anemia is the greatest recurrent maternal complication during pregnancy, Prenatal care must be concerned with its early recognition and management **(Kuma, 2012).** To prevent the consequences of gestational anemia on mother's health and pregnancy outcomes, several measures have been recommended by the WHO, as the administration of a daily iron and folic acid supplement in pregnant women **(Lone et al., 2004 & Lee et al., 2006).**

**Significance of the Study:** A study conducted in Egypt found that the prevalence of iron deficiency anemia amongst Egyptian pregnant women was 52.5% **(Abu Salem, 2016)**. Therefore, to study pregnant women's knowledge and attitudes is a suitable instrument to assess and evaluate target group's current knowledge, and attitude towards a specific problem under investigation; and it gives an effective feedback upon needs, problems, and possible barriers among the target group". In addition, most pregnant women bad dietary habits related to cultural issues.

**Aim of the study:** To assess knowledge and attitude about iron deficiency anemia among pregnant women.

**Research questions**;
1. What is the level of knowledge and attitude about iron deficiency anemia amongst the studied pregnant women?
2. What is the prevalence of iron deficiency anemia amongst the studied pregnant women?
3. What is the relation between Knowledge, attitude and personal data amongst the studied pregnant women?
4. What is the relation between Knowledge, attitude and anemia amongst the studied pregnant women?

## II. Methodology

**Research design:** A cross sectional descriptive design was used.

**Setting:** This study was carried out at antenatal clinic in Assiut University Women Health Hospital. This clinic is the main largest clinic in Assiut governorate which provides antenatal care services for pregnant women from the entire governorate.

**Sample size** was calculated using odds ratio of different risk factors of low level of hemoglobin from previous studies, with the software EPI/Info, version 3.3 with 95% confidence interval (CI), and power 80% of the test. It was found to be 388 women which were increased to 400 pregnant women to safeguard against non-response. A total of 400 pregnant females who attended the antenatal outpatient clinics in Assiut university women health hospital were randomly selected to share in the study. Official administrative agreements were taken before the start of the fieldwork.

**Inclusion criteria:** Pregnant women who are able to communicate.

**Tools for data collection:** *Two tools were used* based on the study aim and review of literature on related studies.

***The First tool: Structured interview questionnaire* divided into five parts:**
**Part I**: Personal data as age of women, residence, level of education, working status, family income per month, gravity, parity, No of abortion, No of living children and time of current pregnancy. **Part II:** Medical health condition as hypertension, respiratory problem, cardiovascular problem gestational problem, previous and current use of iron. **Part III:** Measurement of women weight, height, and calculating body mass index by dividing weight in kilograms over height in meter squared. The cutoff points of less than 18.50 for underweight, 18.5 to 25 for normal weight, 25 to 29.99 for overweight, and 30 or higher for obese **(Ogden et al., 2010). Part IV:** Laboratory Investigation for Hemoglobin level of less than 11.0 g/dl was used to define Iron deficiency

anemia in pregnancy, venous blood samples were gotten and investigated for complete blood count by means of standardized hematological screen at the laboratory in the hospital and investigation was done as a routine for each woman at outpatient clinic.

The World Health Organization has set a minimum cut- off mark for anemia in pregnancy which is taken as 11gm/dl **(WHO, UNICEF, 2007).**

**Part V:** Knowledge of pregnant women toward iron deficiency anemia as definition of anemia, signs and symptoms, causes, the importance of iron supplements, the impact of anemia on both the mother and her fetus, source of foods rich in iron and factors that help in absorption of iron **(Mahmoud, 2007),** it consisted of 7 items each item had many options, and the total grads is 42 grads. The scoring system used for each item: a correct answer was given a score of one grade while the incorrect answer was given a score of zero grad; the score of each item was summed up and then was converted into percent score. Poor score less than 50%, satisfactory score from 50 to 65%, and good score more than 65%.

*The Second tool:* Structured scale used to explore the women attitude about anemia include subject were asked to use 3-point Likert scale in order to rate the extent to which they have the attitude about anemia during pregnancy: strongly agree, agree and disagree. It consists of 15 statements about anemia. Items were respectively scored 3, 2, 1.and the score of each item was summed-up and then was converted into percent score **(Mahmoud, 2007).** Total scores 45 grads (negative attitude score <60%, and Positive attitude score >60%.

**Validity**: Validity of instruments was sought and obtained from seven experts in the field of family and community health nursing, obstetrical and gynecological nursing, and dieticians doctor. As per recommendations, necessary changes were made in the final tool. Modifications were done according to the directions of the experts committee.

**Reliability:** Reliability was analyzed by Cronbach's alpha test, the value obtained for knowledge & attitude, r1 = 0.8448 & r2 =0.7860 respectively.

**Pilot study**: A Pilot study was done on 10 % of the participants and were excluded from the sample, Hemoglobin level of less than 11.0mg/dL was used to define anemia during pregnancy.

**Data collection**: Responses were obtained from the sample via a face-to-face interview after the questionnaire was explained in Arabic language. Data were collected by the researchers from the first of September 2015 to the end of March 2016, three days per week from 9 am to 1 pm, 4:5 pregnant women were interviewed per day. Each participant was individually interviewed in the examination room in Ante Natal clinic in order to collect the data. The researchers asked pregnant women and recorded the answers in the questionnaire sheet. The average time taken for completing each questionnaire sheet was from 30 to 40 minutes according to the woman response. After filling the questionnaire and taking weight and height, women went to the laboratory to do blood investigation (hemoglobin level).

**Ethical consideration:**

The aim and nature of the study were explained by the researchers. The women had the right to agree or refuse to share in this study. An oral agreement was obtained from each participant woman. Complete privacy and confidentiality were ensured to the participants. Approvals were taken from Ethical and Technical Review Committee of Faculty of Nursing, Assiut University for the study proposal and permission from Assiut University Women Health Hospital.

**Statistical analysis:** Data analysis: the data were coded, tabulated and analyzed by computer using SPSS version 19. Data were presented as percentage, mean± standard deviation. Chi-square test was used to compare between qualitative variables. P-value considered statistically significant when $P < 0.05$.

## III. Results

**Table (1)** Shows that 37.5% of studied pregnant females were in the age group 20-25 years with the mean age 25.25±5.21, also, it is found that 80.8%, 39.0% and 91.8% respectively of them were from rural areas, illiterate and house wives. While 26.2 % of participants had family income less than 500 pound per month. Regarding BMI, it was observed that 27.8% of the studied pregnant women were overweight while 8.5 % of them were obese. In addition, this table shows that 54.5% and 42.5% respectively of the studied pregnant women had multi gravida and multi para from 2 to three times, while 11.2 % and 15.2% respectively of them had abortion $\geq 2$ times and had $\geq 4$ living children. Also, this table illustrates that 64.8% of the studied women were in the third trimester from their current pregnancy.

**Table (2):** Illustrates that 36.0% of the studied women complain from physical health problems during pregnancy, and 54% of them had a history about iron supplementation during previous pregnancy while 70% had taken iron supplementation during the present pregnancy. The prevalence of anemia among the studied pregnant females was 32. 5 % with hemoglobin level less than 11mg/ mol.

This table also reflects that 60.0% of the studied pregnant women had poor knowledge scores **Figure (1)** presents that three fifth (60%) of the studied pregnant women had poor knowledge level regarding iron deficiency anemia.

**Figure (2)** views that 21.0% of the studied pregnant women had negative attitudes about iron deficiency anemia.

**Table (3):** states that there is a statistically significant difference between women age and knowledge P= 0.003 also, between attitudes and level of education P=0.011.

**Table (4):** Illustrates that anemia was more common among women with age group more than 30 years old, with normal weight, family income from 500 to 1000 pound, multi para more than 4 times and had abortion more than 2 times 54.9%, 34.9%, 35.5% 78.0 and 68.9% of them respectively. Furthermore, there is a significant difference between anemia and age, parity and gravidity p= 0.000, 0.000 and 0.000 respectively. Moreover, this table reveals that 29. 3% and 39.2% respectively of the studied pregnant women had iron deficiency anemia and they do not use iron supplementation during previous or current pregnancy.

In addition, it was found that anemia was more common amongst the studied pregnant females who had poor knowledge (57.7%) and had positive attitudes (66.2%) **figure (3)** This figure also shows that there is significant relation between attitudes and anemia P= 0.000.

**Table (1): Distribution of the studied pregnant women by their personal data.**

| Personal data | No. (n= 400) | % |
|---|---|---|
| **Age:** | | |
| < 20 years | 53 | 13.2 |
| 20 - < 25 years | 150 | 37.5 |
| 25 - < 30 years | 95 | 23.8 |
| ≥ 30 years | 102 | 25.5 |
| Mean ± SD (Range) | 25.25 ± 5.21 (18 – 43) | |
| **Residence:** | | |
| Rural | 323 | 80.8 |
| Urban | 77 | 19.2 |
| **Level of education:** | | |
| Illiterate | 156 | 39.0 |
| Basic education | 79 | 19.8 |
| Secondary | 122 | 30.5 |
| High education | 43 | 10.8 |
| **Women work** | | |
| Working | 33 | 8.2 |
| Housewives | 367 | 91.8 |
| **Family income:** | | |
| < 500 LE | 105 | 26.2 |
| 500 - < 1000 LE | 155 | 38.8 |
| ≥ 1000 LE | 140 | 35.0 |
| **Body Mass Index(BMI):** | | |
| Normal | 255 | 63.8 |
| Overweight | 111 | 27.8 |
| Obese | 34 | 8.5 |
| **Number of pregnancies (Gravidity):** | | |
| 1 | 52 | 13.0 |
| 2 – 3 | 218 | 54.5 |
| ≥ 4 | 130 | 32.5 |
| **Number of deliveries (Parity):** | | |
| Zero | 52 | 13.0 |
| 1 | 119 | 29.8 |
| 2 – 3 | 170 | 42.5 |
| ≥ 4 | 59 | 14.8 |
| **Number of abortions** | | |
| Zero | 297 | 74.2 |
| 1 | 58 | 14.5 |
| ≥ 2 | 45 | 11.2 |
| **Time of current pregnancy:** | | |
| Second trimester | 141 | 35.2 |

| Third trimester | 259 | 64.8 |
|---|---|---|

**Table (2): Distribution of the studied pregnant women according their health condition**

| Items | No. (n= 400) | % |
|---|---|---|
| **Health problems during current pregnancy:** | | |
| Yes | 144 | 36.0 |
| No | 256 | 64.0 |
| ***Type of health problems ( 144):** | | |
| Gastrointestinal | 101 | 70.1 |
| Respiratory | 23 | 16.0 |
| Cardiovascular | 11 | 7.6 |
| Hypertension | 32 | 22.2 |
| **Iron supplementation during previous pregnancy:** | | |
| Yes | 216 | 54.0 |
| No | 184 | 46.0 |
| **Iron supplementation during current pregnancy:** | | |
| Yes | 280 | 70.0 |
| No | 120 | 30.0 |
| **Hemoglobin level (anemia)** | | |
| Anemic (<11) | 130 | 32.5 |
| Normal ( >11) | 270 | 67.5 |

**\* More than one problem**
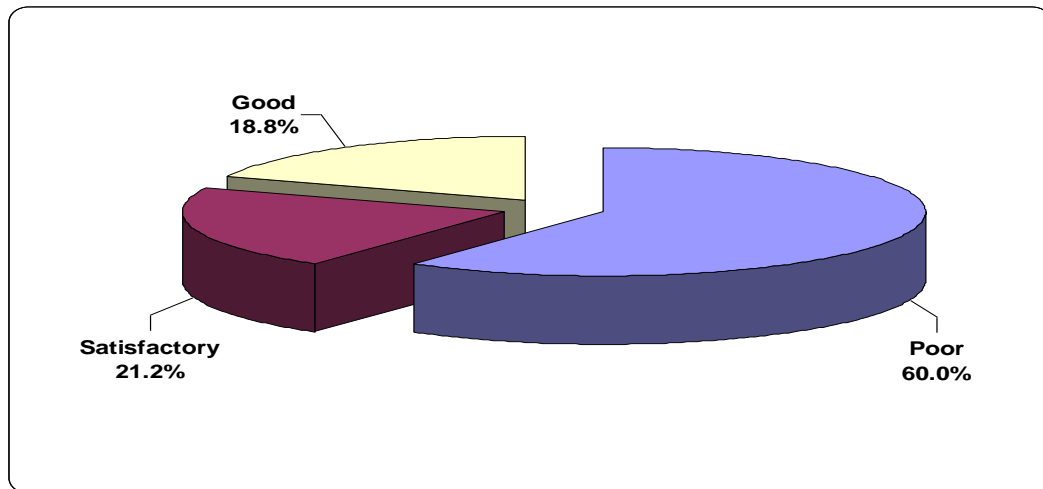


**Figure (1): Total knowledge score of studied pregnant women about iron deficiency anemia**
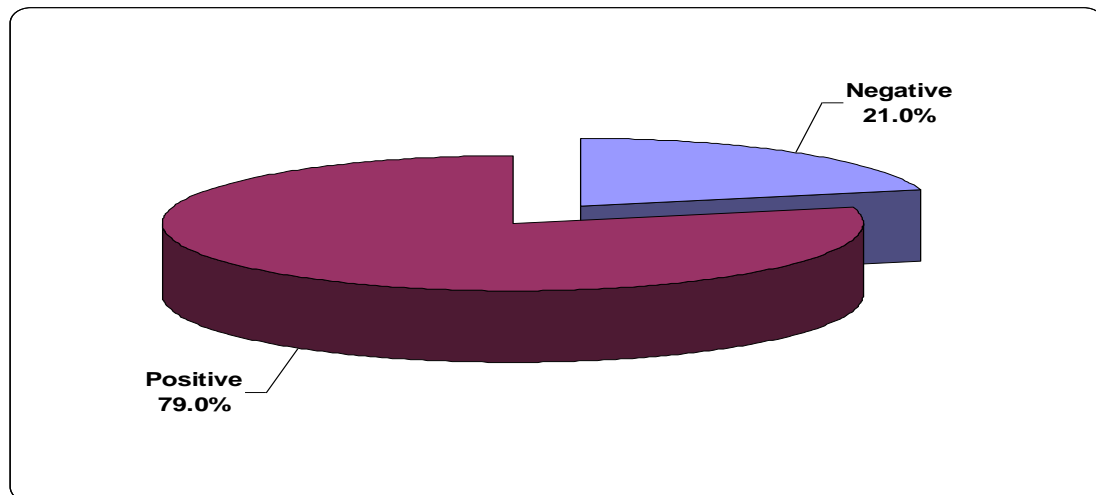


**Figure (2): Total attitudes level of studied pregnant women regarding iron deficiency anemia**

**Table (3): Relation between score of knowledge, attitudes and personal data of studied pregnant women**

| Personal data | Knowledges level | | | | | | P-value | Attitudes level | | | | P-Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Poor (n=240) | | Satisfactory (n=85) | | Good (n=75) | | | Negative (n=84) | | Positive (n=316) | | |
| | No | % | No | % | No | % | | No | % | No | % | |
| **Age:** | | | | | | | 0.003* | | | | | 0.305 |
| < 20 years | 37 | 69.8 | 2 | 3.8 | 14 | 26.4 | | 7 | 13.2 | 46 | 86.8 | |
| 20 - < 25 years | 81 | 54.0 | 45 | 30.0 | 24 | 16.0 | | 29 | 19.3 | 121 | 80.7 | |
| 25 - < 30 years | 61 | 64.2 | 20 | 21.1 | 14 | 14.7 | | 24 | 25.3 | 71 | 74.7 | |
| ≥ 30 years | 61 | 59.8 | 18 | 17.6 | 23 | 22.5 | | 24 | 23.5 | 78 | 76.5 | |
| **Residence:** | | | | | | | 0.102 | | | | | 0.011* |
| Rural | 199 | 61.6 | 70 | 21.7 | 54 | 16.7 | | 70 | 21.7 | 253 | 78.3 | |
| Urban | 41 | 53.2 | 15 | 19.5 | 21 | 27.3 | | 14 | 18.2 | 63 | 81.8 | |
| **Level of education:** | | | | | | | 0.933 | | | | | 0.011* |
| Illiterate | 92 | 59.0 | 36 | 23.1 | 28 | 17.9 | | 46 | 29.5 | 110 | 70.5 | |
| Basic education | 47 | 59.5 | 18 | 22.8 | 14 | 17.7 | | 12 | 15.2 | 67 | 84.8 | |
| Secondary | 77 | 63.1 | 22 | 18.0 | 23 | 18.9 | | 19 | 15.6 | 103 | 84.4 | |
| High education | 24 | 55.8 | 9 | 20.9 | 10 | 23.3 | | 7 | 16.3 | 36 | 83.7 | |
| **Family income:** | | | | | | | 0.089 | | | | | 0192 |
| < 500 LE | 55 | 52.4 | 32 | 30.5 | 18 | 17.1 | | 28 | 26.7 | 77 | 73.3 | |
| 500 - < 1000 LE | 98 | 63.2 | 30 | 19.4 | 27 | 17.4 | | 32 | 20.6 | 123 | 79.4 | |
| ≥ 1000 LE | 87 | 62.1 | 23 | 16.4 | 30 | 21.4 | | 24 | 17.1 | 116 | 82.9 | |

**Table (4): Relation between personal data, health condition and anemia of studied pregnant women**

| Items | Anemic (n= 130) | | Normal (n= 270) | | P-value |
|---|---|---|---|---|---|
| | No. | % | No. | % | |
| **Age:** | | | | | |
| < 20 years | 2 | 3.8 | 51 | 96.2 | 0.000* |
| 20 - < 25 years | 29 | 19.3 | 121 | 80.7 | |
| 25 - < 30 years | 43 | 45.3 | 52 | 54.7 | |
| ≥ 30 years | 56 | 54.9 | 46 | 45.1 | |
| **Family income:** | | | | | |
| < 500 LE | 35 | 33.3 | 70 | 66.7 | 0.439 |
| 500 - < 1000 LE | 55 | 35.5 | 100 | 64.5 | |
| ≥ 1000 LE | 40 | 28.6 | 100 | 71.4 | |
| **BMI:** | | | | | |
| Normal | 89 | 34.9 | 166 | 65.1 | 0.335 |
| Overweight | 30 | 27.0 | 81 | 73.0 | |
| Obese | 11 | 32.4 | 23 | 67.6 | |
| **Number of deliveries:** | | | | | |
| Zero | 0 | 0.0 | 52 | 100.0 | 0.000* |
| 1 | 7 | 5.9 | 112 | 94.1 | |
| 2 – 3 | 77 | 45.3 | 93 | 54.7 | |
| ≥ 4 | 46 | 78.0 | 13 | 22.0 | |
| **Number of abortions:** | | | | | |
| Zero | 67 | 22.6 | 230 | 77.4 | 0.000* |
| 1 | 32 | 55.2 | 26 | 44.8 | |
| ≥ 2 | 31 | 68.9 | 14 | 31.1 | |
| **Health problems during current pregnancy:** | | | | | |
| Yes | 49 | 34.0 | 95 | 66.0 | 0.625 |
| No | 81 | 31.6 | 175 | 68.4 | |
| **Iron supplementation during previous pregnancy:** | | | | | |
| Yes | 76 | 35.2 | 140 | 64.8 | 0.214 |
| No | 54 | 29.3 | 130 | 70.7 | |
| **Iron supplementation during current pregnancy:** | | | | | |
| Yes | 83 | 29.6 | 197 | 70.4 | 0.062 |
| No | 47 | 39.2 | 73 | 60.8 | |
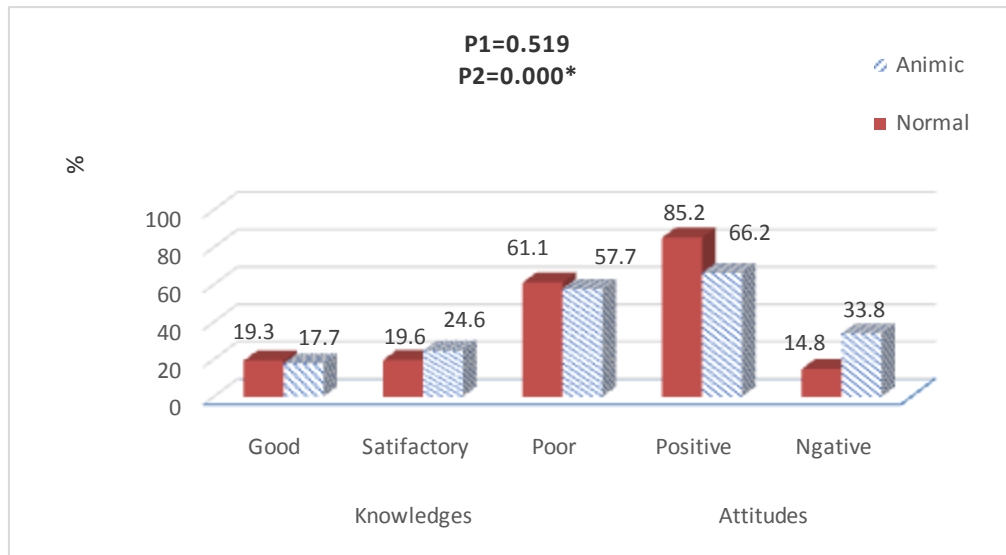
P1 between anima and knowledge          p2 between anima and attitudes
**Figure (3): Relation between knowledge, attitude and anemia**

## IV. Discussion

Anemia is one of the universal public health problems, both for developing and developed countries, affecting women of different age groups. However, it is more prominent in pregnant females, young adolescents and in females in reproductive age **(Ejeta et al.,2014).**

This study aimed to assess knowledge and attitude about iron deficiency anemia among pregnant women.

The present study shows that Mean age ± SD was 25.25 ± 5.21. These results agree with **Ejeta et al., 2014 and**

**Gebre &Mulugeta, 2015** who found that the studied participants Mean age ±Sd was 25.15±4.29 and 25.8 ± 5.84 respectively. While it is in contrast with **Jalambo et al., 2017** who showed that Mean age ± SD of the studied females was 16.3±0.860.

This study also, found that slightly less than two fifth of the studied women were illiterate and about only one tenth of them had high education. These results may be explained due to low socioeconomic level, cultural factors and more than four fifth of them were from rural area.

These results were supported by **Yadav et al.,2014** who illustrated that more than one tens of the studied sample had higher secondary education. In contrast, these results weren't in the same line with **Panigragi & Sahoo, 2011** who carried out a study in Orissa and revealed that more than one six of the studied sample were illiterate and only 7.08% of them had higher secondary education and above.

In addition, these results disagree with a study conducted in Nepal which revealed that more than one six of studied sample were illiterate (**Ghimire & Pandey ,2013**). The current results also reflect that the most of the studied women were housewives. This result was in agreement with **Yadav et al.,2014** who found that the vast majority of studied females were housewives.

Regarding the number of living children, the current study revealed that about two fifth of the participant females had from 2 or 3 children. These results are in contrast with **Yadav et al., 2014** who reported that less than half of the participants didn't have any children and 7.20%, 6.70% had two and three children respectively.

The present study illustrated that less than two third of the studied women were in the third trimester. These results are in disagreement with **Raksha & Shameem , 2016 and Ejeta et al., 2014** who found that more than half of the studied mothers were in second trimester.

Concerning the pregnant women's knowledge about iron deficiency anemia, the present study illustrated that three fifth of participant women had poor knowledge scores and fewer than one fifth of them had good knowledge scores. These results may be explained that fewer than two fifth of studied women were illiterate and more than four fifth of them were living in rural areas where rural areas suffer from deprivation of health services.

These results agree with **Ghimire &Pandey,2013** who reported that more than half of the studied women had not acceptable knowledge about anemia prevention. Moreover, the current study is in the same line with **M'Cormack & Drolet, 2012** who illustrated that the studied participants 'knowledge about anemia was

generally poor as well as it agrees with **Sonkar et al.,2017** who indicated that there was a lack of women's knowledge regarding anemia.

On other hand, these results disagree with **Mohannad et al.,2012** who highlighted a good level of awareness regarding anemia. In addition, these results are in contrast with **Margwe,2015** who found that more than one third of mothers had high knowledge.

The current study reflects that, there was a significant difference between knowledge about anemia and women's age, while there was no significant difference between knowledge about anemia and women's education. The current findings are in agreement with **Margwe , 2015** who reported that there was a significant difference between women's knowledge about anemia and their age.

These results disagree with **Ghimire &Pandey, 2013** who reflected that there was no significant difference between mothers' knowledge about anemia prevention and their age. In addition, these finding disagree with **Mohannad et al., 2012** who revealed that higher level of knowledge was observed in subjects with higher educational background (p< .001).

Concerning pregnant women's attitude toward anemia, the present study showed that about four fifth of the studied women had positive attitude toward anemia. These results are in disagreement with **M'Cormack &Drolet ,2012** who found that there is a fatalistic attitude toward anemia in pregnancy and it is considered inevitable. Also with **Margwe , 2015** who found that 38% of the studied women had unfavorable attitude to anemia.

The current study showed that around one third of the participant women had iron deficiency anemia. These finding are in agreement with **Niguse et al.,2013 and Ejeta et al., 2014** who mentioned that more than one third of studied sample were anemic and less than three tenth of studied women were anemic respectively.

Moreover, these results are in agreement with **Gebre &Mulugeta, 2015** and **Obse et al.,2013** who reported that prevalence of anemia was more than one third of participants. On the other hand, these results were in contrast with **Soliman et al., 2007** who illustrated that the percentage of women with iron deficiency anemia was > 47 %. Furthermore, these results are in disagreement with **Melku et al.,2014, Ngimbudzi et al.,2016 and Raut et al.,2014** who reported that the percentage of anemia was 16.6%, 67.5% and 65% respectively in their studied participants.

The present study revealed that the prevalence of anemia increased with old age and the difference was significant. The age as variable more than 30 years (54.9%) was accompanying with iron deficiency anemia. In addition, there is significant difference between women's age, number of deliveries and anemia this may be due to multipara causes anemia by reducing maternal iron reserves at every pregnancy and causing blood loss at each delivery.

**Abed El Hafez & El Soadaa, 2012** reported that the prevalence of iron deficiency anemia was around three tenth among normal body weight respondents, while the lowest prevalence rates of 12.8% were found among overweight groups. Differences in the prevalence rates were statistically significant values. The present study illustrated that more than one third of the studied participants have normal body weight with anemia and less than one third of obese women have anemia and less than three tenth in overweight group were anemic. In addition, there was no significant difference between anemia and BMI and family income. These results were supported by **Gebre &Mulugeta, 2015** who found that women's age was significantly associated with anemia. Also with **M'Cormack &Drolet ,2012** who showed that there was no significant difference between anemia and family income. Also with **Margwe., 2015** who found there was a close association between number of delivery and anemia in pregnant females.

In addition, it wasn't in the same line with **Melku et al.,2014** who stated that women who have low family income were more expected to be anemic. Also with **Raghuram et al.,2012** found that there was a significant association between number of delivery and prevalence of anemia. Moreover, it was in contrast with **Abu Salem, 2016** reported that increased parity and lack of iron supplementation during pregnancy increase the risk of anemia among both studied groups.

The present study illustrated that there was no significant variance between Iron supplementation during current pregnancy and anemia. These finding are supported by **Khan et al., 2010, M'Cormack &Drolet ,2012 & Ejeta et al.,2014** who mentioned that, there wasn't significant variance between Iron supplementation and anemia. It was also in contrast with **Gebre &Mulugeta, 2015** who found that iron supplementation was significantly associated with maternal anemia.

The current study found that there was statistically significant difference between anemia and attitudes of studied females. While, there wasn't a significant difference between anemia and women's knowledge about anemia.

These results agree with **Jose et al., 2016** who demonstrated that there was a significant variance between level of hemoglobin and attitudes of women about anemia. Furthermore, the current results are in agreement with **Souganidis et al., 2012** who reported that there was no significant relation between maternal knowledge about anemia and maternal anemia

## V. Conclusion

The current study concluded that the studied pregnant women had poor knowledge and positive attitudes toward iron deficiency anemia, and the prevalence of iron deficiency anemia amongst pregnant women constitute about one third of them.

## VI. Recommendations

- Education should include antenatal care that focuses on intake of iron rich foods, on the importance of early booking when the woman becomes pregnant, iron supplementation and anti-helminths.
- Increase awareness of pregnant women about anemia prevention through mass media.
- Further investigation on anemic pregnant women to identify the etiology whenever it is possible
- Counseling and health education are important for pregnant women with anemia, to improve their knowledge and awareness of how to maintain a healthy lifestyle during pregnancy.
- Encourage pregnant women to take folic acid on a daily basis from imitating of pregnant for three months.
- Further researches concerning iron deficiency anemia ( KAP study ) should be conducted.

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