Original Article

Associated factors and compliance with iron-folic acid therapy among pregnant women of Karachi, Pakistan

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Objectives: Toassess the compliance with Iron Folic Acid (IFA) supplements and associated factors influencing their compliance among pregnant women attending antenatal clinic at KVSS Site Hospital Karachi.

Methods: Thishospital based cross-sectional study was conducted on 290 pregnant mothers from October 1, 2016 to December 31, 2016 using Non-probability consecutive sampling technique. A structured pretested questionnaire was used to collect data. SPSS version 21.0 was used for data analysis.

Results: Compliance with IFA supplements was found to be 63.1%. The age of the mother (AOR=1.955, CI =1.086-3.521), Knowledge on causes of anemia (AOR=2.815, CI= 1.669-4.749) and time of registration at ANC during the pregnancy (AOR= 1.815, CI= 1.047-3.146) were significantly associated with compliance to IFA supplements ($p<0.05$). Forgetfulness, actual of side effects and unpleasant taste were main reasons to non-compliance.

Conclusions: Moderate level of compliance with IFA supplements was found whereas the age of the mother, knowledge of causes of anemia and time of ANC visits had important role in compliance with IFA supplements. Health education sessions on anemia in pregnancy and importance of supplements should be enhanced and encouraging for pregnant women during early ANC registration. (Rawal Med J 201;43:319-323).

Key words: Compliance, iron folic acid, pregnant women

INTRODUCTION

Anemia is considered to be the most common public health problem especially under five years of age and pregnant women. Anemia is defined as the decline in concentration of hemoglobin (Hb) according to age and sex of the individual, resulting in the decreased oxygen carrying capacity of red blood cells (RBCs) to such an insufficient level to meet up the normal physiological requirements of the human body.[1-3] WHO labels as anemia when the blood hemoglobin level is less than 11gm/dl or hematocrit below 37% in pregnant women.[4] Anemia is classified as severe, if the blood hemoglobin level is below 7.0 gm/dl, moderate when level declines in between 7.09.9 gm/dl, and mild from 10.0-10.9 gm/dl.[5]The causes of anemia including insufficiency of iron, micronutrient deficiencies of folate, vitamin B_{12}, riboflavin and vitamin A, malaria and hookworm infestation, chronic infections, cancer and genetic disorders. However, iron deficiency anemia (IDA) is the most prevalent nutrient deficiency disorder throughout the world, particularly among pregnant women and children, accounting for more than half of anemia cases in pregnancy.[2-6]Globally, during the year 2013, the major contributors of deaths were maternal mortality and a neonatal death together comprises 2.5-3.4 million deaths specially in developing regions.[5,7]

During pregnancy, iron is a critical component for both the pregnant mother and the developing fetus.[8]Though more than half of the pregnant womenare anemic, the antenatal Iron Folic Acid (IFA) supplementation coverage is a cost effective strategy that could control the situation. As per recommendations by the WHO; IFA supplements must be given to all pregnant women; a standard daily dose of 30-60mg iron + 400µg folic acid orally in the tablet form started as soon as possible and should be ensured to be taken all throughout gestation. Additionally, three months postpartum IFA supplements are recommended in areas where prevalence of anemia in pregnancy is 40% and above.[9,10]

In Pakistan, IFA supplements (elemental Iron 60 mg

and folic acid 0.5 mg) are provided free of cost through the primary healthcare services, including the outreach LHW program. The overall coverage of the utilization of IFA supplements during recent pregnancy was low in Pakistan (45%) and is even lower (39%) in remote rural areas women.[4]The trouble with IFA supplementation during gestation is compliance resulting in failure of decreasing anemia prevalence among pregnant women.

There are number of factors associated with the compliance of IFA supplement especially in case of pregnant women. These may include the age, birth order and socioeconomic status having critical association with the compliance, however perceived side effects; constipation, vomiting and inadequate awareness on IFA results in lower compliance. Moreover, access to IFA supplements due to living in remote rural areas, maternal and paternal illiteracy andmisinformationon IFA supplements were also associated with the non-compliance to IFA supplements but still multiple hidden factors are need to be explored. This study was aimed to determine the compliance with IFA supplements in pregnancy and to study the factors influencing it and thereby improving the health of pregnant women of an urban area of Pakistan.

METHODOLOGY

This hospital based cross-sectional study employing quantitative method was conducted from January-October 2016 at KVSS SITE Hospital (Kulsumbai Valika Social Security), Karachi, Pakistan. Pregnant women in second trimester onwards who have taken IFA supplement at least for a month and visited for follow-up ANC during the study period were included in the study. Those pregnant women who were not supplied IFA in previous visit due to any reason and with hemolytic anemia and mental disorders were excluded. The sample size was computed by estimating single population proportion using formula $n = Z^2 p q/e^2$ with 90% CI and 0.05 margin of error and considering 38.3% who were taking IFA, as compliance rate and 10% to compensate for non-respondents, a total of 290 sample size of pregnant women were included.[11]Ethical clearance and approval was obtained from the Ethics Committee of Health Services Academy, Islamabad. However, administration approval was taken from Medical Superintendent of study hospital and Director SS Hospital, Sindh before to start the study. An Informed written consent was taken from all women.

The data was collected by interview by trained teamon self-administered structured pretested questionnaire adopted from an Ethiopian study.[1] Chi-square and binary logistic regression were used to describe the relationship between compliance with IFA supplements and predictor variables. Variables with $p<0.05$ and 95% CI with adjusted odds ratio were considered as significantly associated with compliance with IFA supplements.

RESULTS

A total of 290 pregnant women in 2nd and 3rd trimester were interviewed making the response rate of 100%. The mean age of respondents was 26.66±4.2 years (range 18-38). The majority of the participants belonged from urban areas, (97.6%) and majority (89.7%) were classified as housewives (Table 1).

Table 1.Socio demographic and economic characteristics.

Variables		Frequency	Percentage
Age	<= 24	76	26.2
	25 – 29	131	45.2
	30 - 34	68	23.4
	35+	15	5.2
Residence	Rural	7	2.4
	Urban	283	97.6
Occupation	House wife	260	89.7
	Govt Employee	6	2.1
	Private Employee	24	8.3
Educational status	Illiterate	105	36.2
	Primary	90	31.0
	Secondary	80	27.6
	Higher	15	5.2
Husband's Education	Illiterate	45	15.5
	Primary	108	37.3
	Secondary	111	38.3
	Higher	26	9.0
Husband's occupation	Self Employed	11	3.8
	Govt Employee	13	4.5
	Private Employee	266	91.7
Family size	1-3	18	6.2
	4-6	139	47.9
	7 & above	133	45.9
Family Income	< = 16000	223	76.9
	16001-24000	64	22.1
	24001 +	3	1.0

The mean gestational age of the respondents was 7.05±1.52 months. A large number (69%) of respondents were in their third trimester. 62.8% of the respondent lived within the range of 5 kms or less distance from the hospital and (37.2%) live in the range of 6-10 kms from hospital. All respondents responded positively with having counseling on IFA supplements and received IFA supplements free of cost (Table 2).

Table 2.Pregnancy related characteristics/distance from hospital.

	Variable	Frequency	Percentage
Trimester	Second	90	31
	Third	200	69
Gravida	Primigravida	46	15.9
	Multigravida	244	84.1
Parity	Primipara	74	25.5
	Multipara	162	55.9
	Nullipara	54	18.6
First ANC visit	1-3	137	47.2
	4-6	147	50.7
	7-9	6	2.1
No of ANC visits	1-2	64	22.1
	3-4	141	48.6
	5 & above	85	29.3
Distance from H.Facility	0-5 kms	182	62.8
	>5 kms	108	37.2

Compliance with IFA supplements, which was considered as self reported IFA supplements taken for 4 days/week or more and less than 4 days/week. A week preceding the date of interview were noted, in this regards. 63.1% respondents were compliant(Fig. 1).The main reasons for non-compliance were forgetfulness (29%), side effects (25.2%), unpleasant taste (13.9%) and fear that baby will become bigger (1.7%). The pregnant mothers who missed the IFA supplement doses due to side effects reported vomiting (23.4%), heart burn (17.6%), abdominal cramps (10.3%) and (3.10%) constipation (Table 3).

Fig. 1. Compliance with IFA.

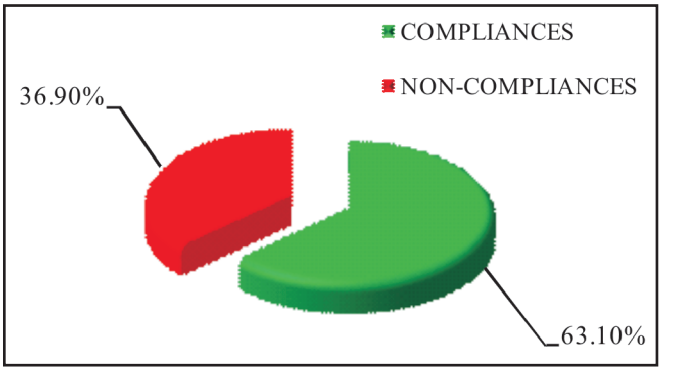

Table 3.Binary Logistics Regression results showing factors associated with compliance.

Variables Category	Compliant	Non-compliant	P value	COR (95%CI)	AOR (95% CI)
Age					
18-24	56 (73.7)	20 (26.3)	**0.026**	**1.918**	**1.955**
25 ≥	127(59.3)	87 (40.7)		**(1.075-3.422)**	**(1.086-3.521)***
Husband's occup-					
Self Employed	10(90.9)	1 (9.1)	0.078	**2.358**	**2.221**
Govt Employee	10(76.9)	3 (23.1)		**(1.055-5.270)**	(0.853-5.784)
Private Employee	163(61.3	103 (38.7)			
Family size					
1-3	15 (83.3)	3 (16.7)	0.088	**1.023**	1.023
4-6	81 (58.3)	58 (41.7)		(0.689-1.521)	(0.678-1.545)
7 & above	87 (65.4)	46 (34.6)			
Gravida					
Primigravida	32 (69.6)	14 (30.4)	0.322	**1.408**	1.126
Multigravida	151(61.9)	93 (38.1)		(0.714-2.776)	(0.377-3.364)
Parity					
Primipara	48 (64.9)	26 (35.1)	0.535	**1.195**	1.025
Multipara	98 (60.5)	64 (39.5)		(0.874-1.632)	(0.621-1.691)
Nullipara	37 (68.5)	17 (31.5)			
First ANC visit					
1-3	93 (67.9)	44(32.1)	**0.026**	**1.616**	**1.815**
4-6	89 (60.5)	58(39.5)		**(1.033-2.530)**	**(1.047-3.146)***
7-9	1 (16.7)	5 (83.3)			
No: of ANC visits					
1-2	41 (64.1)	23(35.9)	0.970	**1.007**	0.898
3-4	88 (62.4)	53(37.6)		(0.721-1.408)	(0.598-1.349)
5 & above	54 (63.5)	31(36.5)			
Knowledge of anemia causes					
Yes	136(70.8)	56(29.2)	**<0.001**	**2.635**	**2.815**
No	47(48.0)	51(52.0)		**(1.592-4.362)**	**(1.669-4.749)***

DISCUSSION

In this study, the results revealed the compliance rate to IFA supplements was 63.1%. This is consistent with a study done from a South Indian city, which reported overall compliance was 64.7%.[2]. Although the actual level of compliance with IFA was not known. the overall utilization of IFA supplements was low in Pakistan (45%) and is even lower (39%) in the case of remote rural area women.[4]Recently, cross sectional household survey conducted in 14 districts of Pakistan revealed 38.3% of interviewed

women reported that they have taken IFA supplements during their last pregnancy.[11] This is consistent with a study from an urban slum of Surat, Gujarat, India where compliance with IFA supplements was 61.7%.[12]

However, compliance in our study was much higher than various community based and cross sectional studies fromvarious parts of the world. Compliance to IFA was 39.2% in a study from Misha district, South Ethiopia,[1] 20.4% in Mecha district Western Amhara,[13]24.5% in a study from Kenya[14] and 37.2% in studyfrom Tigrey, Ethiopia.[15] The main reasons behind the variation in such results may be due to different geographical location, time gap, study conducted in urban area, changes and difference in life style, awareness level and possibly the role of medical counseling and media.

The reasons for non-compliance were forgetfulness, actual of side effects and fear that baby will become larger. These findings are consistent with studies fromEthopia[1] and India.[2]Similar findings have been reported by earlier from Pakistan where forgetfulness, actual of side effects are among barriers of non use of IFA supplements.[10]In this study, crude and multivariate analysis revealed that age of the mother is significantly associated with compliance. The main reasons may be that the middle and younger women are more aware of the consequences of anemia and have more perception and experience of side effects also than that of the elder women. This finding was somewhat consistent with a study from Haryana, India.[16] Another study from Mecha district,Ethiopia showed that women of age 35-49 years old were more compliant with IFA supplements.[13]

This study also revealed that time of first ANC visit was significantly associated with compliance to IFA supplements. This is because of that early registration resulting in more antenatal visits and with repeated counseling leads to more compliance. The finding is consistent with studies from Ethiopia[15]and rural Bihar, India.[17] Another study from Indonesia reported same results.[18] Our study also revealed that the pregnant women having knowledge of anemia causes were more compliant to IFA supplements. This is similar to a study from Ethopia.[13]

CONCLUSION

Moderate level of compliance with IFA supplements was found among our study population. The age of the pregnant mothers, time of first ANC clinic registration during the current pregnancy and knowledge of anemia causes were significantly associated with compliance to IFA supplements. Forgetfulness, actual of side effects e.g., vomiting, heartburn and abdominal cramps weremain reasons to non-compliance. Hence, it is recommended that iron salt with slow release formulation may be used before conception and awareness among pregnant women might benefits in longer term.

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Conception and design: Lajpat Kessani
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Conflict of Interest: None declared
Rec. Date: Oct 28, 2017 Revision Rec. Date: Dec 10, 2018 Accept Date: Jan 10, 2018

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