

# Factors Influencing Antenatal Haematinics Prescription Behaviour of Physicians in Calabar, Nigeria

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## Abstract

**Citation:** Akpan U, Agan T, Monjok E, Okpara C, Etuk S. Factors Influencing Antenatal Haematinics Prescription Behaviour of Physicians in Calabar, Nigeria. Open Access Maced J Med Sci. 2017 Apr 15; 5(2):250-255. https://doi.org/10.3889/oamjms.2017.036

**Keywords:** Anaemia; iron; folate; Ranferron 12; prescription; counseling.

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**Received:** 19-Jan-2017; **Revised:** 09-Feb-2017; **Accepted:** 10-Feb-2017; **Online first:** 20-Mar-2017

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**Funding:** This research did not receive any financial support.

**Competing Interests:** The authors have declared that no competing interests exist.

**BACKGROUND:** Routine iron and folic acid supplementation in pregnancy have been proved to be effective in reducing the prevalence and morbidities of anaemia. However, there is limited data regarding the prescription habits of physician obstetric care givers.

**AIM:** This study set to investigate the attitudes and factors which influence the practice among physicians in University of Calabar Teaching Hospital (UCTH).

**MATERIAL AND METHODS:** A questionnaire based cross-sectional survey was conducted among randomly recruited physician offering antenatal services between August and September 2015. Systemic sampling was used to select 70 doctors in the departmental duty roster. Data were presented in percentages and proportion. Chi-square test was used to test the association between variables. Statistical significance was set at  $p < 0.05$ .

**RESULTS:** The response rate was 100%. The mean age of the respondents was  $30.26 \pm 6.67$  years. All the respondents routinely prescribed haematinics to pregnant women but 34.3% of them did not prescribe to apparently healthy clients in their first trimester. Only 30% and 11.4% of them prescribed it in the postnatal and preconception periods respectively. Brands that contained iron, folate and vitamins as a single capsule were mostly favoured, and information about brands of drugs was mostly provided by the pharmaceutical sales representatives. Younger doctors were more likely to offer haematinics with nutritional counselling compared to older respondents. However, there was no significant relationship between haematinics prescription and sex ( $p = 0.3560$ ), Age ( $p = 0.839$ ), current professional status ( $p = 0.783$ ), and client complaint of side effect of medication ( $p = 0.23$ ). Oral medication was mostly utilised.

**CONCLUSION:** Effort to effectively control anaemia in pregnancy should involve re-orientation of physician obstetric care providers especially about prenatal and postnatal medication and counselling.

## Introduction

Routine administration of haematinics is encouraged in pregnancy in the background of the high prevalence of anaemia in the general population [1]. The WHO has recognised the problem of iron deficiency anaemia in the general population as the most common debilitating nutritional deficiency worldwide in the twenty-first century [2]. It is estimated that anaemia may complicate up to 57% of pregnancies in Sub-Saharan Africa [2].

It has also been reported that anaemia may be responsible for as much as 20% of all maternal deaths in Sub-Sahara Africa through various mechanism [3]. Anaemia makes women more

susceptible to deaths from peripartum haemorrhage by lowering their haemoglobin reserves for blood loss; severe anaemia may be associated with increased susceptibility to infection due to lowered resistance to disease and also carries the risk of cardiac and respiratory failure during delivery and immediate postpartum period. Such problem if ignored and not addressed properly, can have a devastating effect on the entire population with serious consequences.

The normal daily requirement for a pregnant woman is about 20mg of iron [4]. An average diet in most communities seldom contains more than 15mg of iron a day. And of the total amount of iron in food, only a fraction (about 10%) of iron is available for absorption [4,5]. The most suitable mass intervention to prevent anaemia in pregnancy is the administration of iron

with folic acid to pregnant women aimed at increasing the haemoglobin concentration so that the level of anaemia could be significantly reduced [6-9].

However, effectiveness and success of such antenatal intervention programme depend on several factors including not only the attitude and compliance of the patients but to some extent the behaviour and practice of the obstetric care giver [10].

Most studies on the utilisation and effectiveness of antenatal iron and folic therapy/supplementation tend to focus on patients factors such as level of awareness and adherence to the prescribed medication while little is said about the practitioner's prescription pattern and attitude. Compliance to prescribed medication to a large extent is influenced by counselling, doctor's advice, prescription pattern and side effect profile which are rarely reported. Hence this work seeks to establish the attitude and factors which influence the prescription pattern of haematinics to pregnant women in the tertiary hospital. It is hoped that the findings from this study will help to address some anomalies in the prescription pattern of these drugs.

## Materials and Methods

### *Study area and study site*

The research was conducted at the University of Calabar Teaching Hospital out-patient Antenatal Clinic. The hospital is the only public tertiary health facility in Calabar Metropolis, the capital of Cross River State of Nigeria that cares for pregnant women. The antenatal record revealed that between 1200 and 1700 pregnant women are seen in the clinic per year. Except for patients who are insured under National Health Insurance Scheme (NHIS), each pregnant woman is usually expected to pay a booking/registration fee for Antenatal Care (ANC) and purchase her medication. In a previous study, the prevalence of anaemia among pregnant women in Calabar was 59.6% [11]. At the time of the study, there were about 60 specialist doctors (consultants, senior registrars and registrars) and 45 interns and doctors from another department on posting in obstetrics.

### *Antenatal clinic setting*

The general ANC clinic runs from 08.00 to 14.00 hours on Mondays, Tuesdays, Thursdays and Fridays. The hospital practices routine antenatal schedules 4-weekly visit for the 1<sup>st</sup> 28 weeks there after two weekly till 36 weeks then weekly till delivery. Booking for ANC is done on Wednesdays. For those with no problem, prescriptions for Iron and folic acid,

malaria prophylaxis, Intermittent Preventive Treatment with sulfadoxine pyrimethamine (IPT-SP), are routinely given.

### *Study population*

The study population comprised all cadres of medical doctors offering antenatal care in obstetrics and gynaecological department of the University of Calabar Teaching Hospital.

### *Study design*

This questionnaire based descriptive cross-sectional survey.

### *Sampling and data collection*

The study was conducted among physician obstetric care givers in UCTH antenatal clinic from 1<sup>st</sup> August to 30<sup>th</sup> September 2015. Systemic sampling was used to recruit participants using the departmental nominal roll. The categories of doctors included interns, resident doctors and consultants. The questionnaires extract information in demographic characteristics, routine haematinic practices during prenatal, antenatal and postnatal periods, reasons for prescription, commonly preferred route, choice of medication, sources of information about brands of haematinics and factors influencing their practices.

### *Data management*

Questionnaires were inspected for completion and manually sorted and coded. Then data were entered into computer software for analysis using SPSS version 20. The results were expressed as percentages and proportions, means and standard deviation were used to summarise variables. To compare the differences between means of variables, the chi-square test was used and p-value < 0.05 was considered statistically significant.

### *Ethical consideration*

A formal approval was obtained from the hospital research ethics community before the commencement of the study. Informed consent was obtained from every respondent. Data extracted were confidentially handled.

## Results

The response rate was 100%. The mean age of the respondents was 30.26 ± 6.67 years. All the physicians sampled have prescribed haematinics to

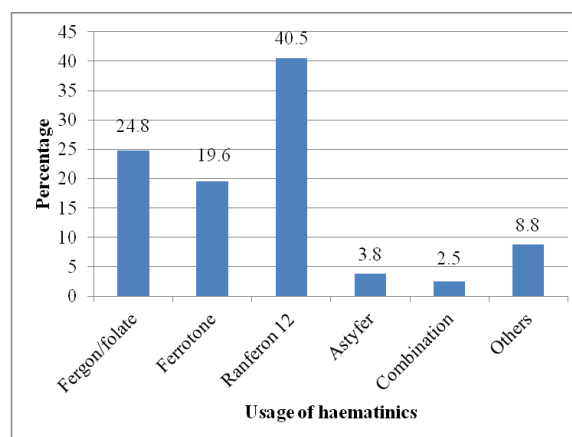
pregnant women in the preceding one month. The socio-demographic characteristics of respondents are presented in Table 1. Oral haematinics were the main route of administration. However, 12 (17.1%) of the participants have prescribed parenteral iron in the preceding six months. Their main indications for the parenteral administration were moderate to severe anaemia especially close to delivery time, perceived poor compliance to oral iron therapy by the clients, and as an alternative to blood transfusion especially in women who refuse a blood transfusion on religious ground. The parenteral iron prescribed included iron dextran and sorbitol. No serious side effect or drug reaction was reported during their last three months of practice.

**Table 1: Socio-demographic characteristics of study participants**

Parameter	Frequency	Percentage (%)
<b>Age group/years</b>		
22-26	24	34.3
27-31	23	32.9
32-36	13	18.6
37-41	3	4.3
42-46	5	7.1
47-51	2	2.9
	Mean age $\pm$ SD	30.26 $\pm$ 6.67
<b>Sex</b>		
Male	38	54.3
Female	32	45.7
<b>Marital status</b>		
Married	30	42.9
Single	40	57.1
<b>Current professional status</b>		
House Officer	34	48.6
Registrar	26	37.1
Senior Registrar	7	10.0
Consultant	3	4.3

Regarding the brands of haematinics, as shown in Fig. 1, a combination drug containing iron, folic acid, micronutrients and vitamins as a single capsule or tablet were highly favoured by 75.2% of them and Ranferon - 12 (marketed by the Ranbansy pharmaceutical company), was the most common oral preparation in this group and was prescribed in 24.8% of the cases. This was followed by fergon and folic acid (22.8%). The reason for preferring combination drug like Ranferon - 12 was due to single capsule/tablet per day dose to enhance compliance. However, more than 50% of the respondents did not remember the exact amount of elemental iron in the drug prescribed. Six (8.6%) of the practitioners admitted giving more than one brand at a time especially when there was clinical or laboratory evidence of anaemia. All the respondents believed that oral haematinics are as effective as parenteral ones in treating mild to moderate anaemia in pregnancy remote from term.

Participants were asked to state the main source of information they take into account in their choices of medication and the responses were: pharmaceutical sales representatives (40%), medical libraries and the internet (24.3%), medical textbooks (17.1%), publications and journals (14.3%), and others such as mass media (4.3%).



**Figure 1: Brands of iron supplement prescribed and utilised among respondents**

Factors influencing their prescription behaviour and their basic criteria for choosing a drug include patients' preference, proven clinical efficacy, recommended daily dose, the cost of the medication, and pharmaceutical delivery mode.

Forty (57.1%) of the doctors routinely offer to counsel to their clients on nutrition and medication adherence. Doctors who were aged 31 years and above, female, and higher cadre were less likely to offer nutritional counselling to ANC clients, and those whose clients did not report the adverse effect of oral medication were more likely to prescribe haematinics routinely. Table 2 shows the relationship between respondents-related factors and haematinics prescription. There was no significant relationship between haematinics prescription and age ( $p=0.839$ ), sex ( $p=0.3560$ ) marital status ( $p=0.383$ ), current professional status ( $p=0.783$ ), nutritional counseling ( $p=0.850$ ) and client complaints ( $p=231$ ).

**Table 2: Relationship between respondents-related factors and haematinics prescription**

Variable	Haematinics Prescription			Chi-Square Test	P-value
	Yes N (%)	No N (%)	Total N (%)		
<b>Age group</b>					
22-26	24 (100.0)	0 (0.0)	24 (100.0)	2.073	0.839
27-31	22 (95.7)	1 (4.3)	23 (100.0)		
32-36	13 (100.0)	0 (0.0)	13 (100.0)		
37-41	3 (100.0)	0 (0.0)	3 (100.0)		
42-46	5 (100.0)	0 (0.0)	5 (100.0)		
47-51	2 (100.0)	0 (0.0)	2 (100.0)		
<b>Sex</b>					
Male	37 (97.4)	1 (2.6)	38 (100.0)	0.854	0.356
Female	32 (100.0)	0 (0.0)	32 (100.0)		
<b>Marital status</b>					
Married	30 (100.0)	0 (0.0)	30 (100.0)	0.781	0.383
Single	39 (97.5)	1 (2.5)	40 (100.0)		
<b>Current professional Status</b>					
House Officer	33 (97.1)	1 (2.9)	34 (100.0)	1.074	0.783
Registrar	26 (100.0)	0 (0.0)	26 (100.0)		
Senior Registrar	7 (100.0)	0 (0.0)	7 (100.0)		
Consultant	3 (100.0)	0 (0.0)	3 (100.0)		
<b>Gave nutritional counseling?</b>					
Yes	56 (98.2)	1 (1.8)	57 (100.0)	0.231	0.631
No	13 (100.0)	0 (0.0)	13 (100.0)		
<b>*Believe HNSPDPFC?</b>					
Yes	52 (98.1)	1 (1.9)	53 (100.0)	0.325	0.850
No	17 (100.0)	0 (0.0)	17 (100.0)		
<b>**Your clients complain of S/Es?</b>					
Yes	28 (96.6)	1 (2.4)	29 (100.0)	1.434	0.231
No	41 (100.0)	0 (0.0)	41 (100.0)		

HNSPDPFC = Haematinics Makes Significant Positive Difference For Pale Clients; S/Es = Side Effects.

Fig. 2 shows that the commonest reported side effects of oral iron medication were nausea and vomiting.

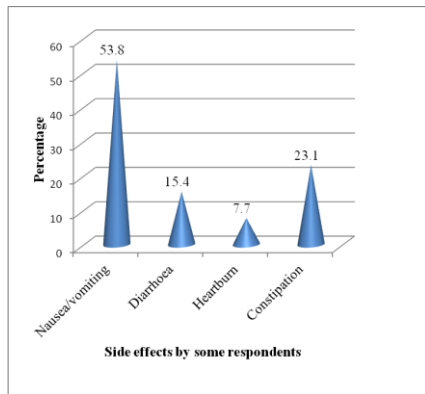


Figure 2: Side effects reported by some respondents

Concerning the timing for commencement of haematinics, 51 (72.9%) of them believed that the medication should be commenced as early as possible and given throughout the period of pregnancy while the remaining prefer to give only folic acid (without iron) in the first trimester except there is clinical or laboratory evidence of anaemia. They suggested the risk of iron toxicity as being the reason they do not routinely give iron in the first trimester even though there was none reported among their clients in the preceding three months. Apart from the antenatal period, only 20 (40%) of the respondents prescribed iron supplement during the postnatal period whereas only 13 (18.6%) recommended preconception folic acid to their clients in subsequent conception in the last six months.

Figure 3 shows the factors that influence or inform the prescription of haematinics among doctors offering antenatal care (ANC). The most common factor was routine practice as departmental/hospital policy (32.2%), followed by concern about maternal wellbeing (23.1%), then fetal wellbeing (22.4%), and other factors as shown.

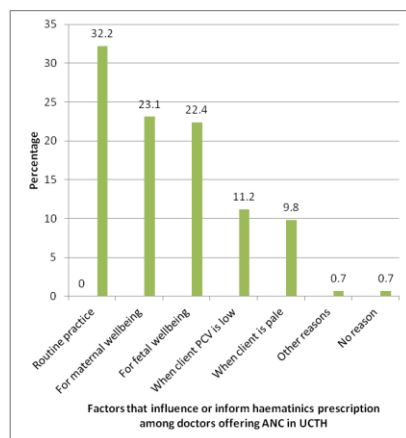


Figure 3: Factors that influence or inform prescription of haematinics among physicians offering ANC in UCTH

## Discussion

This study revealed that the effectiveness of iron supplementation in reducing the menace of anaemia in pregnancy on the mother and newborn child is not only hindered by factors such as supply problem and poor adherence by patients to the regimens but very importantly, by the attitude of the skilled care providers who prescribe or administer the medication. The study shows that although all the respondents studied had prescribed iron medication to pregnant women routinely in the preceding three months, but a significant proportion of them did not prescribe iron supplementation in pre-conception, first trimester and post partum period. Furthermore, many of the practitioners especially the older ones did not routinely offer counselling on nutrition and drug adherence during pregnancy. This is a deviation from global recommendation. WHO recommends that all pregnant women in countries with high prevalence of anaemia should receive daily oral iron and folic acid as part of antenatal care to reduce the risk of low birth weight and maternal anaemia [12] Iron and folic acid supplementation should begin as early as possible. The dose of 30-60mg of elemental iron and 400ug of folic acid per day as recommended throughout pregnancy. As the neural tube closes by day 28 of pregnancy, when pregnancy may not have been detected, folic acid supplementation should be started during the preconception period to prevent neural tube defects [12].

The study also reveals that combination brands of haematinics (iron, folate, vitamins and other micronutrients) were preferred by a significant number of the respondents. The commonest brand utilised/prescribed here was Ranferron - 12. Others include Astyfer, Ferrotone and pregnane. Among the reasons given for this were easy dosing-single capsule per day instead of multiple tablets, patients' compliance and knowledge about the drug facilitated by pharmaceutical representatives. This is in line with the United Nation recommendation. According to United Nations, multiple micronutrient preparations in addition to folic acid and iron supplements may be formulated to include other vitamin and minerals to overcome other possible macronutrient deficiency [13].

Also, WHO [14] recommended that as a standard, all pregnant women in areas of high prevalence of malnutrition should routinely receive haematinics, with appropriate dietary advice to prevent anaemia in pregnant women and where the prevalence is as high as 40% or more, supplementation should continue for three (3) months in the postpartum period. This is particularly important in areas of low iron reserve in women with high parity and short inter-pregnancy intervals.

In this study, although offering iron and folic

acid to pregnant women was routinely done irrespective of maternal haemoglobin status, counselling on medication adherence and proper nutrition was seldom done especially among the high cadre of practitioners. Previous studies have shown that educating the pregnant women on health issues by doctors is positively associated with increased adherence to iron medication [15, 16].

Concerning the factors that influenced the attitudes of the physician in prescribing a particular type/brand of haematinic, drug cost, patients concern, patients' preference and side-effects were factors taken into consideration. This finding is in line with those of other researchers regarding physician prescribing behaviour and attitude [17-19]. Results in Denmark showed that drug price was considered an important factor influencing physician significantly [17]. Reichert et al. showed in their study that physician believed that the cost of medicines was an important criterion for drug prescription especially when the patient was not insured [18].

As the majority of the respondents received information about the drug from the pharmaceutical representatives more than other sources such as textbooks or internets, it is possible that this might have influenced the choice of brands of haematinics patronised by these practitioners. Most of the time marketers, to promote their products, may be bias or may even provide some inducement. Other studies have shown that publications and pharmaceutical sales representations were the most popular sources of information about drugs and that these significantly influenced the prescribing pattern [18, 19].

In conclusion, the findings of this research revealed that although routine iron and folate supplementation was widely practised among the obstetric care givers, a significant proportion of them do not prescribe them in the 1<sup>st</sup> trimester, prenatal and postnatal period despite the high prevalence of anaemia in pregnancy. As iron deficiency anaemia remains a public health problem especially among pregnant women, its control requires a holistic approach and re orientation of physicians involved in antenatal care services as this may enhance the success of the intended intervention.

## Acknowledgement

The authors would like to appreciate all the doctors in the Department of Obstetrics and Gynaecology, University of Calabar Teaching Hospital, Calabar including the respondents who took part in the survey. We also appreciate research assistants who entered the data in computer software for analysis.

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