

Review Article

Exploring Contributing Factors of Anemia Among Pregnant Mothers Attending Antenatal Care in Public Health Facilities in Waliso Town of South West Shewa, Ethiopia, 2023, Pure Qualitative Study

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Abstract

Background: Anemia is a condition in which the number and size of red blood cells, or the hemoglobin concentration, fall below an established cut-off value. Anemia during pregnancy is defined as a hemoglobin concentration less than 11g/dL and a hematocrit less than 33%. It is a worldwide disease that mostly affects women. Therefore, the aim of this study was to explore contributing factors among pregnant mothers attending antenatal care (ANC) follow-up in Public Health facilities in Waliso Town. **Objective:** To explore contributing factors of anemia among pregnant mothers attending antenatal care in Public Health facilities in Waliso Town of South West Shewa, Ethiopia, 2023. **Methods:** A qualitative study was conducted among 13 mothers from April 15 to May 20, 2022. Purposive sampling technique was used to select mothers for face-to-face in-depth interviews. Qualitative data were analyzed thematically by transcribing recorded audio and notes taken during the interviews manually. Qualitative data were analyzed thematically. Finally, the results of this study were presented by using text, tables, and charts. **Results:** Seven sub-themes were formed based on similarities of moms' opinions. Then, the sub-theme was merged, and three main themes were formed. The main themes were the history of diseases, Lack of nutritional counselling, and eating less diverse, and inadequate Iron counselling, and supplementation. **Conclusion and Recommendation:** The contributing factors of anemia among pregnant mothers were a history of diseases, lack of nutritional counselling, and eating less diverse, and inadequate Iron counselling, and supplementation. Health Facility managers give health education on nutritional, and iron taking counselling for pregnant women, and Health care providers work hard to screen, and take appropriate interventions for pregnant women with a history of disease like malaria, anemia, and chronic of disease to reduce the vulnerability of women to anemia. It is better to give adequate information, and counseling on nutrition and iron intake.

Keywords

Contributing Factors of Anemia, Pregnant Women, Associated Factors, Antenatal Care, Woliso Town

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1. Background

Anemia is a condition in which the hemoglobin concentration falls below an established cut-off point, which impairs the capacity of blood to transport oxygen around the body. The three basic causes of anemia are blood loss or decreased or faulty production and destruction of red blood cells. Anemia during pregnancy is defined by the World Health Organization (WHO) as a hemoglobin concentration less than 11g/dL and a hematocrit level of 33 percent [1].

According to the World Health Organization (WHO) 2008 report, 41.8% of pregnant women were anemic, with the highest prevalence rates of 61.3% and 52.5% in Africa and Southeast Asia, respectively. Sub-Saharan Africa is the most affected region, estimated to 17.2 million, approximately 30% of total global cases. It remains one of the most intractable public health problems in developing countries [2].

Pregnant women are highly vulnerable to anemia because of an increased volume of water; in the blood and dual iron requirements [1, 3]. Hence, the World Health Organization (WHO) recommends universal iron-folate supplementation for pregnant women [3].

In Ethiopia, anemia in pregnant women is a moderate to severe public health concern [4-8]. Thus, improved socio-economic status, latrine and maternal iron supplementation coverage, nutritional counseling, and education on the consumption of extra meals and iron-rich foods are essential to mitigate the high burden of anemia [9-11].

Anemia is a worldwide disease even though women and children are mostly affected; it touches all individuals at any stage of life. Anemia affected 1.62 billion people, and 56 million anemia cases were found in pregnant women [12-14]. Anemia affected over half a billion women worldwide, with a prevalence of 38 percent for pregnant women [2]. Anemia remains a moderate to severe public health problem in almost all countries, affecting health and productivity [15-18].

It is a global public health problem affecting both developing and developed countries, but its burden is more significant in developing countries [19-21]. Globally, major causes of anemia are iron deficiency, other nutritional deficiencies, malaria, parasitic infections, chronic infections such as HIV/AIDS, reproductive causes, and genetic conditions [14, 22]. Anemia is a widespread public health problem with vast human, social, and economic consequences [2, 23].

Based on the previous findings, anemia in pregnant women is associated with maternal nutrient deficiencies, obstetric morbidities, socio-demographic and economic characteristics [24]. Deficiency of micronutrients (vitamin C, vitamin B12, and vitamin A) [25], under-nutrition [26], low meal frequency less than three times per day [27, 28], and not taking iron folate supplementation are related to increased odds of anemia in pregnancy [27, 29]. History of obstetric morbidities, such as intestinal parasitic infestations [30] and recurrent or history of malarial attacks are associated with anemia in pregnant

women [28, 31]. Advanced gestational age [32], high parity, and gravidity [4, 29]. Rural residence [29, 33], illiteracy [27], large family size, and poor economic status were found to be the socio-economic determinants of anemia in pregnant women [26, 34].

Achieving the global target of reducing anemia in women of reproductive age will require too much budget and strong political will [23] and the development of innovative interventions and effective delivery platforms. The international community has committed to reducing the global prevalence of anemia in reproductive age by 50% by 2025 [1, 23]. These include scaling up antenatal micronutrient interventions, intermittent presumptive malaria treatment in malaria-endemic regions, iron and folic acid supplementation, and food fortification to prevent 265 million anemia cases by 2025 [23, 24].

The target strategies to reduce the burden of anemia effectively. Several studies on the magnitude of anemia and its associated factors were done in different countries including Ethiopia. But rare studies on pregnant women have been conducted in Oromiyaa and there is no research done on this topic, particularly in the proposed study area by using a pure qualitative approach. Therefore, this study, aimed to explore contributing factors of anemia among pregnant mothers attending antenatal care in Public Health facilities in Waliso Town of South West Shewa, Ethiopia, 2023.

2. Methods and Materials

2.1. Study Area and Period

The study was conducted in Waliso Town which is the administrative center of the South West Shewa Zone, Oromia Regional State. It is located to 114 km southwest of Addis Ababa and has a latitude and longitude of 8°32' N 37°58' E with an elevation of 2063 meters above sea level. The Town is also the administrative town for Waliso Woreda. The 2009 national census reported a total population for Waliso of 59,685, of whom 18,880 were men and 18,998 were women. There is one government hospital and two health centers. In the town, a total of 6,173 pregnant women enrolled in ANC according to the HMIS report of 2014 E. C. The study was conducted from October 1-20, 2022.

2.2. Study Design

A qualitative phenomenological study design was employed by using in-depth interviews (IDIs) to explore contributing factors of anemia among pregnant mothers.

2.3. Population

Women who were anemic and came from both urban and

rural, and those who were primiparous and multiparous, their current pregnancy was planned and unplanned, and mother who had ANC follow up or not, willingness to participate and not interviewed for quantitative study was purposely selected for IDI at the time of they finish the service, but before leaving the health facility.

2.4. Inclusion and Exclusion Criteria

2.4.1. Inclusion Criteria

Pregnant women who are attending antenatal care services at public health facilities in the study area during the study period were included.

2.4.2. Exclusion Criteria

Pregnant women who are critically ill and unable to respond and have hearing and speaking difficulties were excluded.

2.5. Sample Size and Sampling Technique

Sample size: -Sample size was determined after the ideas of the mothers were got saturated and thirteen (13) pregnant mothers were included in the study.

Sampling technique: Women who were anemic, and came from both urban and rural, and those who were primiparous and multiparous, their current pregnancy was planned and unplanned, and mother who had ANC follow up or not, willingness to participate and not interviewed for quantitative study was purposely selected for IDI at the time of they finish the service, but before leaving the health facility.

2.6. Data Collection Instrument and Technique

2.6.1. Data Collection Tools

Data on socio-demographic factors, environmental and sanitation factors, reproductive factors, and nutrition-related characteristics will be collected using a structured and pre-tested questionnaire through a face-to-face interview. The section questionnaire on dietary diversity is adapted from the Food and Nutrition Technical Assistance (FANTA) indicator guideline and modified for the local context. Other parts of the questionnaire were taken from the standard DHS questionnaire, adapted from different articles [13], and developed by the investigator.

The questionnaire consisted of Socio-demographic characteristics, Obstetrics-related factors, and Nutritional-related questions. The dietary diversity (DD) level was assessed using the 24-hour recall method. The pregnant women was asked whether they had taken any food from predefined food categories a day before the survey. Dietary diversity scores was computed based on FAO guidelines.

2.6.2. Data Collection Technique

The qualitative data were collected by using a semi-structured interview guide with probing questions linked to maternal perception. During the in-depth interview, the voice was recorded and notes were taken. The questionnaires contain 3 guiding questions and 10 probing questions.

2.7. Data Quality Management

To maintain uniformity, the semi-structured interview guide was first developed in English, translated into Afan-Oromo, the local tongue, and then back into English. Lastly, data were gathered using the Afan Oromo version of the interview guide. The data collectors received one day of training on the study's goal, data collection techniques, and ethical issues prior to beginning actual data collection. The interviewers employed tape recording and note taking regarding each guiding question and probing question during the interviews. The IDIs were conducted in a salient and private setting at the health facilities. Experts in qualitative research assessed and checked the interview instructions and questions and verified that the tools' content was valid. Prior to the instruments being used for real data collection, they were pretested among 4 moms who gave birth at Goro Health Center.

2.8. Data Analysis Procedures

Qualitative data were analyzed thematically by transcribing recorded audio and notes taken during the Interviews. The recorded audio was first transcribed word by word into Afan Oromo, and then translated into English by the language translator. The transcribed data into English was coded manually (color-coded) with similar ideas with the same code. Then, the narrated qualitative information was organized and categorized according to similar ideas to form sub-themes. Sub-themes emerged together to form the main themes. Then, the study participant's comment was written in quotes. Ideas related to the objective of the study and commonly indicated by study participants were taken to triangulate the quantitative results and included in the report.

3. Results

A total of 13 pregnant mothers in the public Health facility in Woliso Town, South West Shoa were participated in in-depth interviews. The results of the qualitative study showed that among 13 the mothers, the age of mothers ranged from 18-39 years old. More than two-thirds of women 9 (69.23%) who participated in IDI living in urban areas. Concerning the parity 7 (53.85%) of mothers were multiparous. More than half, 8 (61.54%) of respondents had ANC follow-up currently. Greater than three-fourths, 10 (76.92%) of mothers were planned their current pregnancy (see table 1).

Table 1. Socio-demographic and obstetrics characteristics of pregnant mothers in the public health facility in Woliso Town, South West Shoa, Ethiopia, 2023.

IDI participants	Age	Residency	Parity	Currently have ANC services	Status of current pregnancy	Health facility
WP1	25	Urban	Multiparous	No	Planned	WGH
WP2	28	Rural	Multiparous	Yes	Planned	WHCno.1
WP3	22	Urban	Primiparous	Yes	Unplanned	WHCno.2
WP4	26	Urban	Primiparous	No	Unplanned	WGH
WP5	39	Rural	Multiparous	Yes	Planned	WGH
WP6	27	Rural	Primiparous	Yes	Planned	WHCno.2
WP7	18	Urban	Multiparous	No	Planned	WHnCo.2
WP8	18	Rural	Primiparous	Yes	Planned	WGH
WP9	25	Urban	Multiparous	No	Planned	WHCno.1
WP10	18	Urban	Primiparous	Yes	Unplanned	WGH
WP11	19	Urban	Multiparous	Yes	Planned	WHCno.2
WP12	21	Urban	Multiparous	Yes	Planned	WGH
WP13	18	Urban	Primiparous	No	Planned	WHCno.1

Key: WGH = Woliso General Hospital, WHCno.1= Woliso Health Center Number One, WHCno.2= Woliso Health Center number two, WP= Mother participant

The findings of the qualitative study revealed contributing factors to develop anemia during pregnancy by using interview guide questions with probing. Seven sub-themes were

formed based on similarities in mother's opinions. Then, the sub-theme was merged together, and three main themes were formed (see Table 2).

Table 2. Themes of qualitative study analysis of pregnant mothers in public health facility in Woliso Town, South West Shoa, Ethiopia, 2023.

Main theme	Sub-theme
History of disease	History of the parasite 1) History of anemia 2) History of chronic disease
Lack of nutritional counselling and eating less diverse food	1) No nutritional counselling 2) Eating less diverse food
Inadequate Iron counselling and supplementation	1) Inadequate iron taking counselling Inadequate iron supplementation

Main theme 1: History of Disease

In this study contributing factors of anemia among pregnant women was identified by the qualitative study. Mothers who participated in IDI pointed out that there were some factors that contribute anemia during pregnancy.

Sub-theme 1: History of the parasite

Pregnant women who were had a history of parasite infec-

tion were at risk of developing anemia during pregnancy. This was supported by the result from IDI:

"...I was caught [diagnosed] and treated for malaria seven years ago. Now after I got married and pregnant. Between my first and second follow-up I got a severe headache and dizziness, then came back to this health center. He [Health care provider] Health care provider told me after seeing my

laboratory results as I was infected with malaria and I had medium [moderate] anemia” (WP2, 28 years old).

“When I came for pregnancy follow-up, they did a laboratory for me and transferred me to another room [outpatient department], then the doctor said to me you had severe anemia you have to take blood at this hospital. Then, I asked him [doctor] what made me anemic he informed me that I infected with malaria.” (WP4, 26 years old)

Sub-theme 2: History of anemia

The respondents were informed that the current anemia was associated with previous history of anemia. The following were some of the mothers' sentiments:

“A year ago, I was sick and hospitalized, at that time nurses informed me to take blood because of blood in my body was low [anemia]. Now when I got pregnant, I returned to this hospital. Then midwife sent my blood to laboratory. Finally, she informed me that your blood was decreased [anemia] after reviewing my laboratory results.” (WP12, 21 years old)

“When I gave my first child at health center, they said to me as I my blood was decreased and they wrote syrup for me [Heamup syrup]. Now when come for ANC follow up nurses did laboratory for me and informed me as I had moderate anemia...” (WP3, 22 years old)

Sub-theme 3: History of Chronic disease

Women's ideas reflected that women who had history of chronic disease were at risk of developing anemia during conceiving baby. This was explained by:

“I used to have kidney disease. Now while I got pregnant the midwife sent me to laboratory room to do my blood.... Eventually she told me that your blood was decreasing....” (WP5, 39 years old)

“I have been treated for high blood pressure for past five years. When I became pregnant, I came to this clinic [Health Center]. The midwife said to me you had anemia, so you have to comeback as soon as you faced any problem.....” (WP9, 25 years old)

Main theme 2: Lack of nutritional counselling and eating less diverse food

The finding of the present qualitative study showed that anemia was related with no nutritional counselling and eating less diverse food during pregnancy.

Sub-theme 1: No nutritional counselling

The finding of current qualitative study showed that women who got poor nutritional counselling were at risk of developing anemia during pregnancy. The following were some of the women's ideas:

“My first follow-up was also at this health center, at that time she [Midwife] didn't tell me about benefits of eating different types [diverse] of food but, when I come back for the second time, they informed me that you were having anemia due to no eating different types [diverse] of food.” (WP1, 25 years old)

“...The advices of health care provider [Midwife] on diet helped me to increases my blood and prevent me not ex-

posed to severe anemia during pregnancy. It would be great if they gave dietary advice for all pregnant women like this.” (WP6, 27 years old)

Sub-theme 2: Eating less diverse food

Women who were eating a smaller number of diverse foods were mentioned to be at risk of having anemia during pregnancy. The following were some of their sentiments:

“Most of the time my food was bread and enjera I couldn't get any other food like meat, accordingly while I was pregnant when I went to hospital, they told me to do laboratory my blood, then, after reviewing my blood results they said to me that you had anemia. In addition to this they informed me that pregnant mother should get different types [diverse] of food especially during pregnancy.” (WP10, 18 years old)

“I didn't get and eat different types [diverse] of food because my work was daily laborer. I eat whatever I get and suddenly I got pregnant and I came this clinic [Health center] at that time they said to me that your blood was lowering you might have anemia during period of pregnancy if you didn't eats different types [diverse] of food....” (WP2, 28 years old)

Main theme 3: Inadequate Iron counselling and supplementation

This study revealed that women who didn't get inadequate Iron counselling and supplementation were more likely to have anemia during pregnancy:

Sub-theme 1: Inadequate Iron taking counselling

This study revealed that women who didn't get inadequate Iron counselling were more likely to have anemia during pregnancy. This was explained by:

“When I came to this health center for pregnancy follow-up, she [Midwife] gave for me all services. Finally, she gave me [iron tablet] to swallow; I caught nausea while swallowing it immediately I stopped swallowing. When I came back for next follow up at eight months, she told me that your blood was low. Then, she asked me about given pill. I said that to her I couldn't swallow it because it made me discomfort. Eventually, she clearly aware me the advantage of swallowing all pill [iron tablet] during pregnancy.” (WP4, 26 years old)

“The advice health care provider [Midwife] gave me on the pill [iron tablet] was not enough She only gave me and told to me swallowing it would help you to increases your blood. She [Midwife] didn't advise me properly.” (WP11, 19 years old)

Sub-theme 2: Inadequate Iron supplementation

Moms who didn't get inadequate iron supplementation were at high risk of developing anemia during pregnancy, according to findings of current qualitative study. This was evident by:

“The health care provider gave me pills [iron tablets] for three months but, when I came for the second follow up the pills was not available. After my labor was started, I returned back to this hospital at that time she [Midwife] sent

my blood to laboratory and she said to me that you had anemia did you take pills [iron tablets] for at least for three months.” (WP5, 39 years old)

“I didn’t come to this clinic [Health center] timely after I got pregnant. I came when I was seven months pregnant, she gave me all service and pills [Iron tablets] to swallow. After swallowing it for four months I got labour and returned to clinic [Health center] during discharge me to home she told to me as I had anemia and gave me syrup clinic [Heamup syrup]...” (WP6, 27 years old)

4. Discussion

Similarly, the finding of this study showed that pregnant women who had history of malarial attack more likely to be anemic during pregnancy. The qualitative study also supports this finding, pregnant woman who had a history of malarial attack were more likely to be anemic during pregnancy. This was similar with study conducted central zone of Tigray region, northern Ethiopia [28], and at Mizan-Tepi university teaching hospital, Ethiopia 23.5% [8]. This might be explained that parasitic infections especially malaria results destruction of red blood cells. Another reason might be malaria causes anemia by destroying red blood cells at a rate faster than body can replace them.

Additionally, the finding of current study showed that pregnant women who didn’t get nutritional counselling during pregnancy were more likely to be anemic during pregnancy. This was supported by the results of this study, pregnant women who didn’t get nutritional counselling during pregnancy were more likely to develop anemia during pregnancy. This was similar with study conducted at Shashamene Town. This could be due to women who had lack of information on nutrition didn’t intake extra and diverse nutrient. This implies that didn’t get adequate information and counsel on nutrition would made women to intake less diverse food.

Furthermore, the finding of current study showed that women who were currently not taking Iron folate were more likely to be anemic during pregnancy. This was supported by the results of this study, pregnant women who didn’t take iron folate were more likely to develop anemia during pregnancy. This was similar with study conducted Lemo district, Southern Ethiopia (23.2%) (7). This could be due to iron requirement increases during pregnancy. Women who didn’t get iron taking counselling and iron Supplementation were more at risk of developing anemia during pregnancy. This implies that poor counselling and inadequate iron supplementation increases women vulnerability for anemia.

The results of the qualitative study indicated that history of disease like malaria; anemia and chronic disease were the enables of anemia during pregnancy. Pregnant women who had history of disease were more likely to be anemic than pregnant women who did not have history of disease. This implies that exhaustion from having history of disease like malaria, anemia and chronic disease made women anemic

during pregnancy.

5. Conclusion

The explore contributing factors of anemia among pregnant mothers attending antenatal care in Public Health facilities in Waliso Town of South West Shewa, Ethiopia history of diseases, lack of nutritional counselling and eating less diverse and inadequate Iron counselling and supplementation. Health Facility managers: Give health education on nutritional and iron taking counselling for pregnant women. Health care providers: Work hard to screening and take appropriate intervention pregnant women for history disease like malaria, anemia and chronic disease reduce vulnerability of women for anemia. It is better to give adequate information and counseling on nutrition and iron taking. Women: It is better to intake diverse food during pregnancy to decreases the risk of having anemia during pregnancy. It is better to plan their pregnancy and increases the level of education before got pregnant.

Abbreviations

ANC Antenatal Care
WHO World Health Organization

Author Contributions

Bacha Merga Chuko: Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review

Fikru Assefa Kibrat: Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review, Formal Analysis, & editing

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Consent

Informed consent was taken from every study participant before the actual data collection started.

Data Availability Statement

The corresponding author is willing to provide the dataset that was used in the this study based upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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