

Knowledge on Anemia and Benefit of Iron-Folic Acid Supplementation among Pregnant Women Attending Antenatal Care in Public health Facilities of Woldia town, Northeastern Ethiopia: Institution based cross-sectional study

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Research note

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Abstract

Objective: this study aimed to assess the magnitude of knowledge on anemia and benefit of iron-folic acid supplementation among pregnant mothers who gave birth at public health facilities in Woldia town, 2018. An institution based cross-sectional study design was conducted, on 414 pregnant mothers attending antenatal care which was selected by using systematic random samplings. The data was entered into Epi-data version 4.2 and analyzed using SPSS version 24. Bivariable and multivariable analysis was done to see the association between the dependent variable and independent variables. **Results:** this study revealed that 54.1% and 57.7% of pregnant women had good knowledge on anemia and benefit of IFAS respectively. Maternal education status (AOR=2.19, 95%CI: 1.32-3.64), good knowledge of IFAS (AOR=5.85, 95%CI: 3.60-9.50) and residence (AOR=5.43, 95%CI: 2.36-12.51) was statistically associated with pregnant mothers knowledge on anemia. Obtained counseling IFAS (AOR=2.04, 95%CI: 1.11-3.75), having four or more antenatal care visit (AOR=3.12, 95%CI: 1.38-7.07) and good knowledge of anemia (AOR=5.88, 95%CI: 3.63-9.50) was statistically associated with pregnant mothers knowledge on the benefit of IFAS. **Keywords:** Knowledge, anemia, pregnant mother, Woldia town

Background

Anemia is a global public health problem affecting pregnant mothers resulting in maternal mortality and morbidity and poor birth outcome [1]. Globally, anemia affects around two billion people and approximately half of all anemia can be attributed to iron deficiency [2]. It is estimated that 38% of pregnant women worldwide are anemic with highest in Africa followed by South East Asia which accounts for 62.3% and 53.8% respectively [3, 4]. According to the World Health Organization (WHO) report, 3.7% of maternal mortality in Africa is directly attributed to anemia [5]. In Ethiopia, the prevalence of anemia in pregnant women is reported to be 29% which is a major public health problem [6]. Different studies conducted in Ethiopia also showed that the prevalence of anemia among pregnant women were ranged from 20% to 60% [7-13]. Iron supplementation is the most widely employed strategy to alleviate iron deficiency anemia both globally and nationally [14, 15]. World health organization and National guideline current recommendation on the treatment of anemia during pregnancy include improvements in dietary diversity; food fortification with iron, folic acid, and other micronutrients; daily supplementation of iron and folic acid to each pregnant women and control of infections [15, 16]. In Ethiopia, nationally only 5% of pregnant women took IFAS for greater than 90 days but 58% did not take any iron-folic acid tablets during their most recent pregnancy [6]. A study on the importance of antenatal use of iron and folic acid supplement showed that it can eliminate 50% of iron deficiency anemia in pregnant women [17]. Pregnant women in developing countries are at risk of anemia due to poverty, grand multiparity, too early pregnancies, too many and too frequent pregnancies spacing of < 1 year, low socioeconomic status, illiteracy, and late booking of pregnant women at antenatal care units [11, 12, 18]. Many of these risk factors can be minimized if the mother knowledge on cause and prevention of anemia will be improved. Despite anemia having been identified as a global public health problem for several years, no rapid progress has been observed, and the prevalence of the disease is still high globally and locally. Very few

researches are done in Ethiopia regarding knowledge of anemia and benefit of iron-folic acid supplementation in pregnant mothers. Therefore, this study assessed knowledge on anemia and benefit of iron-folic acid supplementation and associated factors among pregnant mothers attending antenatal care in public health institutions of Woldia town, Northeastern Ethiopia.

Methods

Methods

Study Setting and Design

The institution-based quantitative cross-sectional study design was conducted at public health institutions in Woldia town, North Wollo zone. The town comprises governmental (one regional hospital, two health centers, four health posts), non-governmental (five small and eight medium private clinics, two private drug vendors and six private drugstores).

Source and Study Population

The source population was all pregnant women who were attending ANC services whereas all pregnant women who were attending antenatal care in the selected facilities during the study period were included in the study.

Inclusion and Exclusion Criteria

Pregnant women in the selected health facilities who came for ANC visit were included whereas non-volunteer and seriously ill were excluded.

Sample Size Determination and Sampling Procedure

The sample size was determined by a computer based on Epi info 7 software Stat Cal using single population proportion formula with the assumption of 95% confidence interval, **P**= knowledge of pregnant women on anemia in West Shoa Zone Ethiopia (p=57.3%) **[19]**, **d**=is a tolerable margin of error (d=0.05) and 10% non-response rate, the final sample size for the study is **414**.

Method of Data Collection

Information on socio-demographic factors, obstetrics related factors, and knowledge related factors were collected by face to face interview. The English language questionnaire was translated into the Amharic language (a language spoken in the study area) and was translated back to the English language comparison was made on the consistency of the two versions. The knowledge assessment tool was adapted from a study done in Kenya and South Ethiopia **[19, 20, 21, 23]**. Knowledge of anemia was assessed by 25 reliable items (items on ever heard anemia, sign symptom, cause, consequences and prevention of anemia) and knowledge of benefit of IFAS was assessed by nine reliable items (items on the benefits of IFAS and frequency and duration of taking IFA supplements).

Data Quality Assurance

Training was given for data collectors and supervisors about techniques of data collection and briefed on each question included in the data collection tool. The pre-test was conducted to ensure the validity of the tool, and then the correction was made before the actual data collection. Double data entry was done by two data clerks and consistency of the entered data was cross-checked by comparing the two separately entered data.

Data Processing and Analysis

The data were coded, cleaned, edited and entered into Epi-data version 4.2 and exported to SPSS window version 24 for analysis. Comprehensive knowledge of anemia was computed from summing up all relevant 25 knowledge items (item on ever heard anemia, sign symptom, cause, consequences and prevention of anemia). Comprehensive knowledge of IFAS was computed by summing up all relevant nine items (items on benefits of IFAS and frequency and duration of taking IFA supplements). Model fitness was checked with the Hosmer-Lemeshow test. Level of statistical significance was declared at p-value <0.05.

Results

Socio-Demographic Characteristics

A total of 414 study participants were involved in the study making a response rate of 100%. The mean age of study participants was 26.35 (\pm 4.25 SD) years. All most all, 405 (97.8%) of the study participants were married, 294 (71.0%) were Orthodox by religion and 386 (93.2%) were Amhara by ethnicity [*Table 1 S 1*].

Obstetrics Related Characteristics

More than half, 218 (52.7%) of pregnant mothers were in the third trimester, 237 (57.2%) were early registered for ANC (<16 weeks). Regarding gravidity and parity, more than three-fifths, 278(67.1%) of women were multigravida and 184 (44.4%) were primiparous. [*Table 1*].

Knowledge of Pregnant Mothers on Anemia and Benefit of IFAS

More than half, 224(54.1%) of the respondents had good knowledge about anemia whereas 190(45.9%) had poor knowledge of anemia. Regarding knowledge on the benefit of IFAS 239 (57.7%) of the respondents had good knowledge whereas 175(42.3%) had poor knowledge about the benefit of iron and folic acid supplementation.

Factors Associated with Knowledge of Anemia

In this multivariable model, maternal educational status, knowledge of IFAS and residence were statistically associated with knowledge of anemia.

Mothers who were from urban residents were 5.4 times more likely knowledgeable to anemia than their counter parts (AOR=5.43, 95%CI: 2.36-12.51). Mothers who had completed secondary education and above were two times more likely knowledgeable to anemia than mothers who attended non-formal education (AOR=2.19, 95%CI: 1.32-3.64). Regarding knowledge of IFAS, those who had good knowledge on benefit IFAS were almost six times (AOR=5.85, 95%CI: 3.60-9.50) more likely knowledgeable to anemia than the counter parts [**Table 2**].

Factors Associated with Knowledge on the Benefit of IFAS

In this study in the multivariable model ANC visit, knowledge of anemia and obtained counseling about IFAS was statistically associated with knowledge on the benefit of IFAS. Mothers who had obtained counseling about IFAS were two times more likely knowledgeable on the benefit of IFAS than counterparts (AOR=2.04, 95%CI: 1.11-3.75). Mothers who had four or more ANC visit were three times (AOR=3.12, 95%CI: 1.38-7.07) more likely knowledgeable on the benefit of IFAS than counterparts. Regarding knowledge of anemia, those who had good knowledge of anemia were almost six times (AOR=5.88, 95%CI: 3.63-9.50) more likely knowledgeable on the benefit of IFAS than counterparts [**Table 3**].

Discussion

In this study, 54.1% of pregnant mother had good knowledge of anemia. This finding was in line with a study conducted in India, (52.5%) [20], rural district of Ethiopia (51.4%) [21]. But it was lower than the study conducted in North Showa Zone, Ethiopia (57.3%) [19], Pune India (69%) [23] and Amil Nadu, India (76.5%) [26]. The difference might be due to the time gap between the studies and difference in sociodemographic characteristics of study participants. It was higher than a study conducted in South Ethiopia 44.3% [24] and Egypt 40% [25]. This might be currently due to increase information access for pregnant mothers and since the majority of the study participants were from urban residents and being from an urban resident is strongly associated with pregnant mother knowledge on anemia.

The knowledge of pregnant women about the benefit of IFAS was found to be 57.7%. This finding was higher than a study conducted in Singur, West Bengal India (39.9%) [22]. This difference might be due to the difference in sociodemographic characteristics and the time gap between the studies.

Pregnant mothers who completed secondary education and above were two times more likely knowledgeable to anemia as compared with those pregnant mothers who attended non-formal education. This is in line with the study conducted in South Ethiopia [24], North Showa Zone, Ethiopia [19], Amil Nadu, India (76.5%) [26] and Pune India (69%) [23]. This might be due to the fact that as educational level increases the ability of the pregnant mother understanding also rise which ultimately increases the knowledge level.

Pregnant mothers who were from urban residents were five times more likely knowledgeable to anemia as compared with pregnant mothers who were rural residents. This is supported with the study conducted in North Showa Zone, Ethiopia [19]. This might be due to pregnant mothers from urban residents will

have more information access through mass media and they have more frequent and early antenatal care follow up which enables them to get more information.

Having good knowledge on the benefit of IFAS was significantly and positively associated with knowledge of anemia. This is supported with the study conducted in North Showa Zone, Ethiopia [19]. This might be due to the fact that having good knowledge on the benefit of IFAS helps women to understand the cause, consequence, prevention and treatment of anemia by taking IFAS which results in good knowledge of anemia.

Pregnant mothers who had four or more antenatal care visit were three times more knowledgeable as compared with those pregnant mothers who had less than four antenatal care visits. This is supported with a study conducted in South Ethiopia [24] but it is not supported with a study conducted in Pune India (69%) [23]. This might be due to the fact that having frequent ANC visits during pregnancy may have the high chance of getting counseling on the benefit of taking IFAS.

Conclusions

Our data demonstrate that the knowledge level of pregnant mother on anemia and benefit of IFAS was low. Educational status, knowledge of IFAS and residence were independent predictors of pregnant mother knowledge on anemia whereas ANC visit, knowledge of anemia, and obtaining counseling about IFAS were independent predictors of pregnant mother knowledge on benefit of IFAS. Health care providers should counsel pregnant mothers on early frequent ANC visit during pregnancy that focused on anemia cause, prevention and benefit of taking IFAS in the prevention of anemia during pregnancy and postpartum period.

Limitations

The cross-sectional nature of study design limits the applicability of the findings in establishing causality between the variables and it might also suffer from recall bias.

Abbreviations

ANC: Antenatal Care; EDHS: Ethiopian Demographic and Health Survey; ERC: Ethical Review Committee; IFAS: Iron and Folic Acid Supplementation; SPSS: Statistical Package for Social Sciences; WHO: World Health Organizations.

Declarations

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took their time to give us all the relevant information for the study.

Author's Contributions

AD was the principal investigator who initiated the research, wrote the research proposal, conducted the field work, supervised data entry, analyzed the data and wrote the manuscript. GG participated in refining the research proposal, analyzed the data and wrote the report. All authors read and approved the final manuscript.

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Availability of data and materials

All related data has been presented within the manuscript. The dataset supporting the conclusions of this article is available from the authors on request.

Ethics approval and consent to participate

Ethical approval was obtained from Woldia University, Faculty of Health Sciences, Ethical Review Committee (ERC). All the study participants were informed about the purpose of the study, their right to refuse. The participants enrolled in the study were informed about the study objectives, expected outcomes, benefits and the risks associated with it. In this study all the participants were above the age of 18 and written consent was taken from all the participants before the interview.

Consent for publication

Not applicable.

Competing interest

The authors declared that they have no competing interests.

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Tables

Table 1: Obstetrics related characteristics of pregnant mother's attending antenatal care in public health facilities of Woldia Town, Northeastern Ethiopia, 2018.

Variables	Knowledge of Anemia		Knowledge of IFAS	
	Good Knowledge (%)	Poor Knowledge (%)	Good Knowledge (%)	Poor Knowledge (%)
Gravidity				
Primigravida	61(44.9)	75(55.1)	64(47.1)	72(52.9)
Multigravida	163(58.6)	115(41.4)	175(62.9)	103(37.1)
Parity				
Nulliparous	76(55.5)	61(44.5)	73(53.3)	64(46.7)
Primiparous	97(52.7)	87(47.3)	115(62.5)	69(37.5)
Multiparous	51(54.8)	42(45.2)	51(54.8)	42(45.2)
Birth Spacing in years (n=277)				
1-2	23(41.1)	33(58.9)	26(46.4)	30(53.6)
≥ 3	125(56.6)	96(43.4)	140(63.3)	81(36.7)
ANC visit				
≥ 4 visits	42(72.4)	16(27.6)	45(77.6)	13(22.4)
< 4 visits	182(51.1)	174(48.9)	194(54.5)	162(45.5)
First registration time for ANC				
Early registration	142(59.9)	95(40.1)	148(62.4)	89(37.6)
Late registration	82(46.3)	95(53.7)	91(51.4)	86(48.6)
Medical illness other than anemia				
Yes	19(55.9)	15(44.1)	17(50.0)	17(50.0)
No	205(53.9)	175(46.1)	222(58.4)	158(41.6)
History of anemia during a previous pregnancy (n=277)				
Yes	18(54.5)	15(45.5)	19(57.6)	14(42.4)
No	129(52.9)	115(47.1)	146(59.8)	98(40.2)
Current anemia status				
Anemic	25(71.4)	10(28.6)	26(74.3)	9(25.7)
Non-Anemic	199(52.5)	180(47.5)	213(56.2)	166(43.8)
Obtain Counseling on IFA				
Yes	200(57.8)	146(42.2)	221(61.6)	138(38.4)
No	24(35.3)	44(64.7)	18(32.7)	37(67.3)

Table 2: Factors associated with knowledge of anemia among pregnant mother's attending antenatal care in public health facilities of Woldia Town, Northeastern Ethiopia, 2018.

Variables	Knowledge of anemia		COR (95%CI)	AOR (95%CI)
	Good (%)	Poor (%)		
Mother educational status				
No formal education	69(41.8)	96(58.2)	1	1
Primary (Grade 1-8 th)	31(51.7)	29(48.3)	1.48(0.82-2.69)	2.34(1.14-4.82)*
Secondary and above	124(65.6)	65(34.4)	2.65(1.72-4.08)	2.19(1.32-3.64)**
Residence				
Urban	215(59.9)	144(40.1)	7.63(3.62-16.07)	5.43(2.36-12.51)***
Rural	9(16.4)	46(83.6)	1	1
Gravidity				
Multigravida	149(53.6)	129(46.4)	1.74(1.15-2.63)	1.35(0.82-2.23)
Primigravida	75(55.1)	61(44.9)	1	1
Current anemia status				
Anemic	25(71.4)	10(28.6)	2.26(1.05-4.84)	1.84(0.76-4.41)
Non-anemic	199(52.5)	180(47.5)	1	1
Obtain counseling on IFA				
Yes	200(57.8)	146(42.2)	2.51(1.46-4.31)	1.64(0.86-3.11)
No	24(35.3)	44(64.7)	1	1
Frequency of ANC visits				
≥ 4 visits	46(79.3)	12(20.7)	3.83(1.96-7.48)	1.97(0.92-4.22)
< 4 visits	178(50.0)	178(50.0)	1	1
Time of registration				
Early (<16 weeks)	142(59.9)	95(40.1)	1.73(1.17-2.56)	1.35(0.83-2.18)
Late (≥ 16 weeks)	82(46.3)	95(53.7)	1	1
Knowledge of IFAS				
Good knowledge	176(73.6)	63(26.4)	7.39(4.76-11.47)	5.85(3.6-9.50)***
Poor knowledge	48(27.4)	127(72.6)	1	1

Significant at: *P=0.021, **P=0.002, ***P<0.001, 1 = constant.

Table 3: Factors associated with knowledge on the benefit of IFAS among pregnant mother's attending antenatal care in public health facilities of Woldia Town, Northeastern Ethiopia, 2018.

Variables	Knowledge of IFAS		COR (95%CI)	AOR (95%CI)
	Good (%)	Poor (%)		
Mother educational status				
No formal education	89(53.9)	76(46.1)	1	1
Primary (Grade 1-8 th)	25(41.7)	35(58.3)	0.61(0.33-1.11)	0.41(0.20-1.24)
Secondary and above	125(66.1)	64(33.9)	1.66(1.08-2.56)	1.00(0.60-1.66)
Residence				
Urban	221(61.6)	138(38.4)	3.29(1.80-6.01)	1.50(0.76-2.95)
Rural	18(32.7)	37(67.3)	1	1
Current anemia status				
Anemic	26(74.3)	9(25.7)	2.25(1.02-4.93)	1.72(0.71-4.16)
Non-anemic	213(56.2)	166(43.8)	1	1
Obtain counseling on IFA				
Yes	214(61.8)	132(38.2)	2.78(1.62-4.77)	2.04(1.11-3.75)**
No	25(36.8)	43(63.2)	1	1
Frequency of ANC visits				
≥ 4 visits	49(84.5)	9(15.5)	4.75(2.26-9.97)	3.12(1.38-7.07)***
< 4 visits	190(53.4)	166(46.6)	1	1
Time of registration				
Early (<16 weeks)	148(62.4)	89(37.6)	1.57(1.06-2.33)	1.11(0.69-1.77)
Late (≥ 16 weeks)	91(51.4)	86(48.6)	1	1
Knowledge of anemia				
Good knowledge	176(78.6)	48(21.4)	7.39(4.76-11.47)	5.88(3.63-9.50)****

Poor knowledge	63(33.2)	127(66.8)	1	1
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Significant at: *P=0.015, **P=0.022, ***P=0.006, ****P<0.001, 1 = constant.

Supplementary Files

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