



Knowledge And Awareness on Iron Deficiency Anaemia Among Women - A Questionnaire Based Survey

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ABSTRACT

Iron deficiency anaemia is one of the major health problems faced by women. Several factors such as age, sex, socio-economic status, educational level play prominent roles in influencing the health status. Iron deficiency anaemia may result in slow growth and development, fatigue, stillbirth etc. But the knowledge and awareness towards it was significantly low. The main purpose of this study was to evaluate the knowledge and awareness of women towards iron deficiency anaemia. A questionnaire based survey was conducted among 100 female participants. Questionnaire was distributed through a survey link. Results were collected and analysed using IBM SPSS Statistical Analyzer (23.0 version). Frequency distribution and descriptive analysis were carried out. Pearson Chi square test was done. P value less than or equal to 0.05 was considered to be statistically significant. The results of the study showed that the knowledge and awareness of women varied according to their level of education. Participants who are educated were found to have more knowledge and awareness compared to the participants who are not educated. Therefore, it is of utmost importance for women to gain adequate knowledge on iron deficiency anaemia to make lifestyle modifications for healthy living.

Keywords: Iron deficiency anaemia, online survey, educational level, lifestyle modifications

INTRODUCTION

Anemia is a condition in which the number of red blood cells of the body is insufficient to meet physiological needs. Iron deficiency is the most common cause of anemia worldwide. (Rengasamy et al., 2018; Stoltzfus et al., 2004). Children, women of reproductive age, and pregnant women are at high risk of developing anemia. This is well associated with increased risk of miscarriage, stillbirth, prematurity and low birth weight of the baby. About 20% of perinatal mortality and 10% of maternal mortality in developing countries is attributed to iron deficiency (Menon et al., 2016; Pasricha et al., 2010). Numerous factors such as age, sex, pregnancy status, adverse habits like smoking influence the hemoglobin concentration. Causes of iron deficiency anaemia fall into two broad categories. One is increased iron needs and another is decreased iron intake absorption. (DeMaeyer and Dallman, 1989; Ma et al., 2019; Ramakrishna Reddy, 2004) Increased iron needs may be due to the increasing needs of the body as part of development, blood loss during menstrual cycles, worm infestation, pregnancy, infections, inflammatory or bowel disease. Genetic disorders also play an important role in iron deficiency anaemia. Disorders such as thalassemia and sickle cell disease are associated with anemia. In addition to this, bone marrow diseases that cause suppression of red cells synthesis which may also lead to anemia. (Aikawa et al., 2006; Mohan et al., 2015; Rengasamy et al., 2016) During the whole time period of pregnancy, there is an increased need of about 700-850 mg of body iron while lactation results in additional loss of iron via breast milk. But, lactation amenorrhoea compensates for this loss. The problem increases with repeated pregnancies as body iron stores get depleted. (Li et al., 2020; Ramya et al., 2018; Umata et al., 2008) Decreased absorption may be due to effects of some medications that hinder the absorption of iron from the diet. Another possibility is a lesser intake of dietary sources of iron. The average daily dietary iron intake in developed countries is between 10 and 15 mg. Under normal conditions, only between 5% and 10% of this quantity is absorbed, that is, 1–3 mg/day. Obesity is also considered as the cause of iron deficiency anaemia. (Ke et al., 2019; Shukri et al., 2016; Topley, 1968). Freshness of food plays a significant role. In certain geographic areas, intestinal parasites, particularly hookworm, worsen the iron deficiency because of blood loss from the gastrointestinal tract. (Chen et al., 2019). The aim of this study was to evaluate the knowledge and awareness of women towards iron deficiency anaemia.

MATERIALS AND METHODS

A questionnaire based study was conducted among 100 female participants in Chennai, Tamil Nadu. The questionnaire consisting of 15 questions (Table 1) was designed and addressed voluntarily to 100 women through an online survey link. This study was approved by Institutional Review Board, Saveetha Dental College, Data was collected using an online survey link (Survey planet) and tabulated in excel. The excel sheet was then imported to IBM SPSS Statistical Analyzer (23.0 version) for statistical analysis. Frequency distribution and descriptive analysis were carried out. Pearson Chi square test was done. The association between the variables was analysed using this test. P Value less than or equal to 0,05 was considered to be statistically significant. Results were obtained in the form of graphs.

Table 1: table representing the questionnaire distributed to the participants

<p>1.Age</p> <ul style="list-style-type: none"> • Less than 20 • 21-30 • 31-40 <p>2.Level of education</p> <ul style="list-style-type: none"> • Illiterate • Educated <p>3.Have you heard about iron deficiency anaemia?</p> <ul style="list-style-type: none"> • Yes • No • Don't know <p>4.Is iron deficiency anaemia is a major health problem faced by women?</p> <ul style="list-style-type: none"> • Yes • No • Don't know <p>5.What do you think is the reason for anaemia?</p> <ul style="list-style-type: none"> • Worm infestation • Increased blood loss during menstrual cycle • Decreased dietary iron intake • All the above • Don't know <p>6.What do you think are the symptoms of iron deficiency anaemia?</p> <ul style="list-style-type: none"> • Pale skin colour • Alopecia • Delayed child birth • Fatigue • All the above • Don't know <p>7.What do you think are the effects of iron deficiency anaemia?</p> <ul style="list-style-type: none"> • Decreased growth and development • Stillbirth • Prematurity • Low birth weight babies • All the above • Don't know <p>8.Do you know green leafy vegetables and meat are rich in iron?</p> <ul style="list-style-type: none"> • Yes • No • Don't know <p>9.Do you know intake of citrus fruits can help in the absorption of iron?</p> <ul style="list-style-type: none"> • Yes • No • Don't know <p>10.Do you know consumption of tea or coffee after a meal will decrease the absorption of iron?</p> <ul style="list-style-type: none"> • Yes • No
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- Don't know
11. Do you know iron deficiency anaemia has an effect on a child's growth, immunity and intelligence?
- Yes
 - No
 - Don't know
12. Do you know the iron requirement for pregnant women is higher than women who are not pregnant?
- Yes
 - No
 - Don't know
13. How do you prevent iron deficiency anaemia?
- Increased dietary intake of iron
 - Consumption of Vitamin C rich fruits
 - Avoiding post meal tea and coffee
 - Don't know
14. How do you think iron deficiency anaemia can be treated?
- Iron supplements
 - Deworming
 - Consuming Vitamin c tablets
 - All of the above
 - Don't know
15. Do you think regular medical check-ups are important for women?
- Yes
 - No
 - Don't know

RESULTS AND DISCUSSION

This study was conducted among 100 participants. 20% of the participants were less than 20 years, 58% of the participants who belonged to the age group 21-30 years and remaining 22% of the participants belonged to the age group 31-40 years (Figure-1). Among the study population, 52% were educated and 48% were illiterates (Figure-2). About 55% of the study population were aware of iron deficiency anaemia constituting 44% of participants who were educated and 11% of participants who were uneducated (Figure-3).

Majority of the study population that is 45% of the participants disagreed while only 19% of the participants agreed that iron deficiency anaemia as a major health problem among women (Figure-4). Only 9% of the population were aware of the causes of iron deficiency anaemia constituting participants who were educated and majority of the population that is 33% stated only decreased dietary intake of iron as the cause of iron deficiency anaemia (Figure-5). Among the study population, only 14% of the participants who are educated were aware of all the symptoms of iron deficiency anaemia while 38% of the participants who are not educated had no knowledge about the symptoms of iron deficiency anaemia (Figure-6). Only 13% of the study population who are educated had knowledge on the effects of iron deficiency anaemia while majority of the population that is 56% had no knowledge about the effects of iron deficiency anaemia which constitutes 13% of participants who are educated and 43% of participants who are uneducated (Figure-7). 34% were aware that green leafy vegetables and meat are rich in iron (Figure-8). Among the study population, only 24% of the study population constituting 19% of educated women and 5% of uneducated participants were aware of the influence of citrus fruits on absorption of iron and majority of the population that is 48% of the participants had no knowledge on the influence of citrus fruits on absorption of iron (Figure-9). 38% of the participants had no knowledge on the influence of consumption of tea or coffee on absorption of iron constituting 10% of educated participants and 28% of uneducated participants (Figure-10). Majority of the study population, 49% of the participants were aware on the effects of iron deficiency anaemia on child's growth, immunity and intelligence which constitutes 39% of the participants who are educated and 10% of the participants who are uneducated (Figure-11).

43% of the participants were aware of the increased iron requirement for pregnant women compared to non-pregnant women (Figure-12). Majority of the study population that is 48% of the participants were not aware of all the preventive measures of iron deficiency anaemia and only 19% of participants who are educated were aware of all the preventive strategies (Figure-13). About 43% of study population were not aware of all the treatment options of iron deficiency anaemia and only 20% of participants who are educated were aware of all the treatment modalities of iron deficiency anaemia (Figure-14). About 37% of the study population constituting 33% of participants who are educated and 4% of the participants who are not educated were aware of the necessity of regular medical check-ups among women. In general, the results of this study showed that

knowledge and awareness on iron deficiency anemia among women were significantly low and should be improved.

The results of the present study showed that knowledge and awareness among women towards iron deficiency anemia varied according their level of education. The results of this study are in consistent with the results concocted by Hussain T et al who concluded that awareness regarding iron deficiency anaemia is directly linked with the educational and social status of a community and is found to be increasing with the passage of time with exploration and accessibility to media and health care facilities(Hussain et al., 2010). The majority age groups (25-35 years), were the women who were employed and had the highest knowledge about this condition, showing that education plays a role in the awareness of iron deficiency anemia.(Li and Deng, 2003)Iron deficiency anemia is one of the important public health problems in developing countries among the women of the reproductive age group. Multiple factors like age, parity, socioeconomic status and diet can determine the stores of iron in the women of reproductive age group.(Mawani et al., 2016)Good sources of iron include fruits, vegetables, whole grains, milk and milk products, lean meat, fish, dry beans, egg, nuts. A healthy diet includes a diet low in saturated fats, sugars and salt. Promotion of foods rich in iron as well as micronutrients such as folic acid, Vitamin A, C, B-12, and Zinc help in iron absorption.(Bashir and Khan, 2013) The reason why Iron deficiency is a matter of concern is that it causes fatigue, decreased motor abilities, impaired memory and can also cause delays in mental development . In addition to this, anemia in pregnancy can increase the risk of having a preterm delivery and preterm babies have other health concerns ranging from low birth weight and neural tube defects to death. A preterm birth is one of the main causes of infant mortality in developing countries and iron supplementation during pregnancy helps in reduction of risk of preterm birth.(Brabin et al., 1998)Therefore it is important to have adequate knowledge and awareness regarding iron deficiency anaemia.

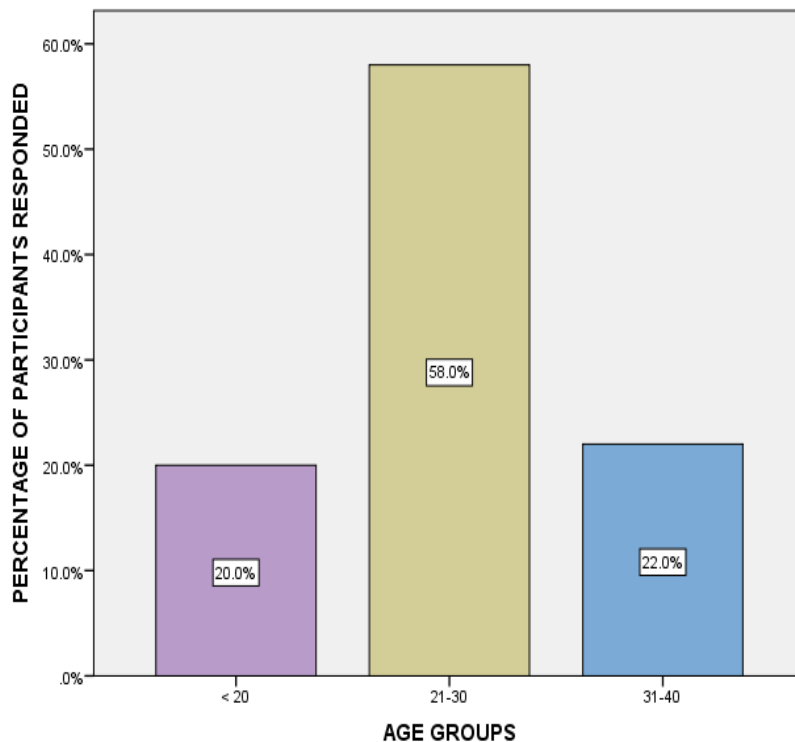


Figure 1: this bar graph depicts the age distribution of the study population. X-axis represents the level of education and Y- axis represents the percentage of participants responded. Violet represents less than 20 years, Beige colour represents age group 21-30 years and Blue colour represents age group 31-40 years. Majority of the participants (58%) belonged to the age group 21-30 years followed by 22% of participants of age group 31-40 years and 20% of the participants were less than 20 years.

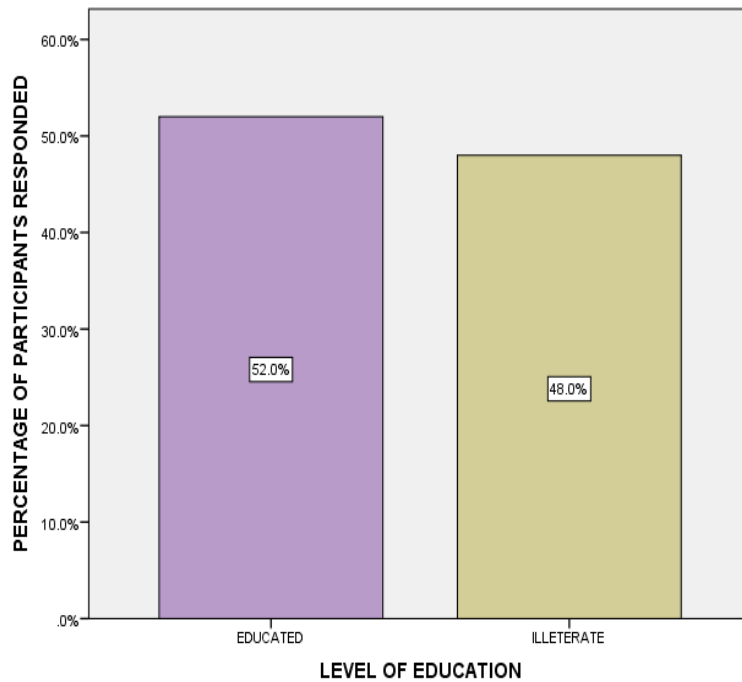


Figure 2: this bar graph depicts the distribution of study population based on their level of education. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Violet colour represents educated participants and Beige colour represents Illiterates. About 52% of the study population were educated and the remaining 48% were uneducated.

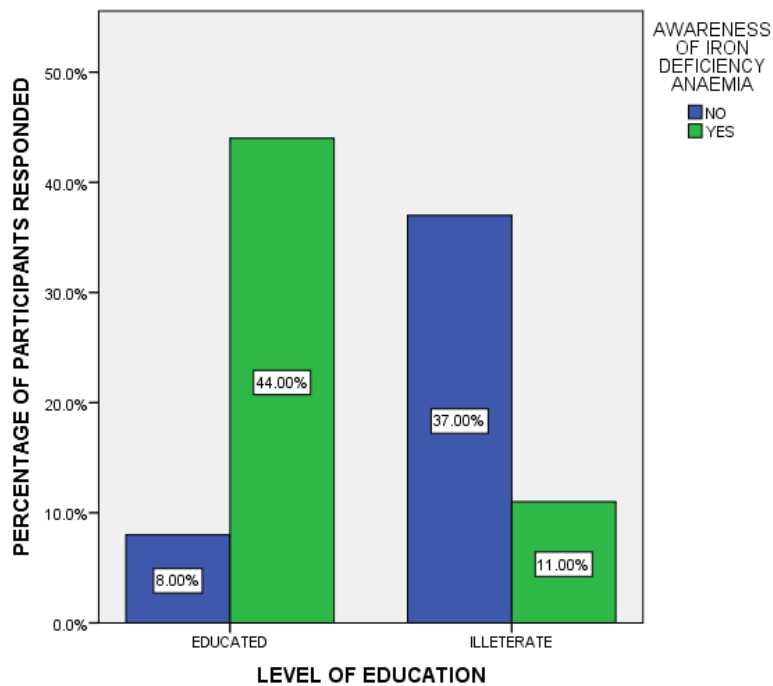


Figure 3: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No and Green colour represents Yes. Participants who are educated were more aware of iron deficiency anaemia compared to others. Pearson Chi-square test, $p \text{ value} = 0.000 < 0.05$, hence the association is statistically significant.

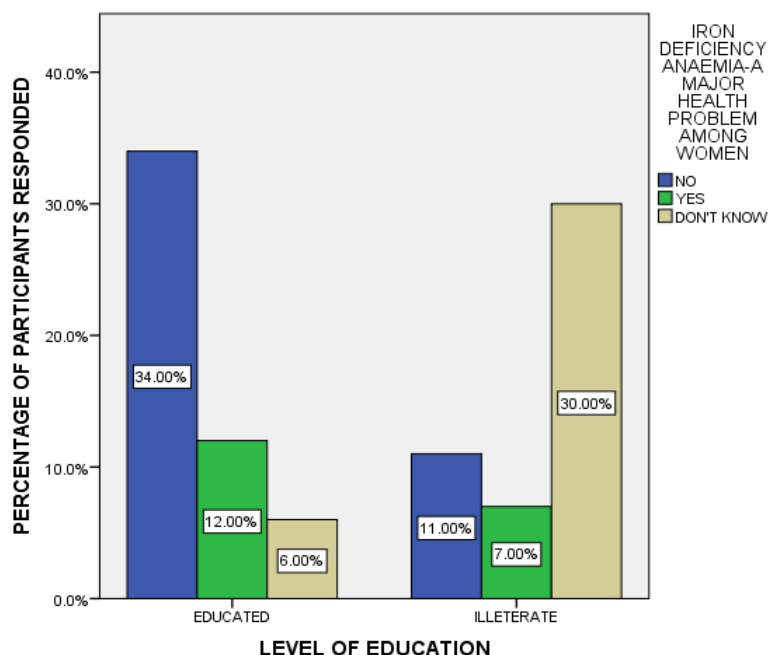


Figure 4: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Majority of the population disagreed that iron deficiency anaemia as a major health problem among women. Pearson Chi-square test, p value=0.001<0.05, hence the association is statistically significant.

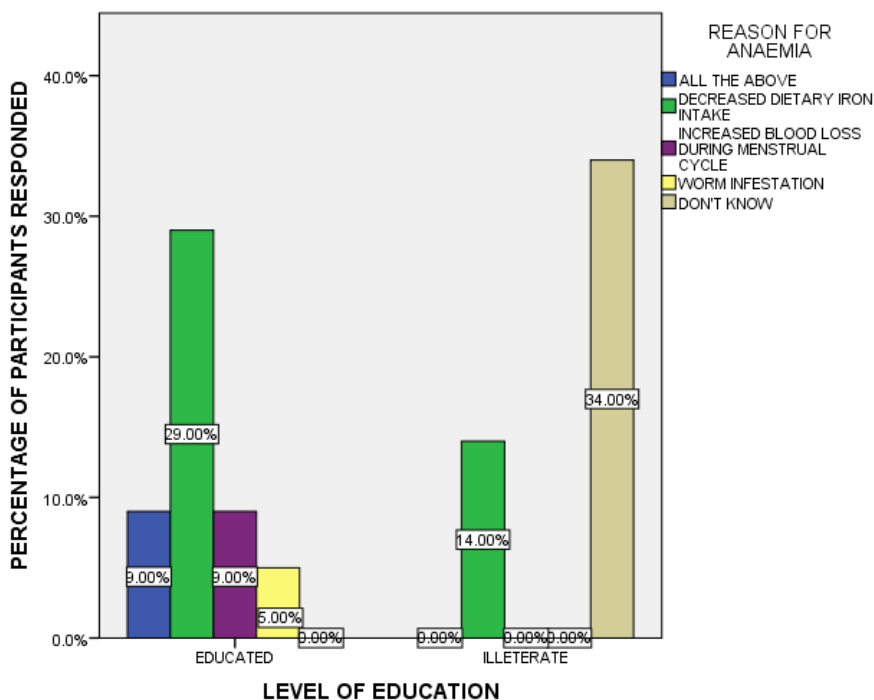


Figure 5: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Green colour represents decreased dietary iron intake, Purple colour represents increased blood loss during menstrual cycle, Yellow colour represents worm infestation, Blue colour represents all the above and Beige colour represents Don't know. Only 9% of the population were aware of the causes of iron deficiency anaemia constituting participants who were educated. Pearson Chi-square test, p value=0.000<0.05, hence the association is statistically significant.

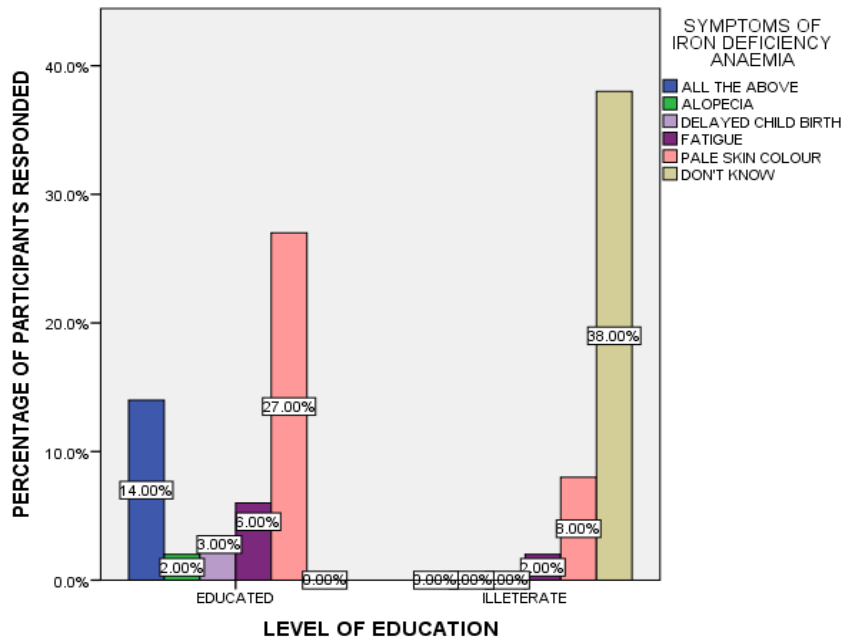


Figure 6: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Green colour represents Alopecia, Violet colour represents delayed child birth, Purple colour represents fatigue, Pink colour represents pale skin colour, Blue colour represents all the above and Beige colour represents Don't know. Only 14% of the study population were aware of the symptoms of iron deficiency anaemia which constitutes participants who were educated. Pearson Chi-square test, p value=0.000<0.05, hence the association is statistically significant.

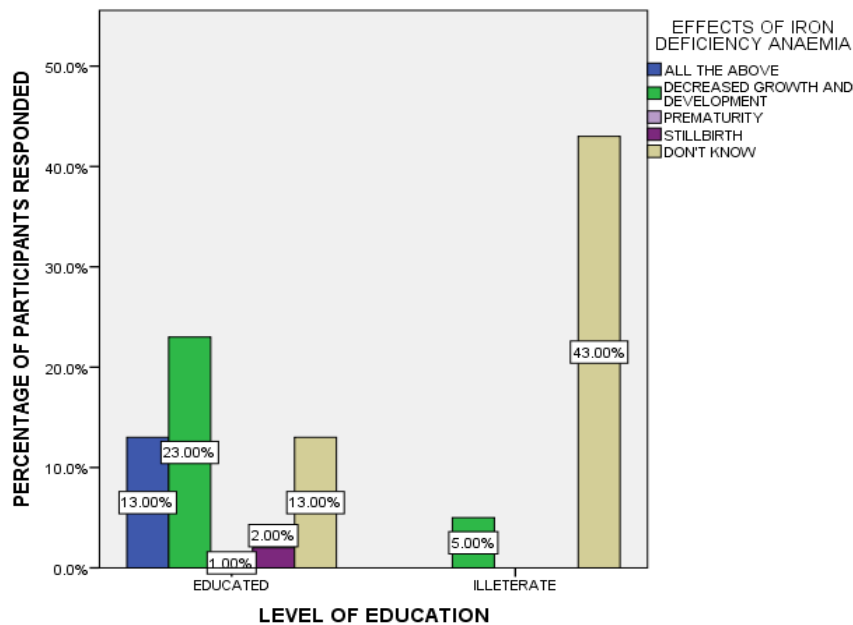


Figure 7: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Green colour represents decreased growth and development, Violet colour represents prematurity, Purple colour represents stillbirth, Blue colour represents all the above and Beige colour represents Don't know. Only 13% of the participants who are educated were aware of the effects of iron deficiency anaemia. Pearson Chi-square test, p value=0.000<0.05, hence the association is statistically significant.

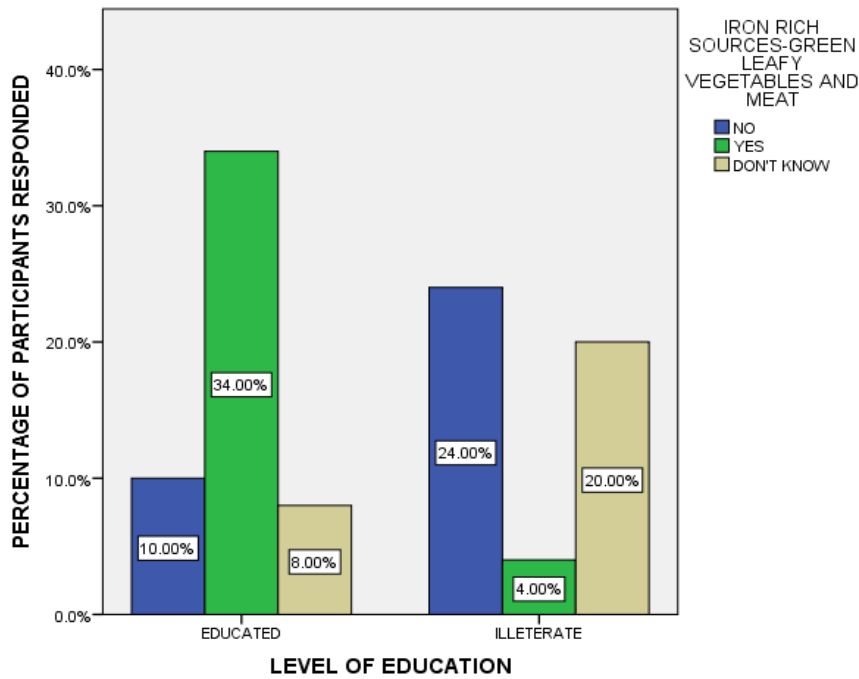


Figure 8: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Participants who are educated were more aware of the dietary sources which are rich in iron such as meat and green leafy vegetables compared to others. Pearson Chi-square test, $p\text{ value}=0.002 < 0.05$, hence the association is statistically significant.

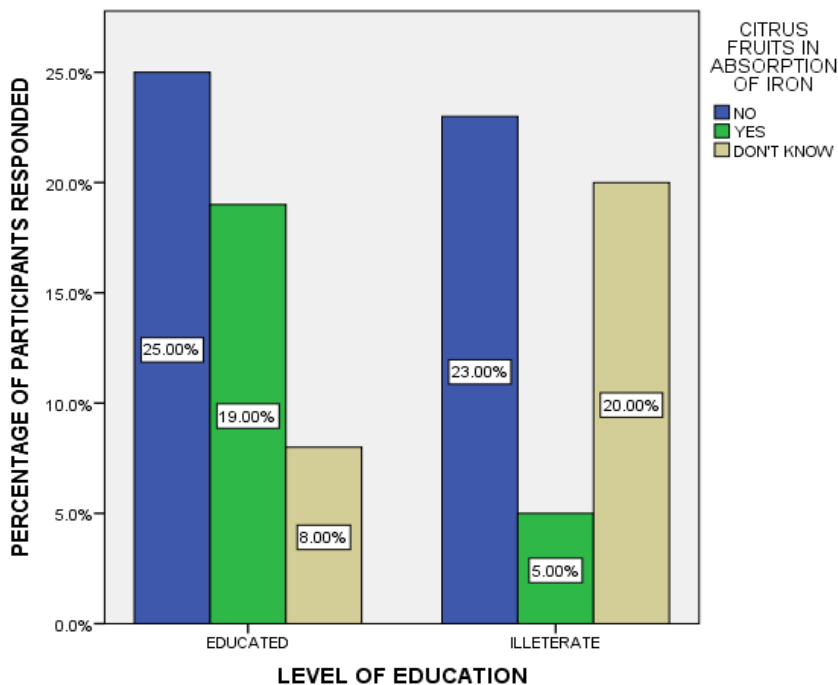


Figure 9: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Only 19% of the participants who are educated were more aware of the influence of citrus fruits on the absorption of iron compared to others. Pearson Chi-square test, $p\text{ value}=0.000 < 0.05$, hence the association is statistically significant.

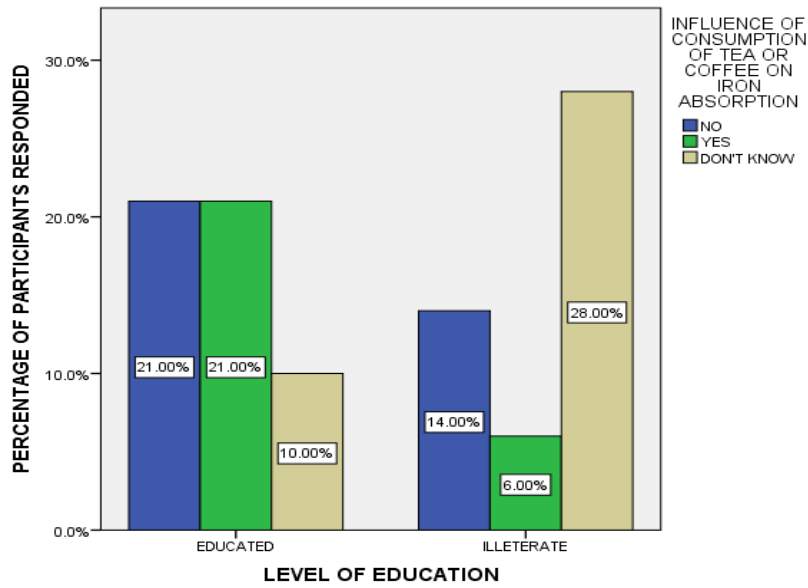


Figure 10: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Majority of the study population (38%) were not aware of the influence of consuming tea or coffee after meal on the absorption of iron. Pearson Chi-square test, p value = $0.000 < 0.05$, hence the association is statistically significant.

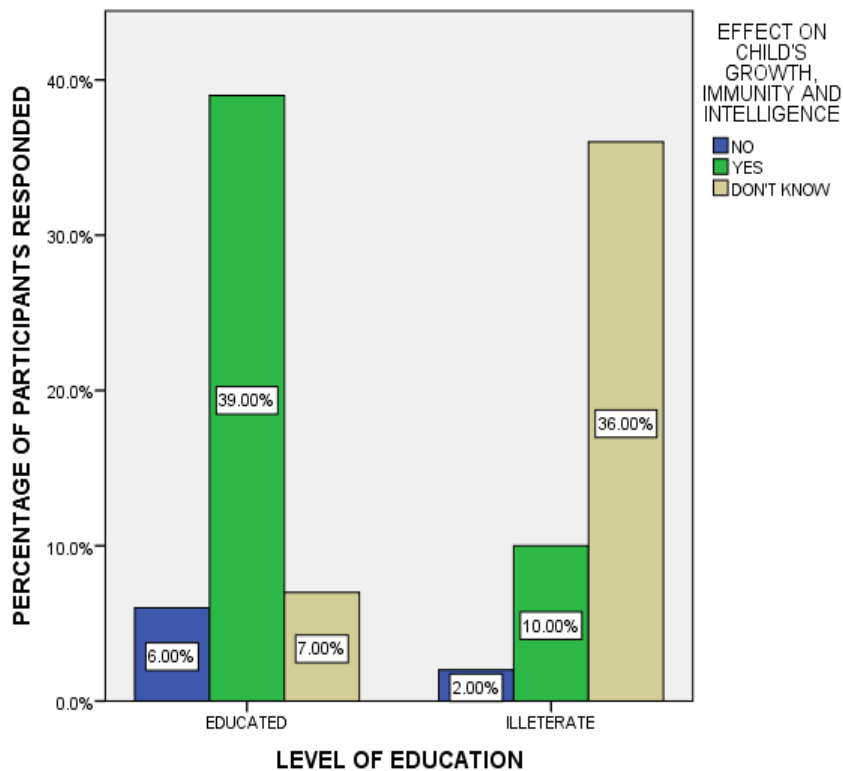


Figure 11: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Participants who are educated were more aware of the effects of iron deficiency anaemia on a child's growth, immunity and intelligence compared to others. Pearson Chi-square test, p value = $0.001 < 0.05$, hence the association is statistically significant.

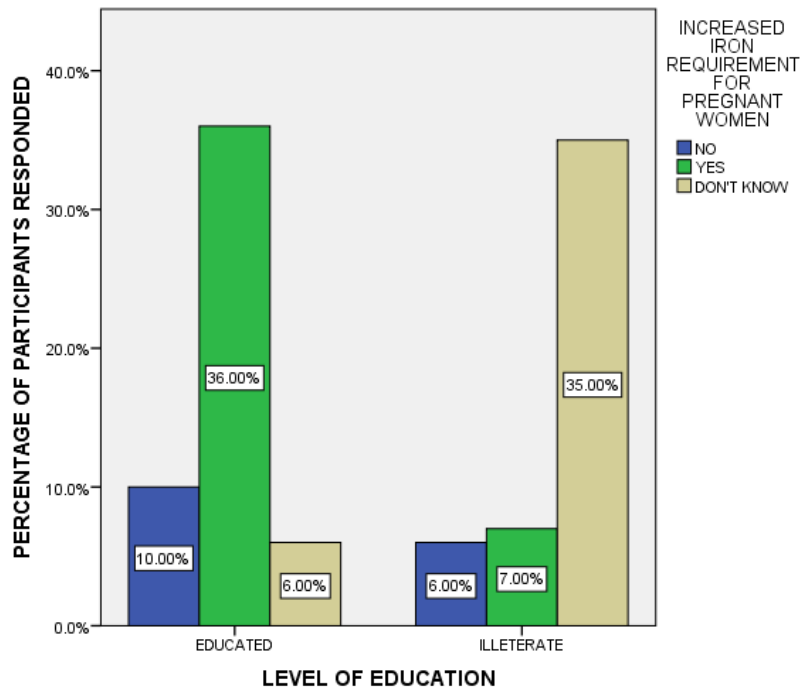


Figure 12: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Participants who are educated were more aware of the increased iron requirement for pregnant women compared to others. Pearson Chi-square test, p value = $0.000 < 0.05$, hence the association is statistically significant.

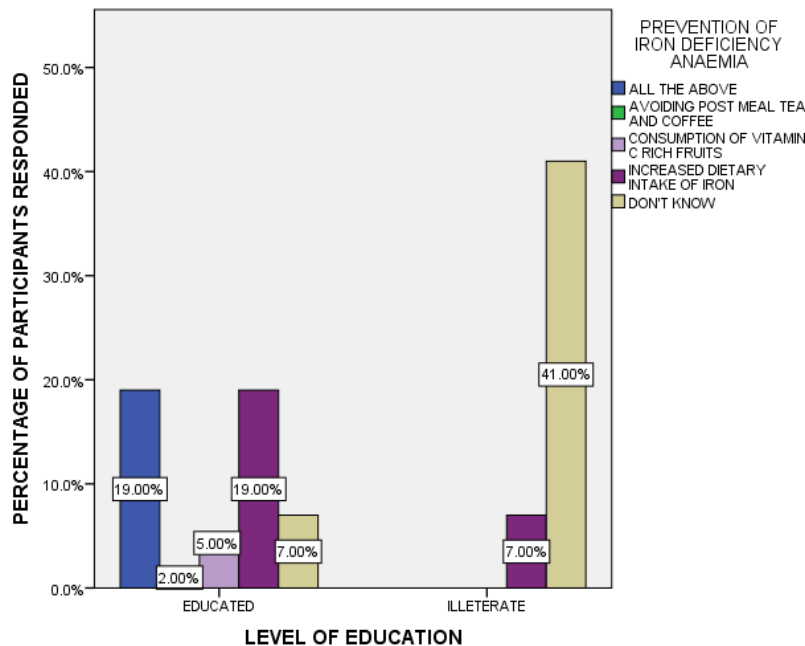


Figure 13: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Green colour represents avoiding post meal tea or coffee, Violet colour represents consumption of vitamin C rich fruits, Purple colour represents increased dietary intake of iron, Blue colour represents all the above and Beige colour represents Don't know. Participants who are educated were observed to have more knowledge on the preventive measures of iron deficiency anaemia compared to others. Pearson Chi-square test, p value = $0.000 < 0.05$, hence the association is statistically significant.

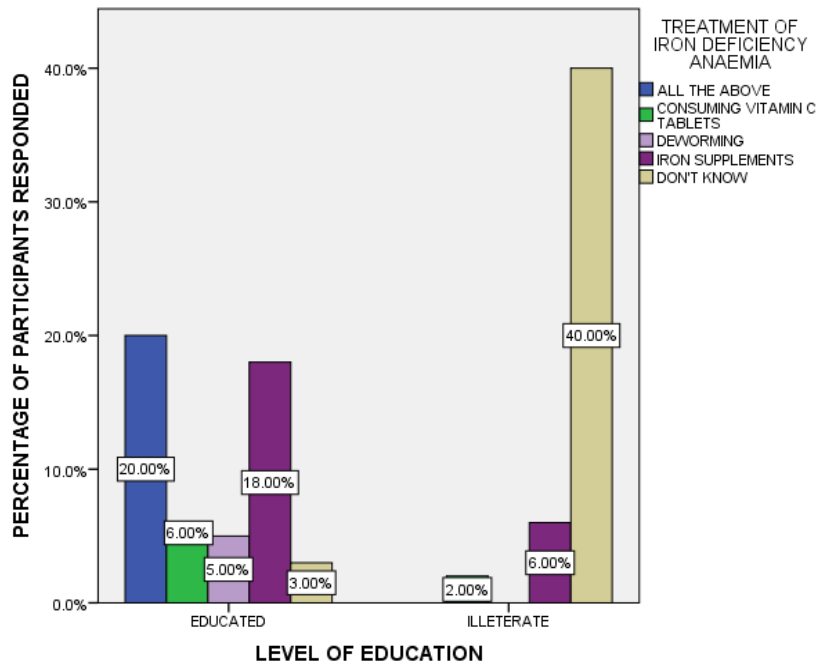


Figure 14: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Green colour represents consumption of vitamin C tablets, Purple colour represents Iron supplements, Violet colour represents Deworming, Blue colour represents All the above and Beige colour represents Don't know. Participants who are educated were observed to have more knowledge on the management of iron deficiency anaemia compared to others. Pearson Chi-square test, p value = $0.000 < 0.05$, hence the association is statistically significant.

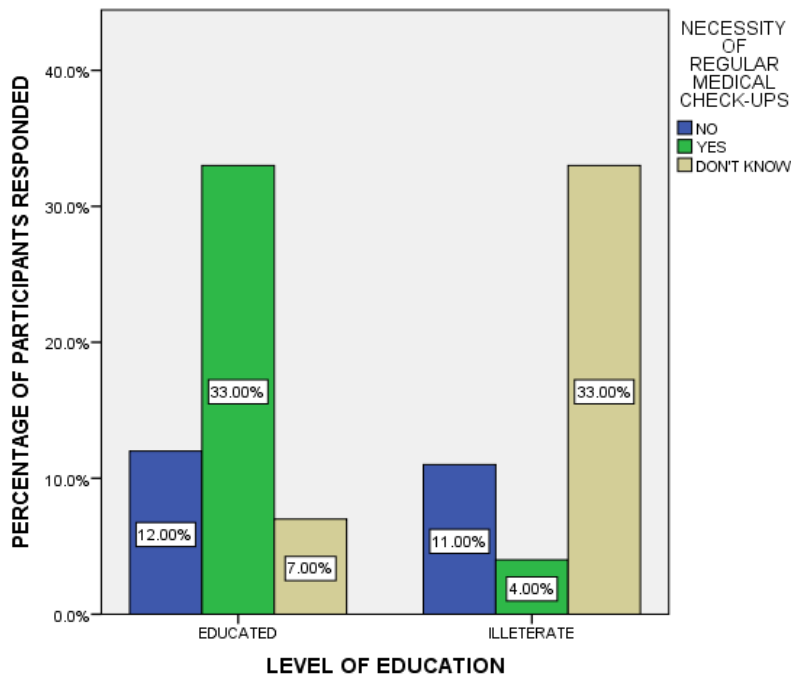


Figure 15: This bar graph represents the association between the level of education and participants' responses to the given question. X-axis represents the level of education and Y-axis represents the percentage of participants responded. Blue colour represents No, Green colour represents Yes and Beige colour represents Don't know. Participants who are educated were more aware of the necessity of regular medical check-ups among women compared to others. Pearson Chi-square test, p value = $0.001 < 0.05$, hence the association is statistically significant.

CONCLUSION

In this study, the knowledge on iron deficiency anaemia and awareness of women towards it were assessed. The results of the study showed that the knowledge and awareness on iron deficiency anaemia among women varied according to their level of education. Educated participants were observed to have more knowledge and awareness compared to participants who are uneducated. Thus to conclude with, knowledge on iron deficiency anaemia is important to lead a healthy lifestyle especially for women. Hence, the primary focus should be improving the knowledge and awareness through symposiums and continuing medical education programs.

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CONFLICT OF INTEREST

Nil.

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