Socio-demographic and obstetric factors associated with anaemia among pregnant women in Sokoto, North Western Nigeria

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Statement of the problem

- Each year > 0.5 M women die from pregnancy-related causes including anaemia.

- Anaemia is a problem of global public health importance & is the 8th leading cause of disease in girls and women in SSA.

- Anaemia result in 20% of maternal deaths in SSA.

- Maternal mortality resulting from anaemia affect 34/100,000 live births in Nigeria.

- In pregnancy, anaemia has a significant impact on the health of the foetus & mother.

- Foetuses are at risk of preterm deliveries, low birth weights, morbidity and perinatal mortality due to the impairment of oxygen delivery to placenta and foetus.

- Women in SSA patronise traditional birth attendants (TBA).

- Unbooking and late antenatal booking exist in Nigeria (9.9% booked in the 1st trimester).

Study Design

- **This study was a prospective observational study aimed at investigating the prevalence of anaemia among pregnant women attending antenatal care in Sokoto, North Western Nigeria.**

Materials and Method

- **This study involved 403 consecutively-recruited pregnant women attending ANC in Sokoto, Nigeria.**

- **Qualitative data was collected using questionnaire.**

- **3mls of blood was collected into EDTA anticoagulated blood tubes.**

- **PCV and HB was determined using the SWELAB 3 part-differential Haematology analyzer (Medonic of Sweden).**

Statistical Analysis

- Data was analyzed using SPSS statistical software version 17.0.

- Data were expressed as percentages and means.

- The proportion of women with anaemia was compared against socio-demographic, economic and obstetrics variables using chi square statistical test.

- Multivariate logistic regressions were employed for variables associated with anaemia.

- A p-value of ≤ 0.05 was considered significant in all statistical analysis.

Inclusion and exclusion criteria

- Inclusion criteria included; age (≥ 18 years), history of pregnancy, willingness to offer verbal informed consent to partake in the study.

- Exclusion Criteria; Non-pregnant women, pregnant non-consenting women and pregnant women on haematinics, long-term medication and those with history of pregnancy induced hypertension (PIH), pre-eclampsia and bleeding disorders were excluded from this study.

Results

- Subjects included 403 pregnant women aged 18-44 years with mean age of 32.32 ± 10.60 years.

- Mean PCV & HB levels were significantly lower among pregnant subjects compared to non – pregnant controls (p=0.001).

- Out of the 403 women, 228 (56.6%) had HB levels <10g/dl (anaemic) while 175 (43.4%) were non- anaemic.

- Anaemia was marginally higher among pregnant subjects in the 15-19 years age group.

- Anaemia was significantly lower among highly educated subjects compared to less educated subjects.

- Anaemia was marginally higher among less-remunerated subjects.

Results

- Anaemia was significantly higher among pregnant women in polygamous compared to monogamous relationships.

- Anaemia was more prevalent among teenage pregnant subjects (< 18 years of age).

- Anaemia was higher among multigravidae compared to primgravidae

- Anaemia was more prevalent among pregnant subjects with < 24 months inter pregnancy intervals compared to those >24 months.

- Anaemia was higher among grand multiparous women compared to primiparous subjects.

- There was no significant difference in the prevalence of anaemia based on religious affiliation.

Table 1: Prevalence of anaemia based on age and educational status

| Variable	N (%)	Anaemic N (%)	Non-Anaemic N (%)	Mean (SD) HB	Mean (SD) PCV	p-value
Age groups (years)						
15-19	17 (4.2)	6 (35.3)	11 (64.7)	10.2 (0.8)	30.7 (2.1)	0.155
20-24	120 (29.9)	66 (55.0)	54 (45.0)	9.7 (1.3)	29.3 (3.5)	
25-29	162 (40.4)	89 (54.9)	73 (45.1)	9.9 (1.3)	30.0 (3.6)	
30-34	74 (18.4)	45 (60.8)	29 (39.2)	9.7(0.9)	29.4 (2.6)	
35-39	24 (6.0)	18 (75.0)	6 (25.0)	9.5 (1.4)	28.9 (4.1)	
40-44	6 (1.5)	4 (66.7)	2 (33.3)	9.6 (0.1)	29.0 (0.2)	
Educational Level						
Tertiary	33 (8.2)	12 (36.4)	21 (63.6)	10.0 (1.2)	30.4 (3.2)	0.034*
Secondary	133 (33.0)	79 (59.4)	54 (40.6)	9.8 (1.2)	29.7 (3.3)	
Primary	140 (35.0)	68 (48.6)	72 (51.4)	9.5 (1.5)	28.9 (4.5)	

Table 2: Prevalence of anaemia based on income

Income	N (%)	Anaemic N (%)	Non-Anaemic N (%)	Mean (SD) HB	Mean (SD) PCV	p-value
< 10,000	66 (17.0)	<u>34 (51.5)</u>	32 (48.5)	9.9 (1.3)	29.8 (3.7)	0.678
11,000-20,000	83 (21.0)	<u>49 (59.0)</u>	34 (41.0)	9.7 (1.3)	29.4 (3.4)	
21,000-30,000	16 (4.0)	7 (43.8)	9 (56.3)	9.7 (1.5)	28.8 (5.2)	
31,000-50,000	90 (23.0)	39 (43.3)	51 (56.7)	9.9 (1.1)	30.1 (3.1)	
> 500,000	148 (36.7)	63 (42.6)	85 (57.4)	9.7 (1.1)	29.4 (3.1)	

Table 2: Prevalence of anaemia based on type of marriage type, religious affiliations & age at time of marriage

Variable	N (%)	Anaemic N (%)	Non-Anaemic N (%)	Mean (SD) HB	Mean (SD) PCV	p-value
Type of marriage						
Monogamous	284 (70.0)	106 (41.7)	148 (58.3)	9.8 (1.3)	29.6 (3.4)	0.01*
Polygamous	119 (30.0)	80 (53.7)	69 (46.3)	98 (1.2)	29.6 (3.4)	
Religious Affiliations						
Christian	55 (14.0)	34 (61.8)	21 (38.2)	10.0 (1.3)	30.7 (4.0)	0.836
Muslim	348 (86.0)	194 (55.8)	154 (44.2)	9.8 (1.2)	29.5 (3.4)	
Age at time of marriage (Years)						
< 18	78 (19.4)	45 (57.7)	33 (42.3)	9.7 (1.1)	29.4 (3.4)	0.464
> 18	325 (80.6)	183 (56.3)	142 (43.7)	9.8 (1.2)	29.7 (3.4)	

Table 1: Major Triad responsible for anaemia in SSA
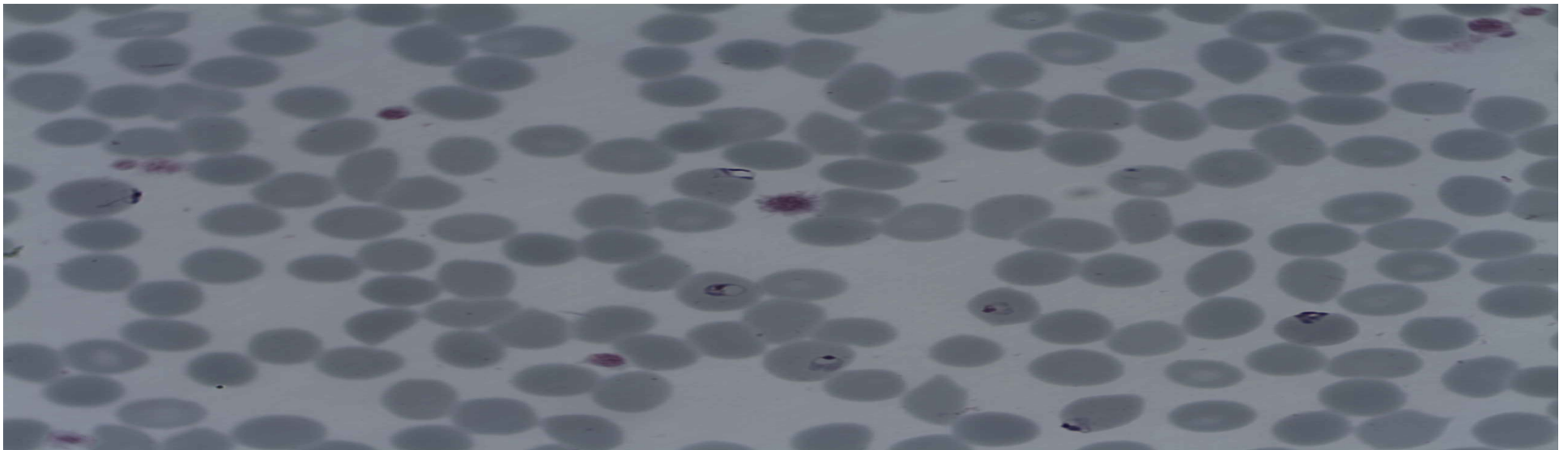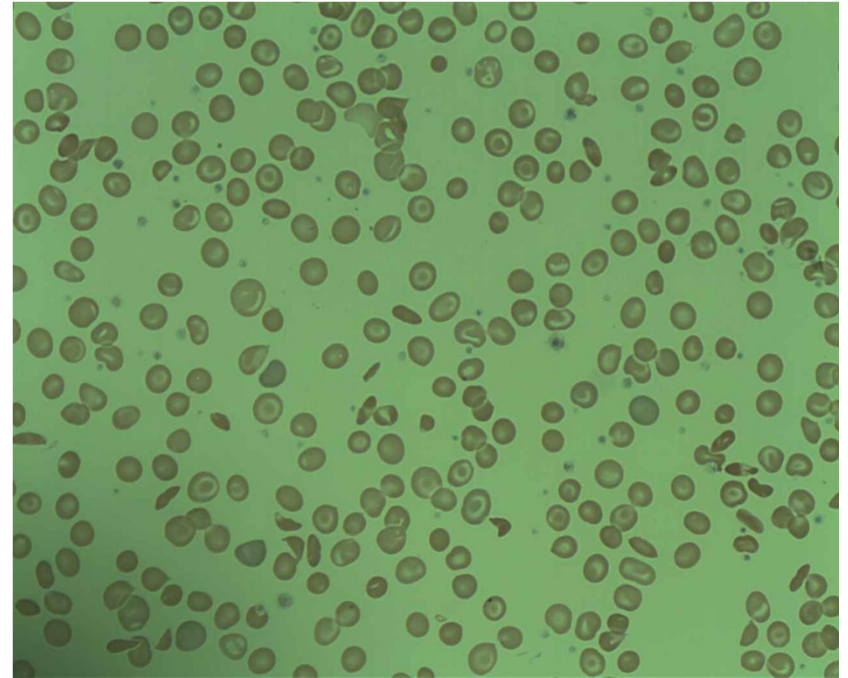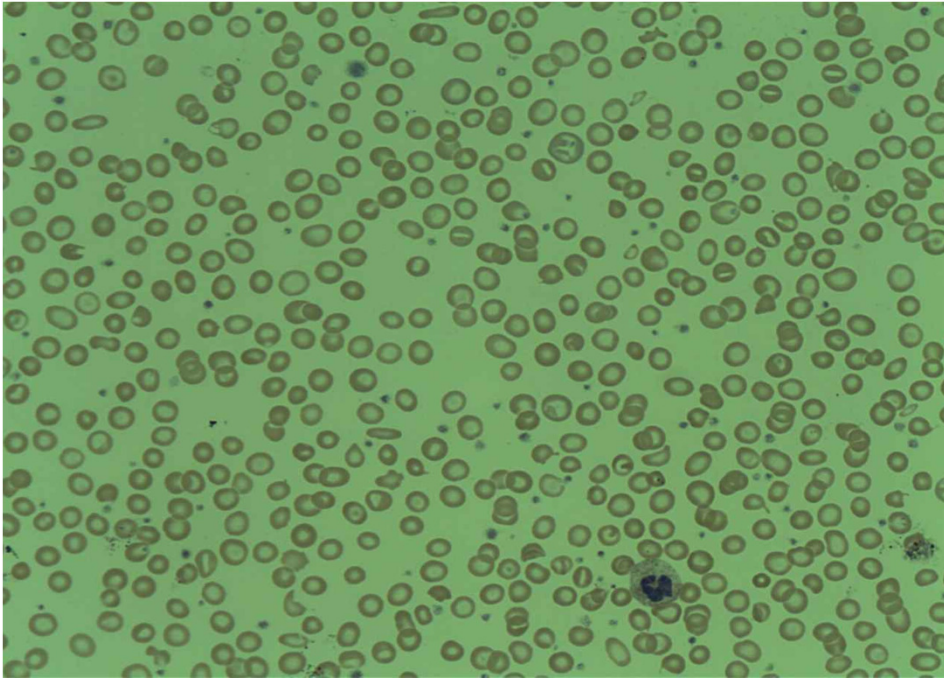
Discussion

- Our study is in agreement with advocacy (SOGON, 2004) that HB & PCV & indices of anaemia is vital in evaluating the risk of anaemia and intervention

- Our observed anaemia prevalence (56.6%) is consistent with a previous report which indicated that the anaemia is a significant challenge in pregnant women (Ayoya et al., 2011).

- Our observed prevalence is however lower than;

- 70% reported in Lagos (Anorlu et al., 2001)

- 67.4% in Enugu (Iloabachie and Meniru, 1990)

- 76.5% in Ibadan (Idowu et al., 2005)

- 59.6% in Calabar (Agan et al 2010)

- 62.2% in Ile Ife (Komolafe et al., 2005)

- 66.0% in Burkina Faso (Meda et al., 1999)

- 53.9% in Southwest Ethiopia (Gatachew et al., 2012).

Discussion

Our observed prevalence is higher than;

- 30.4% prevalence observed in Ethiopia (Jemal et al., 2010)

- 15.3% in Trinidad and Tobago (Uche - Nwaichi et al., 2010)

- 38.8% in Port – Novo Cape Verde (Okeke, 2011)

- 27.4% in Thailand (Tippawan, 2011)

- 42.2% in Oman (Yahya et al., 2011)

- 40.8% in Western Algeria (Demmouche et al.,2011)

- 51.8% observed in Gombe State (Bukar et al., 2008)

- 40.4% in Enugu (Dim and Onah, 2007)

- 30% in Ibadan (Olubukola et al., 2011)

- 17% in Kano (Nwizu et al., 2011)

- 50% in Brazil (Ferreira et al.,2008)

- 46.2% in Benin City (Bankole et al., 2012).

Discussion

Our observed prevalence was higher for several reasons;

- Our study used HB cutoff value of 10g/dl compared to other which used the WHO HB cutoff value of 11.0g/dl.

- Haemoglobin cutoff of 11.0g/dl derived from the West continues to be used erroneously as diagnostic for anaemia among Africans.

- It may be appropriate to have a separate criteria for all Africans to accommodate the subset with lower haemoglobin.

- Previous report found that race-specific anaemia criteria of 10 g/l yielded a comparable sensitivity and specificity among Africans.

Discussion

The prevalence of anaemia was higher among grand multiparous women compared to multiparous woman and primiparous subjects.

- Previous report indicates that grand multipara are a high risk obstetric patients.

- Improving the socio-economic standard of women and increased awareness on the importance of family planning can reduce the incidence and complications of grandmultiparity (Ikeako et al., 2011).

Discussion

Anaemia was higher among less educated, poor remunerated pregnant women in polygamous relationships.

- Several factors contribute to the high rates of maternal anaemia in Nigeria widespread nutritional deficiencies; high incidence of infectious diseases; low access to and poor quality of health services; low literacy rates; ineffective design, implementation and evaluation of anaemia control programmes and poverty (Ayoya et al., 2012).

Discussion

- Previous report (Zahira, 2012) indicates that a significant relationship exist between low socio-economic status and anaemia among pregnant women.

- Highly educated people have a greater access to finance & information & are more likely to make more evidenced –based & informed decisions concerning their nutrition, health & well-being (Rao et al., 2011).

- Previous report indicates a high prevalence of micronutrient deficiencies (folic acid, zinc, iron, copper, and magnesium) amongst pregnant women of low socioeconomic status (Pathak et al., 2004).

- Women in polygamous relationships are prone to less care, less empowered, are often victims of domestic violence & abuse.

- Men in polygamous relationships are less likely to invest time & resources in the care & support for their pregnant wives (*Al-Krenawi, 2012,* Upadhyay et al., 2012).

Discussion

The reasons for the high prevalence of anaemia in this study and developing countries are multi-factorial and includes;

- Iron deficiency

- Other micronutrient deficiency

- Excessive blood loss

- Haemogobinopathies

- Malaria & other parasitic infections (hookworm and schistosomiasis infestation).

- HIV-infection

- Malnutrition

- Multiparity and inadequate child spacing

- Low socioeconomic status (Agan et al., 2010, Bankole et al., 2012).

Discussion

- *Prevalence of anaemia was higher among pregnant women in the 15-19 age group and among women who got married at < 18 years compared to those who got married at > 18 years.*

- Adolescent pregnancy is an increasing challenge particularly in Northern Nigeria and most developing countries (Ogele et al., 2011).

- Previous report indicates that age of the pregnant women plays a significant role in the prevalence of anaemia (Gibbs et al., 2012 and Olubukola et al., 2011).

Conclusion and recommendation

This present shows a high prevalence of anaemia among pregnant women in Sokoto, Nigeria.

- We advocate for targeted iron supplementation for pregnant women.

- Routine haemoglobin and haematocrit should be included in antenatal care protocol of pregnant women.

- We recommend the implementation of WHO recommendation of provision of antihelminthic therapy (third trimester) to control hookworm and other helminthic infections.

- There is also the need for the promotion of insecticide-treated bed nets.

- Provision of intermittent preventive treatment (IPTp) to protect pregnant women.

- Mass media campaigns & peer outreach education are required to educate women on the advantages of early ANC booking & compliance with prescribed medications.

Acknowledgement

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Question

Thank You for your attention!

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