ORIGINAL RESEARCH

Why Anemia is still a Challenge in Pregnant Women in India?

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Abstract

Background: Anemia is a serious global public health problem that particularly affects young children and pregnant women. India ranks 170 out of 180 countries for anemia among women, according to global nutrition survey, 2016. Despite so many government measures and active participation of various NGOs, anemia is still looming large at India's horizon and the target of eradicating anemia from our country looks more unachievable.

Aim and objective: The objective of the present survey was to assess knowledge, attitude, and practice (KAP) of Indian Obstetricians toward anemia and its management in their routine clinical practice, which refers to situation at real-life scenario or daily clinical practice in India.

Materials and methods: This was a prospective, cross-sectional, observational, questionnaire-based survey conducted among Indian obstetricians and gynecologists. Total 20 multiple-choice questions (MCQs), on various practical aspects of anemia management, were developed by Safe Motherhood Committee, Federation of Obstetric and Gynecological Societies of India (FOGSI). The data were collected, analyzed, and summarized in frequency and percentage.

Results: The knowledge gaps could easily be understood by the practices followed by the participants in the screening and diagnosis of anemia during pregnancy. The frequency of hemoglobin (Hb) estimation done by the participants in the second trimester was about 10% only. Out of the total of 1,974 obstetricians, majority of them (71.9%) did not perform thalassemia screening routinely, whereas only about 28% screen their patients for thalassemia either by Hb electrophoresis or by Mentzer index. Nearly 50% of caregivers are still not routinely performing deworming before initiating the oral iron therapy thus optimal iron response is not achieved in their patients.

Conclusion: The present KAP survey highlights that anemia continues to be an important public concern to pregnant women. Majority of obstetricians and gynecologists are adequately working in diagnosis and management of anemia with the need of knowledge and practice upgradation for effective management of anemia.

A way forward: Organizing of workshops at all levels of the society, and in all the corners of the country, will thus help in bridging the existing knowledge gaps and correct the faulty practices; thus, improving the health status of pregnant females and ultimately make the World Health Organization (WHO) goal of "Health for All by 2030" achievable.

Keywords: Adverse maternal outcome, Anemia, Knowledge gaps, Screening.

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Introduction

Anemia is a serious global public health problem that particularly affects young children and pregnant women.[1] India ranks 170 out of 180 countries for anemia among women, according to global nutrition survey, 2016.

According to the WHO, women in the reproductive age-group and having Hb levels lower than 12 grams per deciliter (gm/dL) are considered anemic.[2]

According to our Indian government, Anemia Prevalence Source, national family health survey – 4 (NFHS-4), 53% of Indian women in their reproductive age, 50% of pregnant women, and 58% of breastfeeding mothers are anemic.[3] Despite so many government measures and active participation of various NGOs, anemia is still looming large at India's horizon and the target of eradicating anemia from our country looks more unachievable.

The Ministry of Health and Family Welfare (MoHFW), Government of India, has launched the Anemia Mukt Bharat Program for accelerating decline in anemia prevalence and to achieve the Poshan Abhiyaan (2018–2020) target of reducing prevalence of anemia in women of reproductive age 15–49 years by 3% points per year.[4]

Indian government's target is to reduce the prevalence of anemia by 3% point per annum in anemia reduction targets for 2022. It aims to reduce the anemia prevalence according to NFHS – 4 from 53%, 50%, and 58% in women of reproductive age, pregnant women and lactating women to national target 2022 to 35%, 32%, and 40%, respectively.

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Despite India being the first country to launch the National Nutritional Anemia Prophylaxis Programme in 1970, the problem of iron deficiency anaemia (IDA) remains widespread. As is to be

expected, the economic implications of IDA are also massive.[4] "Severe anemia may have adverse effects on the mother and the fetus. Anemia with Hb levels less than 6 gm/dL is associated with poor pregnancy outcome. Prematurity, spontaneous abortions, low birth weight, and fetal deaths are complications of severe maternal anemia."[4A] Anemia is still widespread in India—53.2% of non-pregnant women and 50.4% of pregnant women were found to be anemic in 2016, as per NFHS. India carries the highest burden of the disease despite having an anemia control program for 50 years.[5] According to the results of NFHS – 4, 2015–2016 and NFHS – 5, 2019–2020) in India, the prevalence of anemia has been increased to 6.2% in 2019–2020 from 2015 to 2016.[6] If we compare the NFHS – 4 and NFHS – 5 data, Sikkim documented a maximum increase by 17.1% whereas Lakshwadeep showed a decline by 18.1% in pregnant women aged 15–49 years, who were anemic (<11.0 gm/dL) (%).

A KAP survey measures, through a structured, standardized questionnaire, changes in the knowledge, attitude, and practice of a person in response to a specific intervention. A KAP survey is a representative survey conducted on a particular population on a specific topic. These surveys are popular and widely used because they utilize fewer resources and tend to be more cost-effective than other social research methods.[7]

The objective of the present survey was to assess KAP of Indian Obstetricians toward anemia and its management in their routine clinical practice, which refers to situation at real-life scenario or daily clinical practice in India.

Materials and Methods

Survey Design and Setting

This was a prospective, cross-sectional, observational, and questionnaire-based survey conducted among Indian obstetricians and gynecologists. A total of 20 MCQs on various practical aspects of anemia management, were developed by Safe Motherhood Committee, FOGSI. The data were collected, analyzed, and summarized in frequency and percentage.

Survey Participants

The survey participants were registered medical practitioners and qualified obstetricians (DGO/MD/MS) working in outpatient departments of public and privately run clinics/hospitals in a tertiary care setting. Total 1,974 obstetrics and gynecology professionals across India had participated in the survey.[8]

Survey Instrument

A specially designed, structured, self-completion survey questionnaire was filled in by the obstetricians based on their prior clinical experience and knowledge of anemia and its management. The questionnaire consisted of 20 MCQs, out of which 3 questions were related to knowledge, 3 questions to attitude, and 14 questions were related to practice about anemia and management in routine clinical practice. This questionnaire was independently validated by Safe Motherhood Committee, FOGSI.

Data Analysis

Categorical data were summarized by number, *N*, and percentage (%) in each category, where *N* represents the total number of participants responding to each question. The data were summarized in frequency tables and graphs. Not all participants answered all questions.

Ethical Considerations

This was a survey and no patient-related data was captured and therefore ethics committee approval was not necessary and hence it was not obtained. As this was not a clinical trial, no clinical trial registration was required and hence it was not registered.[9]

Results

In total, 1,974 obstetricians had participated in this survey across India. The final data from 1,974 participants' responses were evaluated and analyzed as follows and the following results were noted.

Knowledge Gaps in Screening Practices

Frequency of Hb Estimation Practices: According to the survey in this study, many gaps were visible in the knowledge and the management protocols practiced by the caregivers. The knowledge gaps could easily be understood by the practices followed by the participants in the screening and diagnosis of anemia during pregnancy. The frequency of Hb estimation done by the participants in the second trimester was about 10% only and the remaining 90% did not do any Hb estimation in second trimester.

Majority of the respondents (99%) did Hb estimation in third trimester and only 1% of them did not do any Hb estimation.

Complete blood count (CBC) and general blood picture (GBP), which were important screening tools regarding the type of anemia, were done by only 83% of the participants as compared to 17% of the respondents, who only relied on Hb estimation for anemia diagnosis. Majority of the participants (71%) did proper and complete anemia workup including the serum ferritin levels whereas the remaining 29% lacked the knowledge for proper anemia and complete workup.

Another feature showing gap in knowledge in screening practices can be proven by the fact that only 9.5% of the participants did Hb estimation twice in the pregnancy, whereas the remaining 90% of the respondents did not do the required number of Hb estimations in the entire duration of pregnancy (Fig. 1). The limitations of anemia screening are given in Table 1.

Thalassemia screening: Out of the total of 1,974 obstetricians, majority of them (71.9%) did not perform thalassemia screening routinely, whereas only about 28% screened their patients for thalassemia either by Hb electrophoresis or by Mentzer index (Table 2). Calculation of the Mentzer index (mean corpuscular volume per red cell count) may be helpful.[8,9] A Mentzer index less than 13 suggests that the patient has the thalassemia trait, and that of more than 13 suggests that the patient has iron deficiency.

India is located in the thalassemia belt and we do not have a national thalassemia control program till date. About 9,000 thalassemic children are born every year in India[10] and the disease burden of treatment of these babies is immense, as the treatment is very expensive. The most effective approach to reduce this burden of the society and reduce the disease incidence is implementation of a carrier screening program, offering genetic counseling, prenatal diagnosis, and selective termination of affected fetuses.[11] As a result, the screening of all pregnant women is the most effective and simplest technique to reduce and ultimately eradicate this genetic disorder from the society (Fig. 2).

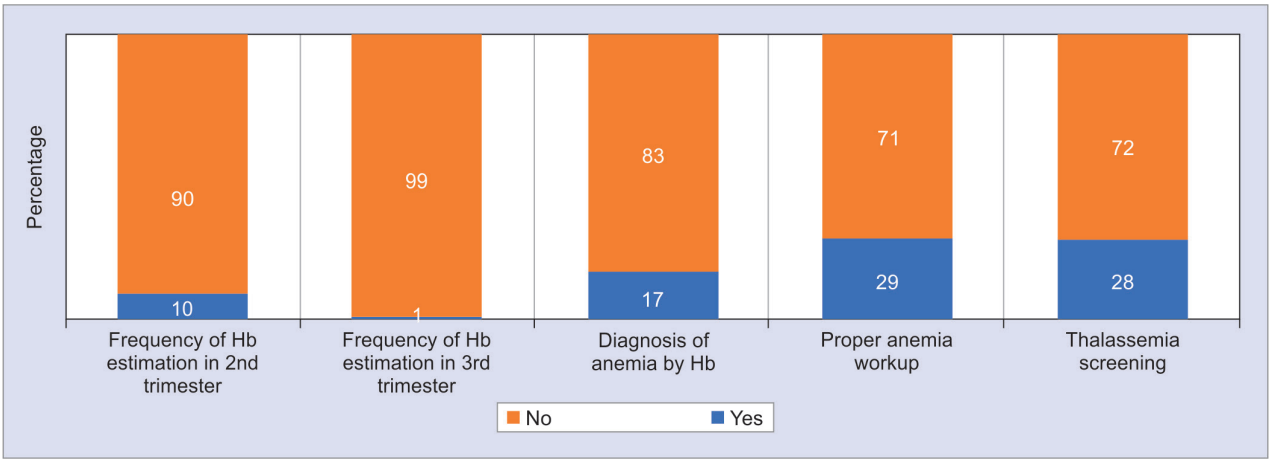

Fig. 1: Screening and diagnosis of anemia

Table 1: Limitations in anemia screening

Almost 10% gynecologists screen for anemia only in second trimester and 1% in third trimester
Nearly 17% gynecologists simply rely on Hb estimation for diagnosis of anemia
Only 29% gynecologists perform proper anemia workup including serum ferritin
Practically, 9.5% gynecologists perform Hb estimation only twice in pregnancy
Total 72% gynecologists do not screen for thalassemia

Table 2: Routine thalassemia screening (total respondents = 1,974)

Response	*Percentage of respondents*
Yes	28.1%
No	71.9%

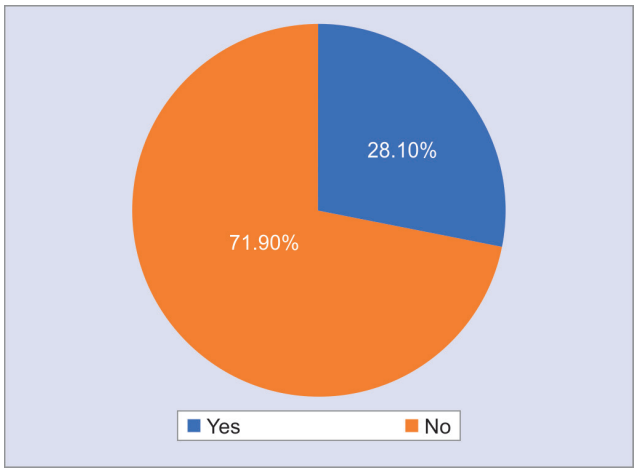

Fig. 2: Routine thalassemia screening

Knowledge Gaps and Limitations in Anemia Management

The deficiencies in the management protocols were varied as visible by various practices followed by the participants thus causing ineffective anemia management in their respective patients.

Table 3: Routine deworming practice (total respondents = 1,974)

Response	*Percentage of respondents*
Yes	50.1%
No	49.9%

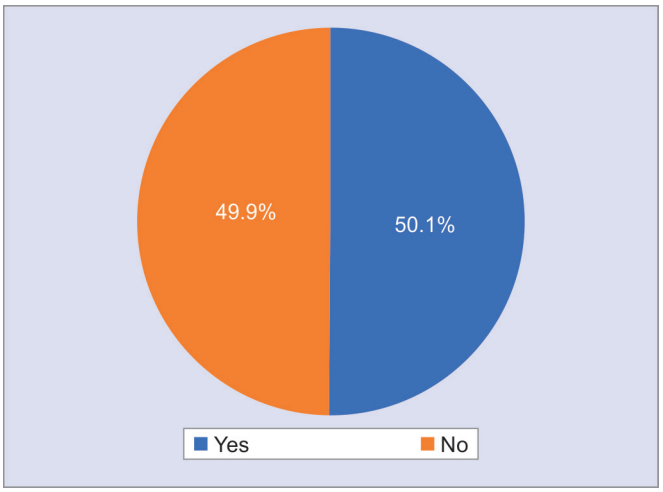

Fig. 3: Routine deworming practice

Deworming practice: Nearly 50% of caregivers are still not routinely performing deworming before initiating the oral iron therapy thus optimal iron response is not achieved in their patients (Table 3; Fig. 3).

Iron therapy in first trimester: About 43% of the participants offered only dietary modification and no oral iron therapy for treatment of moderate anemia in the first trimester to their patients whereas the remaining 57% did offer oral iron therapy to their patients to correct anemia in first trimester. They did not offer any medication in first trimester other than folic acid due to fear of teratogenicity in the fetus.

Injectable iron was offered only by 11% of the participants in the first trimester in cases of moderate anemia, whereas the majority 89% were not in favor of offering the above. All the participants who were not in favor of offering any type of iron therapy either oral or injectable in the first trimester for moderate anemia did so as they were afraid of the teratogenic effects of these drugs in first trimester.

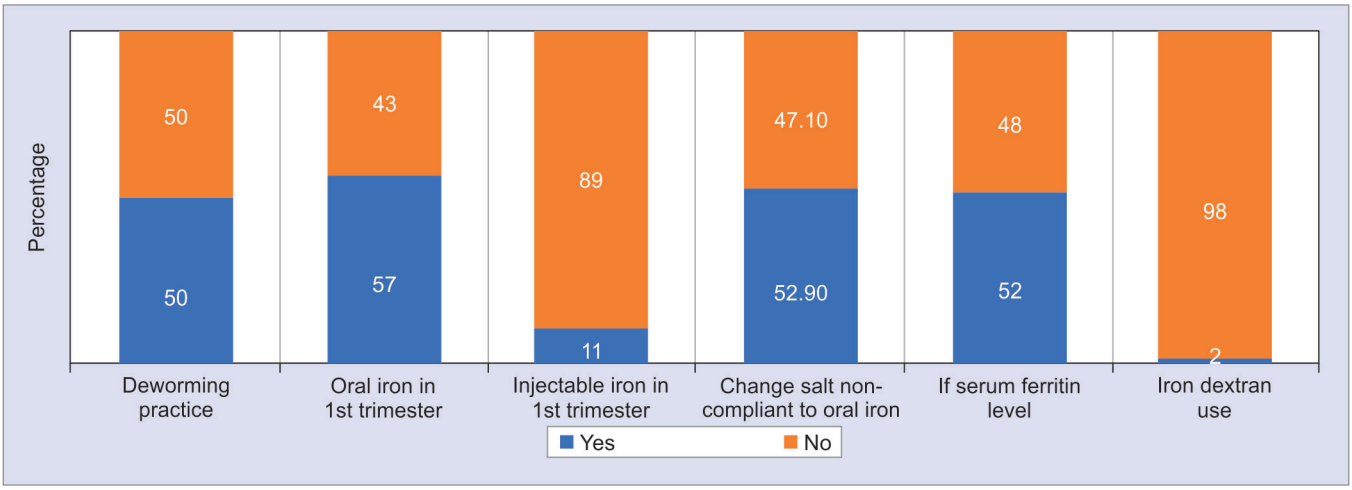

Fig. 4: Management of anemia

Table 4: Limitations in management of anemia

Half (50%) of the gynecologists do not perform deworming before starting hematinic
In the first trimester, 43% of gynecologists do not prescribe any oral iron and manage anemia with dietary modification only
Only 11% gynecologists prefer giving injectable iron in first trimester in moderate anemia
In patients non-compliant to oral iron, 52.9% of gynecologists only change oral iron salt rather than switching to injectable iron
It is noted that 48% gynecologists do not assess serum ferritin before starting injectable iron therapy
No uniformity in Hb estimation after IV iron therapy, varies from 2 weeks to more than or 4 weeks
It is noted that 2% gynecologists still prescribe iron dextran

Switching from oral to injectable Iron therapy: About half of the participants (47.1%) changed to a newer salt or brand of oral iron therapy only, instead of offering or switching over to injectable iron therapy in their patients not tolerating and who were not compliant with oral iron. The remaining 52.9% did offer injectable iron therapy when their patients did not tolerate or were not compliant with oral iron therapy.

Serum ferritin levels were assessed by less than half of the participants (48%) in their patients before offering them injectable therapy, which is a recommendation, whereas the remaining 52% did investigate their patients with serum ferritin levels before starting of injectable iron therapy.

Response to injectable iron therapy: The rise in Hb levels was varied after injectable iron therapy as some of the participants estimated the Hb levels after 2 weeks whereas others did it after or more than 4 weeks of use of therapy. As a result of this disparity in timing of Hb estimation, the rise of Hb was varied and not uniform.

Choice of injectable iron therapy: Despite so much of advancement seen in anemia management and the variety of options available, a small number of the participants about 2% of the participants were still comfortable in offering intramuscular iron preparations, which are known to be more painful and associated with slower rise of Hb levels. The remaining 98% did offer better and more convenient injectable iron therapy to their patients (Fig. 4). The limitations of anemia screening are given in Table 4.

Discussion

Iron-deficiency anemia has remained the top cause of disability in India for 10 years now, according to an IndiaSpend analysis of the last two global burden of disease (GBD) surveys.[8] According to the Phase I of the NFHS results, which had factsheets for 22 states and union territories (UTs), it showed that in the majority of these states and UTs, more than half the children and women were found to be anemic. The WHO documents association of anemia with adversely cognitive, behavior, and physical growth of children, immune response of all age groups to various infections and decrease in physical capacity and work performance by all suffering from it. Iron-deficiency anemia in pregnancy has been associated with increased risk of perinatal risks to mother and neonates, and overall increased risk of maternal and fetal mortality and morbidity.

There is at present no further need to overemphasize the role of early diagnosis and timely treatment of all, especially pregnant women. According to the Government of India guidelines, screening for anemia during pregnancy is recommended in the first trimester (or at booking) followed by 24–28 weeks and at 36 weeks of gestation. A minimum of screening of Hb levels thrice in pregnancy (minimum once in each trimester) helps in early screening and diagnosis of anemia.

Routine deworming prior to start of oral iron therapy is recommended and it greatly improves response to iron therapy. The WHO recommends preventive chemotherapy (deworming), using single-dose albendazole (400 mg) or mebendazole (500 mg) as a public health intervention for pregnant women, after the first trimester, living in areas where both (i) the baseline prevalence of hookworm and/or T. trichiura infection is 20% or more among pregnant women, and (ii) where anemia is a severe public health problem, with a prevalence of 40% or higher among pregnant women, to reduce the worm burden of hookworm and T. trichiura infection.[9] So in practice, it is offered to all antenatal patients before start of therapy.

The availability of injectable iron has revolutionized the treatment of anemia; thus, making it an important alternative to oral iron.

A few workshops like this one done by Safe Motherhood Committee, FOGSI, will help in identifying and improving in the existing knowledge gaps and thus improve in the management practices of the caregivers. Organizing of such workshops at all levels of the society and in all the corners of the country will thus help in bridging the existing knowledge gaps and correct the faulty practices; thus, improving the health status of pregnant females and ultimately reach the WHO goal of "Health for All by 2030".

Conclusion

The present KAP survey highlights that anemia continues to be an important public concern to pregnant women. Majority of obstetricians and gynecologists are adequately working in diagnosis and management of anemia with need of knowledge and practice upgradation for effective management of anemia.

Acknowledgments

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Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

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