Title

ASSESSMENT OF ANEMIA AND ITS ASSOCIATED FACTORS AMONG PREGNANT WOMEN ATTENDING ANTENATAL CARE IN KARAMARA HOSPITAL JIGJIGA TOWN, EASTER NETHIOPIA

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ABSTRACT

Anemia in pregnant women remains serious and unacceptably high especially in the developing countries. Nutritional and environmental factors influence the prevalence and severity of Anemia. About 52.9% is due to iron deficiency. This study assesses anemia prevalence and its associated factors among pregnant women attending antenatal care in Karamara hospital. Cross sectional study was conducted among antenatal care attendants in Karamara hospital, from March 11 to May 18, 2013. Structured questionnaire was administered. Blood and stool samples were taken. Completeness of data was checked, coded, edited and entered into Epi info, exported to SPSS cleaned and analyzed. The relationships between variables were examined through bivariate analysis, by computing odds ratio at 95% confidence level. Confounders were controlled by multivariate logistic regression at 95% CI. A P value < 0.05 was considered as statistically significant. As a result, participants were 411 antenatal care attendants from 15 to 45 years of age with complete data. The PCV value was between 11.49g/ dl and 42.81g/dl with the Median and IQR of 10.60 and 3.83 respectively. Age, Trimester, drinking tea immediately after meal, and consuming iron rich food 24 hours before survey were significantly associated. And, anemia prevalence is 56.7%. Its factors are age, third trimester, and drinking tea after meal, and consumption of organic iron rich food.

Introduction

Anemia is a decrease number of red blood cells or less than the normal quantity of hemoglobin (Rolf w, 2011).

Anemia prevalence among pregnant women 1993-2005 (WHO, 2008):

- World 41.8%
- Africa 61.3%.

According to 2011 Ethiopian Demographic and Health Survey, proportion of anemia among pregnant women (EDHS, 2011):

- Ethiopia 22%.
- Ethiopian Somali Region 46.8%.

Studies indicates that if anemia is not addressed in early pregnancy it would lead to

- Maternal death,
- Preterm delivery,
- Low birth weight and
- Inferior neonatal health

This is a threat to the achievement of MDG 4&5

- Reducing child mortality by two-third
- Reducing maternal mortality by third-quarter

Objectives

General objective

- To assess the prevalence of anemia and associated factors among antenatal care attending women in, Karamar hospital, Jigjiga town.

Specific objectives

1. To determine the prevalence of anemia among ANC attending women in the study area.
2. To identify factors associated with anemia in pregnant women in the study area.

Methods

Study area and period

- The study was conducted in Karamar Hospital, Jigjiga town Ethiopian Somali Region.
- Its 630 kilometers far from Addis Ababa.
- Has total population of 125,876
- 8,748 women.
- 32,664 reproductive age group
- 3,089 pregnant (ESHB,2012)
- Has Altitude of 1669m above sea level

Study Design

- Facility based cross-sectional study.

Source population

- All pregnant women following ANC at Karamara Hospital from March 11 to May 18, 2013 .

Study population

- All pregnant women registered and attending their ANC in Karamara Hospital,fulfilling the inclusion criteria and available during the data collection period.

Inclusion and exclusion criteria

Inclusion criteria

- Pregnant women coming for first ANC and permanent residents in study area.

Exclusion criteria

- Pregnant women who are seriously ill during data collectio period

Sampling Techniques

- All pregnant women who were visiting ANC at Karamara Hospital during data collection period were included in the study.

Data Collection tools and Procedures

- Questionnaire (face to face Interviewing) and Microscopic examination (Parasitological & Blood specimen)
- Two trained diploma midwifery and two laboratory technologist participated in data collection.

Data Quality Control

- The questionnaire was translated to local language
- Training was given
- Pre-tested was done on 21 respondents
- The collected data was back translated to English
- All completed questionnaires were examined for completeness

Sample size determination

$$n = \frac{z^2 p(1-p)}{d^2}$$

n = sample size,

d = margin of error between the sample and the population. z =95% confident interval

P = prevalence rate of 46.8% ~ 47% based on the previous study =382.7~383; 10% for non-response,

The final sample was 421.

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Study Variables

Dependent Variable

- Anemia

Independent Variables

1. Socio-demographic and socio economic (age, marital status, ethnicity, education, income, occupation, availability of latrine, water sources)
2. Maternal related characteristics (abortion, parity, trimester, smoking, HIV, parasitic infection, place of delivery, ANC, contraceptive, malaria)
3. Iron intake (dietary iron reaches foods)

Data Analysis

- Data was entered in to Epi info version 3.5.1
- Entered data was exported in to SPSS version 16.0 for cleaned and analyzed.
- After cleaning, frequencies and percentages were calculated to all variables.
- Binary logistic regression was used to determine magnitude of association between individual independent and dependent variables.

Finally, those independent variables which were significant at p value < 0.05 in the bivariate logistic regression were included in to the final multivariable logistic regression model to control the possible confounding.

Operational Definitions

- Anemia cut off for altitude: 11.4g/l
- Anemia for first, third trimester 12mg/l
- Anemia in second trimester: 12.5 mg/l
- Anemia cut off for altitude & trimester (first, third) 12.4 mg/l
- Anemia cut off for altitude & second trimester: 12.9 mg/l
- Permanent resident: Pregnant women who live at least for one year in the study area.

Ethical Considerations

- Ethical clearance was obtained.
- Support letter of co-operation was written
- Confidentiality and private information was protected.
- Information about the study was given.
- The right of the respondent to withdraw from the interview or not to participate was respected.
- Numerical codes were used to identify participants.
- All pregnant women who were found to be anemic (in any category, even mild) were treated freely.
- All biological samples, which were collected from participants for diagnosis, were discarded immediately

Results

Selected back ground characteristics of study participants

- Response rate was 97.6%.
- The age of the study participants was ranging from 15 to 45 years, with mean and SD age 24.86 (+5.46) years.
- Eighty six (45.3%) illiterate, Elementary 165(40.1%), and Collage and above 28(6.8%)
- Majority of the study participants 84.9%& 69.1% were Muslims & Somali ethnic group respectively.
- More than three fourth (78.6%)) were house wives.
- The median monthly income of respondents was 900 birr with IQR of 1500birr.

Selected environmental and other related variables

Nearly half 197(47.9%) of the participants got water from tape, Majority of them 338 (82.2%) didn't treat their drinking water, Only 1/4th 103 (25. 0%) of respondents were use ITN, Four hundred and eight (99.3%) do not infected with malaria, Parasitic infection among pregnant women was assessed and found 47 out of 411 were infected. And, Malaria was screened for all study participants but no cases were identified.

Maternal related variables

Nearly two third 252(61.3%) participants were multiparous, 172 (41.8%) second, 152 (37.0%) third and 87 (21.2%) were on their first trimester, and Eighty four (20.4%) has history of abortion and 86.6% pregnant women do not use contraceptives.actors with anemia in pregnancy.

Prevalence of Anemia

The hemoglobin value was range from 3.43g/l to14.27g/l with Median and IQR of 10.60 and 3.83 respectively and Prevalence of anemia among pregnant women was 56.7%.

Nutrition related factors

Third quarter of the current study participants 307 (74.7%) were drink tea or coffee. Vitamin A rich fruits & Vegetables 41%, other fruits &Vegetables 19.7% and Organic meat 24.7% were most consumed food groups among non-anemic pregnant women in 24 hours. More than half 243(59.1%) participants consume heam-iron rich foods prior to 24 hours. Milk 76.4%, vegetable 69.7%, fish 14.6%, pulses and legumes 55.1% meat 71.9% and egg 26.4% were the most consumed food groupsin non-anemic pregnant women in 7days.

Factors associated with anemia in pregnant women

In the bivariate logistic regression analysis; age, Trimester, History of abortion, Drink tea, consumption of iron rich foods in previous 24 hours and Gravida were associated with anemia in pregnant women.

After applying mulitivirte logistic regression, age, trimester, drinking tea or coffee and consumptionof iron rich foods in the previous 24 hours were significantly associated factors with anemia in pregnancy.

Conclusions

- The prevalence of anemia is 56.7%; and it is sever public health significant according to WHO criteria.
- Age, trimester, drinking tea or coffee immediately after meal and consumption of organic iron rich foods are factor associated with anemia in pregnant women.

Acknowledgements

- Save the Children USA, USAID/ENGINE Project
- Fidel Aklilu (Engineer)

Table 1 Selected back ground characteristics of pregnant women who had attain ANC in Karamara Hospital (N=411) Jigjiga town, Eastern Ethiopia, from March 11 to May 18, 2013.

Variables	Number	Percent (%)
Age(years)		
15-24	192	46.7
25-34	186	45.3
>35	33	8
Marital status		
Married	389	94.6
Non-married *	22	5.4
Religion		
Muslim	349	84.7
Orthodox	48	11.7
Protestant	10	2.4
Catholic	4	1
Ethnicity		
Somali	284	69.1
Oromo	65	15.8
Amahra	34	8.3
Gurage	14	3.4
Tigray	10	2.4
Other**	4	1
Education of respondent		
No education	186	45.3
Elementary(1-8)	165	40.1
high school(9-12)	32	7.8
Collage and above	28	6.8
Occupation of respondent		
House wife	323	78.6
Daily laborer	30	7.3
Gov't or privet	27	6.6
Merchant	24	5.8
Other***	7	1.7
Monthly income (Birr)		
<500	124	30.2
501-1000	112	27.3
>1000	175	42.6

*single, divorced and widowed, **silte, *** Student

Figure 2 .prevalence of anemia in different cutoffs pregnant women who were attending ANC in Karamara Hospital (N=411) Jigjiga town, Ethiopian Somali Region, Eastern Ethiopia, March 11 to May 18, 2013.

Methods used to classify	STATUS	
	ANEMIC	NON ANEMIC
WHO classification	129(31.4%)	282 (68.6%)
Hemoglobin Adjusted for altitude	143 (34.8%)	268(65.2%)
Hemoglobin Adjusted for trimester	195(47.4%)	215(52.6%)
Hemoglobin Adjusted for altitude and trimester	233(56.7%)	178(43.3%)

Figure 1 Distribution of the degree of anemia among pregnant women who attained ANC in Karamara hospital, Jigjiga town, Ethiopian Somali Region, Eastern Ethiopia, March11 to May 18, 2013.

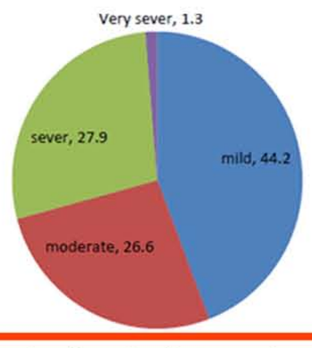

Figure 4 Bivariate and Multivariate analisis of factors that affect ANC attendees in Karamara Hospital (N=411) Jigjiga town, Ethiopia Somali Region, Eastern Ethiopia, 2013

Variables	Anemia status		COR [95% CI]	AOR [95% CI]
	Anemic N (%)	Non-anemic N (%)		
Age(years)				
15-24	96(41.2)	96(53.9)	1.00	1.00
25-34	110(47.2)	76(42.7)	1.45 [0.96,2.17]	1.42[0.89,2.25]
>35	27(11.6)	6(3.4)	4.50[1.78,11.39]**	3.27[1.21,8.83]*
Trimester (weeks)				
First(<12)	38(16.3)	49(27.5)	1.00	1.00
Second (13-27)	94(40.3)	78(43.8)	1.55[0.92,2.61]	1.78[1.04,3.06]
Third(>28)	101(43.3)	51(28.7)	2.55 [1.49,4.39]**	2.59[1.46,4.58]**
History of abortion				
No	174(74.7)	153(86.0)	1.00	1.00
Yes	59(25.3)	25(14.0)	2.08[1.24,3.48]*	1.72[0.96,3.10]
Drink tea/coffee				1.00
No	48(20.6)	58(31.5)	1.00	1.71[1.07,2.73]*
Yes	185(79.4)	112(68.5)	1.77 [1.13,2.77]*	
consumption of iron rich foods(24h)				
No	107(45.9)	61(34.3)	1.00	1.00
Yes	126(54.1)	117(65.7)	0.61 [0.41,0.92]*	0.62[0.41,0.95]*
Gravidity				
Primigravida	80(34.3)	79(44.4)	1.00	1.00
Mulitigravida	153	99(55.6)	1.53 [1.02,2.78]*	0.93[0.56,1.53]

*P<0.05, **P<0.01, COR (Crude odds ratio), AOR (Adjusted odds ratio), CI (Confidence interval)