Section: Community Medicine

Original Research Article

A CROSS- SECTIONAL STUDY TO ASSESS THE AWARENESS ABOUT ANAEMIA AND ITS PREVENTIVE MEASURES IN PREGNANT WOMEN OF URBAN SLUM OF INDORE CITY

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Abstract

Background: Iron deficiency anaemia is a world-wide public health problem with the highest prevalence in developing countries. It is found especially among women of child-bearing age, young children and during pregnancy and lactation. Anaemia during pregnancy is one of the important factors associated with a number of maternal and foetal complications. The objective of this study is to assess the awareness, perception and practices regarding anaemia and its corrective measures in pregnant women of urban slum of Indore city. **Materials and Methods:** A cross-sectional study based on a pre-designed, pre-tested semi-structured questionnaire in 100 pregnant women of urban slum over 4 months duration in Indore. Statistical analysis was done in Microsoft Excel using percentage and Chi-Square test was applied using SPSS software 25.0 trial version. **Result:** Majority (90%) of pregnant women were housewives. Only 34% of them knew about the role of iron supplementation,49% were taking IFA tablets occasionally while 21% didn't take it at all and only 61% of them took extra diet rich in iron during pregnancy. Majority of them were aware about rich sources of iron. 57% women didn't know about complications of anaemia, this might be one of the important probable reasons for their poor compliance of IFA tablets. Majority of women (61%) were unaware about the effects of anaemia on foetus. 39% women went for antenatal check-ups 3 or more times during pregnancy. 56% took IFA tablets after meals and majority (60%) had no knowledge about food items that increase iron absorption while 48% didn't know about food items decreasing iron absorption and only 31% regularly visited Anganwadi Centres. **Conclusion:** This study revealed that overall knowledge about anaemia in pregnancy was less in study population and compliance to IFA tablet was poor in majority of the study population. This might be due to their lack of awareness about complications and the adverse effects of anaemia on outcomes of pregnancy and also on foetus.

INTRODUCTION

World Health Organization (WHO) data shows that 36.5% of pregnant women worldwide were anemic in 2019.[1] In India, prevalence of anaemia among pregnant women (age 15-49 years) was 50.4% as per National Family Health Survey: NFHS-4 (2015-16) report & 52.2% as per NFHS-5 (2019-21).[2,3] India contributes to about 80% of the maternal deaths due to anaemia in South Asia.[4]Anaemia is one of the most important deciding factors for the outcome of pregnancy. Anaemia during pregnancy is one of the important factors associated with a number of maternal and foetal complications. It decreases the woman's reserve to tolerate bleeding either during or after child birth and makes them prone to infections. Anaemia during pregnancy also has been associated with increased risk of intra uterine growth restriction (IUGR), premature delivery, low birth weight (LBW) and decreased iron stores for the baby which may lead to impaired development and high infant mortality and also high maternal morbidity and mortality.[4,5,6] Among the various causes of anaemia in women, iron

deficiency is the most common cause, primarily due to their recurrent menstrual loss and secondarily due to poor supply of iron in their diet.WHOdefines anaemia in pregnancy as Haemoglobin (Hb) values less than 11gm/dl.[7,8]PPH(PostPartum Hemorrhage) is one of the most important causes of maternal mortality in India and anemia further contributes to it. The high proportion of maternal deaths are due to anemia in pregnant women.[9] Also, maternal morbidity rates are higher in anemic women. [10,11]
So, this study is an attempt to assess the awareness, perception and practices regarding anaemia and its corrective measures in pregnant women of urban slum of Indore city.

MATERIALSANDMETHODS

A Cross- sectional study was conducted among 100 pregnant women of Badi Gwaltoli area of urban slum of Indore city as study subjects for a duration of 4 months from June 2021 to September 2021.Sample size was calculated using the Cochran's formula based on the prevalence of anaemia among pregnant women in India.[2]

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} * p * q}{d^2} = \frac{(1.96)^2 * 50.4 * 49.6}{(10)^2} = 96.03 \simeq 100$$

$Z_{1-\frac{\alpha}{2}}$= Critical value at 95% confidence level (Standard value =1.96)
p= Prevalence of Anaemia among pregnant women (age 15-49 years) in India (50.4%)*
q=100-p
d=Margin of error (10%)
*Prevalence based on NFHS-4 (2015-16) data for India.
Hence, we took final sample size of 100 for our present study.
Sequential Sampling method was used. Data collection was done using Pre tested, Pre designed, Semi- structured questionnaire for interviewing the pregnant women to assess their awareness, perception and practices regarding anaemia and its corrective measures and its importance among study population. All the pregnant women who gave consent were included in the study while pregnant women who did not give consent & all the non-pregnant women were not included in the study.

Statistical Analysis: Data was entered in excel sheet and analyzed using SPSS Software 25.0 trial version. Categorical data was expressed in the form of frequency and percentage. The association between literacy &the knowledge about various aspects related with anaemia during pregnancy were assessed by Chi-Square Test. Approval from Institutional Ethics Committee was taken. Verbal consent was taken from all the study participants and the confidentiality of data was ensured.

RESULTS

Majority (49%) of the study participants were of age group 22-26 years & the mean age (in years) was 24.75 ± 11.72, 13% of them were illiterate while 40% of them were educated up to middle school level. Majority (90%) of the pregnant women were housewives.

Table 1: Socio-Demographic Profile of study Participants (N=100)-

Variables	**Frequency (Percentage)**
Age (in years)-	N (%)
17-21	19 (19)
22-26	49 (49)
27-31	30 (30)
≥ 32	2 (2)
Total	100 (100)
Educational Status-	N (%)
Illiterate	13 (13)
Primary	4 (4)
Middle School	40 (40)
High School	7 (7)
Higher Secondary	26 (26)
Graduate & above	10 (10)
Total	100 (100)
Occupation-	N (%)
Housewife	90 (90)
Labourer	1 (1)
Teacher	2 (2)
Other job	7 (7)
Total	100 (100)

Table 2: Awareness and Perception of Pregnant women regarding anaemia and its importance in Pregnancy-

Variables	**Frequency (Percentage)**
Knowledge about occurrence of anaemia in pregnancy among the study population-	N (%)
Yes	48 (48)
No	29 (29)
Partial Knowledge	23 (23)

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Total	100 (100)
Knowledge about reasons behind occurrence of anaemia-	N (%)
Iron & folic acid deficiency	46 (46)
Hookworm infestations	9 (9)
Vitamin B-12 Deficiency	11 (11)
Didn't Know	34 (34)
Total	100 (100)
Knowledge of normal Hb Level in pregnancy-	N (%)
Correct responses	24 (24)
Incorrect responses	39 (39)
Didn't know	37 (37)
Total	100 (100)
Awareness regarding symptoms of iron deficiency*-	N (%)
Decreased concentration level	18 (18)
Decreased immunity	11 (11)
Decreased work performance/easy fatiguability	46 (46)
Generalized body ache	33 (33)
Lack of appetite	8 (8)
Dizziness	25 (25)
Awareness about complications of Anaemia among study population-	N (%)
Yes	20 (20)
No	57 (57)
Partially aware	23 (23)
Total	100 (100)
Knowledge regarding effect of Anaemia on foetus-	N (%)
Low birth weight	21 (21)
Still birth	14 (14)
Abortion	4 (4)
Didn't know	61 (61)
Total	100 (100)
Awareness regarding dietary sources of iron among study population-	N (%)
Spinach, and green leafy vegetables	37 (37)
Non-vegetarian food items like fish, meat	32 (32)
Both of the above	26 (26)
Didn't know	5 (5)
Total	100 (100)
Knowledge regarding food items that increase the iron absorption from IFA tablets-	N (%)
Amla and its juice	6 (6)
Lemon and orange	16 (16)
Both of the above	18 (18)
Didn't know	60 (60)
Total	100 (100)
Knowledge regarding food items that decrease the iron absorption-	N (%)
Antacid tablet	30 (30)
Egg, milk & milk products	13 (13)
Tea and coffee	9 (9)
Didn't know	48 (48)
Total	100 (100)

*Multiple correct response type question

48% pregnant women were aware about occurrence of anaemia in pregnancy while 46% of them opined that iron & folic acid deficiency is the main reason of occurrence of anaemia while 34% didn't know the reason. 39% gave the incorrect values of normal Hb level during pregnancy. 46% of them attributed decreased work performance or easy fatiguability as the main symptom of iron deficiency. Majority (57%) of them were not aware about the complications of anaemia during pregnancy, similarly most of them (61%) didn't have knowledge regarding effect of anaemia on foetus. 37% of study population opined that spinach, and green leafy vegetables are the main dietary sources of iron. Majority (60%) of them didn't have knowledge regarding food items that increase iron absorption while 48% didn't know about the foods that decrease the iron absorption.

Table 3: Practices among pregnant women regarding Anaemia and its preventive measures-

Variables	**Frequency (Percentage)**
Change in composition of diet in study population during pregnancy-	N (%)
Increase intake of green leafy vegetables	16 (16)
Increase intake of milk & non-veg food	11 (11)
Both of the above	34 (34)
No change in diet	39 (39)
Total	100 (100)
Measures taken by study participants after being diagnosed as a case of Anaemia-	N (%)
Consult with the doctor	67 (67)
Improving nutrition	14 (14)
Both of the above	6 (6)

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No measures taken	13 (13)
Total	100 (100)
No. of visits to the hospital for antenatal check-up during pregnancy-	N (%)
One time	22 (22)
Two times	30 (30)
3 times or more	39 (39)
Not at all	9 (9)
Total	100 (100)
Regular visit to Anganwadi Centre among study population-	N (%)
Yes	31 (31)
No	34 (34)
Occasionally	35 (35)
Total	100 (100)
Consumption of Iron and Folic Acid (IFA) tablets during pregnancy-	N (%)
Yes	30 (30)
No	21 (21)
Occasionally	49 (49)
Total	100 (100)
Reason for poor compliance of regular intake of IFA tablets/supplements during pregnancy*-	N (%)
Gastritis due to IFA tablets	34 (34)
Nausea & vomiting	21 (21)
Lack of awareness about importance of IFA supplementation & effects of anaemia on pregnancy outcomes	42 (42)
All of the above	63 (63)
Relation of consumption of IFA tablets with meals-	N (%)
Taken Before meal	9 (9)
Taken After meal	56 (56)
Any time she wants	18 (18)
Didn't know	17 (17)
Total	100 (100)

*Multiple correct response type question

39% of pregnant women had no change in diet during pregnancy, majority (67%) of them went to consult doctors after being diagnosed as having anaemia. Only 39% had 3 or more than 3 antenatal visits during pregnancy. 35% of them visited to Anganwadi Centre occasionally while 49% were taking IFA tablets occasionally and 30% were taking irregularly. In majority (63%) of them poor compliance of IFA intake was attributed to lack of their awareness about anaemia and its complications & also the problems of gastritis, nausea and vomiting due to intake of IFA supplements. Majority (56%) of them consumed IFA tablets after meals.

Table 4: Literacy & Knowledge about occurrence of Anaemia in pregnancy-

Educational Status	Knowledge About occurrence of Anaemia in Pregnancy, N (%)			TotalN (%)
	YesN (%)	NoN (%)	Partial KnowledgeN (%)	
Illiterate	5 (9.26)	7 (24.14)	1 (5.88)	13 (13)
Primary	1 (1.85)	2 (6.90)	1(5.88)	4 (4)
Middle School	13 (24.07)	16 (55.17)	11 (64.71)	40 (40)
High School	5 (9.26)	1 (3.45)	1 (5.88)	7 (7)
Higher Secondary	21 (38.89)	3 (10.34)	2 (11.76)	26 (26)
Graduate & above	9 (16.67)	0 (0)	1(5.88)	10 (10)
Total (%)	54 (100)	29 (100)	17 (100)	100 (100)

Chi square value = 27.124, p value = 0.003

Statistically significant difference was seen between literacy and knowledge regarding anaemia. Women with higher educational status had better knowledge about occurrence of anaemia in pregnancy.

Similarly, statistically significant difference was seen between literacy and their knowledge about the causes of anaemia. Pregnant women with higher educational status had correct knowledge about the reasons behind occurrence of anaemia in pregnancy (Chi square value = 38.190, p value = 0.004).

No statistically significant difference was found between knowledge regarding normal level of hemoglobin in pregnant women and their educational status (Chi square value = 17.475, p value = 0.065) and also between their knowledge regarding the purpose of iron folic acid (IFA) supplementation given during pregnancy and their educational status (Chi square value = 24.055, p value = 0.153).

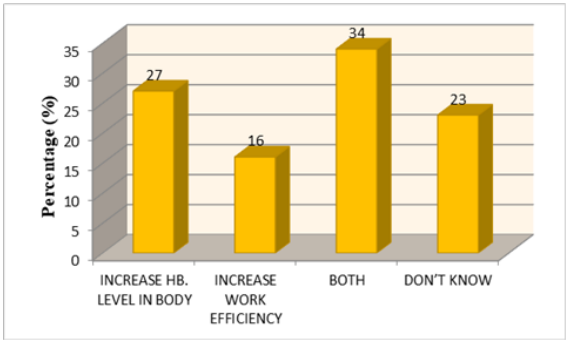

Figure 1: Knowledge of pregnant women regarding the role of iron supplementation in correcting Anaemia.

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34% pregnant women were of the opinion that iron supplementation increases both Hb as well as work efficiency while only 23% of them didn't know about the role of iron supplementation during pregnancy.

DISCUSSION

This was a cross sectional study which assessed the awareness, perception and practices regarding anaemia and its corrective measures in pregnant women of urban slum of Indore city. In our study, the majority (49%) of pregnant women were in the age group of 22-26 years, the mean age (in years) of study participants was 24.75 ± 11.72. 13% women were illiterate,4% had primary education, 40% till middle school, 7% till high school and 26% till higher secondary level while 10% were graduates & post graduates while majority (90%) of women were housewives, findings similar to Rajeev Kumar Yadav et al,[12] where 86.5% were housewives & majority (60.50%) were in the age group of 20-24 years, 37% had higher secondary level education & 10.8% were illiterate. In the similar study done by Dr MahkNelofar et al,[13] in Srinagar, 38% women were illiterate, 35% had primary education while 27% were educated up to high school and 85.4% were homemakers while according to similar study by P Narahari et al,[14] 41.3% were illiterate, 38% had a primary education, 14.7% had made it up to 10th/12th, and only 6% were graduates/ post graduates. In our study, Majority of pregnant women (68%) were healthy and had no history of previous chronic diseases whereas in study by Romi Bansal et al,[15] anemia was more prevalent in the patients with the one or the other comorbidities (52.6%) as compared to 47.4% of subjects who had no comorbid conditions. Present study showed that 48% women had proper knowledge about anaemia in pregnancy but it was very low as compared to previous study done by Ghimire N et al,[16] which was 98%. Majority of them had knowledge regarding symptoms of anaemia, 46% answered decreased work performance as the main symptom due to iron deficiency this finding was similar to P Narahari et al,[14] in which they found 70% women were aware and 34% were unaware of symptoms of anaemia. In the present study, most of the women (46%) knew about reason behind cause of occurrence of anaemia as deficiency of iron and folic acid but they didn't know about other causes like infections and vitamin B-12 deficiency. This finding didn't support the study conducted by F. Moradi et al,[17] in Iran which revealed that 75.9% of pregnant women were aware about the reason of iron supplementary use during pregnancy. In the present study, women with higher educational status had better knowledge about occurrence of anaemia in pregnancy (p-value = 0.003, Chi Square value= 27.124) & statistically significant difference was seen between literacy and their knowledge about the causes of anaemia in pregnancy (p-value = 0.004, Chi Square value= 38.190) similar to the study finding by Chowdhury et al,[18] in Bangladesh who also found that education of women was significantly associated with anaemia in pregnancy and also by Rajeev Kumar Yadav et al,[12] who concluded that there was significant association between cause of anaemia& women's education ($p<0.001$) & between preventive practice regarding anaemia and women's education ($p<0.001$). Similarly, the education of pregnant women was significantly associated with anaemia in the study by R Suryanarayanaet al. [19] As per our study, 45% women had undergone blood tests 6 months ago. The study also indicates that most of the women (76%) didn't know about normal level of haemoglobin in body. Only 34% of study population knew about role of iron supplementation but the knowledge was not sufficient as compared to previous study done by Ghimire N et al,[16] which was 96.4%. Average duration of household work done among study population was 8-10 hours i.e., 43% women. Most of them didn't know about the importance of rest in pregnancy. Only 61% of women took extra diet rich in iron during pregnancy, which was very low as compared to study finding by Ghimire N et al,[16] which was 78.7%. This might have helped them to reduce chances of anaemia. In our study, majority of the women were aware about rich sources of iron; this finding was similar to that of Ghimire N et al,[16] which stated that 67.5% women were aware of the same. 57% pregnant women didn't know about complications of anaemia, this might be one of the probable reasons for their poor compliance of IFA tablets. Most of the pregnant women (46%) answered decreased work performance or easy fatiguability as the main symptom of iron deficiency, apart from generalized body ache (33%) & dizziness (25%) as other symptoms. Majority of study population (61%) were unaware about the effects of anaemia on foetus. Most of them (67%) chose to visit the doctor if they are diagnosed with anaemia. Only 39% of them went for antenatal check-up 3 or more times during pregnancy whereas it was 91.4% according to Ghimire N et al. [16] Similarly, only 31% of them regularly visited to Anganwadi Centres. Our study revealed that 54% women were unaware about the purpose of IFA tablets given during pregnancy, that's why they took it occasionally (49%), whereas 75.9% were unaware in study by Ghimire N et al.[16] But these findings support the study findings of Anuradha Sinha et al,[20] who found that majority of pregnant women did not consume the minimum number of IFA tablets & the lack of motivation and education towards utility of supplementation might be the cause to serve high prevalence of anemia. In present study, 56% women were taking IFA tablets after meals and majority (60%) had no knowledge about food items that increase iron absorption, similarly 48% didn't know about the food items which

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decrease the iron absorption, whereas in study by Romi Bansal et al,[15] 74.8% women had no intake of IFA tablets during pregnancy. These findings are not supporting the findings of the study by Ademuyiwa IY et al,[21] who found that there was no significant relationship between awareness of anaemia and its prevention among pregnant women. In our study, 47% women visited Anganwadi Centres while 23% stopped taking IFA tablets & 22% consulted doctor in case they experienced side effects of IFA tablets. This might be because IFA tablets were being provided to them by Anganwadi workers.

CONCLUSION

Knowledge about anaemia and its reasons was good among pregnant women of higher educational status. But knowledge about normal level of haemoglobin and purpose of IFA tablets was not proper even in educated women. This study revealed that overall knowledge about anaemia in pregnancy was less in study population and compliance to IFA tablet was poor in majority of them. This may be because; they were unaware of complications and adverse effects of anaemia on pregnancy outcome and also on foetus. There is a need to increase awareness about anaemia & its various outcomes related with pregnancy among the women of urban slum areas. Until they inculcate their knowledge about various aspects of anaemia into real practices, the problem of anaemia will sustain in the community which will have negative impacts on pregnancy outcomes and on overall health status of women and children also.

Recommendations

- Awareness regarding anaemia and its effects on pregnancy should be strengthened by focusing the involvement of grass- root level health care providers like ASHA (Accredited Social Health Activist), Anganwadi workers, ANM (Auxiliary Nurse Midwife) etc. by their door-to-door visits.
- Use of role plays, street shows & health camp like activities to spread awareness about anaemia by involvement of local public and health care providers in the community at regular intervals.
- Health education by use of IEC (Information, Education & Communication) materials in local languages regarding anaemia, rich dietary sources of iron & dietary modifications during pregnancy to be advocated at all the health facilities & public places.
- Regular counselling sessions for pregnant women at Anganwadi Centres & all the health facilities to promote follow up, remove the fear and myths regarding IFA intake.
- More priority should be given to strictly implement Government's programs like National Iron Plus Initiative to reach out to all the pregnant women & lactating mothers. Also, adolescent girl education, promotion of sanitation & hygiene should be prioritized.
- Iron fortified iodized salt (double fortified salt) should be promoted to build up iron stores. It is also recommended to increase gap between intake of tea, coffee, chocolate or herbal teas with that of meals. Social marketing of IFA tablets having lesser side effects (like gastritis) can be developed. Mere cooking of food in cast iron utensil may reduce the severity of anaemia.

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