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Compliance to Iron Folic Acid Supplementation among Antenatal Mothers Attending a Primary Health Centre

A community Based Cross Sectional Study

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ABSTRACT

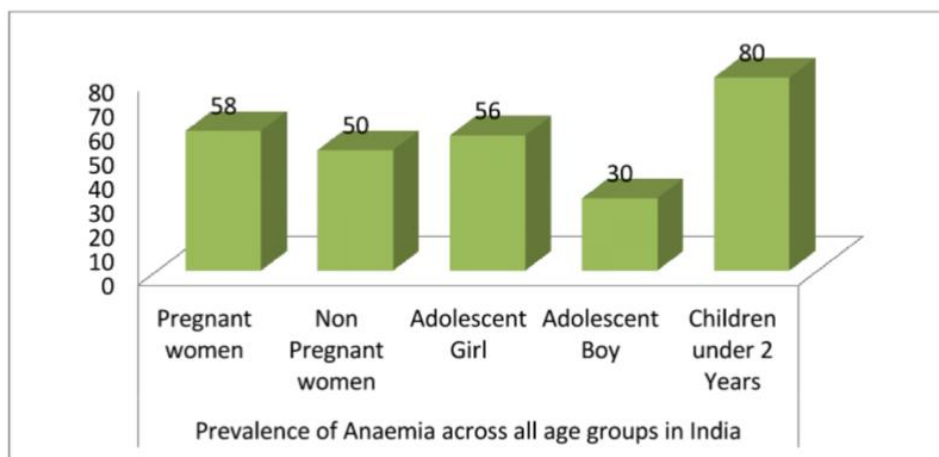
Pregnant women suffer from Iron deficiency anaemia. National programme of India proposes IFA supplementation to pregnant women for 100 days for safe motherhood. Success of such interventions depends on the compliance to intake. Health system and patient's factors are determine the compliance status, which are not studied extensively. Limited adherence to therapy is denying success of supplementation. This study was carried out to assess compliance status and factors influencing it.

Keywords: Compliance, IFA Tablets, Knowledge.

1. INTRODUCTION

The World Health Organization (WHO) estimates the number of people with anaemia worldwide to be very high (2 billion) and approximately 50% of anaemia can be attributed to Iron deficiency ⁽¹⁾. Anaemia continues to be a major health problem in India. Iron deficiency anaemia occurs more often in women than in men. The main reason is excessive loss of iron during menstruation and childbirth. Moreover the risk of anaemia is aggravated by poor literacy, ignorance and lack of knowledge about iron deficiency anaemia ^(2,3,4).

In pregnancy, lack of knowledge about anaemia and its prevention is one of the main causes for high prevalence. According to the National Iron Plus Initiative (NIPI) - Government of India's Flagship programme for anaemia, India stands with the highest prevalence of anaemia across all age groups. Poor social and economic factors further aggravate the precarious health conditions of the women, children and adolescents who cannot afford and access to health care facilities in remote areas of the state. Anaemia accounts for 20% of maternal deaths in India ⁽⁵⁾.



Source: National iron plus initiative, Ministry of Health and Family welfare, Government of India
National Family Health Survey 3--NFHS 3

Iron is an essential nutrient, which is required for haemoglobin synthesis and its demand increases during pregnancy. This is further worsened by loss of appetite and inadequate diet in antenatal mothers⁽⁶⁾. Iron deficiency during pregnancy is a risk factor for anaemia, preterm delivery, low birth weight baby and increased maternal mortality. Folic acid deficiency in early pregnancy is associated with increased risk of neural tube defects.^(7,8)

It is estimated that as many as 20% of maternal deaths are due to anaemia and its complications^(9,10). The Ministry of Health in India is running the programme of provision of one tablet containing 100 mg of elemental iron and 0.5 mg of folic acid for daily consumption to all women during pregnancy for 100 days. But the success of such intervention depends on compliance to IFA tablets intake. Missing 2 or more tablets consecutively is usually considered as noncompliance⁽¹⁾. Only 23.6% of pregnant women consumed more than 100 tablets out of the 37.2% who received them during pregnancy in India^(11,12).

This compliance is essential for IFA supplementation which in turn is influenced by several social and demographic factors. Despite the efforts to reduce iron deficiency anaemia during pregnancy, only few women take the iron supplements as recommended.

Anaemia is an important but poorly studied nutritional risk among Indian antenatal mothers. Protecting maternal and foetal health in these settings involves practical measures relating to diagnosis and treatment of anaemia cases, appropriate dosage of Iron provision, health education, utilization of prenatal health centre services and surveillance in perinatal period to reduce the complications of anaemia⁽¹³⁾.

This study aims to estimate the proportion of antenatal mothers compliant to Iron- Folic acid supplementation attending a primary health centre in rural setting in Tamil Nadu.

2. REVIEW OF LITERATURE

According to World Health Organization (WHO), anaemia affects half a billion women of reproductive age worldwide^(1,2). Failure to address anaemia leads to poor health quality of women's life and has an intergenerational effect on health outcomes of the population. Children are mentally and physically affected and are not able to contribute fully to the progress of respective societies and to the economic wellbeing of their country. Therefore the WHO's 'Nutritional targets for 2025' includes the reduction of anaemia by 50% by 2025⁽⁴⁾

Anaemia is the most common haematological disorder during pregnancy. India has the highest prevalence of anaemia (87%)⁽⁶⁾. Anaemia is known to be associated with multiple factors such as poor socioeconomic status, high parity, short birth interval, poor diet in both quality and quantity, lack of health and nutritional awareness and high rate of infectious diseases like parasitic infestation. In developing countries, under privileged people have less access to medical care and preventive measures. Thus it increases their risk of developing anaemia and contributes to high maternal mortality⁽⁷⁾.

The World Health Organization (WHO) defines anaemia as blood haemoglobin concentration less than 11 gm/dl. Anaemia, especially if severe, is directly or indirectly responsible for 40% of maternal death.

The WHO estimates that 58% of the women in developing countries are anaemic. In some parts of India, its prevalence may be as high as 88%. Iron is required for haemoglobin synthesis and during pregnancy there is an increase in the requirement of iron for a healthy outcome of mother and foetus, which is not fulfilled by the regular diet. This may get worsened by the loss of appetite during pregnancy. Therefore the most suitable mass intervention for iron supplementation is administering iron along with folic acid in the form of tablets to the pregnant women which aims at increasing the haemoglobin concentration in blood, so that the level of haemoglobin at term could be increased to the best possible extent.

The national protocol in India proposes one tablet containing 100 mg elemental iron and 0.5 mg folic acid for daily consumption to all women during pregnancy for 100 days as a part of safe motherhood programme to combat this threat.

But effectiveness and success of such interventions depends on the compliance to Iron folic acid tablets intake. Compliance describes the degree to which a patient correctly follows a medical advice. Many experts believe that one of the main reasons that national iron supplementation programme have failed is women's noncompliance. There are many factors including the health system and patient's factors that determine the compliance status, which are not studied extensively.

Only 23% women consumed iron tablets for at least 90 days during pregnancy, says a report (IIPS, 2007). Limited adherence to therapy is denying the success of supplementation programme, a scenario common in other developing countries and this is mostly due to side effects and lack of motivation (Lacerte, 2011; Khan 2010:WHO). Adherence is the vital issue in the success of Iron supplementation programme.⁽⁸⁾

Improving compliance is therefore, essential for prevention and control of anaemia and to make iron supplementation programme successful. Compliance is influenced by many socio demographic factors and women's knowledge about anaemia⁽⁹⁾. This study was carried out to assess the status of compliance to IFA supplementation among antenatal mothers and the factors that influence it.

3. OBJECTIVES

- To estimate the proportion of antenatal mothers compliant to Iron- folic acid supplementation, attending Primary health centre, Nandhivaram, Tamilnadu.
- To identify the factors affecting compliance of antenatal mothers to Iron and Folic acid supplementation.

4. METHODOLOGY

Study Design: A community based cross sectional study.

Study Centre: Primary health centre, Nandhivaram, Tamilnadu.

Study Period: One month (July 2017)

Study Population: The study population consists of antenatal mothers in the study area who attended antenatal clinic & who were supplemented with Iron folic acid tablets.

Inclusion Criteria: Antenatal mothers who have been booked and reside in the Nandhivaram PHC area and had been prescribed IFA tablets for at least one month prior to the date of study were included as subjects.

Exclusion Criteria: Visitors to the PHC were excluded.

SAMPLING: Sample Size:

Sample size: $Z^2_{\alpha}pq/L^2$

According to the previous study in India, the compliance of Iron-Folic acid supplementation among antenatal mothers is 23.6 %^(10,11).

Allowable absolute error -7%, α level at 5% and 10% - non respondents.

Final sample size is 162.

Sampling Method:

In Nandhivaram PHC, around 100 antenatal mothers in antenatal clinic day of every week and 60 antenatal mothers in week days had attended. Among them 10 -12 antenatal mothers per day were selected by systematic random sampling. Every 7th patient was included until the required sample size was reached.

5. MATERIALS AND METHOD

After obtaining permission from the Institutional Ethics Committee and informed consent of the participants a pre tested semi structured validated questionnaire in Tamil was administered and data was collected.

The questionnaire consists of:

Part A - Demographic profile of antenatal mother

Part B - Pregnancy related information and knowledge about anaemia which includes 10 questions related to anaemia, its causes, signs & symptoms, treatment and prevention. Correct answer was given a score of 1 & wrong answer was given a score of 0. Maximum score was 10. Scoring was categorized as follows –

Poor knowledge: 0-25%

Average knowledge: 26 -50 %

Good knowledge: 51 – 75%

Excellent knowledge: 76 - 100% ⁽²⁰⁾

Part C - Compliance status and factors affecting the compliance to IFA supplementation.

Operational Definitions:

The subject is considered to have noncompliance if she had missed 2 or more tablets consecutively ^(17,18).

Study Variables:

Predictor Variables: Age, religion, residence, occupation, education, birth order, no. of antenatal visits, past h/o anaemia, malaria, travel distance to the health care centre, receiving counselling about IFA.

Confidentiality:

Informed consent was obtained from all participants. Confidentiality and safety of the subjects were taken care of.

Data Analysis:

The data thus collected was entered in Microsoft Excel sheet and analysed using version 22.of the Statistical Package for Social Sciences Packages (SPSS).

6. RESULTS

In this study, 69% (n=112) of the participants were found to have compliance and 31% (n=50) were found to have noncompliance to the IFA tablets intake in the past one week of enquiry from the study date.

Table 1: Socio Demographic Profile of the Participants

| Socio Demographic Profile | Category (in years) | Total n (%) |
|---------------------------|---------------------|-------------|
| Age | 15-19 | 5 (3.1) |
| | 20-34 | 156 (96.3) |
| Gestational age | 1 trimester | 2 (1.2) |
| | 2 trimester | 26 (16.1) |
| | 3 trimester | 134 (82.7) |

Table 2: Factors Affecting the IFA Intake

| Factors affecting the IFA intake | Category (in years) | Total n (%) |
|---|---------------------|-------------|
| No.of antenatal visits | <4 | 32 (19.8) |
| | >4 | 130 (80.2) |
| Distance to the nearest healthcare facility | <5km | 162 (100) |
| | >5km | - |
| Transport mode | By walk | 41 (25.3) |
| | Own vehicle | 75 (46.3) |
| | bus | 44 (27.2) |
| Got counselling about IFA intake | Yes | 160 (98.8) |
| | No | 2 (1.2) |
| H/o Anaemia | Yes | 38 (23.5) |
| | No | 124 (76.5) |
| Any illness before pregnancy | Malaria | 2 (1.2) |
| | Others(Hypothyroid) | 13 (8) |
| | None | 147 (90.7) |

Table 3: Details about IFA Intake of the Participants

| Details | Category | n (%) | | Total n (%) |
|---|----------------|--|---|----------------|
| | | Among those havin compliance (N = 112) | Among those havin non compliance (N = 50) | |
| Have taken tablets from the day of prescription | Yes | 100(89.3) | 39(78.0) | 139 (85.8) |
| | No | 12(10.7) | 11(22) | 23 (14.1) |
| If no, reason | Forgot | 2(16.7) | 1(9.1) | 3 (13) |
| | Ignorance | 3(25.0) | 2(18.2) | 5 (21.7) |
| | Vomiting | 4(33.3) | 8(72.7) | 12 (52.2) |
| | Out of station | 3(25.0) | - | 3 (13) |
| Duration of intake | <100 days | 40(35.71) | 22(44) | 62 (38.2) |
| | >100 days | 72(64.28) | 28(56) | 100 (61.7) |

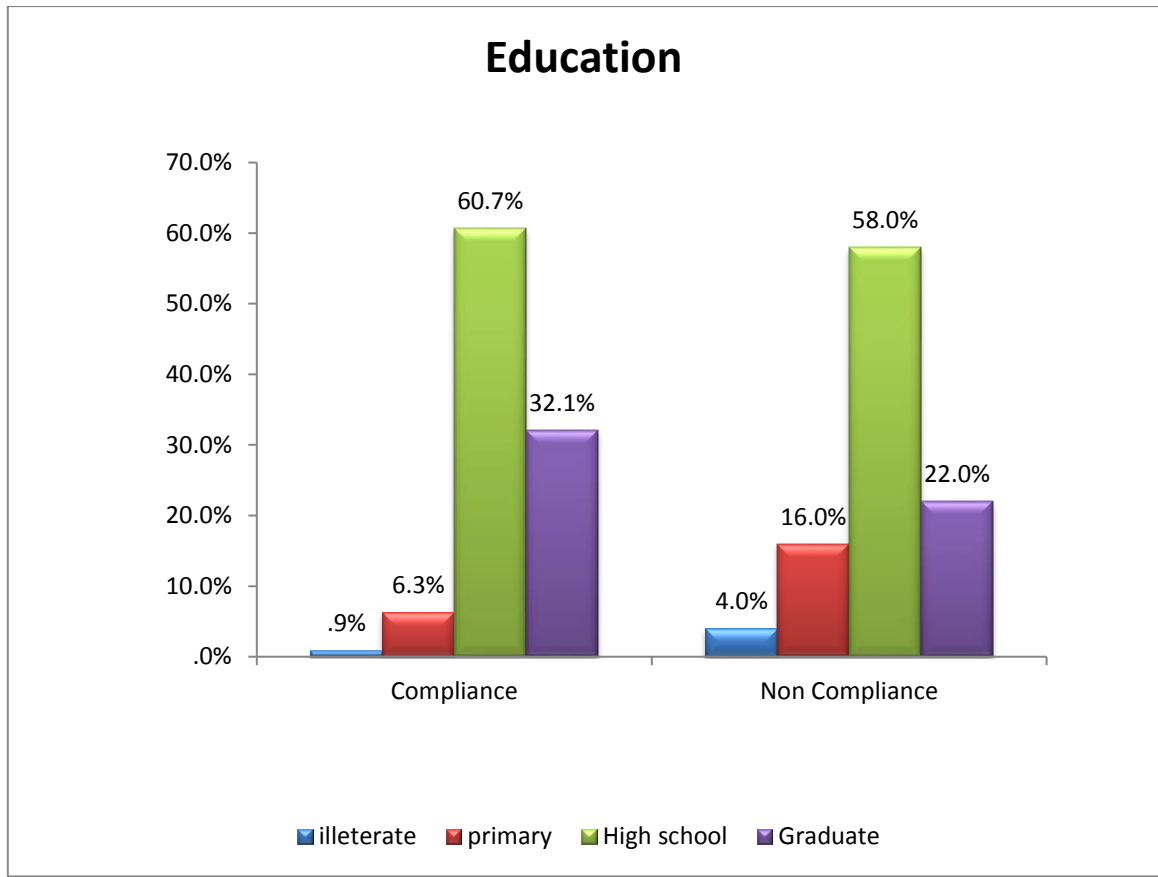


Figure 1: Education Status of the Participants

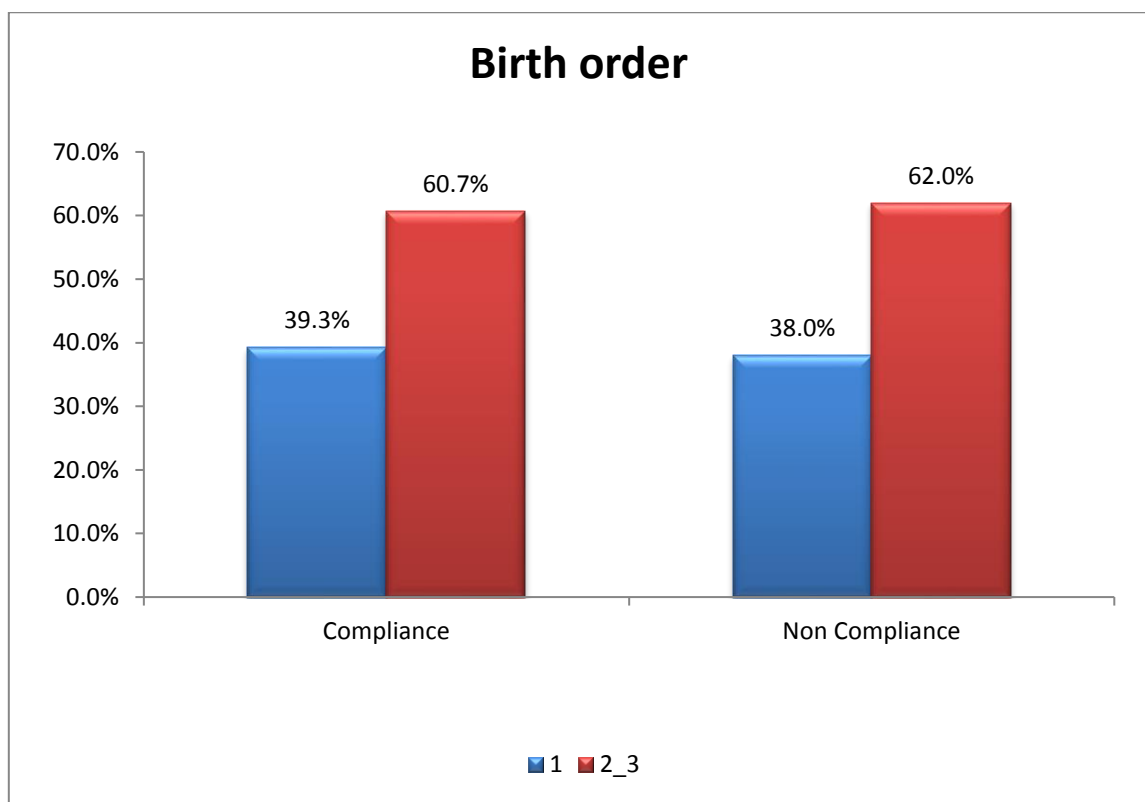


Figure 2: Birth Order Details of the Participants

Inference Table

| Socio demographic profile | Category | n (%) | | Total n (%) | P VALUE |
|---|-------------|---|--|----------------|------------|
| | | Among having compliance (N = 112) | Among having non compliance (N = 50) | | |
| H/O anaemia | Yes | 27(24.1) | 11(22) | 124 (76.5) | 0.770 |
| | No | 85(75.9) | 39(78) | 38 (23.5) | |
| Transport mode | By walk | 28(25.0) | 13(26) | 41 (25.3) | 0.085 |
| | Own vehicle | 54(48.2) | 21(42) | 75 (46.3) | |
| | Bus | 28(25.0) | 16(32) | 44 (27.2) | |
| Knowledge about anaemia | Poor | 11(9.8) | 8(16.0) | 19 (11.7) | 0.033 |
| | Average | 20(17.9) | 17(34) | 37 (22.8) | |
| | Good | 35(31.3) | 14(28) | 49 (30.2) | |
| | Excellent | 46(41.1) | 11(22) | 57 (35.2) | |
| Took tablets from the day of prescription | Yes | 100(89.3) | 39(78.0) | 139 (85.8) | 0.057 |
| | No | 12(10.7) | 11(22) | 23 (14.2) | |
| If no, reason | Forgot | 2(16.7) | 1(9.1) | 3 (13) | 0.184 |
| | Ignorance | 3(25.0) | 2(18.2) | 5 (21.7) | |
| | Vomiting | 4(33.3) | 8(72.7) | 12 (52.2) | |
| | Other | 3(25.0) | - | 3 (13) | |
| Duration of intake | <100 days | 40(35.71) | 22(44) | 62 (38.2) | 0.316 |
| | >100 days | 72(64.28) | 28(56) | 100 (61.7) | |

Out of all variables, knowledge about anaemia had the significant association

(p value < 0.05) with compliance to IFA intake in this study.

| REASON FOR COMPLIANCE n (%) N = 112 | |
|---|----------|
| Clinician instruction | 72(64.2) |
| Family support | 0 |
| Fear of illness | 38(33.9) |
| Free of cost | 0 |
| Anaemia knowledge | 2(1.73) |

| REASON FOR NON COMPLIANCE n (%) N = 50 | |
|--|--------|
| Side effects | 19(38) |
| Family influence | 0 |
| Colour, taste | 3(6) |
| Forgetfulness | 10(20) |
| Belief of affecting mother & baby | 0 |
| Negligence | 6(12) |
| Loss of tablets or prescription | 9(18) |

7. DISCUSSION

Anaemia prevention programme has been recently strengthened by Govt. of India with iron plus guidelines with gain from NRHM and support of workers like ASHA, FHW & ANM. Pregnant women can get IFA tablets free of cost at all government health centres and also through distribution by health workers during house to house visits. In spite of these efforts anaemia in pregnancy still stands as a major health problem. Compliance to IFA pills is an important factor that determines the anaemia status of women.

In this study, 69% (112) of participants were found to have compliance to IFA supplementation which is better to 58.1% in a study in an urban area of south India (8).

Women aged 20-34 years were most commonly presented (n=156) irrespective of the degree of compliance. So the compliance was not influenced by the age factor. Even though IFA tablets were prescribed after first trimester, 2 antenatal mothers who didn't have hyperemesis received in first trimester itself.

As the mode of transport was by own vehicle (42%) and the nearest healthcare centre was located <5km (100%) the compliance to the IFA tablets were not affected by these factors.

Among the noncompliance group, out of 50 antenatal mothers, 40 women had completed their higher secondary education. So, compliance was not affected by educational status.

31 women among non-compliant were in 2nd and 3rd birth order. This implies that the awareness about IFA supplementation was not sufficiently given in the 1st pregnancy itself.

80% of antenatal mothers had >4 antenatal visits and 98.8% of women got counselling about IFA intake but still 50 participants had noncompliance to the IFA intake.

This clearly shows that women still have noncompliance to IFA supplementation although they were educated and counselled during their antenatal visits. It signifies the need of structured counselling about consequences of irregular intake during every antenatal visits.

History of anaemia is present in 22% (n=11) of women having noncompliance. This data clearly indicates that the antenatal mothers were not adequately motivated about IFA supplementation.

The antenatal mothers had taken the tablets from the day of prescription is 85.8% in total study population.

50 antenatal mothers were non-compliant and 24 participants had missed <2 tablets non consecutively due to side effects (like gastritis, dark stools), forgetfulness & lack of tablets (32%,20%,8% respectively).

There was no significant drug intake other than citrizine, eltroxin, paracetamol (90%) during pregnancy. Few antenatal mothers (n=13) had hypothyroidism before pregnancy and continued to take tablet eltroxin with IFA tablets.

The degree of compliance was mainly influenced by clinician instruction and the fear of illness (64.3% & 33.9% respectively). These two factors are mainly gained by having knowledge about anaemia.

This study shows the **significant (p value <0.05)** association of knowledge about anaemia with IFA intake.

Therefore by creating enough awareness & counselling about anaemia and by correcting the factors responsible for noncompliance, we can improve the compliance status of the antenatal mothers to IFA intake.

8. LIMITATIONS

- The limitation of this study is chances of recall bias among the study subjects regarding the IFA intake.
- Some of the factors such as deficient supply of iron pills & provider compliance are not taken into consideration.

9. RECOMMENDATIONS

Anaemia is a common cause of morbidity among pregnant women. IFA tablets will decrease the morbidity of both mother and foetus. Hence various interventions such as

- Improvement in the education status.
- Counselling about the significance of IFA tablets during antenatal visits should be repeatedly explained by the doctor.
- Health education sessions should be conducted for pregnant mothers on regular basis.
- Counselling about monitoring of IFA intake to their family members.
- Increase the no. of antenatal visits to reassure that they have enough IFA tablets.
- In this study it was found that knowledge about anaemia through counselling is the most significant factor that determines the compliance. Therefore increasing awareness about anaemia and iron supplementation can improve their compliance to IFA intake and decreasing the prevalence of anaemia.

10. ABBREVIATIONS

IFA - Iron and Folic Acid

CDCP - Centre for Diseases Control and Prevention

ASHA - Accredited Social Health Worker

ANM - Auxiliary Nurse Midwife

FHW - Female Health Worker

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Questionnaire

[IFA Questionnaire in English](#)

[IFA Questionnaire in Tamil](#)