DETERMINANTS OF COMPLIANCE TO IRON FOLATE SUPPLEMENTATION AMONG PREGNANT WOMEN IN DAMOT SORE DISTRICT SOUTHERN ETHIOPIA.

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Jimma, Ethiopia

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Abstract

Background: - Anemia is a serious ill-health which affects both mother and child and may lead to maternal and child mortality. Iron folate supplementation is one of the key interventions and cost-effective strategies for the prevention and control of iron deficiency anemia among pregnant women. However; still there is low compliance to iron folate supplementation among pregnant;which is 2.8% in study settingand its determinants were not well identified in this study area.

Objective: - To assess determinants of compliance to iron folate supplementation among pregnant women in Damot sore district, Wolaita Zone Southern Ethiopia, 2020.

Methods: - A facility-based unmatched case-control study was conducted from February to march, 2020 using interviewer-administered questionnaires and consecutive sampling technique was used to select study participants. Data were entered into Epidata 3.1 and exported to the Statistical package for social science version 21.0 for analysis. Bivariable and multivariable logistic regression were used to identify factors associated with iron folate supplementation. Adjusted odds ratios (AOR) with 95% confidence interval (CI) and p-value<0.05 were used to declare statistical significance.

Results: - A total of 309 pregnant women (103 cases and 206 controls) participated in this study. Being rural dwellers [AOR (95%CI): 0.398(0.214-0.74)], pregnant women who couldnot read and write[AOR (95%CI): 0.1(0.02-0.43)], could read and write[AOR (95%CI): 0.3(0.14-0.66)] poor knowledge on iron folate supplementation [AOR (95%CI): 0.2(0.11-0.37)],counseling about iron folate supplementation [AOR (95%CI): 0.34(0.18-0.64)] and negative perceptions towards anemia and iron folate supplementationwere significantly associated with compliance to iron folate supplementation at p-value of <0.05.

Conclusion: -This study revealed that place of residence, educational status of mothers, knowledge about Iron folate supplementation, counseling about Iron folate supplementation, and perceptions towards it were determinants of compliance to iron folate supplementation. Therefore, an effort should carry out to improve compliance with iron-folate supplementation among pregnant women in the study setting.

Keywords: -compliance, Iron folate, pregnant women.

Acknowledgment

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Acronyms and Abbreviations

ANC-------------------------------------Antenatal care

AOR-------------------------------------Adjusted odds ratio

BSc-------------------------------------Bachelor in Science

CI---------------------------------------Confidence interval

EDHS-----------------------------------Ethiopia Demographic and Health survey

EPHI---------------------------------- Ethiopian public health institute

ERC-------------------------------------Ethical review committee

ETB-------------------------------------Ethiopia birr

HC--------------------------------------Health center

ID---------------------------------------Iron deficiency

IFAS------------------------------------Iron folic acid supplementation

MPH/E---------------------------------Masters of public health in Epidemiology

NNP------------------------------------National nutrition program

PCA------------------------------------Principal component analysis

PI---------------------------------------Principal Investigator

SNNP-----------------------------------South nation nationalities people

SPSS------------------------------------Statistical package for social sciences

WHO------------------------------------World health organization

CHAPTER ONE: - INTRODUCTION

1.1. Background

Pregnancy is an important stage in the life of women, which affects the woman and her offspring directly and indirectly. In the pregnant stage; women have high requirements for iron and folate because of changes in body function and hormonal states as does fetal requirements increase, this results in an increased chance of the development of iron and Folate deficiency (1). Pregnancy represents a challenge from a nutritional side because micronutrient intake during the periconceptional time and in pregnancy affects fetal organ development and the mother's health. An unsuitable diet in pregnancy can lead to several deficiencies including iron deficiency and may impair placental function and play a part in miscarriage, preeclampsia, intrauterine growth restriction, and preterm delivery. Dietary practice of pregnant mothers can direct them to deficiencies of iron and folate and result in negative health impacts for the mother as well as the fetus or newborn (2).

Anemia exists when red blood cells circulating in the body are insufficient to meet normal physiological oxygen-carrying needs (3). Under world health organization (WHO) pregnant women are said to be anemic if the Hemoglobin levels drop below 11gm/dl. It can result in various health complications in pregnant women, where it can lead to adverse maternal and fetal outcomes (4).

Globally Anemia is highly prevalent among pregnant women and is estimated to be 41.8% andit may affect 56% of pregnant women in developing countries(5). Iron deficiency (ID) is the most prevalent micronutrient deficiency among pregnant women, leading to iron deficiency anemia. In Ethiopia, 29% of pregnant women were anemic according to EDHS, 2016. Anemia is a serious ill-health which affects both mother and child and may lead to maternal and child mortality. The burden of Iron deficiency during pregnancy results in a higher risk of infection, pre-eclampsia, intrauterine growth restriction, premature birth, and low birth weight, prolonged labor, elevated maternal and perinatal mortality. Moreover, Folate deficiency during pregnancy causes anemia in pregnant and birth defects in a fetus(4, 6-8). Extra consequences of anemia in pregnancy include cardiovascular dysfunction, reduced physical and mental performance, reduced immune

function, decreased prepartum blood reserves, and increased threat of blood transfusion in the postpartum period (9).

Optimal Iron folate supplementation is the main and cost-effective approach for the prevention and control of iron deficiency anemia in pregnant women (10). Again its supplementation during pregnancy prevents against low birth weight, the incidence of prematurity, spinal bifida, and postpartum hemorrhage (11). World Health Organization recommends standard daily iron folate supplements to be initiated early during pregnancy though its non-compliance is an imperative challenging factor in combating anemia (4).

1.2. Statement of the problem

The magnitude of anemia in pregnant women remains unacceptably high at a global level, particularly in developing countries. In addition to this, the proportion of pregnant women who receive iron folate supplementation remains persistently low (12). Studies conducted in different region of the world particularly Africa countries including our country Ethiopia revealed that the compliance to iron folate supplementation among pregnant women were unexpectedly very low(13-18). Ethiopia Mini Demographic and health survey of (2019), indicated that compliance to iron folate supplements for pregnant women in Ethiopia is 11% at National level and 4.3% in South nation, nationalities people(SNNP) regional state for the recommended period of 90 or more days (19). Again facility-based cross-sectional study in Wolaita Zone, South Ethiopia showed that only 2.8% of pregnant women had received the supplement for 90 days or more which is very low when compared with national even with the regional level of adherence to iron folate supplementation (18).

The consequences of poor compliance to iron folate supplement were anemia during pregnancy and are also associated with increased risk of neural tube defects, preeclampsia, fetal malformations and preterm delivery (7).

The 2020 targets of the National Nutrition Program (NNP) of Ethiopia decrease the anemia prevalence among pregnant women from 22% to 14% by providing Pregnant women with routine iron folic acid supplementation. Despite the efforts made to reduce iron deficiency anemia by providing iron folate supplementation as a national program for pregnant women still now, there is poor compliance to iron folate supplementation (20). In addition to this, there is

limited evidence regarding the influence of perception towards IFAS on compliance to iron folate supplementation and on top of this counseling on iron folate supplementation by health extension worker during home to home visit as a factor that positively or negatively influence the iron folate compliancewere not assessed. Again most of the studies done on compliance to iron folate supplementation were descriptive rather than analytic study. Therefore this study aims to assess perception towards iron folate supplementation, counseling of iron folate supplementation by health extension worker during home to home visit, socio-demographic factors, obstetric and health-related factors, health service and client-related factors that determine compliance to iron folate supplementation among pregnant women in Damot Sore district, southern Ethiopia.

1.3. Significance of the study

The findings of this study may help for evidence-based communication and decision making for different organizations (stakeholders in the study area) at a different level by revealing determinants of compliance to iron folate supplementationto pay attention for prevention and control of anemia during pregnancy with the accessible and sustainable provision of IFA strategies by making sure that the various enabling factors that contributing the pregnant women compliance to IFA supplementation have been identified. Also, the information from this study may help to increase and update knowledge of health care providers at the health institution level regarding determinants of compliance to iron folate supplementation to provide quality care to ANC attendants. In addition, the result ofthis study will be useful to guide program planning and organizing care for pregnant mothers. It may also enrich literature available on the issue and may help for further studies.

CHAPTER TWO: LITERATURE REVIEW

2.1. Compliance to iron folate supplementation among pregnant women

A study conducted in Kathmandu Nepal showed that 73.2% of pregnant women had high compliance to iron folate supplementation (21). Another study done in Surat city of Gujarat state, west India and urban areas of south India at the different time revealed that the level of compliance among pregnant women to IFAS were 61.7% and 64.7% respectively (22, 23). Also study conducted in West Iran attested that the compliance of pregnant women specifically to iron and folate supplementation was 71.6% and 81.5% respectively (1).

A study conducted in Mafikeng town, North West province, South Africa attested that 93% of pregnant women were compliant to iron folate supplementation (24). Another study done in Enugu, South Eastern Nigeria revealed that the compliance to iron supplementation among pregnant women was 65.9% (25). A facility-based cross-sectional study conducted in Uganda showed that only about 12% of ANC attendant pregnant women had compliant to iron supplementation (16). Around 32.7% of pregnant women were compliantwith iron supplementation according to the report of the study of Kiambu county town, Kenya (26). A cross-sectional study conducted in Khartoum, Sudan 92.1% of pregnant women use iron folate supplementation (27).

A facility-based cross-sectional study conducted in Lay Armachiho district, North Gondar showed that 28.7% of pregnant women were compliant to iron folate supplement (28). Again facility-based comparative cross-sectional study conducted in the North West zone of Tigray revealed that the level of compliance to iron folate supplementation among urban and rural pregnant women were 37.2% and 28.9% respectively (29). Around 55.3% of pregnant women who attended the University of Gondar Hospital were compliant with iron folate supplementation (30). About 93% of pregnant women who attended all health institutions in Asella town were compliant with IFA supplements(5). The status of compliance to iron folate among pregnant women in pastoral communities of the Afar region was 22.9% (17). A study conducted in Government health centers in Addis Ababa showed that 60% of pregnant women who attended ANC at governmental health centers in Akaki Kality sub-city compliant to iron folate supplement (31). Around 39.2% of pregnant women in Misha District of Hadiya Zone had iron

folate compliant (32). A study conducted in Wolaita Sodo town, south Ethiopia attested that the overall compliance rate was 73.2% but only 2.8% of pregnant women had good compliance to iron folate supplementation (18).

2.2. Socio-demographic characteristics and iron folate compliance

Studies conducted in south India, southern brazil, Tanzania, Western zone of Tigray, Ethiopia and Mecha district western Amhara showed that the age of pregnant women was one of factor significantly positively associated with compliance to iron folate supplementation(1, 15, 23, 29, 33, 34). In contrast to that the age of pregnant women was not significantly associated with iron folate compliance according to the studies done in Eastern Terai of Nepal, Southeastern Nigeria, south Senegal, Gondar Northwest Ethiopia, Asella Ethiopia, Segen zone, south Ethiopia and Wolaita zone South Ethiopia(5, 10, 13, 18, 25, 30, 35).

Studies done in Pokhara Nepal, Malawi, Afar region of Ethiopia, and Wolaita zone revealed that place of residence was factor significantly positively related to iron folate complaints among pregnant women(9, 17, 18, 36). By contrast, studies conducted in South India, West Iran, Southeastern Nigeria, South Africa, Debre Tabor Ethiopia and Misha district South Ethiopia attested that place of residence was not significantly associated with iron folate compliance among pregnant women(1, 24, 25, 32, 37, 38).

Studies conducted in Surat city of India, Pokhara Nepal, Eastern Terai of Nepal, West Iran, Malawi, Mecha district West Amhara and Asella town Oromia region attested that educational status was significantly associated compliance among pregnant women(1, 5, 9, 13, 22, 34, 39). But other studies conducted in North India, South Brazil, Uganda, East Kenya, Segen zone south Ethiopia, and Hossana south Ethiopia showed that educational status was not significantly associated with iron folate compliance among pregnant women(10, 14, 16, 33, 37, 40).

Most of the studies done from global to local revealed that marital status was not significantly associated with compliance to iron folate supplementation(17, 23, 31, 35, 41-43). By contrast to this, A study done in Wolaita zone indicated that one of associated factor which significantly affects iron folate compliance was marital status (18).

A study done in Pokhara Nepal revealed that the husband's occupation was significantly associated with iron folate compliance among pregnant women (39). And the occupation of pregnant women was one of the predictors which significantly associated with iron folate compliance in accordance o the studies conducted in Uganda, Khartoum Sudan, and Addis Ababa Ethiopia(16, 27, 31). In opposite to that studies conducted in Indonesia, Kiambu County Kenya and Mecha district of West Amhara showed that occupation was not significantly associated with iron folate compliance among pregnant women(26, 34, 44).

Family size was one of the factors significantly associated with iron folate supplementation among pregnant women in Surat India, Lay Armachiho northwest Ethiopia and Wolaita zone south Ethiopia(18, 22, 28).

Studies done in Pokhara Nepal, Kiambu County Kenya, South Senegal, Lay Armachiho Ethiopia, Hossana and Wolaita zone attested that the monthly income/Households wealth index/ of the family had significantly affected iron folate compliance among pregnant women(18, 26, 28, 35, 39, 40).

2.3. Obstetric and health-related factors

Studies done in Kiambu County Kenya, Debre Tabor Ethiopia, Asella town Oromia region, and Wolaita zone south Ethiopia revealed that gravidity of the mother had significantly associated with compliance to iron folate supplement(5, 18, 26, 38). But studies conducted in urban areas of South India, South Senegal, Afar region Ethiopia and Addis Ababa Ethiopia attested that gravidity of the mother did not significantly affect the compliance of pregnant women to iron folate supplement(17, 23, 31, 35).

Parity of mother was one of the predictors which significantly associated with compliance to iron folate supplementation by the report of Rio De Janeiro, North Tanzania, South Senegal, and Hossana South Ethiopia's studies(15, 35, 40, 41). But it was not significantly associated with iron folate compliance among pregnant women in Indonesia, West Iran, Khartoum Sudan, Segen people south Ethiopia and Wolaita zone south Ethiopia(1, 10, 18, 27, 44).

Studies done in Pokhara Nepal, Asia, Eastern Kenya, South Africa, Eritrean refuges of a northwestern zone of Tigray Ethiopia, Gondar Hospital and Wolaita zone attested that

Frequencyof ANC visits or the number of ANC visits were significantly positively associated with compliance to iron folate supplementation among pregnant women(14, 18, 24, 30, 39, 42, 45). Again early initiation of pregnant women for ANC service was significantly associated with iron folate compliance in the Afar region, Gondar Hospital, and Burji district south Ethiopia(10, 17, 30).

Studies conducted in Pakistan and Malawi indicated that the number of live births was significantly associated with compliance to iron folate supplementation among pregnant women(9, 46). By contrast, it was not significantly associated with compliance to iron folate supplementation among pregnant women in the most world and African countries including Pokhara Nepal, urban areas of south India, north Tanzania, and Khartoum Sudan(15, 23, 27, 39). And also study conducted in Hawassa city South Ethiopia showed that the number of live births was not significantly associated with compliance to iron folate supplementation among pregnant women (47).

Studies conducted in North Tanzania and Jida north Shewa Ethiopia revealed that the presence of disease other than anemia before and during pregnancy was significantly associated with iron folate supplementation among pregnant women(15, 48).

Previous history of anemia and anemia during current pregnancy were significantly associated with compliance to iron folate supplementation among pregnant women in Pokhara Nepal, West Iran, Khartoum Sudan, North Tanzania, Gondar north Ethiopia, a northwest zone of Tigray Ethiopia and Segen people zone south Ethiopia(1, 10, 15, 27, 29, 30, 39).

2.4. Health service and client-related factors

Studies conducted in South Senegal and rural districts of Ethiopia attested that the distance between home and nearest health facility was significantly associated with pregnant women's compliance to iron folate supplementation(35, 49).

Studies conducted in Pokhara Nepal, South Africa, Uganda, Jida north Shewa Ethiopia, Eritrean refugee camps in Northern Ethiopia and Misha district South Ethiopia showed that providing counseling about IFAS for pregnant women were significantly associated with iron folate compliant(16, 24, 32, 39, 45, 48).

Pregnant women's knowledge about anemia was significantly associated with iron folate compliant according to the finding in Eritrean refugees of northern Ethiopia, rural districts of Ethiopia, Mecha district of western Amhara Ethiopia and Wolaita zone south Ethiopia(18, 34, 45, 49).

Studies conducted in South Kediri Indonesia, Iran, Eastern Kenya, Debre Tabor, Asella Town, and Hawassa city attested that knowledge of pregnant women about IFAS was significantly associated with compliance to iron folate supplementation(5, 14, 39, 44, 47, 50).

Studiesdone in Kathmandu Nepal and Mecha district West Amhara Ethiopia revealed that beliefs/perception about iron folate tablets was significantly associated with compliance to iron folate supplementation among pregnant women(34, 51).

Studies conducted in Kenya and Ethiopia and the Afar region of Ethiopia indicated that partner and family support were significantly associated with iron folate compliance among pregnant women (17, 52).

All of the available references used to develop this proposal were up-to-dated. Most references tried to address some determinant factors that affect iron folate supplementation. Again the research articles tried to minimize bias. Almost all articles used in this research work were adapted standardized tools to their context of research questions as measurement tools.

All of the research articles used as references for this research work had a descriptive cross-sectional study design but not tried to use the analytic study to assess determinant factors that affect compliance to iron folate supplementation among pregnant women. Regarding predictors, limited information in some research articles but almost all references were not tried to assess some important predictor'sparticularly perception towards IFA supplementation. Again almost all of the research articles used as references in this research work regarding the counseling of pregnant women about IFAS were mostly given at health facility level but not assessed about health education on health benefits and compliance with IFA supplementation by health extension or community health worker through the home to home visit at the community level. Health Extension Workers were more likely to identify and reach a greater number of women earlier in pregnancy and targeting pregnant women through community settings indicated that

good compliance and confirmed reductions in anemia according to a review of evidence and program implications on the community-based distribution of iron–folic acid supplementation in low and middle-income countries(53).
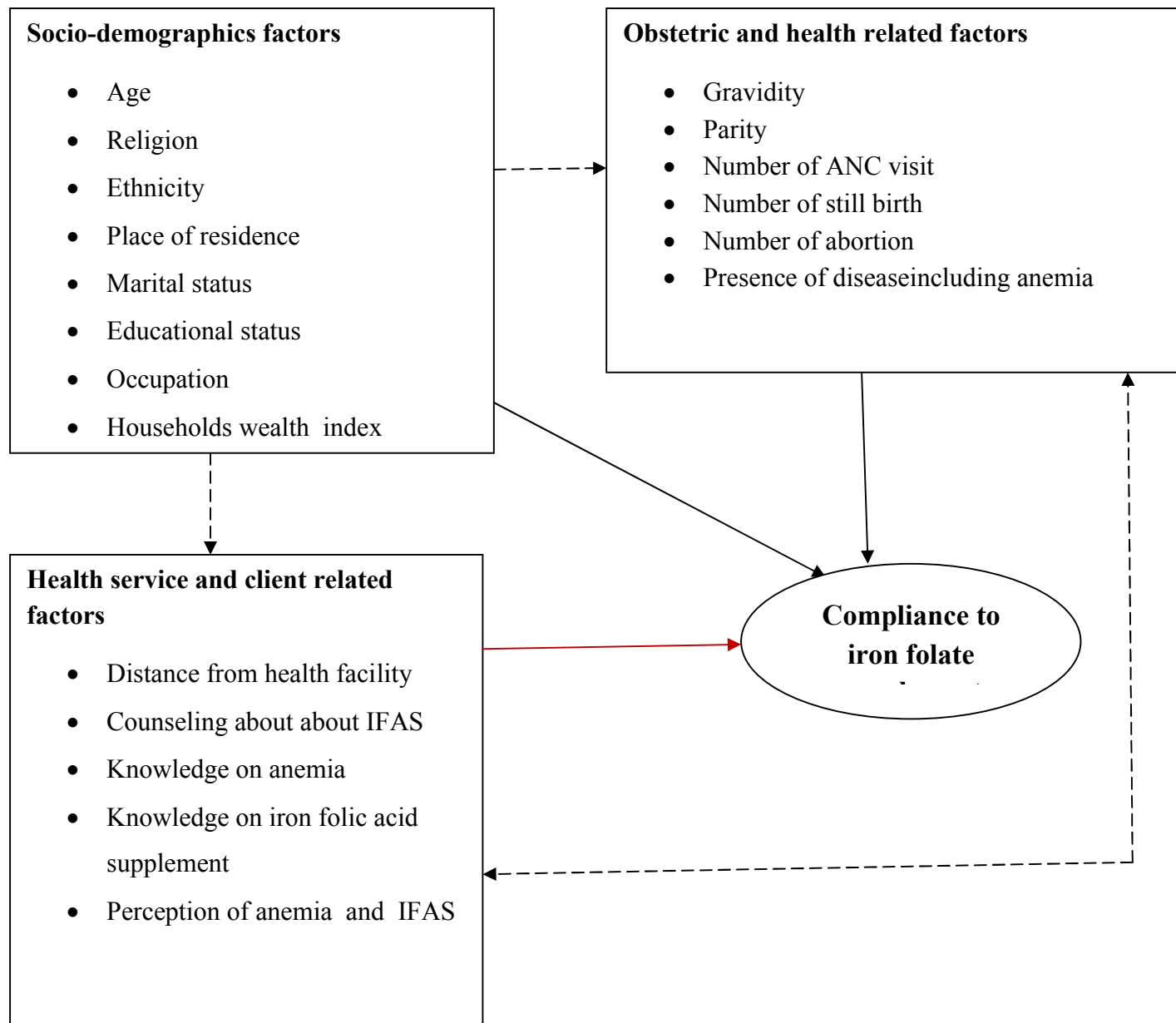
Figure 1:-Conceptual framework determinants of compliance to iron folate supplementation among pregnant women in Damot Sore district, south Ethiopia, 2020.

Sources:-Adapted after reviewing different works of literature (10, 17, 28, 32, 40, 47, 48).

CHAPTER THREE: OBJECTIVE

To assess determinants of compliance to iron folate supplementation among pregnant women in Damot sore district, Wolaita Zone South Ethiopia from February to March 2020.

3.1. Hypothesis

- ➢ Perception towards iron folate supplementation has an association withcompliance to iron folate supplementation among pregnant women.
- ➢ Counseling of iron folate supplementation by HEWs during home visitshasan association with iron folate compliance among pregnant women.

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area and period

Damot sore district is one of the districts in the southern nations, nationalities, and peoples' region of Ethiopia. Agriculture is the livelihood of more than 90% of the population in this area. Mixed farming involving the production of cereals, root crops, Inset, and coffee are practiced. The climate is stable, with temperature variation between 24^0c and 30^0c during the day and 16^0c to 20^0 $_C$ at night all year round. The average rainfall is 1350ml per year. It is located in the wolaita zone at a distance of 347km from Addis Ababa due south, and 162km from Hawassa due west. It is bordered on the southeast by Sodo Zuria, on the west by Kindo Koysha, on the northwest by Boloso Bombe, and on the north by Boloso Sore district. It is administratively divided into 17 rural and 3 semi-urban Kebeles. Based on the 2007 census conducted by the Central Statistical Agency (CSA), this district has a projected total population of 133,966 of whom 66,581 are males and 67,385 are females. There are 29,123 households with 4634 pregnant women in the district. There are 4 governmental health centers and 20 health posts that provide maternal and child health services. The study was conducted in Damot Sore District from February to March, 2020.
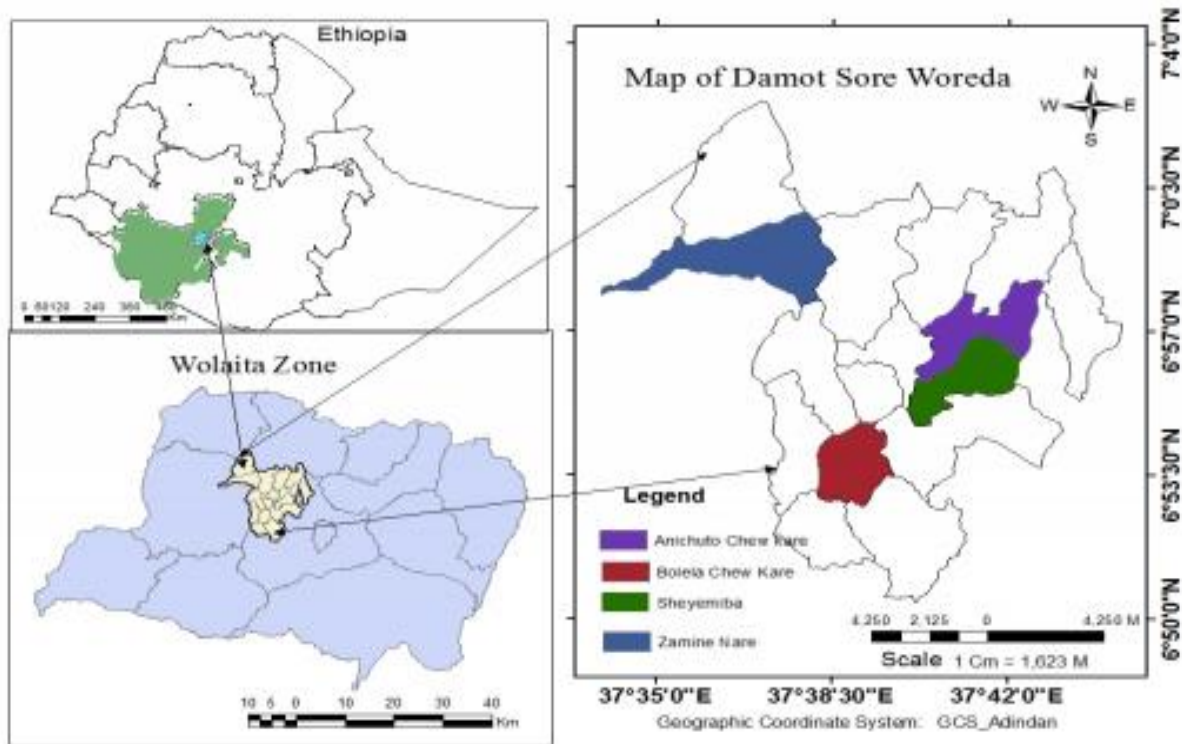
Figure 2: - Map of Damot Sore district, Wolaita zone, Southern Ethiopia, 2020.

Source: - Adopted from the study conducted in Damot Sore district, Southern Ethiopia(54).

4.2. Study design
Afacility-based unmatched case-control study design was used.

4.3. Population

4.3.1. Source population
All pregnant women who attended ANC service and took iron folate supplementation before the study period.

4.3.2. Study population
- ✓ **Cases: -** Pregnant women who attended ANC and took IFA supplementation for at least 4days/week in the previous month before the study period.
- ✓ **Controls: -** Pregnant women who attended ANC and took IFA supplementation for less than 4days/week in the previous month before the study period.

4.3.3. Eligibility Criteria

4.3.3.1.Inclusion Criteria

Pregnant women who had ANC visits and received iron-folate supplementation for at least onemonthbefore the study wasincluded.

4.3.3.2.Exclusion Criteria

Pregnant women who not received or received IFAS for less than one month, also who had unable to respond (unable to hear and/or speak), serious illness including mental disorderswere excluded from the study during the study period.

4.4. Sampling

4.4.1. Sample size determination

The sample size of the study was determined using two population proportion formula by using EPI Info software version 7. Factors associated with compliance to iron folate supplementation among ANC attendant mothers and respective parameters were obtained from a study conducted in Misha district, south Ethiopia (32).In addition, 95% confidence level, 80% power, and control to case ratio = 2:1 were used to calculate sample size for each associated factor as follows.

Table 1:-Sample size determination for a study on determinants of compliance to iron folate supplementation among pregnant women in Damot sore district, south Ethiopia, 2020.

S. No	Variables	Power	Ratio (Controls to cases)	% of exposed among controls	AOR	Calculated sample size		
						Controls	Cases	Total
1	Age of the mothers >=25	80%	2:1	76.6	2.99	24	12	36
2	**Good Knowledge of anemia**	**80%**	**2:1**	**41**	**4.45**	**196**	**98**	**294**
3	Frequency of ANC visits >= 4 times	80%	2:1	25.7	3.56	29	15	44

From this study the good knowledge of anemia gave sufficiently large sample size with the proportion of exposure (good knowledge of anemia) among controls (poor compliance) = 41%;

the proportion of exposure (good knowledge of anemia) among cases (good compliance) = 59% and with AOR of 4.45. Therefore the required sample size for this study was decided by taking a sufficiently large sample size. The selected sample size was 294(98 cases and 196 controls). By taking a 5% non-response rate the final sample size for this study was 309(103 cases and 206 controls).

4.4.2. Sampling technique and procedure

Four health centers were found in Damot sore district that givesANC service for the pregnant women. Those health centers were Wamura health center (HC), Shayamba Killena HC, Doge Hanchucho HC and Zamine Nare HC. All health centers were included in the study. Both cases and controls were selected from the pregnant women who came for ANC service in the study setting during the study period. Study participants were proportionally allocated to each health center with their respective average client size attended per month by referring the registration books of each antenatal care unit. A consecutive sampling technique was employed to get cases and controls from each health center.
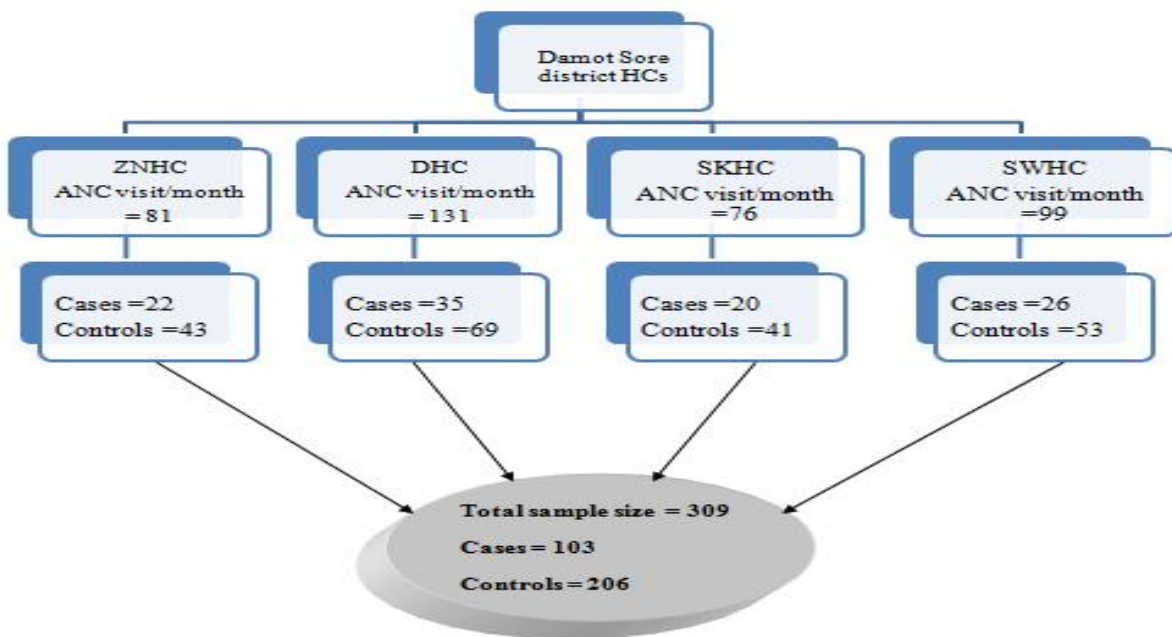
Figure 3:- Schematic presentation of sampling procedure to get study participants from each health center of Damot sore district Wolaita zone, south Ethiopia, 2020.

4.5. Variables

4.5.1. Dependent variable
Compliance to iron folate supplement

4.5.2. Independent variables
Socio-economic and demographic factors: age, religion, residence, marital status, mother education level, partner education level, family size, family support and income.

Obstetric and health-related factors: number of ANC visits, place of ANC, gravidity, parity, trimester, history of previous anemia, History of stillbirth, History of abortion.

Health service-related factors: Distance from the health facility, adequate explanation/counseling/ about the tablets by providers at the time of supplement collection, health extension workers provision of health education during home to home visit.

Client related factors: knowledge on Anemia, knowledge on IFAS and perception towards anemia and IFA supplementation.

4.6. Data collection tool and procedures
The interview questionnaire was adapted after reviewing different literatures(18, 32, 38, 45, 49, 51). The questionnaire contains variables related to socio-demographic characteristics, obstetric and health, and health service and client-related factors. Data were collected by face to face interview technique using a pretested questionnaire by 4 diploma Midwives at 4 health centers under close supervision of the assigned supervisors (2 BSc Nurse) and principal investigator during the data collection period.

4.7. Measurement
Household's wealth index of study participants: - The respondents were asked to answer 15 items which are closed-ended questions to assess the study participant's household's wealth index level. The correct answer was given a score of 1 and the incorrect was given a score of 0(55).Then we analyzed by using principal component analysis to reduce the data obtained from 15 items to a single factor or components called households wealth index level. And wealth index of study participants was ranked or categorized in to five wealth quintiles (poorest, poorer,

middle, richer and richest) (8, 49). Finally, used for further analysis whether it determined iron folate supplementation or not.

Women's knowledge about iron folate supplementation was assessed by a questionnaire composed of 8 closed-ended questions. The correct answer was given a score of 1 and the incorrect was given a score of 0. A woman who answered ≥ 5 items correctly were classified as women with good knowledge about iron folate supplementation, those who answered less than 5 items of the questions correctly were considered women with poor knowledge about iron folate supplementation(10).

Knowledge of pregnant women about anemia was measured by a questionnaire composed of 6 closed-ended questions. The questions include about causes, symptoms, treatment and prevention of anemia. The correct answer was given a score of 1 and the incorrect was given a score of 0. The woman's knowledge regarding anaemia was classified as good if she could correctly answer ≥ 4 items and poor if she could correctly answer below 4 items(28).

Perception towards anemia and iron folate supplementation: - The respondents were asked to answer 10 closed-ended questions, which were used to assess perceptions towards anemia and IFA. All of these items were scored on a 5-point Likert-scale (1 "Strongly agree", 2 "Agree", 3 "Not sure", 4 "Disagree" and 5 "Strongly disagree"). A composite score-based on the mean of the 10 items was calculated. The composite score was then categorized into two: below mean (<2.2) = positive perception and, mean and above (≥ 2.2) = negative perception towards anemia and iron folate supplementation(51).

4.8. Operational definitions

Compliance with IFA supplementation: when the pregnant women took the supplement at least 4 days per week in the previous month before the study(17, 29).

An early visit to ANC clinic: Those pregnant women who visit the ANC clinic before 16weeks of gestation.

Good Knowledge about IFAS: when study participant answer 5 and above from eight items of prepared questions to assess comprehensive knowledge of IFAS(10).

Good Knowledge about anemia:when study participantanswer 4 andabove from six items of prepared questions to assess comprehensive knowledge of anemia(28).

Positive perception: when study participant scores below the composite score from ten items of prepared questions to assess perception towards anemia and IFA supplementation(51).

4.9. Data quality management

To assure data quality; the English version questionnaire was translated to Amharic then to the local language (Wolaitigna) for interview and then retranslated to English for consistency. The questionnaire includes socio-demographic characteristics, obstetric and health, and health service-related factors.The questionnaire was pretested by using 50 (17 cases and 33controls) sample size of the population a week before actual data collection period in Lasho Health center in Sodo Zuria district, and some modifications such as correction of typing errors, and arrangement of the questionnaire were done. And, internal consistency of the questionnaire was assessed and Cronbach's Alpha was computed; knowledge about IFAS (0.843), knowledge of pregnant women regarding anemia (0.841), and perceptions towards anemia and IFAS (0.81) which was acceptable for this population. Beside to this; reliable tool was used to assess households wealth index with cronbach's Alpha of 0.842(55).Assigning data collectors from other health centers and blinding them from knowing case status of study participant (case status of study participant identified by clinical Nurses in each health center and then link with data collectors with unique code given to the study participant). Three days training was given for data collectors and supervisors about the aim of the study and on the ways of data collection by the principal investigator. Data were checked for completeness and consistency each day during the data collection period by supervisors. The overall data collection process was coordinated by the principal investigator.

4.10. Data analysis procedures

The collected data were coded, cleaned, and entered into Epidata version 3.1 and exported to statistical package for social science (SPSS) version 21.0 for analysis.The Households Wealth index was determined using Principal Component Analysis(PCA). Variables coded between 0 and 1 were entered and analyzed using PCA and the PCA assumptions were fulfilled(i.e. the variable was dichotomous, sample size was 309 which is greater than 50, ratio of cases to variables was ≈21 to 1 which is greater than 5 to 1,there are 11 correlations in the matrix greater than 0.30, KMO of sampling adequacy was 0.752 this is greater than 0.5 and significant Bartlett's Test of Sphericity) and those variables with greater than 0.5 communality values were used to produce factor scores which were summed and ranked into five quintiles as "lowest", "second", "medium", "fourth and "highest".Descriptive statistics and proportions were used to describe the data. Bivariable and multivariable logistic regression analyses were performed to see the association between outcome and explanatory variables. Variables thatwere found statistically significant in the bivariable analysis ($p<0.25$) were entered into a multivariable logistic regression model. Finally, multivariable logistic regression analysis was done to identify factors that determine the compliance to iron folate supplementation. Occurrence of multicolinearity was checked for final model whether there is colinearity among candidate variables. An effort was made to assess whether the necessary assumptions for the application of multivariable logistic regression were fulfilled. In this regard, the Hosmer and Lemeshow's goodness-of-fit test with a large $p$value ($p>0.05$) was checked to saw good model fitness. Only variables with $p< 0.05$ were reserved in the final model. Odds ratio along with 95% confidence interval (CI) were used to assess the association between explanatory variables and iron folate compliance. A p-value < 0.05 was considered statistically significant in this study.

4.11. Ethical consideration

The research proposal was approved by the Ethical Review Committee (ERC) of Jimma University Institute of Health Science. Based on the approval, an official letter was written from Jimma University institute of health sciences Faculty of Public Health to Damot district health office, Wolaita Zone. A support letter was obtained fromdistrict health officeand submitted to the four health centers for cooperations. Informed consent was obtained from each study subject after an explanation of the objective of the study. All study participants were encouraged to participate in the study and at the same time, they told that they wouldhad the right not to participate. At last, data were collected after assuring the confidentiality nature of responses and obtaining informed consent from the study participants.

4.12. Dissemination plan

The finding of this study will be presented for Jimma University scientific community and the hard copies of the findings will be submitted to the faculty of public health and health institute graduate study. After approval, the research report will be presented and disseminated to Damot Sore district Health office and other responsible bodies. Also, the finding of the study will be presented in different seminars, meeting conferences and workshops. Moreover,the effort will be done to publish the findings of the study in different national or international peer-reviewed scientific Journals.

CHAPTER 5: RESULTS

5.1. Socio-demographic factors of pregnant women

A total of 309 pregnant women (103 cases and 206 controls) participated in the study without non response. . Around half, 150(48.5%) of study participants were in the age group of 25-34; of whom more than half 104 (50.5%) were controls and 46(44.7%) werecases. The mean (±SD) age of the study participant was 26.19(±5.23) and of whom; cases constitute 25.62(±5.34) and controls constitute 26.5(±5.2) year with age ranging from 18 to 40 years. Among the study participants 307(99.4%) were married. Majority of the respondents, 275(89%) were wolaita in ethnicity and of whom 93(90.3%) and 182(88.3%) were cases and controls respectively. Most,219(70.9%) of study participants were rural dwellers; where cases constitute 58(56.3%) and controls constitute 161(78.2%). Regarding the educational status of the study participants, 109(35.3%) had primary education level; of whom 37(35.9%) and 72(35%) were cases and controls respectively.

From socio-demographic variables, Bivariable logistic regression analysis revealed that place of residence and educational status of pregnant women had an association with iron folate compliant at a p-value of ≤ 0.25 and they were candidate for multivariable logistic regression analysis (see table 2).

Table 2:-Sociodemographic characteristics of pregnant women in Damot district, wolaita zone south Ethiopia, February to March 2020.

Variables	Categories	Compliance		COR (95% CI)	P-value
		Good (%)	**Poor (%)**		
	18-24	48(46.6%)	85(41.3%)	1.07(0.44-2.58)	0.89
Age	25-34	46(44.7%)	104(50.5%)	0.84(0.35-2.01)	0.69
	>= 35	9(8.7%)	17(8.3%)	1	0.62
	Protestant	53(51.5%)	100(48.5%)	1.124(0.7-1.80)	0.629
Religion					
	Orthodox	50(48.5%)	106(51.5%)	1	
	Wolaita	93(90.3%)	182(88.3%)	1	
Ethnicity	Other	10(9.7%)	24(11.7%)	0.85(0.37-1.78)	0.61

Residence	Rural		58(56.3%)	161(78.2%)	0.36(0.22-0.6)	**<0.001***
	Urban		45(43.7%)	45(21.8%)	1	
Family size	<4		49(47.6%)	99(48.1)	0.98(0.61-1.58)	0.94
	≥4		54(52.4%)	107(51.9%)	1	
Educational status of Mother	Can't read and write		12(11.7%)	28(13.6%)	0.44(0.2-0.98)	**<0.001***
	Read and write		12(11.7%)	63(30.6%)	0.2(0.09-0.41)	<0.001
	Primary education		37(35.9%)	72(35%)	0.53(0.29-0.94)	<0.01
	Secondary education and above		42(40.8%)	43(20.9%)	1	
Occupation	Mother	House wife	60(58.3%)	100(48.5%)	1.49(0.85-2.62)	0.17
		Government employee	25(24.3%)	62(30.1%)	1	
		Merchant	12(11.7%)	34(16.5%)	0.88(0.39-1.96)	0.75
		Other	6(5.8%)	10(4.9%)	1.49(0.49-4.5)	0.48
	Husband	Farmer	40(38.8%)	66(32%)	1.2(0.65-2.2)	0.57
		Government employee	35(34%)	85(41.3%)	1	
		Merchant	28(27.2%)	55(26.7%)	0.81(0.44-1.48)	0.49
Household Wealth index	Poorest		17(16.5%)	27(13.1%)	1.55(0.73-3.3)	0.26
	Poorer		19(18.4%)	39(18.9%)	1.2(0.59-2.45)	0.62
	Middle		22(21.4%)	38(18.4%)	1.43(0.71-2.86)	0.32
	Richer		19(18.4%)	38(18.4%)	1.23(0.6-2.52)	0.57
	Richest		26(25.2%)	64(31.1%)	1	

5.2. Obstetric and health-related factors of pregnant women

Most,210(68%) of study participants were multigravida mothers; of whom 65(63.1%) were cases and 145(70.4%) were controls. More than half, 172(55.7%) of study participants were Multiparious mothers. From those multiparous mothers, 49(47.6%) were cases and 123(59.7%) were controls. Majority, 301(97.4%), 299(96.8%) and 308(99.7%) of study participants had no history of still birth, abortion and history of disease respectively. Regarding ANC service initiating time around186(60.2%) of the respondents, were started ANC service utilization at > 16 weeks of gestation from which cases constitute 56(54.4%) and controls constitute

136(63.1%). Majority282(91.3%) of study participants had ANC service utilization at the health center; of whom 95(92.2%) and 187(90.8%) were cases and controls. Around 158(51.1%) of pregnant women had a frequency of <4 ANC visits and of whom 46(44.7%) of pregnant women were cases and 112(54.4%) were controls.

From Obstetric and health-related variables, Bivariable logistic regression analysis revealed that gravidity, parity, ANC initiation time and ANC frequency had an association with iron folate compliant at a p-value of ≤ 0.25 and they were candidate for multivariable logistic regression analysis (see table 3).

Table 3:-Obstetric and health-related factors of pregnant women in Damot district, wolaita zone south Ethiopia, February to March 2020.

Variables	Categories	Compliance		COR (95% CI)	P-value
		Good (%)	Poor (%)		
Gravidity	Primigravida	38(36.9%)	61(29.6%)	1.39(0.84-2.29)	**0.2**
	Multigravida	65(63.1%)	145(70.4%)	1	
Parity	Nullparious	35(34%)	58(28.2%)	1.52(0.89-2.59)	**0.13**
	Primiparious	19(18.4%)	25(12.1%)	1.91(0.96-3.77)	0.06
	Multiparious	49(47.6%)	123(59.7%)	1	
ANC starting time in week	16 and below	47(45.6%)	76(36.9%)	1	
	Above 16	56(54.4%)	130(63.1%)	0.7(0.43-1.13)	**0.14**
Frequency of ANC visits	Below 4	46(44.7%)	112(54.4%)	0.68(0.42-1.1)	**0.11**
	4 and above	57(55.3%)	94(45.6%)	1	
Place of ANC service	Health post	8(7.8%)	19(9.2%)	0.83(0.35-1.96)	0.67
	Health center	95(92.2%)	187(90.8%)	1	

5.3. Health service and client-related factors

5.3.1. Client related factors

In this study regarding the counseling about IFAS, most,202(65.4%) of study participants had counseled about IFAS; of whom 83(80.6%) were cases and 119(57.8%) were controls. From those who got counseling about the benefits of IFAS; 90.3% cases and 83.8% controls responded that IFAS used to prevent anemia. Again this studyrevealed that from study participants,

177(57.3%) had good knowledge about IFAS; of whom cases constitute 80(77.7%) and controls constitute 97(47.1%). Concerning knowledge of study participants about anemia; more than,161(52.1%) of study participants had good knowledge; of whom 54(52.4%) and 107(51.9%) were cases and controls respectively.

Also, this study showed that among the study participants, more than half,184(59.5%) had negative perceptions towards anemia and IFAS and from which cases constitute 53(51.5%) and controls constitute 131(63.6%).

5.3.2. Health service-related factors

Regarding the distance of health facility from the residence of study participant 181(58.6%) took less than 30 minutes to arrive health facilities for ANC services. From those participants, 48(46.6%) and 133(64.6%) were cases and controls respectively. Concerning to HEWs home to home visit; around 180(58.3%) of study participants (53(51.5%) cases and 127(61.7%) controls) responded that the health extension workers had visited to provide counseling about IFAS. Regarding the source of IFAS supply 277(89.6%) of the study participant got IFAS supply from the health center the rest 32(10.4%) got from health post.

From client and health service-related variables; Bivariable logistic regression analysis revealed that counseling about IFAS, knowledge about IFAS, perception towards anemia and IFAS, the distance of health facility from residence and HEWs home visits were associated with iron folate compliant at p-value of ≤ 0.25 and they were candidate for multivariable logistic regression analysis (see table 4).

Table 4:-Client and health service-related characteristics of pregnant women in Damot district, wolaita zone south Ethiopia, February to March 2020.

Variables	Categories	Compliance		COR (95% CI)	P-value
		Good (%)	Poor (%)		
Counseling	No	20(19.4%)	87(42.2%)	0.33(0.19-0.58)	**<0.001***
on IFAS	Yes	83(80.6%)	119(57.8%)	1	
Knowledge	Poor	23(22.3%)	109(52.9%)	0.26(0.15-0.44)	**<0.001***
on IFAS	Good	80(77.7%)	97(47.1%)	1	
Anemia	Poor	49(47.6%)	99(48.1%)	0.98(0.61-1.58)	0.94
knowledge	Good	54(52.4%)	107(51.9%)	1	
Perception towards anemia and IFAS					
Negative		53(51.5%)	131(63.6%)	0.61(0.38-0.98)	**0.041***
Positive		50(48.5%)	75(36.4%)	1	
Time elapsed from home to health facility (in minute)					
≤30 min		48(46.6%)	133(64.6%)	1	
>30 min		55(53.4%)	73(35.4%)	2.09(1.29-3.38)	<0.01
HEWs visits	Yes	53(51.5%)	127(61.7%)	1	
	No	50(48.5%)	79(38.3%)	1.52(0.94-2.45)	0.09
Source of	Health center	91(88.3%)	186(90.3%)	1	
IFAS supply	Health post	12(11.7%)	20(9.7%)	1.23(0.57-2.62)	0.6

5.4. Factors independently associatedwithcompliance to iron folate supplementation

To know the association of predictor variables with Iron folate compliance; both bivariable and multivariable logistic regression analyses were done. Occurrence of multicolnearity for the final model and its maximum variation inflation factor (VIF) value was 4.9. This VIF value confirmed the absence of significant colinearity among candidate explanatory variables. Hosmer and Lemeshow's goodness-of-fit test was checked to saw good model fitness and its p-value was 0.77.A multivariable logistic regression model was fitted to identify independent variables that determine or predict iron folate compliance among pregnant women at p-value <0.05. Among candidate variables entered to multivariable logistic regression; place of residence [AOR(95%CI): 0.398(0.214-0.74)], educational status of pregnant women, knowledge about

IFAS [AOR(95%CI): 0.2(0.11-0.37)], counseling regarding IFAS [AOR(95%CI): 0.34(0.18-0.64)], and perceptions of pregnant women towards anemia and IFAS [AOR(95%CI): 0.43(0.24-0.77)] were significantly associated with iron folate compliance at p-value <0.05.

After adjusting for other variables, pregnant women who live in rural were 60.2% times less likely compliant to IFAS than urban dwellers (AOR= 0.398, 95% CI= 0.214-0.74). Pregnant women who can't read and write had 90% (AOR= 0.1, 95%CI=0.02-0.43), who can read and write were 70% (AOR= 0.3, 95%CI= 0.14-0.66), and who had primary education were 47% (AOR=0.53, 95%CI=0.28-1.01) less likely compliant to IFAS than those who had secondary and higher education level.

Accordingly, pregnant women who had poor knowledge related to Iron folate supplementations were 80% times less likely compliant to IFAS than those who had good knowledge (AOR=0.2, 95%CI=0.11-0.37). Similarly, Pregnant women who had no counselingabout Iron folate supplementations were 66% times less compliant compared to those who got counseling about Iron folate supplementations (AOR=0.34, 95%CI=0.18-0.64).Moreover, pregnant women who had negative perceptions towards anemia and IFAS were 57% less likely compliant to IFAS than those who had positive perception (AOR=0.43, 95%CI=0.24-0.77). (See table 5).

Table 5:-Multivariable logistic regression analysis of determinants of iron folate compliance among pregnant women in Damot sore district wolaita zone south Ethiopia, from February to March 2020.

Variables	Categories	Compliance		COR(95%CI)	AOR(95%CI)	p-value
		Good (%)	Poor (%)			
Place of residence	Rural	58(56.3%)	161(78.2%)	0.36(0.22-0.6)	0.398(0.214-0.74)	**0.004****
	Urban	45(43.7%)	45(21.8%)	1	1	
Educational status of the mother						
Can't read and write		12(11.7%)	28(13.6%)	0.44(0.2-0.98)	0.1(0.02-0.43)	**0.003***
Read and write		12(11.7%)	63(30.6%)	0.2(0.09-0.41)	0.3(0.14-0.66)	**0.003**
Primary education		37(35.9%)	72(35%)	0.53(0.29-0.94)	0.53(0.28-1.01)	0.06
Secondary and higher level		42(40.8%)	43(20.9%)	1	1	

Gravidity	Primigravida	38(36.9%)	61(29.6%)	1.39(0.84-2.29)	0.81(0.43-1.53)	0.51
	Multigravida	65(63.1%)	145(70.4%)	1	1	
Parity	Nullparious	35(34%)	58(28.2%)	1.52(0.89-2.6)	1.33(0.24-7.56)	0.74
	Primiparious	19(18.4%)	25(12.1%)	1.91(0.96-3.8)	1.21(0.53-2.75)	0.66
	Multiparious	49(47.6%)	123(59.7%)	1	1	0.88
ANC starting time in month	≤ 4	47(45.6%)	76(36.9%)	1	1	
	>4	56(54.4%)	130(63.1%)	0.7(0.43-1.13)	0.71(0.4-1.28)	0.25
Frequency of ANC visits	<4	46(44.7%)	112(54.4%)	0.68(0.42-1.1)	0.75(0.42-1.34)	0.33
	≥4	57(55.3%)	94(45.6%)	1	1	
Counseling on IFAS	No	20(19.4%)	87(42.2%)	0.33(0.19-0.58)	0.34(0.18-0.64)	**0.001**
	Yes	83(80.6%)	119(57.8%)	1	1	
Knowledge on IFAS	Poor	23(22.3%)	109(52.9%)	0.26(0.15-0.44)	0.2(0.11-0.37)	**<0.001****
	Good	80(77.7%)	97(47.1%)	1		
Perception towards anemia and IFAS						
Negative		53(51.5%)	131(63.6%)	0.61(0.38-0.98)	0.43(0.24-0.77)	**0.005**
Positive		50(48.5%)	75(36.4%)	1		
Time elapsed from home to health facility (in minute)						
≤30 min		48(46.6%)	133(64.6%)	1	1	
>30 min		55(53.4%)	73(35.4%)		1.56(0.87-2.77)	0.13
HEWs visits	Yes	53(51.5%)	127(61.7%)	1	1	
	No	50(48.5%)	79(38.3%)	1.52(0.94-2.45)	1.43(0.78-2.6)	0.24

CHAPTER 6: DISCUSSION

Pregnant women are among the most vulnerable groups of iron deficiency anemia. Iron folate supplementation is among the feasible ways to prevent anemia during pregnancy. However, iron folate compliance among pregnant women in most African countries including our country Ethiopia and some determinant factors were not addressed. Thus, this study assessedthe determinants of iron folate compliance among pregnant women. Accordingly, the identified factors significantly associated with iron folate supplementation were rural residence, low educational status of pregnant women, poor knowledge of pregnant women about IFAS, not gettingcounseling about IFAS and negative perception towards anemia and iron folate supplementation.

The finding of this study showed that the rural residence was significantly associated with compliant to iron folate supplementation among pregnant women (p-value <0.01). Pregnant women who had rural dwellers were 60.2% times less likely compliant to IFAS than urban dwellers. The result of this study is consistent with other studies conducted in Pokhara Nepal and the Afar region of Ethiopia.The reason could be the urban pregnant women might have better exposure for information about the benefits of IFAS than rural pregnant women (17, 39).

This study revealed that the educational level of pregnant women was significantly associated with compliance to iron folate supplementation (p<0.01). Illiterate women were less likely to comply with iron folate supplementation than those women who are literate. This is supported by a study done in west Iran, Mecha district western Amhara of Ethiopia, and Asella town Oromia region Ethiopia (1, 5, 34).This might be explained by the potential effect of education on self-care skills; as the better-educated are more likely to understand and meet up their own needs (34).

In this study providing counseling or advice about IFAS for pregnant women was significantly associated with iron folate compliance (p= <0.001). Pregnant women who had no counseling about Iron folate supplementations were 66% times less compliant compared to those who got counseling on Iron folate supplementations. This study is in line with the study conducted in South Senegal, Debre Tabor, and Misha district south Ethiopia(32, 35, 38).The possible reason might be not getting advice about IFAS may decrease the level of knowledge, attitude and

practice towards its compliance (38). But it is inconsistent with the study done in Jida north, north Shewa Oromia Ethiopia (48). This might be due to the study design difference.

The current study also found that knowledge about IFAS was significantly associated with compliance with it (p-value <0.001). Pregnant women who had poor knowledge related to Iron folate supplementations were 80% times less likely compliant to IFAS than those who had good knowledge. This finding is comparable with the study done in Debre-Tabor, Mecha district, Asella town and Hawassa city (5, 34, 38, 47). The reason could be poor knowledge of pregnant women may result in a poor perception of the benefits of taking iron tablets (34).

In addition, this study revealed that perception towards anemia and IFAS was significantly associated with compliance to Iron folate supplementation Pregnant women who had negative perceptions towards anemia and IFAS were 57% less likely compliant to IFAS than those who had positive perception. This finding similar tothe study done in Kathmandu Nepal (51). The possible reason might be due to poor counseling about IFAS benefitsat the community level by HEWs through the regular home to visits.

In general, the finding of this study implies that pregnant women who had not compliedwith iron folate supplementation were due to illiteracy of pregnant women, poor counseling on iron folate supplementation, poor knowledge about iron folate supplementation, negative perception towards anemia and iron folate supplementation.

This study has its strength and limitations. Using sufficiently large sample size, using proper study design to assess determinant factors that affect compliance to iron folate supplementation, Assigning data collectors from other catchment and blinding them from knowing case status of study participantand intensive training for them and day to day supervision during data collections were the strength of this study.

Despite the above strength, this study has its own drawbacks. Information on determinant factors of iron folate compliance was obtained from self-report of pregnant women; which leads to recall bias, social desirability bias and could result in misclassification bias during identifying compliance status of study participants were some limitations of the study.

CHAPTER 7: CONCLUSION AND RECOMMENDATION

7.1. Conclusion

In this study, we found that there were significant associations between determinant factors and compliance to iron folate supplementation among pregnant women. The study found that being rural resident, low educational status of pregnant women, poor knowledge of pregnant women about IFAS, not getting counseling about IFAS and negative perception towards anemia and iron folate supplementation were factors negatively associated with compliance to iron folate supplementation. Therefore, an effort should carry out to improve compliance to iron-folate supplementation among pregnant women in the study setting through creating awareness and improving the knowledge level of pregnant women about the compliance of iron folate supplementation by the government and other supporting agencies.

7.2. Recommendation

For health extension workers

Strengthen regular home to home visits for the provision of counseling regarding IFAS.

Improve counseling about IFAS at the community level with the collaboration of the health development army, community leaders to enhance the awareness of the community about IFAS benefits.

For health facilities

At health facility level health professionals should provide health educationconcerning IFAS for pregnant women duringANC follow up periodabout Iron folate tablet intake; and its health benefits and anemia during pregnancy and its consequences to reduce negative perceptions towards anemia and IFAS, enhance knowledge status of pregnant women to iron folate supplementation.

For District health office

Sensitization of the community concerning anemia and iron folate supplementation through health education during regular community forum to enhance knowledge about IFAS and to tackle negative perceptions towards anemia and iron folate supplementation.

Other sectors(especially educational bureau, women and children's affair and NGOs working in the area)

Improve the educational status of women in the study setting.

For researchers

Researchers should do further studies with strong methods such as prospective cohort study and a community set up to overcome this limitation.

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Annex 1: Participant information sheet and informed consent form for pregnant women (English version)

Hello. My name is _____I am collecting data for a study on **"Determinants of compliance to Iron folate supplementation among pregnant women in Damot sore District, southern Ethiopia 2019/2020"** as part of the requirement to graduate with masters of public health in Epidemiology from Jimma University. I would like to ask you some questions about the determinants of compliance to iron folate supplementation. The interview will take about 25 minutes. Your participation in the study is very significant to know the determinants of iron folate compliance in this setting. However, your participation is fully voluntary. If you decide to participate, you have the right to withdraw from the study at any time. The data you provided will be kept in a highly confidential manner and none of your personalidentifiers will be on the questionnaire.

1. Yes ☐No ☐

If no respect the decision and thank her, if yes, continue the interview

Interviewee signature-- date: ----------------------------

Interviewer's signature ------------------------------------- date: ----------------------------

Investigator's Address:

- o **Name:-** Sintayehu Kussa Buge
- o **Phone N<u>o</u> :-** +251916415329
- o **Email:-** contactsintek13@gmail.com

Thank you for your cooperation!!

Annex 2:- English Questionnaire for participant interview

Part I: Socio-demographic and economic characteristics of the study subjects

S. No	Questions	Response		Skip
Q101	Age in years	_____		
Q102	What is your religion?	1. Protestant 2. Orthodox 3. Muslim 4. Others		
Q103	Which Ethnic group you are?	1. Wolaita 2. Gurage 3. Silte 4. Amhara 5. Other		
Q103	What is your current Marital status?	1. Single 2. Married 3. Divorced 4.Widowed 5. Other		
Q104	Where is your residence?	1. Rural 2. Urban		
Q105	Total family size	_____		
Q106	What is your educational status?	1. Cannot read and write 2. Read and write 3. Primary education 4. Secondary education and above		
Q107	What is your current Occupation?	1. House wife 2. Daily laborer 3. Government employee 4. Merchant 5. Other (specify)_____		
Q108	What is the educational level of your Husband?	1. Cannot read and write 2. Read and write 3. Primary education 4. Secondary education and above		
Q109	What is the current occupation of your husband?	1. Farmer 2. Daily laborer 3. Government employee 4. Merchant 5. Other (specify)_____		
	Households wealth index items			
W101	Does your household have electricity?	1. Yes	2. No	
W102	Does your household have a radio?	1. Yes	2. No	
W103	Does your household have a television?	1. Yes	2. No	
W104	Does your household have a refrigerator?	1. Yes	2. No	

W105	Does your household have an electric mitad?	1. Yes 2. No	
W106	Does your household have a table?	1. Yes 2. No	
W107	Does your household have a chair?	1. Yes 2. No	
W108	Does your household have a bed with cotton/sponge mattress	1. Yes 2. No	
W109	Does any member of your household have a bank account?	1. Yes 2. No	
W110	What is the main source of drinking water for members of your household?	1.Piped to yard/plot 2. Other	
W111	What kind of toilet facility do members of your household usually use?	1. Pit latrine without slab/open fit 2. No facility/field	
W112	What type of fuel does your household mainly use for cooking?	1. Electricity 2. Wood	
W113	What is the main material of the floor in your household?	1. Earth/sand 2. Other	
W114	What is the main material of the exterior walls in your household?	1. Bamboo with mud 2. Other	
W115	What is the main material of the roof in your household?	1. Metal / corrugated iron 2. Other	

Part II- Obstetric and Health related characteristics

Q201	How many times you were pregnant?	Specify in number_____	
Q203	How many times you were delivered	Specify in number _____	
Q204	Have you ever had a pregnancy that ended in stillbirth?	1. Yes 2. No	If No go to Q206
Q205	If yes, How many still births did you have?	Specify in number_____	
Q206	Have you ever had a pregnancy that miscarried or aborted	1. Yes 2. No	If No go to Q208

Q207	If yes, How many abortions did you have?	Specify in number_____	
Q208	Did you have history of any disease before and pregnancy?	1. Yes 2. No	If No go to Q210
Q209	If yes, which disease you have faced?	1. Malaria 2. Hypertension 3. Diabetes mellitus 4. Other	
Q210	When did you visit the health facility for the first ANC service?	Specify _____(in month)	
Q211	How many ANC visits do you have in the current pregnancy?	Specify in number _____	
Q212	Where did you receive the ANC service?	1. Health post 2. Health center 3. Hospital 4. Other(Specify)_____	

Part III: Health service and client-related factors

Knowledge on IFAS

Q311	Have you ever heard about IFAS?	1.Yes 2.No	
Q312	Taking IFAS during pregnancy is important to the mother?	1.Yes 2.No	
Q313	Taking IFAS during pregnancy is important to the fetus?	1.Yes 2.No	
Q314	Do you think taking IFAS starts from confirmation of pregnancy and continue throughout pregnancy?	1.Yes 2.No	
Q315	Do you think that taking IFAS during pregnancy is important to prevent anemia	1.Yes 2.No	
Q316	Do you think iron and folic acid tablet continue inthe postpartum period?	1.Yes 2.No	
Q317	Taking iron and folic acid tablets during pregnancy doesn't lead to a too-big baby	1.Yes 2.No	
Q318	Taking iron and folic acid tablets during pregnancy may help to prevent birth defects	1.Yes 2.No	

1.1.Knowledge on anemia

Q320	Does pregnancy make women anemic?	1.Yes 2.No	

Q321	Do anemic women become breathless easily?	1.Yes	2.No	
Q322	Do anemic women have weaknesses?	1.Yes	2.No	
Q323	Do anemic women have pale skin or tongue?	1.Yes	2.No	
Q324	Can anemia be prevented?	1.Yes	2.No	
Q325	Do you know what is being done to prevent anemia?	1.Yes	2.No	

1.2.Perception towards anemia and IFA supplementation

S. no	Items	Strongly agree(1)	Agree (2)	Not sure (3)	Disagree (4)	Strongly disagree(5)	
Q326	Developing anemia is a serious issue						
Q327	Developing anemia is harmful to both mother and child						
Q328	Taking IFA can cause side effects						
Q329	IFA tablet is free to use						
Q330	IFA is not easily available						
Q331	I often forget to take IFA						
Q332	Taking IFA is beneficial and can help to prevent anemia						
Q333	My family thinks that it is important for me to take IFA						
Q334	My family members remind me to take IFA						
Q335	Health care provider reminds me to take IFA						

2. Health service-related factors			
S. no	Questions	Response	**Skip**
Q401	How far the health facility from your home by foot? (In minutes)	Specify in number _____	
Q402	Are HEWs visits your home?	1. Yes 2. No	
Q403	If Q402 is yes, how many times they visit per week?	Specify in number_____	
Q404	Did you get counseling about IFAS from HEWs?	1. Yes 2. No	
Q405	If yes for q404, what are the benefits of IFAS	1. Prevents anemia 2. Protects mothers from sickness 3. Gives strength for mother during delivery 4. Increase amount of blood 5. Makes fetus grow healthy and strong	
Q406	The source of the folic acid supplement?	1. Health center 2. Health post 3. I bought from a private clinic/pharmacy 4. Other (please specify)_____	
Q407	How many days in a week did you take folic acid supplements?	Specify in number_____	

Appendix 3: Participant information sheet and informed consent form for pregnant women (Amharic version)

እንደምን አሉ፤ እኔ _____ እባላለሁ፤ በጅማ ዩኒቨርሲቲ የሁለተኛ ድግሪውን በኤፒዲሚዮሎጂ በሚያጠናው አቶ ስንታዬሁ ኩሳ በሚያደርገዉ በ**"Determinants of compliance to iron folate supplementation among pregnant women in Damot sore District, southern Ethiopia 2019/2020"** ጥናት ዙሪያ በመረጃ ሰብሳቢነት እሰራለሁ። የብረትእንክብል አወሳሰድመስፈርቶችንበተመለከተጥያቄዎችንልጠይቅዎእፈልጋለሁ። በዚህጥናትዉስጥየብረትእንክብል አወሳሰድን ዉሳኔ ለማወቅያለዎትተተሳትፎዎሳኝው፤ ቃለመጠይቁ 25 ደቂቃዎችንይወስዳል። ሆኖምተሳትፎዎሙሉበሙሉበፍቃደኝነት ላይ የተመሰረተነው። ለመሳተፍከወሰኑበማንኛውም ጊዜከጥናቱየመዉጣትመብትዎየተጠበቀነው ። የሰጡትመረጃበከፍተኛምስጢራዊነትየሚጠበቅሲሆንማንኛውምየእርስዎየግልመለያ በዚህመጠይቅላይአይጠቀስም።

ፈቃደኛ ነዎት?   1. አዎ   2. አይደለሁም   (ፈቃደኛ ከሆኑ ይቀጥሉ ካልሆኑ ግን ያቁርጡ!!)

የተሳታሪስምእናፊርማ:_____ ቀን: _____

የመረጃሰብሳቢስምእናፊርማ: _____ ቀን: _____

የጥናትአድራጊው

ስም:- ስንታዬሁ ኩሳ ቡኔ

ስልክቁጥር:-+251916415329

Email: -contactsintek13@gmail.com

ለትብብርዎእናመስግናለን !!!

Annex 4: Amharic Questionnaire for participant interview

ክፍል 1፡ ማህበራዊናስነሕዝብናኢኮኖሚያዊባህሪዎች			
ተ. ቁ	ጥያቄ	ምላሽ	መዝለል
Q101	ዕድሜዎትበዓመት	_____	
Q102	ሃይማኖትዎምንድንነው?	1. ፕሮቴስታንት 2. አርቶዶክስ 3. ሙስሊም 4. ሌላ	

Q103	ብሔርዎምንድነው?	1. ወላይታ	2. ጉራጌ	3. ስልጤ
		4. አማራ	5. ሌላ	
Q104	የአሁነየጋብቻሁኔታዎምንድነው?	1. የላገባች 2. ያገባች 3.የተፋታች 4. ባሊ የሞተባት 5. ሌላ		
Q105	መኖሪያዎየትነው?	1. ገጠር	2. ከተማ	
Q106	ጠቅላላየቤተሰብመጠን	-------------------------------		
Q107	የትምህርትደረጃዎምንድነው?	1. ማንበብናመጻፍአልችልም		
		2. ማንበብናመጻፍእችላለሁ		
		3. የመጀመሪያደረጃትምህርት		
		4. ሁለተኛደረጃትምህርትእናከዚያበላይ		
Q108	የአሁነየሥራመስከዎምንድነው?	1. የቤትእመቤት 2. የቀንሰራተኛ		
		3. የመንግስትሰራተኛ 4. ነጋዴ		
		5. ሌላ (ይግለጹ) _____		
Q109	የባለበትዎየትምህርትደረጃምንድነው?	1. ማንበብናመጻፍአይችልም		
		2. .ማንበብናመጻፍይችላል		
		3. የመጀመሪያደረጃትምህርት		
		4. ሁለተኛደረጃትምህርትእናከዚያበላይ		
Q110	የባለበትዎሥራምንድነው?	1. ገበሬ 2.የቀንሰራተኛ 3. የመንግስትሰራተኛ		
		4. ነጋዴ5. ሌላ (ይግለጹ) _____		

የቤተሰብ ሀብት ደረጃን የሚያሳዩ ጥያቄዎች

W101	የእርስዎቤተሰብኤሌክትሪክአለው?		1. አዎ 2. አይደለም
W102	የእርስዎቤተሰብሬዲዮአለው?		1. አዎ 2. አይደለም
W103	የእርስዎቤተሰብቴሌቪዥንአለው?		1. አዎ 2. አይደለም

W104	የእርስዎቤተሰብማቀዝቀዣአለው?	1. አዎ 2. አይደለም	
W105	የእርስዎቤተሰብየኤሌክትሪክ ምጣድአለው?	1. አዎ 2. አይደለም	
W106	የእርስዎቤተሰብጠረጴዛአለው?	1. አዎ 2. አይደለም	
W107	የእርስዎቤተሰብወንበርአለው?	1. አዎ 2. አይደለም	
W108	ቤተሰብዎከጥጥ / ስፖንጅፍራሽጋአልጋአለ.ጋአለው?	1. አዎ 2. አይደለም	
W109	ማንኛውምየቤተሰብዎአባልየባንክሂሳብለው አለ?	1. አዎ 2. አይደለም	
W110	ለቤተሰብዎአባላትየመጠጠውሃምንጭምንድንነው?	1. የቧንባ 2. ሌላ	
W111	ብዙውንጊዜየቤተሰብዎአባላትምንዓይነትመጸዳጃቤትይጠቀማሉ?	1. መከለያያለዉ መፀዳጃ ቤት 2. መዳ ላይ	
W112	የእርስዎቤተሰብበወነኛነትለማብሰያየሚጠቀሙበትምንዓይነትነዳጅነው?	1. ኤሌክትሪክ 2. እንጨት	
W113	በቤትዎውስጥወለሉምንድነው?	1. አፈር / አሸዋ 2. ሌላ	
W114	የቤትዎየጤግግድጋዳምንድነው?	1. በጭቃ 2. ሌላ	
W115	የቤትዎጣሪያምንድነው?	1. ብረት / ቆርቆሮብረት 2. ሌላ	
ክፍል 2፡ ከፆንስእናከጤጋርየተዛመዱባህሪያት			
Q201	ስንትጊዜነፍሰጡርነበሩ?	በቁጥር ይጥቀሱ_____	
Q203	ከዚህ በፍትስንትጊዜወልደዋል	በቁጥር ይጥቀሱ_____	
Q204	ገናበመወለድያበቃእርግዝናጋጠሞዎትያውቃል?	1. አዎ 2. አይ	የለምከሆነደ Q

			ይሂዱ
Q205	መልሶ ያከሆነ፣ስንትጊዜ አጋጥሞትነበር?	በቁጥር ይጥቀሱ_____	
Q206	የፅንስመጨናገፍ አጋጥሞትያውቃሉ?	1. አዎ 2. አይ	የለምከሆነወደ (ይሂዱ
Q207	መልሶያከሆነስንትጊዜነበር?	በቁጥር ይጥቀሱ_____	
Q208	ከእርግዝናበፊትየማንኛውምበሽታአጋጥሞት ያውቃል?	1. አዎ 2. አይ	የለምከሆነወደ (ይሂዱ
Q209	አያከሆነ፣የትኛውንበሽታአጋጥሞዋታል?	1. የወባበሽታ 2. የደምግፊት 3. የስኳርህመም4. ሌላ	
Q210	ለመጀመሪያወለድ ከትትልአገልግሎትጤናተቋምመቼነበርየሆኑት (በወርይጥቀሱ)	---------------------------	
Q211	አሁንባለዉእርግዝናስንትየወልድ ክትትል አለዋት?	በቁጥር ይጥቀሱ_____	
Q212	የወልድ ክትትል አገልግሎትንየትይከታተላሉ	1. ጤናኬላ2. ጤናጣቢያ 3. ሆስፒታል4. ሌላ(ይግለጹ)___	

ክፍል 3፡ የጤናአገልግሎትእናከእንብኛጋርየተዛመዱምክንያቶች

ስለ IFA ኪኒን ያላቸው እውቀት

Q311	ስለ IFA ኪኒንሰምተውያውቃሉ?	1. አዎ 2. አይ
Q312	በእርግዝናወቅት IFA ኪኒንመውሰድለእናትአስፈላጊነውን?	1. አዎ 2. አይ
Q313	በእርግዝናወቅት IFA ኪኒንመውሰድለፅንሱአስፈላጊነውን?	1. አዎ 2. አይ
Q314	IFA ኪኒን መውሰድእርግዝናከተረገዘ ጊዜጀምሮየምቀጥልይመስልዋታል?	1. አዎ 2. አይ
Q315	በእርግዝናወቅት IFA ኪኒንመውሰድየደምማነስንለመከላከልአስፈላጊነው፣ብለውያስባሉ?	1. አዎ 2. አይ

Q316	በድህረወሊድግዜብረትእናፎሊክአሲድኪኒን የሚቀጥልይመስልዎታል?	1. አዎ	2. አይ
Q317	በእርግዝናወቅትብረትእናፎሊክአሲድኪኒን መውሰድሕፃንን ትልቅ ያደርጋል ብለዉ ያስባሉ?	1. አዎ	2. አይ
Q318	በእርግዝናወቅትብረትእናፎሊክአሲድመውሰድየጫቀላ ልጅአካል ጎዶለነትንለመከላከልሊረዳይችላል?	1. አዎ	2. አይ

1. በደምማነስላይያላቸዉ እውቀት

Q320	እርግዝናእናትችን ለደምማነስ ሊያደርጋይሆን?	1. አዎ	2. አይ
Q321	ደምማነስየለባቸዉ እናቶችበቀላሉትንፋሽ ሊያጥርባቸዉይሆን?	1. አዎ	2. አይ
Q322	የደምማነስያለባቸው እናቶች ድካም ልሰማቸው ይችላን?	1. አዎ	2. አይ
Q323	የደምማነስያለባቸው እናቶች ቆዳወይምምላስ ይነጣ ይሆን?	1. አዎ	2. አይ
Q324	የደምማነስንመከላከልይቻላል?	1. አዎ	2. አይ
Q325	የደምማነስንለመከላከልምንእየተደረገእንዳለያውቃሉ?	1. አዎ	2. አይ

2. የደምማነስእናየብረትእናፎሊክአሲድ አቀርቶትግንዛቤ

		እጅግእስማማለሁ	እስማማለሁ	እርግጠኛአይደለሁም	አልስማማም	እጅግአልስማማም
Q326	የደምማነስችግርአሳሳቢጉዳይነው					
Q327	የደምማነስለእናቲቴምህለልጆምነጅነው					
Q328	IFA ንመውሰድየጎንዮሽጉዳቶችንያስከትላል					
Q329	IFA ኪኒንለመጠምነባነው					
Q330	IFA ኪኒንበቀላሉአይገኝም					
Q331	IFA ኪኒንመውሰድብዙጊዜእረሳለሁ					
Q332	IFA ኪኒንመውሰድጠቃሚናየደምማነስንይከላከላ					

Q333	ቤተሰቤ IFA ኪኒንመውሰድለእኔአስፈላጊነውብለውያስባሉ					
Q334	የቤተሰቤአባላት IFA ኪኒንእንድወስድያስታውሱኛል					
Q335	ጤናባለሙያ IFA ኪኒንእንድወስድያስታውሰኛል					

3. ከጤናገልግሎትጋርተያያዥነትያሉ መጠይቆች

Q401	ከቤትዎእስከጤናተቋሙምንያህልርቀትይዝዛል? (በደቂቃዎትይግለጹ)		በቁጥር ይጥቀሱ _____	
Q402	ጤና ኤክስተንሽን ባለሙያዋ ቤትዎይጎበኛሉ ወይ?		1. አዎ 2. አይ	የ... Q...
Q403	Q402 አዎከሆነበየሳምንቱስንትጊዜይጎበኛሉ?		በቁጥር ይጥቀሱ _____	
Q404	ከጤና ኤክስተንሽን ባለሙያዋ ስለአይረን እንከብልየምክራገልግሎትአግኝተዋል?		1. አዎ 2. አይ	
Q405	ለተ.ቁ 404 መልስዎአዎከሆነ፣ የ IFA ኪኒንጥቅሞችምንድናቸው?	1. የደምማነስንይከላከላል 2. እናትንከበሽታይከላከላል 3. በወሊድጊዜየእናትንንጥኑኬይሰጣል 4. የደምመጠንይጨምራል 5. ሽልጤናማእናጤንካራያደርገዋል 6. ሌሎች _____		
Q406	የፎሊክአሲድእንከበል ከየት ይወስዳሉ?		1. ከጤናጣቢያ 2. ከጤናኬላ 3. ከግልክሊኒክ / ፋርማሲ 4. ሌላ (ይግለጹ) _____	
Q407	ለ Q406 አዎ ከሆኔ በሳምንትውስጥለስንትቀናት ወሰደዋል?		በቁጥር ይጥቀሱ _____	

Annex 5:- Oyichchi zaaruwan zuppetiya aayotu akekka immiyonne eenota ekkiyo yechcha woyikko woraqqata. (wolayitatto shahuwaa)

Ayimmala deeti?Tanni _____ getettayiis. Jimma univurshishiyan naa"antto diggiriya woyikko mastirettiya "Epidemiology" giyo luxxeta kifiliyan de"iya manta Kussa Aintayoy piligiddi de"iyo "**Determinants of compliance to iron folate supplementation among pregnant women in Damot sore District, southern Ethiopia 2019/2020".**giyo huphphe yohuwa yushshuwan maddiya xurrata shishshayidda bettayiis. Birattanne folikke kininniya go"ettiyo maara xelliyagan oyishshata oyichanawu koyayiis. Ha pilgettan birattanne folike kininniya intte ekketta haanotta eeranawu intte zuppe maddoy woyikko issipetettay huphphe aano gididdi bettiis. Oyshshi zaaroy lattamanne ichachchu daqiqqa ekkees.Gidikkonne intte zuppe kumetta intte koshshan zemppidaga giddiyogga erissana koyayiis.Zuppetanawu mayetti simmiddikka ayiwodiyankka kiyanawu mattay nagetidagga. Intte immido marajja woykko xurray nagettidaga heggabollanka intte buzzo oonatettay ha oyishshi zaaruwan qonccenaga gidiyogga minttana koyayiis

Ha oyishshi zaaruwan zupettanawu eeno geeti?   1. Ee   2. Chii   (eeno gikko oyishsha domma; eeno gana xayikko oyishshi zaaruwa qanxxa woyikko essa.

- Zuppetiyarri sunttanne paramma _____
- Xurra   shishiyagga   sunttanne   paramma_____ galassa:-_____

Pilgetta ottiyaga qattuwa:

Sunttay:- Kussa Sintaya

S. payiduwaa:- +251916415329

Intte zuppiyawu kehippe galattos !!!!!

Annex 6:- Wolayttato donnan gigidda pilgetta oyishshata

Shahuwaa isiita:- Deretettane aqquwa xeliya oyishshata

M.P	Oyishsha	Zaaruwaa	Guppa
Q101	Baare appunne?	_____	
Q102	Ne ammano eqqottay ayibe?	1. Wongella amaniyagettu yaara 2. Ortodokise 3. Isilama4. haara	
Q103	Ne sheshshay ayibe ?	1. Wolaytta 2. Gurage 3. Silxxe 4. Amara 5. Haara	
Q104	Azinnane machcho hannota	1. Gelabeyikke 2. Gelassi 3. Birshetassi 4. Am''e maccassa	
Q105	De''iyo keettay awani de''I ?	1. Gandda 2. Ambba	
Q106	Soo ketta asaa qodday appunne?	_____	
Q107	Luxxetta xekkay ayibe?	1.Nabbabanawune xuffanawu dandayikke 2. Nabbabanawune xuffanawu 3. Koyrro xekka timirtte kettaa 4. Na''antto xekkane appe bolla	
Q108	Ne oosoy ayibbe?	1. Ketta aayo 2. Wolqqa oosanchcha 3. Kaawo oosanchcha4. Zal''anchcha 5. haara	
Q109	Ne azzina Luxxetta xekkay ayibe?	1. Nabbabanawune xuffanawu dandayikke 2. Nabbabanawune xuffanawu 3. Koyrro xekka timirtte kettaa 4. Na''antto xekkane appe bolla	
Q110	Ne azzina oosoy ayibbe?	1. Goshanchcha 2. Wolqq a oosanchcha 3. Kaawo oosanchcha 4. Zal''anchcha 5. Haara (qonccissa)_____	
Soo keetta aqquwaa xelliya oyshshata			
W101	Elektrikkiya wolqqay de''i?	1. Dees 2. baawa	
W102	Raddone de''i?	1. Dees 2. baawa	
W103	Teveljjine de''i?	1. Dees 2. baawa	
W104	Hattane qumma irxxissiya buquray de''i?	1. Dees 2. baawa	
W105	Elektrikkiya bashshe de''i?	1. Dees 2. baawa	
W106	Xaraphphezay de''i?	1. Dees 2. baawa	
W107	Uttiyo oyidde de''?	1. Dees 2. baawa	
W108	Puttuwa woykko issiponjiya indday de''i?	1. Dees 2. baawa	
W109	Bankkiya hisabbe payidoy de''?	1. Dees 2. Baawa	
W110	Uyiyyo hattaa awuppe demetti?	1. Buwanbappe 2. Haarassappe	
W112	Ayimmala sheshsha	1. Keettay de''iyaggan 2. Dembban	

	keetta go"etetti?		
W113	Keetta baassoy ayibbe?	1. Bittappe oosettis 2. Haarabappe oosettis	
W114	Keetta godday ayibbe?	1. Urqqa/ bitta 2. Haaraba	
W115	Keetta kaaray ayibbe?	1. Qorqqoruwwa 2. Haarabba	

Shaaho naa"o: shaaranee payatettara oyqqetidabba oyichiya oyishshata

Q201	Apputto sharridetti?	_____ (payidduwan qonccissa)	
Q203	Haggappe kasse apputto yeladdi?	_____ (payidduwan qonccissa)	
Q204	Uuluwan hayidda na"I de"i?	1. Ee 2. Baawa	Baawa gikko q206ttawu guppa
Q205	Oyushsha q204 zaaroy Ee gidikko appunne?	_____ (payidduwan qonccissa)	
Q206	Ixxettay boshsheti eeri?	1. Ee 2. eerena	Baawa gikko q208ttawu guppa
Q207	Oyushsha q206 zaaroy Ee gidikko appunne?	_____ (payidduwan qonccissa)	
Q208	Shaarappe kasse harigge oyiqqi eeri?	1. Ee 2. erenna	erenna gikko q210ttawu guppa
Q209	Oyushsha q208 zaaroy Ee gidikko ayimmala hargge sakkide?	1.shekkeriya 2. Suttaa auggetta 3. Sukkarre hargge?	
Q210	Koyirro sharra kalletta hagaza payatetta eqqotan awudde domaddi?	_____(Agginan qonccissa)	
Q211	Ha shaarassi appuni kaletta oottadi?	_____ (payidduwan qonccissa)	
Q212	Shaara awan kalayida de"ay?	1.Payatetta maggada 2. Payatetta xabbiya 3. Hospittale	

Shaaho heezza: payatetta haggazane kalliyageturaa oyqqetida oyishatta

Birattanne foliki acide kinniya eera xeeliya oyishshata

Q311	Biratta kinniniyaba siyaa eray?	1. Ee 2. Chii	
Q312	Shaara wodiyan biratta kinniniya ekkiyogge ayeesi maddi?	1. Ee 2. Chii	
Q313	Shaara wodiyan biratta kinniniya ekkiyogge shaara atetta maddi?	1. Ee 2. Chii	
Q314	Shaara wodiyan biratta kinniniya ekkiyogge shaaray aatto woddiyappe dommin dommiyabamalati?	1. Ee 2. Chii	
Q315	Shaara wodiyan biratta kinniniya ekkiyogge sutta paccatetta teqqanawu maddees gadda qoppay?	1. Ee 2. Chii	
Q316	Shaara wodiyan biratta kinniniya ekkiyogge gaccinuwanikka eqqena gadda qoppay?	1. Ee 2. Chii	
Q317	Shaara wodiyan biratta kinniniya ekkiyogge yirra ordisses gadda qoppay?	1. Ee 2. Chii	
Q318	Shaara wodiyan biratta kinniniya ekkiyogge yirra na"a bolla kifiliya paccatetta teqqanan dandayi?	1. Ee 2. Chii	

Sutta paccatetta hargiyaba xelliya eera oyishata

Q320	Shaaray ayotta sutta pacatetta gattana danddayi?	1. Ee 2. Chii	

Q321	Sutta paccay de"iyo ayotti shempoy teqettana dandayi?	1. Ee	2. Chii	
Q322	Sutta paccay de"iyo ayottussi dafurssay siyettana dandayi?	1. Ee	2. Chii	
Q323	Sutta paccay de"iyo ayottussi galbbay woyikko ayiffe boxxana danddayi?	1. Ee	2. Chii	
Q324	Sutta pacatetta teqqana danddayetti?	1. Ee	2. Chii	
Q325	Sutta pacatetta teqqanawu aybbi ossettidi de"iyakko eeray?	1. Ee	2. Chii	

Sutta pacatettanne biretta folike kininniya xelliyaga akekka

		Kehippe mayettayis	Mayettayis	Erikke	Mayetikke	Kehippe mayetikke	
Q326	Sutta paccatetta mettoy qoppisiyaba						
Q327	Sutta paccatettay ayessa gidin yirassi qohho						
Q328	Kinniyiya ekkiyogge qohoy de"es						
Q329	Kininniya go"etiyogge mishsha oyichenna						
Q330	Biretta Kininne demanawu wayisses						
Q331	Kininniya ekiyogga darooto dogayiis						
Q332	Kininniya ekkiyogge go"esinne sutta paccatetta teqqes						
Q333	Soo asay kininniya ekiyogge tayo go"es giddy qopposonna						
Q334	Soo asay kininniya ekkanawu hasayisosona						
Q335	Payatetta eranchatti kininniya hasayisosona						

Payatetta hagazzra oyiqqetiddagara de"iya oyishshata

Q401		De"iyo kettay payatetta eqqottappe ayikenna hakki?(daqqiqan qonccissa) ?	_____(payiduwan qonccissa)	
Q402		Payatetta extenshinneti intte ketta xomossiyona?	1. Ee 2. chii	
Q403		Q402 zaaroy ee gidikko	Payidduwa qonccissiyona_____	

	saminttan apputto xomossiyona		
Q404	Payatetta extenshinneti biretta kininniya xelliyagan zooriya imiyona?		
Q405	Oyshsha Q404 zaaroy ee gidikko kinniya maddoy ayibe ayibe?	1. Sutta pacatetta teqees 2. Ayiyo hargiyappe teqees 3. Yeliyo wode ayiya minnanadan oottes. 4 yiira payanne minno giddanadan oottees .5. Haara	
Q406	Birattanne folikke kininniya awuppe eketti?	1. Payatetta magaddappe 2. Payatetta xabbiyappe 3. Haara qonccissa	
Q407	Birattane folikke kninniya saminttan giddon appun galassa ekkay?	Payidduwa qonccissiyona_____	

DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university, and that all sources of materials used for the thesis have been fully acknowledged.

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