FOOD TABOOS AMONG PREGNANT WOMEN AND ASSOCIATED FACTORS IN DIMMA DISTRICT, SOUTHWEST ETHIOPIA

A THESIS TO BE SUBMITTED TO JIMMA UNIVERSITY, INSTITUTE OF HEALTH, FACULTY OF PUBLIC HEALTH, DEPARTMENT OF POPULATION AND FAMILY HEALTH; IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF MASTERS SCIENCE (MSC) IN NUTRITION.

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FOOD TABOOS AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN IN DIMMA DISTRICT, SOUTHWEST ETHIOPIA

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Abstract

Background: A food taboo is a food or drink which people strictly prohibited from consuming due to wrong perception due cultural or religious reasons. Pregnancy is viewed as a critical period in the life of women and baby and is most of the time prone to many of food taboos; taboos in this period had deleterious effect on pregnant women's health and on her fetus in the womb.

Objective: To assess the magnitude and factors associated with Food taboos Among Current Pregnant Women in Dimma district, Gambella; Ethiopia.

Method: Facility based cross sectional study was conducted among 276 pregnant mothers from March6-May10/2019, in 3 Public health facilities of Dimma district, Gambella. FGDs and KIIs also conducted to explore food items which were prohibited during pregnancy. FGD were conducted among 18 pregnant women; six from each HC and three KIs were recruited; one from each HC. The data were collected by FGDs and KIIs by using unstructured questioner. Both the FGDs and KIIs were held at health facilities. All FGDs and KIIs were audio taped and transcribed in verbatim. To include to the transcriptions, the notes taken by data collector during data collection were used.

After exploring restricted food items Participants were selected using systematic sampling technique methods for quantitative study. Data were collected using pretested interviewer administered structured questioners by trained BSc midwives and Diploma clinical nurses. The data was edited, entered into Epi data version 3.1 and then exported to SPSS windows version 21.0 for analyses. Descriptive statistics and multivariable logistic regression model were fitted to isolate independent predictors of food taboo practices. All tests were two sided and p values <0.05 was used to declare statistical significance.

Results: In the sample, 34.7% of the study participants were practiced at least one food item. Out of food taboo practicing mothers around fifty of them were restricted from at least three food items. Common food taboos which were practiced were: Fruits, cereals, honey, sugarcane, garden cress, mustard seed and yam. The reasons behind restriction of these food items were; fear of maternal and fetal complications like abortion, cardiac problems and anemia. The odds the food taboo practice was found higher among participants age >=25 years [AOR=2.72, 95% CI: 1.44-

5.12], No formal education [AOR=2.56, 95% CI: 1.17-5.60], gestational age [AOR=4.33, 95% CI: 1.99-9.36].

Conclusions:

More than one third of the pregnant mothers were practicing food taboos in Dimma Woreda. Food taboo practice significantly associated with pregnant mothers' age, educational level and gestational age. Therefore; nutrition education intervention on food taboo practice and importance of nutrients during pregnancy using behavioral change and communication for those whose age is >=25 years and pregnant women on third trimester should be intensively implemented and empowering women to have access for education by all stake holders.

Key words: Food taboo, pregnant women, Dimma district, associated factors…

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Acronyms and abbreviations

ANC Antenatal Care

AOR Adjusted odds ratio

CI Confidence interval

COR Crude Odds Ratio

FGD Focus group discussion

HC Health center

IUGR Intrauterine growth restriction

LBW Low birth weight

KII Key informant interview

KIs Key informants

KMO Kasein Meyer Olkin

NGO Nongovernmental organization

PCA Principal Component analysis

PPS Proportion to population size

SPSS Statistical Package for Social Sciences

SRS Systematic Random Sampling

SS Sample size

W HO World Health Organization

CHAPTER ONE INTRODUCTION

1.1. Background of the problem

Food taboos can be defined as restriction or prohibition of some food items due to cultural and religious reasons. It may not be the same in all cultures and in all societies (1). Pregnancy, also known as, Gestation is the state of carrying a developing one or two offspring within the female's womb. During this period, there are normal, physiological and hormonal changes which are important for maintaining the flow of nutrients to the unborn baby, Stimulating uterine growth, promoting mammary development, and relaxing smooth muscles. Inadequate dietary consumption during this period affects mother and child. During pregnancy there are food taboo practices to prohibit pregnant women from crucial nutrients. Taboos may be followed by any culture, a tribe, a community and a complete nation as a whole. Most of the time it has been seen that nutrition consumption is being followed by a group of people in similar age groups (2). Due to some health problems society restricts pregnant women from consuming some food items(3). The origins of food taboos are normal once up on a time and we couldn't come across with the real origin. Food taboos contribute to unhealthy nutritional practices in pregnancy and early childhood by restricting crucial nutrients during pregnancy which is critical period for the child and for the mother. Discouraging the outcome of addressing food taboos of pregnant women during ANC follow up about long-established way of life which restricts certain food intake has been revealed to be a major contributor to under-nutrition which is a primary factor in more than fifty percent of the basic causes of child hood mortality in developing countries(4).

Food items which are restricted during pregnancy are animal products and some vegetables and fruits. Due to this reason, the majority of foods are limited to plant based like cereals, which are generally rich in carbohydrates and avoids other important nutrients such as proteins, fats, vitamins and minerals which are important for normal body functioning, and fetal growth and development during pregnancy(5).

There are some dietary values which are related with pregnancy. For instance, in the South, South-Western and central part of Ethiopia, mothers are prohibited from food items which are white in color are believed to be plastered on the body of the newly born baby(6).

Even though the fact is that this practices and taboos have been seen during pregnancy, there is no single assumption as evidences about food taboos. All individual has food taboos weather rural or urban. Taboos are considered as a practice which are accepted by a society(7).

1.2. Statement of the problem

A healthy pregnancy is without abnormalities in the mother and results in the healthy outcome in delivery. During pregnancy concentrations of many nutrients decline due to physiological changes secondary to the expansion of blood volume and changes in renal function. In all trimesters of pregnancy, maternal fat stores increased to meet later energy demands, increased insulin insensitivity and resistance, both of which support fetal growth. During pregnancy, dramatic changes in renal function also occur and are associated with increased excretion of glucose, amino acids, and water-soluble vitamins(8).

Under weight, iron deficiency anemia is one of the main causes of death in case of bleeding during delivery, and it is common among women in low income countries(9). Therefore, in Ethiopia, it is very important that health workers become more knowledgeable about the influence the culture has on breastfeeding, pregnancy and dietary behaviors and believes that might be potentially harmful or dangerous during pregnancy and lactation(10).The prevalence of food taboos are more common in low and middle income countries, the study which was done in Surendranagar district, in southern India about three fourths of pregnant women practiced food taboos during pregnancy due to old traditional believes(11).

Findings from Pondichery indicated that 62.8% of interviewed women had food taboos(11). In Sub- Saharan Africa food taboo and misconceptions is more common and strictly practiced during pregnancy and lactation period(10). The study from south eastern part of Nigeria indicated that 36.5 % of pregnant women had food taboos during pregnancy due to some traditional beliefs and they are usually prohibited from eating several food items which are rich in carbohydrate, animal proteins, and micronutrients (12).

In Ethiopia, pregnant mothers are affected by practicing food taboos and restriction of food items which are rich with essential nutrients. There are some literatures indicated that in some areas like Shashamane where 49.8% of the women reported that they were practicing food taboos(3).

Similarly, study done in Awabel district, North Gojjam Zone, showed the prevalence of practicing food taboos among pregnant women was twenty seven percent(13). About 27.5% of women are prohibited from at least one food item while 18.6% are restricted from more than one food during pregnancy due to food taboo in the study which was done in Hadiya Zone(5). There are tremendous consequences of food taboos in middle and low income countries. It has been recognized as one of the contributing factors to maternal under-nutrition in pregnancy, particularly, in rural African communities(2). UNICEF Food-Care Health conceptual Framework indicated that cultural norms, taboos and beliefs are included as one of the factors contributing to severe under- nutrition among children in a rural African settings. Still, there are gaps in assessment of general knowledge of Ethiopian women about the causes nutrition during pregnancy(4).

Pregnant women in Dimma woreda are also the victims of malnutrition due to lack of awareness about the causes of malnutrition and nothing has been done about food taboos in the study area and in the region as a whole.

Therefore due to the consequence of maternal nutrition to the overall health of the pregnant women and newborn baby, this study is designed to determine the magnitude of food taboos and associated factors among pregnant women in Dimma district with the purpose of providing data that informed policies and responsible bodies for appropriate intervention.

2.2. Significance of the study

Food taboo is one of risk factors for malnutrition among pregnant women. Maternal malnutrition has direct and indirect effect on the nutritional status of their children. Therefore, understanding the cultural context and socio-demographic characteristics of food consumption during pregnancy is an important step in supporting Ethiopian women and her unborn baby.

Findings of this study will help health professionals to understand common food taboos among pregnant women in the study area and helps them how to counsel the pregnant women. Additionally, the findings of this study will be used as evidence for other stakeholders who are working on maternal and child nutrition and policy makers on how to intervene the existing nutritional problem of this vulnerable group of population.

CHAPTER TWO: LITERATURE REVIEW

2.1. Prevalence of food taboos

Prevalence of food taboo practice was widely practiced in low and middle income countries including Ethiopia. For instance, the study which was done in Surendranagar district, India about 77%(11).In Pondichery district, India it was about 62.8%(14). The study which was done in South eastern Nigeria food taboo practice was about 36.5%(12). In Ethiopia; Shashemane study showed that about half of the study participants were practicing food taboo. It was 27.5%(5) and 27%(13) in the studies which were done in Hadiya Zone and Northern Gojjam Zone respectively.

2.2. Determinants of food taboo

There are several socio-demographic factors which are associated with food taboos and misconceptions; age, educational status, marital status, occupational status level of income, reside religion and gravid.

A study from districts of Odisha (India) indicated that; low educational level, high income level and lack of proper nutritional information had association with food taboos. Additionally, the study indicated that pregnant women from low income family has no option to prefer food items; and they are less likely to develop food taboo(15)

Findings from Khodu of Surendranagar district revealed that literacy status(illiteracy) was independently associated with food taboos among pregnant women(11). The study from Ibadan Nigeria showed that teenagers those who had no formal education were more practicing food taboos(2). In Ethiopia the magnitude of food taboos is higher even when compared with other middle and low income countries. For example, finding from Shashemane indicated that place of residence and formal education were independent predictors of food taboos respectively(3) and the study from Awabel district, Northern Gojjam Zone: age and monthly income had association with food taboos(13).Findings from Hadiya Zone showed that educational status and age of participants are independent predictors of food taboos(5).

Findings from Ibadan state of Nigeria indicated that, pregnant women those were on first pregnancy were associated with food taboos when compared with those women on second above pregnancy(2).Similarly, findings from Shashemane revealed that women who had previous ANC follow up were less likely to develop food taboos and (3).

2.3. Common food taboos

Majority of the studies done in different parts of Ethiopia identified that the food items which are restricted during pregnancy are almost animal products and some vegetables and fruits which are good sources of calories, protein and vitamins. For instance; honey, linseed and Milk/yoghurt were commonly avoided food items as the study done in Shashemane indicated(3).Similarly, linseed, cabbage, banana, sugarcane, pumpkin/ duba, nug, tea, coffee porridge, coca drink, ground nut and pimento were common food items which are restricted during pregnancy in Awabel district (13). Study from Hadiya Zone indicated that food items which are white in color like fat, milk products and banana were common restricted food items(5).

2.4. Beliefs and Practices about food taboo

The study from Odisha districts indicated that even if they attended formal education and live standardized life still they believe in traditional taboos and they didn't have reason why they were practicing it (13). The study which was done in Ghana revealed that the reason for practicing taboo were the respection for community leaders, parents and husbands(16).

The studies which were done in Africa indicated that the participants believed on food restriction that some food items had association with association on plastered on fetal head, makes big baby which makes delivery difficult. (12,17)

Study from Hadiya Zone revealed that, lack of nutrition knowledge contributes to food taboo practice(5). The study from Guto Gida Woreda, East Wollega, showed that about half of the participants didn't have enough knowledge about nutrition during pregnancy(18).

Conceptual framework

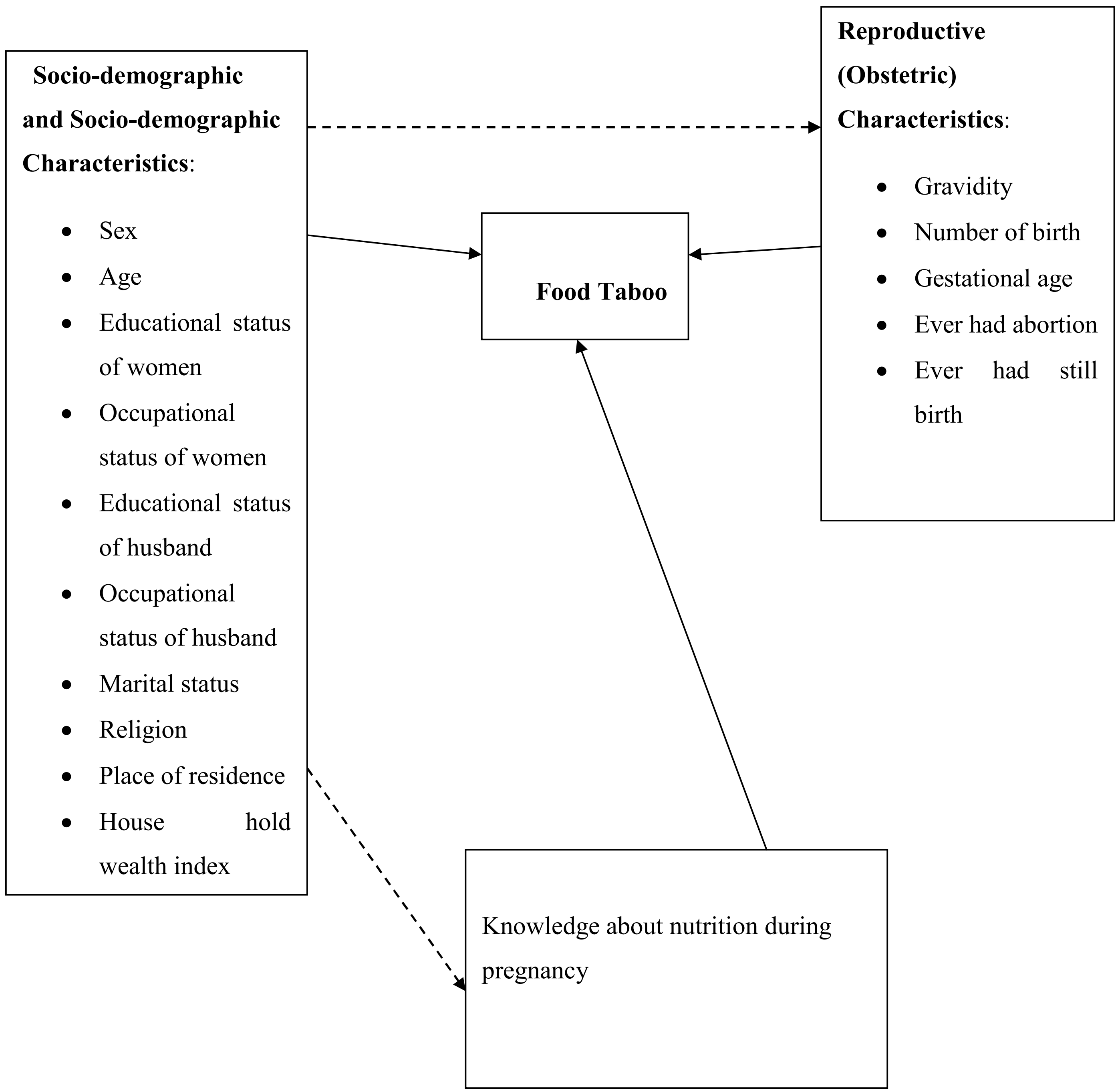

Figure 1: Conceptual frame work adapted from different literatures (4, 6, 14, 19, and 20).

CHAPTER THREE: OBJECTIVES

3.1. General objective

- To assess the magnitude and associated factors of food taboos among pregnant women in Dimma district, Gambella, western Ethiopia.

3.2. Specific objective

- To assess the magnitude of food taboo practice among pregnant women of Dimma district, Gambella region; Western Ethiopia, 2019.
- To identify factors associated with food taboos among pregnant women in Dimma district, Gambella region, Western Ethiopia, 2019.
- To explore food items which are considered as taboo for pregnant mothers in Dimma district, Gambella region; Western Ethiopia,2019,

CHAPTER FOUR: METHODS AND MATERIALS

4.1. Study area and study period

The study was conducted in Dimma district, which is found in Agnuak Zone, Gambella regional state, Western Ethiopia. It is one of five Woredas in Agnuak Zone, which is situated at south – east of the region and located at a distance of 461kms from Gambella city.

Dimma woreda is bordered in the North by Gura ferda woreda, in the southwest by south Sudan, in the east by Surma woreda/Bero woreda and in the west by Gog woreda. The district has 21 kebeles with projected total population of 24,134, of these12135 (50.28) are males. Of the total population, 3 %(724) of the population are expected to be women reproductive age (15-49 years). There are three governmental and one NGO health centers (total 4 health centers) in the town that serves the population of the district and nearby districts. Dimma woreda is 630 meters above sea level. The mean annual temperature of Dimma district is from 31-41^{0}C. Its weather condition is hot. The study was conducted from March6-May8/2019.

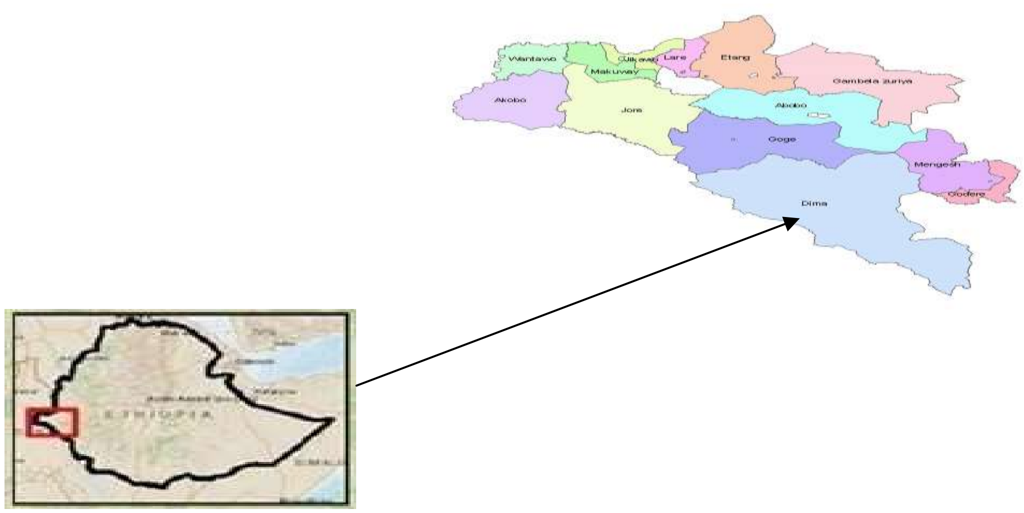

Fig 2: Geographical location of study area, Dimma District, Ethiopia, 2019.

4.2. Study design

Institution based cross sectional study design was conducted.

4.3. Population

4.3.2. Source population

- All pregnant women attending ANC follow up in selected health facilities of Dimma district during data collection period.

4.3.2. Study population

- All randomly selected pregnant women attending ANC follow up in public facilities during data collection.

4.4. Inclusion and Exclusion Criteria

4.4.1. Inclusion Criteria

- Pregnant women who reside in the study area for 6 months and above.

4.4.2. Exclusion Criteria

- Pregnant women, who were not able to respond due to serious illness, and obvious mental illness, were excluded.

4.5. Sample size determination

For Objective One: sample size for the first objective was determined by using single population proportion formula considering the following assumptions: 49.8% prevalence of Food taboo from study in Shashemane district(3), 95% confidence level (CI) and 5% margin of error (d).

- n=(Z α/2)2p(1-P)/d2

$$n=\frac{(1.96)^2(0.498)(1-0.498)}{(0.05)^2}$$

n=384

- Where;

n = Minimum sample size

Z =1.96, Normal deviant at the portion of 95% confidence interval two tailed test

P = prevalence of food taboo (0.498), among pregnant women from Shashemane's study(3)

d = margin of error acceptable is taken as 5%= 0.05

For Objective Two: sample size for the second objective is determined by using epi info 7, by taking variables that have significant association with food taboos in different studies and considering the assumptions as indicated in the following table.

Table 1: Sample size for factors associated with food taboo practice among pregnant women during ANC follow up in public HCs in Dimma district,South west Ethiopia,2019.

S.No	Variables	Assumptions						Sample size	References
		Confidence level (%)	Power (%)	Ratio (Unexposed:Exposed)	% outcome in unexposed group	% outcome in exposed group	OR		
1	ANC follow up	95	80	0.58	61	92	7.35	71	(3)
2	Literacy status	95	80	0.92	62	90	5.52	85	(11)

The minimum required sample size from the calculated for the objective one and two above is 384. Then, since the source population is less than 10,000 a finite population correction formula is applied to get a working sample size.

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

$$Nf = \frac{384}{1+\frac{384}{724}} = 251$$

where n_f = the final sample size,

n= initial sample size (251) and

N = total number of pregnant women (724)

By adding 10% for non response rate the final working sample is 276.

4.6. Sampling techniques and procedures

For quantitative study: There are three Government HCs in the district. Three of these HCs (all of them) were selected for this study, and then systematic sampling technique was employed to select study participants from each HC. 3 %(724) of the population are expected to be women reproductive age (15-49 years) in the woreda. By using proportion to population size sample size for all three health centers were allocated as follows: 385 from Dimma HC, 246 from Koy HC and 93 from Achagna HC By dividing expected number of pregnancy in the woreda to total population in each HC's catchment area and multiplying by conversion factor (3%).Then drawing sample size for each HC from final sample size drawn for the woreda (276) by using pps; 147 for Dimma HC, 93 for Koy HC and 35 for Achagna HC. Then, systematic sampling technique by dividing N/n 724/276=3 every third woman was my study woman.

For qualitative Study: Since there were no any study on food taboos in this particular study area to list restricted food items and food taboo is also sensitive issue to know the reasons behind restricting food items qualitative study was conducted to triangulate quantitative study. For this, three FGDs were conducted with 18 pregnant women containing six from Dimma HC, six from Koy HC and six from Achagna HC. Additionally three husbands of pregnant women (Key informants) one from each health center were selected purposively.

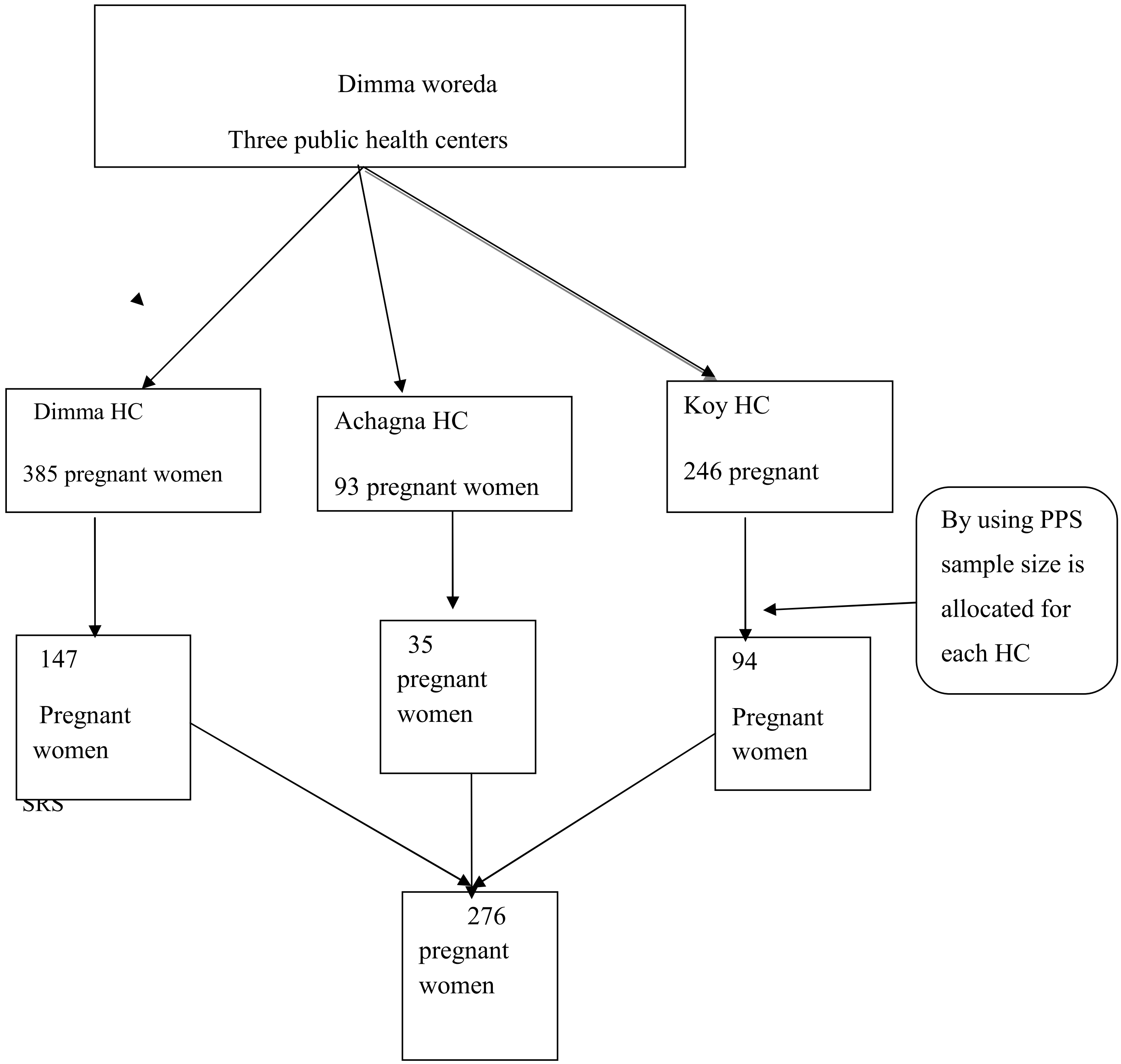

Figure 3: sampling procedure of study participants in Dimma district, Gambella region, Ethiopia 2019.

4.7. Study Variables

4.7.1. Dependent Variable

- Food taboos

4.7.2. Independent variables

- Socio-demographic and socio-economic characteristics**:** Age, sex, marital status, educational status of the women, religion, residence and occupational status of the women, occupational status of the husband and house hold wealth index.
- Reproductive characteristics: parity, gravidity, previous abortion, months of pregnancy and still birth.
- Knowledge aspect: Knowledge of the women about importance of nutrition during pregnancy

4.8. Measurement

Knowledge of pregnant women about nutrition during pregnancy - Mothers' knowledge on nutrition during pregnancy was assessed by asking nine questions. All mothers' answers were computed to obtain scores. Then based on their scores mothers were divided into those who had good knowledge and poor knowledge on nutrition during pregnancy(19).

House hold wealth index: - This was measured from questions including 25 variables through asking whether a house hold had items like: television, electricity, mobile telephone, non-mobile telephone, radio, bicycle, motorcycle, animal drawn cart, bajaj, refrigerator, table, chair, bed with cotton sponge/spring mattress, electric mitad, kerosene lamp, farm land, animals (milk cows, oxen, horses, donkeys, mules, goats, sheep or chicken) and beehive.

Each house hold was then assigned a score for each asset, and the scores were summed for the particular household. Individuals were then ranked according to the total score(20).

4.9. Standard and Operational definitions

Food taboos: A food taboo is a food or drink which people strictly prohibited from consuming due to wrong perception due cultural or religious reasons(21).

Pregnancy: Is defined as the state of carrying a developing one or two offspring within the female womb. This condition can be diagnosed by positive urine HCG, ultrasound and detection of fetal heartbeat. Pregnancy lasts about 36 to 40 weeks, measured from the date of the woman's last normal menstrual period(22).

Knowledge: is awareness and understanding that one has gained on nutrition during pregnancy through learning and practice and pregnant women was considered to be knowledgeable if she correctly answered greater than or equal to 44.44% of the total knowledge assessing questions(18). It is considered as good knowledge if the respondents responded above mean; otherwise it is called poor if below the mean.

Wealth index: The Wealth Index is a composite measure of the cumulative living standard of a household. It is calculated using data on a household's ownership of selected set of assets, such as televisions, bicycles, and cars; dwelling characteristics such as flooring material; type of drinking water source; and toilet and sanitation facilities. The Wealth Index considers characteristics that are related to wealth status, avoiding variables that do not represent an asset, or outcome variables(20).

4.10. Data collection procedure and instruments

For qualitative: Data was collected by FGDs and KIIs using adapted unstructured interview guide which had probing questions. Both the FGDs and KIIs were held at nearby health facilities. Before proceeding to collecting data, comfortable place was selected in nearby HC and rapport was created with participants. The FGDs were conducted in local language, Agnuak while KIIs were conducted in both English and Amharic. All FGDs and KIIs were audio taped and notes were taken during discussion. These procedures were continued until redundancy of idea.

For quantitative: Structured questioner was adapted from different literatures(2,3,5,11–13,19,23). Data was collected using pretested structured questionnaire. The questionnaire was designed in English and translated to local language “Agnuak” for better understanding by data collectors and interviewees. A total of two degree holder Midwives and one diploma holder clinical nurse and one Supervisor with qualification of BSc Nurse were hired to collect data.

4.11. Data processing and analysis

For qualitative: Thematic analysis was employed. Data analysis was done at the end of FGDs and KIIs. Verbatim transcription was done by listening audio record material by researcher and translator. The transcribed data was translated to English by translator. Translator was fluent in English, Amharic and Agnuak language. The translated data was revised several times in order to have better understanding of the context. A translated data was coded line by line manually. Major categories were developed from code of data and themes were from categories developed by reading quotes.

For quantitative: After data collection it was checked for its completeness then it was entered into Epi-data software version 3.1. Moreover, cross-checking and data cleaning was done. Finally, the data was exported to SPSS program version 21.0 for analysis. Descriptive statistics like proportion, mean and median was calculated. Binary logistic regression was used to identify independent predictors of pregnant mother’s food taboo practice. The variables with p-value less than or equal to 0.25 in bivariate analysis was entered into multivariable analysis. Multicollinearity diagnostic was done by checking variance inflation factor (VIF) and no problems were identified (No VIF>10).Backward stepwise logistic regression was used to determine independent predictors with p-value less than 0.05 with their respective AOR and 95%CI. The model fitness was checked by Hosmer-Lemeshow good fit test and the model was declared as fit model since p-value was greater than 0.05.

Finally, 95% CI, P-value of <0.05 and OR was considered statistically significant for association. The results were presented by using text, tables and figures.

The household wealth index was computed using principal component analysis method by considering locally available household assets which were dummy coded. Before running the PCA, assumptions were checked. At the beginning recommended sample size requirement was checked which was 265 and it satisfied this assumption. Next case to variable ratio was assessed and no problem was identified. After that sampling adequacy for the set of variables and for individual variables and Bartlett test of sphericity was checked.

After this entire checkup the analysis was done and some of the variables were removed due to communality, anti-image correlation, and factor loading and complex structures.

Finally, three components with 14 variables were left. In each component more than one variable were loaded. Components were named by giving name of variables with highest loading. Then reliability and outlier were checked for the components. Finally, the household wealth was computed and categorized into three categories.

4.12. Data quality control

The questionnaire was translated to local language by experts. Pretest was done on 5% of sample size in health center called Megenteya HC which is the immediate near health center. Moreover training was given for the data collectors and collected data was checked for the completeness in field by principal investigators.

4.13. Ethical consideration

Before data collection, an ethical clearance was obtained from Jimma university ethical review board, and then formal letter of cooperation was written to Health facilities in Dimma district. An informed consent was obtained from study subjects. More over the study purpose was explained for study participants and any participants' findings were kept confidential.

4.14. Dissemination Plan

The research findings will be disseminated to Jimma university student research program. Furthermore it will be disseminated to Dimma woreda Health Office, Agnuak Zone health department and Gambella regional health bureau.

CHAPTER FIVE: RESULTS

5.1. Socio demographic and socio-economic characteristic

A total of two hundred and sixty five women were participated in the study with a response rate of (96%). The mean (± SD) age of the participants was 24.57(±5.9). Almost all (98.1%) of the participants were married and majority (45.3%) of them were Orthodox followed by Muslim (32.1). From the total participants, 41.1% of pregnant mothers and 54.7% of their husbands had no formal education. The study also found that more than half (55.1%) of pregnant mothers were house wife, while 34% of their husbands were daily laborer. Additionally, 57.7% of mothers were from rural setting. **(Table 2)**

Table 2: Socio-demographic and socio-economic characteristics of ANC follow-up women in Dimma district, Southwest Ethiopia, 2019.

Variables	Categories	Frequency (%)	Food taboo practice (%)	
			Yes	No
Age	< 25	131 (49.4)	31(23.7)	100(76.3)
	>= 25	134 (50.6)	61(45.5)	73(54.5)
Religion	Orthodox	120 (45.3)	46(38.3)	74(61.7)
	Muslim	85(32.1)	26(30.6)	59(69.4)
	Protestant	55(20.8)	20(36.4)	35(63.6)
Educational status of women	No formal education	109(41.1)	46(42.2)	63(57.8)
	Primary school	83(31.3)	28(33.7)	55(66.3)
	Secondary and above	73(27.5)	18(24.7)	55(75.3)
Occupational status of women	House wife	146(55.1)	57(39)	89(61)
	Employed	44(16.6)	15(34.1)	29(65.9)
	Merchant	53(20)	16(30.2)	37(69.8)
	Daily laborer	6(2.3)	2(23.3)	4(66.7)
	Student	16(6)	2(12.5)	14(87.5)
Educational status of husband	No formal education	145(54.7)	61(42.1)	84(57.9)
	Primary	71(26.8)	22(31)	49(69)
	Secondary and above	49(18.5)	9(18.4)	40(81.6)
husband occupation	Employed	25(9.4)	5(20)	20(80)
	Merchant	75(28.3)	22(29.3)	53(70.7)
	Daily laborer	90(34)	37(41.1)	53(58.9)
	Other	75(28.3)	28(37.3)	47(62.7)
Place of residence	Urban	112(42.3)	43(38.4)	69(61.6)
	Rural	153(57.7)	49(32)	104(68)
House hold wealth index	Poor	90(34)	28(31.1)	62(68.9)
	Medium	95(35.8)	36(37.9)	59(62.1)
	Rich	85(30.2)	28(35)	52(65)

5.2. Reproductive characteristics

The study pointed out 52.8% of participants were multigravida, while 30(11.3%) of them experienced previous abortion. Regarding to gestational age 37% and 34% of mothers were on their second and third trimester of gestation respectively **(table 3).**

Table 3; Reproductive characteristics of ANC follow-up women in Dimma district, Southwest Ethiopia, 2019.

Variables	Categories	Frequency (%)	Food taboo practice	
			Yes	No
Gestation	First trimester	75(28.3)	14(18.7)	61(81.3)
	Second trimester	98(37)	30(30.6)	68(69.4)
	Third trimester	92(34)	48(52.2)	44(47.8)
Gravidity	Primigravida	125(47.2)	47(36.7)	78(62.4)
	Multigravida	140(52.8)	45(32.1)	95(67.9)
Ever had abortion	Yes	30(11.3)	7(23.3)	23(76.7)
	No	135(88.7)	85(36.2)	150(63.8)

5.3. Food taboo practice among pregnant mothers

The current study revealed that more than three fourth of (34.7%) of the participants avoid at least one food item, out of these mothers(34.7%) around fifty percent of them were restricted at least from three food items which were identified during the qualitative study.

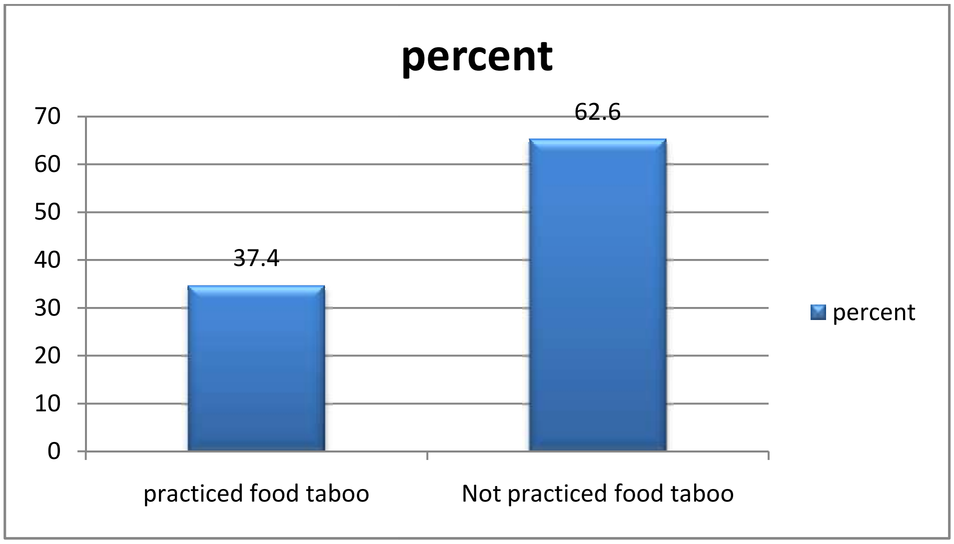

Figure 4: Shows the women who were practicing food taboo and not practicing food taboo among ANC follow up women in Dimma district, Gambella, Ethiopia, 2019.

They were restrict themselves from consuming one of these food items like honey, garden cress, sugar cane, mustard seed, yam, cereals and fruits due to fear of maternal and fetal complications and abortion during pregnancy.

Reasons for restriction were they believed that it makes a big baby, fear of abortion and they believe that some food items like yam (godere) reduce maternal blood and leads to anemia.

Twenty years mothers said:

"…I don't eat honey during pregnancy…it increases amount of blood in my body and can damage my baby's heart as there is blood flow to baby…"

Other 32 years old women reported that eating mustard seed and drinking cold water could cause abortion. She said*:*

"...I avoid eating mustard seed, feto (garden cress) and drinking cold water….as these types of food can cause abortion…"

Similarly, some husbands said that sugarcane consumption can cause abortion and did not allow his wife to eat sugarcane. Thirty seven years old husband said:

"...I don't allow my wife to eat sugar cane… it increase fluids in her body, and it can cause abortion…"

Some women also reported that some foods like Godere (yam) can cause maternal complications and they were not eating it during pregnancy.

Thirty eight years old pregnant women said:

"*...I don't eat godere (yam).It can cause complications during pregnancy and delivery."*

Figure 4 showed that 14.3% of women feared the consumption fruits as they believed these kinds of food could increase the size of baby (Figure 4) baby (Figure 4)**.** Similarly, indepth interview with some women showed didn't consume some foods like fruits and cereals as they feared that it increase the size of baby.

"...I don't eat much fruits…because my baby will become big and it makes delivery very difficult…" Twenty four years women.

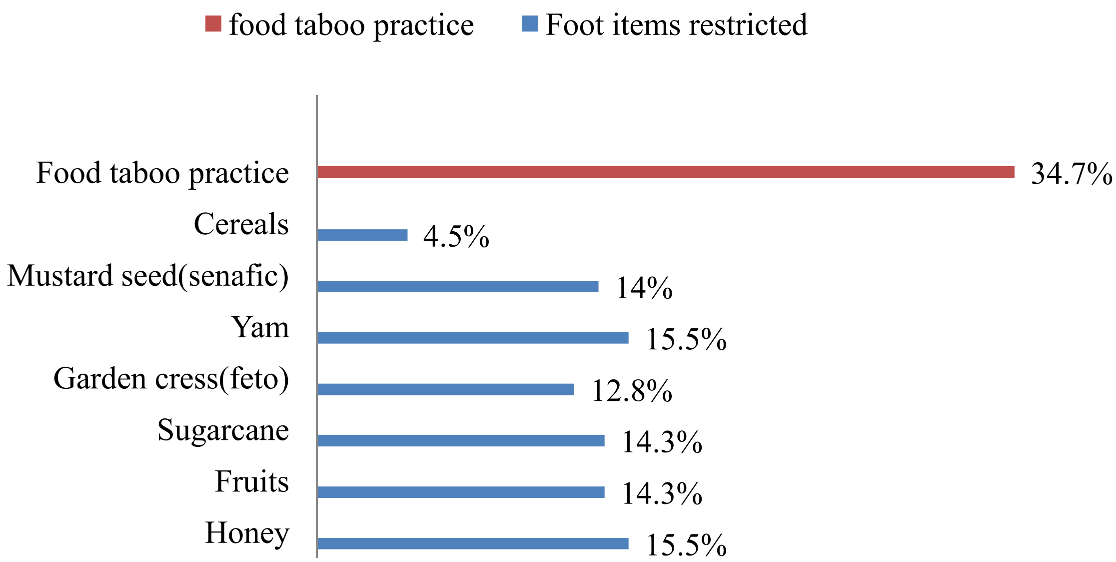

Figure 5: List of food items avoided during pregnancy among pregnant mothers attending ANC follow up in Dimma district, Gambella, Ethiopia, 2019.

In this study nearly half of the participants didn't have good knowledge about nutrition during pregnancy.

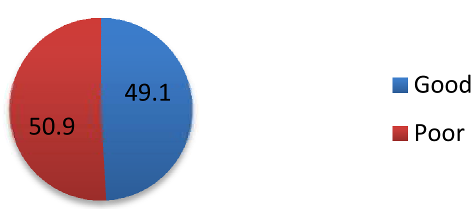

Figure 6: Knowledge of women about nutrition among during pregnancy among pregnant women in Dimma district, Gambella Region, 2019.

5.4. Factors associated with food taboo practice

In bivariate analysis age, women's educational status, women's occupational status, husband's educational status, husband's occupational status and gestational age of the women showed association (at p-value <0.25) with food taboo practice and selected as candidate variables for multivariable analysis**(Table 4).**

Table 4; Factors associated with food taboos among pregnant women in Dimma district, Gambella Region, Ethiopia, 2019.

Variables	Categories	Food Taboo Practice		COR(95%CI)	P-value
		Yes N (%)	No N (%)		
Age	<25	31(33.7)	100(57.8)	1	
	≥25	61(66.3)	73(42.2)	2.70(1.59-4.57)	<0.001*
Women Education	No formal education	46(50.0)	63(36.4)	2.23(1.16-4.29)	0.016*
	Primary school	28(30.4)	55(31.8)	1.56(0.77-3.13)	0.216*
	Secondary and above	18(19.6)	55(31.8)	1	
Women Occupation	Housewife	57(62.0)	89(51.4)	4.48(0.98-20.47)	0.053*
	Employed	15(16.3)	29(16.8)	3.62(0.73-18.07)	0.117*
	Merchant	16(17.4)	37(21.4)	3.03(0.62-14.90)	0.173*
	Daily Laborer	2(2.2)	4(2.3)	3.50(0.37-33.31)	0.276
	Student	2(2.2)	14(8.1)	1	
Husband Education	No formal education	61(66.3)	84(48.6)	3.23(1.46-7.15)	0.004*
	Primary school	22(23.9)	49(28.3)	1.99(0.83-4.82)	0.124*
	Secondary and above	9(9.8)	40(23.1)	1	
Husband occupational status	Employed	5(5.4)	20(11.6)	1	
	Merchant	22(23.9)	53(30.6)	1.66(0.55-4.98)	0.366
	Daily laborer	37(40.2)	53(30.6)	2.79(0.96-8.11)	0.059*
	Other*	28(30.4)	47(27.2)	2.38(0.80-7.06)	0.117*
Gestational age	up to 3months	14(15.2)	61(35.3)	1	
	4 up to 6months	30(32.6)	68(39.3)	1.92(0.93-3.96)	0.076*
	≥seven months	48(52.2)	44(25.4)	4.75(2.34-9.67)	<0.001*

Significant at p<0.25, Other(Farmer and Drivers)

From total variables entered in to multivariable analysis the following three variables were independent predictors of Food taboo practices. Accordingly; the odds of food taboo practices among mothers who were above and equal to age 25 years was around three [AOR: 2.72; 95%CI :(1.44-5.12)] times higher when compared with mothers who were under age category of less than 25 years. In this study, the odds of food taboo practices among mothers who had primary educational status were around three [AOR: 2.56; 95%CI :(1.17-5.60)] times higher when compared with mothers who had secondary and above educational status. Gestational age is also an independent predictor of food taboo practice, the odds of food taboo practices among mothers who had months of pregnancy greater than or equal to seven months was four [AOR: 4.33; 95%CI :(1.99-9.36)] times higher when compared with mothers who had one up to three month pregnancy (**Table 5**).

Table 5. Multivariable analysis of factors associated with food taboo practice among ANC follow up at Government HCs in Dimma district, Gambella Ethiopia, 2019.

Variables	Category	Food Taboo practices		Crude odds ratio(COR)	**AOR**	**P-value**
		Yes (%)	**No (%)**			
Age	<25	31(33.7)	100(57.8)	1^R	1^R	
	≥25	61(66.3)	73(42.2)	2.70(1.59-4.57)	**2.72(1.44-5.12)**	**0.002***
Women Educational status	No formal education	46(50.0)	63(36.4)	2.23(1.16-4.29)	1.44(0.70-2.96)	0.316
	Primary education(1-8)	28(30.4)	55(31.8)	1.56(0.77-3.13)	**2.56(1.17-5.60)**	**0.019***
	Secondary and above	18(19.6)	55(31.8)	1^R	1^R	
Gestational age	Up to Three months	14(15.2)	61(35.3)	1^R	1^R	
	Four up to six months	30(32.6)	68(39.3)	1.92(0.93-3.96)	1.60(0.75-3.45)	0.226
	Greater than or equal seven months	48(52.2)	44(25.4)	4.75(2.34-9.67)	**4.33(1.99-9.36)**	**<0.001***

*Significant at p-value<0.05, 1^R=Reference

CHAPTER SIX: DISCUSSION

The current study found 34.7% of pregnant mothers avoid at least one food item during the current pregnancy., out of these food taboo practicing mothers around fifty percent of them were restricted at least from three food items. The finding is comparatively higher than the findings from North Gojjam and Hadiya Zone reported food taboo among 27(13) and 27.5%(5) of pregnant mothers respectively, the discrepancy might arise from a better accessibility to information in urban areas, the participants in current study come from comparatively small town which likely compromise their access to any information generally and health related information particularly. However the result is comparatively lower than a study from shashemene 49.8%(3) and Surendranagar district 48. %(11), the possible reason here might be the nature of design I used; which is institution based.

The study identified seven food items which are prohibited during pregnancy; important sources of nutrients for pregnant women were restricted during pregnancy. Some women prohibited themselves from eating fruits which is nearly similar with the study which from Hadiya Zone(8.6%)(5) and Shashemane(3).

Some women were also restricted themselves from eating honey as they fear that it increases the weight of child and damages heart of the child.

About 34(12.8%) were restricted from garden cress (‘feto’ in Amharic), 37(14%) were restricted from mustard seed (senafic in Amharic), 12(4.5%) from cereals, 41(15.5%) were restricted from Yam (godere in Amharic) .

The reasons for food restrictions were abortion (feto and senafic), fatty baby (cereals and fruits), Excess amniotic fluid during pregnancy and delivery (sugar cane) and anemia (yam) they perceived that eating yam exposes to loss of blood during pregnancy. Even if the food items restricted is not consistent across different areas the reported reasons are similar with other studies conducted in other parts of Ethiopia in Hadiya (5) and Shashemane district(3). In this study maternal age is an independent predictor of food taboo practice, accordingly In this study maternal age is an independent predictor of food taboo practice, accordingly, women who were above 25 years had higher odd than their counterparts. This finding is consistent with other studies which were done in Ethiopia (2,12,13). The possible reason might be explained by the possibility to be influenced by socio-cultural thoughts, in many developing countries including Ethiopia as a women getting older she is likely to be engaged in social gathering frequently which let her to adopt and by different cultural thoughts and practices. Chance of being influenced by different socio-cultural thoughts, but in the contrary; younger women likely adopt latest health recommendations early. But our finding is not in line with study finding in Ibadan Nigeria; which reported higher magnitude among youngsters. (2). This difference could be due to socio-cultural difference. It is reasonable to expect that educational level of pregnant mothers influence their general practice including food taboo. This association is also evident in this study. In this study food taboo practice was appeared to be higher among participants whose low educational status as compared to those who achieved higher level of education. This finding is in line with other studies which were done in India(11), Nigeria(2) and Ethiopia (2, 12, 13). Likewise gestational age is also associated with food taboo practice; women those who were on third trimester (>=7Months) had higher risk of practicing food taboo than those women who were on first and second trimester. **Since pregnancy is a risk, as the gestational age is approaching to delivery, mothers likely to be highly concerned about pregnancy outcomes and likely to take any measures that will help to ease labor process**. This could be due to maternal perception to reduce the weight of the fetus by the fear of complications during pregnancy.

Limitations of the study

- Institution based nature of the study design
- Social desirability bias is taken as limitation in somehow.

CHAPTER SEVEN CONCLUSION AND RECOMMENDATION

7.1. Conclusion

The current study found 34.7% of pregnant mothers practiced taboo at least one food item in the current pregnancy, out of these food practicing mothers around fifty percent of them were prohibited from at least three food items. Food taboo practice is independently associated with pregnant mothers' age, educational status and gestational age.

The foods and drinks which were restricted during pregnancy were, honey, cereals, fruits yam, mustard seed, sugarcane and garden cress. The reasons which restrict food were, fear of abortion, big baby, too much fluids in the body and anemia.

7.2. Recommendation

Based on the findings from the current study the following recommendations are forwarded:

For Gambella regional Education Bureau

Education bureau in collaboration with other stakeholders should strengthen the effort to improve the accessibility of adult learning.

Gambella regional health Bureau

Coordinate and evidence based health education interventions should be implemented to create awareness about food taboo and its consequences.

For health care providers

- Develop effective communication skills when counseling ANC follow up women rather than only focusing on provision of the services.
- Creating awareness of the women through increasing knowledge about the importance of nutrients during pregnancy for the well being of the mother and children.
- Health care providers should discuss barriers when counseling patients and solutions should be tailored toward individual needs.

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Annexes

Annex I Information sheet
English version

Good morning/ afternoon. My name is _______________________________________ and I am here on behalf of Ageze Teshome Sulito student of Jimma University, school of public health. He is doing a research on food taboos and misconceptions of pregnant women Attending ANC unit of health facilities found here in the District. He has got permission from Jimma University and the respective health facilities to conduct this study. Candidates for this study will randomly be selected from each ante natal unit and you have got the chance to be the one. Participation in this study is completely voluntary and I hope you will agree to participate and answer the questions as truly as possible since your practice is very essential. If you agreed to participate, and I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time. You will face no harm for your refusal or later withdrawal from this study.

You will be asked questions about your personal information, food taboos and restricted food items and reason of restriction with the aid of photographs that I will show you. Interview usually takes 50 minutes for each FGD and 35 minutes for quantitative data on average. The information collected will be used by Government policy makers and health professionals to find ways to improve maternal nutrition.

Do not give your name and all of the answers you give will be coded to keep the information confidential. Data will not be shared with anyone except for members of this research team for the purpose of this work only. Your willingness and active participation is very important for the success of this study.

Address: Cell phone +251985169443

Email: agezeteshome2@gmail.com

Questionnaire ID: ________________

APPENDIX I: PREGNANT WOMEN FGD

Focus Group Discussion and KII Guide

Introduction

Good morning/ afternoon to all. I want to begin by thanking you for joining our group. My name is _______________and I will serve as the head of this group discussion. Have any of you participated in a group like this before? A group like this is called a ―focus group. This is a way for us to hear what you have to say issues that concern you, your community and the nation as a whole which will help in designing programs that are supposed to help you. The discussion is planned for about an hour. We are going to talk about how much you know about the common food taboos and beliefs during pregnancy in Dimma district, the prohibited foods and the reasons why pregnant women adhere to these taboos and beliefs and how they compelled to adhere. We want you to explain to us how you got to know about these taboos and beliefs, for how long and what your thoughts are about the practice in Dimma district. There may be several different foods that are prohibited during pregnancy; we also want you to tell us these foods and the reasons for their prohibition. We will talk further about what is expected to happen to pregnant women who fail to adhere to the various taboos. There may also be other traditional beliefs, other than food taboos that we will also want us to talk about. Even though we are very happy about your participation, let me say, you have the right to continue or withdraw at any time or express any concern that you may have about what is done here.

Disclosure

We will bring along few items to help us record and take note as we go through the discussion.

They include:

- Audio taping;
- Reporting;
- Observers helping to listen/ take note;

Procedures/ Ground Rules

- No right or wrong answer; we want to hear your personal opinions
- Be honest; want to know what you really think;
- Anything you say will be regarded important; so don’t be shy;

- No formal breaks but going to washroom are allow.

Procedures/ Ground Rules

- No right or wrong answer; we want to hear your personal opinions
- Be honest; want to know what you really think;
- Anything you say will be regarded important; so don't be shy;
- No formal breaks but going to washroom are allow.

Age	Tribe	Residence	Educational level	Occupation	No. of Children	Denomination

This personal information is for participants in each FGD's from public health centers in Dimma district, 2019.

APPENDIX II: VOLUNTEER AGREEMENT FORM

The details of my involvement in the research, Common Food Taboos and Beliefs during Pregnancy in Dimma district have been explained to me. I have been given an opportunity to obtain clarifications about the research to my satisfaction. I therefore agree to participate as a volunteer.

Date___________________________

Signature_____________________________

Let us start

A. Knowledge of Food Taboo

1. Do we know what taboo is?

   1a. what is it?

   1b, Are there any Food Taboos in Dimma district?

   Probe: During pregnancy? During labor? After-birth?

2. What do you understand by, Food Taboo during pregnancy?

   2a. why should women observe Food Taboo during pregnancy periods?

   Probe: During labor?

   3. What are some of the experiences that you are aware of that women encounter when they don't observe Food Taboo during pregnancy?

B. Attitude and Perception

1. What are your views about women observing Food Taboo during pregnancy?

   Probe: During labor? After-birth?

2. Why do you think women should observe Food taboo during pregnancy?

   Probe: During labor? After-birth?

3. When they observe Food Taboo during pregnancy, do you see them as doing the right thing?

   Did you think it was something they should have done?

   Probe: During labor? After-birth. Why? Why not?

4. Did your wife ever observe food taboo during pregnancy?

5. Were you in agreement with what she did?

6. What do you think about the attitude of the service providers? Probe further on the regularity and quality of services provided. What do they like about the service provider work, what do they want them to do differently

C. Information Transfer

1. How did you get to knowledge about Food Taboo during pregnancy?

Probe: During labor? After-birth?

2. How long have you known about Food Taboo?

3. Who first told you about Food Taboo?

3a. Why did they say pregnant women should observe them?

Probe-Before your first pregnancy? During your first pregnancy? During labor?

4. How are they reminded to observe Food Taboo during pregnancy?

Probe: Mother? Mother In-Law? Community elders?

D. Desire to Participate

6. What is the current level of Food Taboo adherence this area? Probe: Explain.

7. In this area, what does culture say about being pregnant in the first place?

Probe further: During labor? After-birth.

8. Are there others who do not observe Food Taboo?

8a.What are the reasons they give for not observing Food Taboo?

9. Other than Food Taboo, are there other taboos and beliefs that women must hold during pregnancy?

Probe further if any: What are they?

10. What do you think will happen to them if you refuse to observe the Food Taboos?

E. Prohibited Food Types

11. What are the foods they are told not to eat? (List them) Probe further: What do you know will happen if they eat them? (Record for each food given)

12. Do they eat these foods outside pregnancy?

Probe: During labor? After-birth?

13. Are you aware any health worker at the Clinic telling pregnant women what to eat and what not to eat?

14. What are some of the foods they were told to eat? What not to eat?(food items told to eat and not to eat.

15. What reasons did they give you?

Thanks for your time and your kind participation.

Cwiiri	Wijur Mari	Karbëëtö Mari	Yi rook Göör Mari	Tïïcmari	KwäänObwörë Mooy	Gin KääriRii Ki Gø

DöötiMooy Ni En MaalKany En Beeye Per Jey Mo CïpDëëtGe Kipper Ki Yi FGD Ki (Yi Public Health) JöötDëël Mar Jey Yi Warada Mar Dïma.

APENDIX II

Warakanpäängjïëy mar jeymwøacïpdëëtge.dønyyikwäänö mar cam man ni food taboos kingäädhë mar jeykanyonäkmo di määnmongëëtge en maalkiyiwarada mar dïma nee caangejïra.køøre met-ecmaraacïbabäät gum dëël ,kiperciinwïc mar kwäänö nee duunëkijammimowøpkipera, køøreaanajïëykimancïbaraa.

Dwääy_________________________

Ngïï_________________________

CAAØ GØ NI BØ

A.KWÄNYNYÖ KIPER CAM MAN NI CWØL NI TABOO

1. Løny man ngäääögøwal taboo angøøni?

   1a enaangøøni ?

   1b Dicammodicwøløni taboo yidïmakany?

   Probe: kanyonäkngëëdïenamaal, ritïïc? , kikøørlwaar ?

   2 Agïnënikwanynyobäät cam man nicwølni taboos kanyonäkngëëtmëëenamaal.

   2a .Akiperngø a ö mëëorangnge (oranggi) caamimooynicwølni taboo en kanyonäkngëëtmëëenamaal?

   Probe.ritïïc

   3Ajapangenidøøcokwanykanyocädukimëëki per kanyonäkngëëtgeenamaal.

B.YI NËËNÖ KA ACAARE MO KÄDÖ

1.Nëënnömaroangøønidøckiri cam man ni taboo døc.

Probe .kanyo en ngëëdimaal ? ritïïc? kikøørlwaar?

4.Apoolmarieegïnöeeraangøkanyo en ngëëtëmaal.

5. I eniri mane kirimanatïëë?

6.Agïnangønicaariki bang jeymotïïctïïc .

Probe. A nøkgeki nut kiribeenytïïcmanotïïc ,agïnënimanynyikiperjootïïctïïc , agïnëni many ge no opäää.

C . TÏÏC JAMMI (WAAC) NEE PÖÖDHË

1. Otïïgønidïïniikwäänyikiri cam man nicwøl taboo kanyonäkmongëëdienamaal

   Prob .ritïïc ? kikøørlwaar ?

2. Cam man nicwølni taboo en ii ngäääökikanymonyïëdi
3. ocaanangajïrïdikwøng?

   3a.Genu köökiperngønimëëkanyonäkmongëëtgeenamaalmanynya man rang gegøongäcgegø

   Probe.Kanyapoodeni en maal mar ngëëdimanadikwøngpoodi.

   4.Wïthgeopaayingakiman rang ge cam man nicwølni taboo kanyo en ngëëdimaal .

   Probe .Mïëö?miicødhaanhø(waangø)? jøadøøngngøkiyieaatut(paac)?

D. MET EC KIPER CÏP DËËL KI TÏÏC

5.Agïnëni nut kiperdööng cam mar taboo kiciigekany?

Probe.Caani?

6. Ki kanyee ,kööngöocaanngøbäätkanyo en ngëëdimaalkaadikwøng?

Probe.Mørmonyään?ritïïc ? kikøørlwaar ?

7. Poot di jeymo cam man nicwølni taboo en kergejoodø?

7a.Agïnangønitïïcge nee cam man ni taboo en bajootge ?

8. Ki mørmokaala taboo, poot di mør ,momëëngäädhökigøkanyo en ngëëtgemaal.

Probe. Mo nyäängenaangeni (angøøni)?

9.Agïnëotägidëëtgekanyokweergeki man ngäcge(neen) taboo ?

E. TEENG CAAMI MWØA NÄK OMÄNÖ

10. Ateengcaamimwøenikøpniker (kar) cam ge?

göörpiny?

Probe.Agïnëniløny man ngäyinitägökanyo cam gegø?

(göörnyencaamipinymwøanäkocïbö (ojïëö))

11. løny man cämgekicaamimooyningëëtgeenamaal

Probe.ritïïc ? kikøørlwaar ?

12. Genirøkgeegigwøøkijøtïïjöötdëëlkiyiøt-jaathkanyocäänmëë moo ngëëtge en maaalkipergïnu cam gekigïnuba cam ge?

13. AteengcaamimwøenicaanjÏgeni cam ge ?naaamwøenikøpniker cam ge ?

(göörnyencaamipinymwøanäkocïbö (ojïëö) kimwøakøpniker cam ge ?

14. Aluupmonyïëdiniløkgejïïw

ÏïnaPwøcKiperManaCïpïCaaeMooy

Ki Met Ii Ni CïppïKiperTïïc Man

Annex III: Questionnaire for quantitative part, not full but for socio-demographic and reproductive characteristics and knowledge of pregnant women about nutrition during pregnancy other parts will be adapted after the findings of FGD's and KII.

JIMMA UNIVERSITY

SCHOOL OF PUBLIC HEALTH

Questionnaire designed to assess food taboos and Malpractices of antenatal care attending pregnant women of Dimma district.

Instruction: This questionnaire is designed for the purpose of face to face interview to collect data from pregnant women participating in this study. It will have socio-demographic, reproductive and knowledge of the women about nutritional status during pregnancy sections and restricted food items and. First section will deal with socio demographic characteristics of participants while will be adapted after FGD's result.

Note: This questionnaire has to be filled only by the interviewer once informed consent is obtained from respondents. Please circle the numbers that contain answers you received.

Questionnaire ID No	___________________________________.
Health facility type	1. Public 2. Private
Name of health Facility	__________________.
Date of Interview	____/___/____
Time interview started	____:_______
Time interview ended	______:______
Interviewer	Name ________________________________ signature ___________
Checked by Supervisor	Name _________________________________ Signature _________ Date ____/___/__

Socio- demographic characteristics:			
No.	**Questions and filters**	**Coding and Categories**	**Skip**
001	How old are you? (age in completed years	___________years	
002	What is your religion?	Orthodox ………………..1 Protestant ……………… 2 catholic …………………3 Muslim ………………….4 Other(specify) _____________ ……5	
003	Your marital status?	Married ………………….. 1 Single ……………………. 2 Divorced ………………… 3 Widowed ………………… 4	
004	Husband's educational status	No education ………………1 Can read and write …………2 Primary …………………… 3 Secondary …………………. 4 Higher (collage and above) ………….`5	
005	Occupation of your husband?	Employed …………………1 Merchant ………………….2 Daily labourer ………………3 Driver ………………..4 Other (specify) _____________ ……..5	
006	Where is your place	Urban ……………………. 1	

	of residence?	Rural …………………….. 2	
007	What is the highest level of Education you ever completed?	No education …………… …..1 Can read and write ……………..2 Primary …………………… 3 Secondary …………………. 4 Higher (collage and above) …………`5	
008	What is your occupation?	Attended to house chores ……….. 1 Employed (private/public) ……….. 2 Merchant …………………………. 3 Daily labourer …………………….. 4 Student …………………………. 5	
009	Is this your first pregnancy?	Yes ……………………… 1 No ……………………... 2	
010	If no, how many times? (including current pregnancy)	______________ Times.	
011	How much is the birth interval between pregnancies?	_______________ Years.	
012	How many months of pregnant You are now?	____________ Months.	
013	Do you ever have abortion?	1.yes 2.No	If no skip to question number 015

014	How many times	________________	
015	Do you ever had still birth	1.Yes 2.No	
016	What is the size of your family? (total number of individuals living in your house)	Male children ____________ Female children ____________ Adults ___________ Total household size __________	
017	How much is the total monthly income of your family?	_______________ Birr.	
018	Do you have the following Properties in your household? 1.Electricity 2. watch/clock 3. radio 4. television 5.mobile telephone 6. non mobile telephone 7. refrigerator 8. table 9. chair 10.bed with cotton/ sponge/spring mattress 11. electric mitad 12. kerosene lamp/pressure lamp	Yes No 1. Electricity …………… 1 ………………….. 2 2. watch/clock …….. 1 ………………….. 2 3. Radio ………………… 1 ……………………2 4.television …………….1 ……………………..2 5.mobile telephone ……. 1 ……………….2 6. non mobile telephone ……… 1 …….2 7. refrigerator ………………1 ………………2 8. table ……………………1 ……………………2	

		9. chair ……………………1 ……………………2 10. Bed with cotton/ sponge/spring mattress …………………1 ………………………2 11.electric mitad ………1 …………………….2 12. kerosene lamp/pressure lamp ……1 ……2	
019	Does any member of this household own? 1. Bicycle 2.Motorcycle/scooter 3.Animal drawn cart 4.Car/truck 5.Bajaj	Yes No Bicycle ……………………1 …………… 2 2. Motorcycle/scooter …….. 1 ……….2 3.Animal drawn cart …………..1 ………..2 4.Car/truck …………………………1 …………2 5.Bajaj …………………………………1 …………… 2	
020	Does any member of this household own any agricultural Land?	Yes ………………….. 1 No …………………... 2	If answer is "2" skip to Q. 123
021	If yes, how much of agricultural land do members of		

	this house hold own? Local units (specify) ________		
022	Does this household own any livestock, herds, other farm Animals or poultry?	Yes …………………… 1 No ……………………. 2	
023	Does your household own any of the following animals? 1.Milk cows, oxen or bulls 2.Horses, donkeys or mules 3.Goats 4.Sheep 5.Chicken 6.Beehives	Yes No Number 1 …………………2 …………… _________ 1 ……………….. 2 ……………… _________ 1 ………………….2 ……………… _________ 1 ………………….2 ……………... _________ 1 ………………….2 ……………… _________ 1 ………………… 2 ……………... _________	

Annex IV: Knowledge of pregnant women about nutrition during pregnancy		
015. Do you know about the meaning of food?	1. Yes	2.No
016. Is food important for growth and development of fetus?	1. Yes	2.No
017. Do you know about the main food groups or balance diet?	1. Yes	2. No
018. Do you know food sources of protein?	1. Yes	2. No
019. Do you know about sources of carbohydrate?	1. Yes	2.no
020. Do you know about sources of iron?	1. Yes	2.No
021. Do you know about sources of vitamin?	1. Yes	2.No
022. Do you know about sources of iodine?	1. Yes	2. No
023. Do you know about inadequate nutrient is the cause of miscarriage or preterm?	1.Yes	2.No

Annex v: List of restricted food items among ANC follow up pregnant women in government HCs in Dimma district, Southwest Ethiopia, 2019.

Restricted food items during pregnancy	1. Yes	2. No
024.Do you eat fruits during pregnancy		
025. Do You eat mustard seed (senafic) during pregnancy?		
026. Do You eat garden cress (feto) during pregnancy?		
027. Do You eat Yam (godere) during pregnancy?		
028. Do you eat sugar cane during pregnancy?		
029. Do You eat honey (mar) during pregnancy?		
030. Do You eat cereals (teratre) during pregnancy?		

Ngïï Mar Kwäänö Mar Pïëc		
Teeng Tïï Jööt Dëël	1 mar jey bëët 2.per jey mo nøk	
Nyeng Jap Tïï Jööt Dëël	- - - - - - - - - - -	
Dwääy Mana Tïïc Pïëc Ki Løk Pïëc Yie	- - - - / - - - - - - / - - - - - -	
Caa Mana Cak Pïëc Ki Løk Pïëc Yie	- - - - - - - - - - - - -	
Caa Mana Thum Pïëc Ki Løk Pïëc Yie	- - - - - - - - - - - - -	
Ngatta Tïïc Pïëc Ki Løk Pïëc	nyengnge ------------	ngïï---------------------
Rangnga Ngatta Caath Køør Tïïc **Wala Cuuperbaayjer**	nyengnge----------------- dwääy----------------	ngïï---------------------

kwäänö	p ï ë c	kööt ki yi ngøri mana ngøri ki gø	päär/ kaal
0 1	cwiiyi adïï? (cwiiri mooy päāng kany)	cwiiri mwøa_______	
0 2	jwøk man lami angøøni(amane)?	øørthødøk-------------1 pørøtecthaanh--------2 kathølek---------------3 mucilem---------------4 mør(caani kiree)-----5	
0 3	yi röök nywöm mari	ocøødø ---------------1 kercøødø-------------2 genu päāö-------------3 ci thøø-----------------4	
0 4	yi röök göör mar ngat paari	ker göödö--------1 løny ki man kwäānë ki göörë bärë-----2 ena ya 1--8th -------3 ena ya 9th ---12th---4 ena køølec wala yuunibercïïtï-------5	
0 5	tïïc mar ngat paari	tïëö ki tïïc mara akwõma------1 ngat gafha-----2 tïï teek bäādï----3	

		dï kïï-------4 mør (caani)-----5	
0 6	kar bëëtö mari en kaa ?	p ä ä n y - - - - - - - - - 1 ya anywaa----2	
0 7	anguun göör mari nyïëdï ?	k e r g ö ö d ö - - - - - - - 1 løny ki man gööt piny okwaan gø------2 ena ya 1th--8th -----3 ena ya 9th- 12th----3 køølec(yuuni böösthïï)------4	
0 8	tïïc mari angøøni ?	n g a t j e e n g ø t t ø - - - - - 1 tïëö ki tïëa akwöma -----------2 ngat gadha-------3 tïï teek bäädi ----4 nyilaar göör--------5	
0 9	løny man tumë man beeye en ngëëdi mari maal mana di kwøng kiree?	k a r e - - - - - - - 1 pa jeni (eni)____2	
010	ani näk mo paa eni ee aki køøye(kwörë adïï) ni m	k w ö r ë - - - - - - - - - - - - - - -	
011	yi röök lwaar mari ke en ngëëdi mari maal acwiiri adïï ?	c w i i r i - - - - - - - - -	

012	d w ä t t i a d ï ï ?	d w ä d ë - - - - - - - - - - -	
013	løny ki man tumë ni ïïnu mänh wøk?	k a r e - - - - - - - - - - - - - - - 1 bunggø---------2	ni näk mo bunggø päār raa 015
014	akwörë adïï nii mānhnha wøk	k w ö r ë - - - - - - - -	
015	yi poot ker gïttö ki nyilaal	a a n u g ï t t ö - - - - - - - - - - - - 1 bungngö--------------2	
016	kwāān jø paac bëët adïï?	c w ø c - - - - - - - - - - - - - - - - - - 1 mään---------------2 mwøa døøngngø---3 kwään jø paac adïï-?	
017	jap kääru dëëttu ki gø nyïëdi	b ï r r ï - - - - - - - - - - - - - - -	
018	japi ni en piny kany ii løny ki man tïm ge ni dagø paac 1.maac (electric) 2.caa 3.raadiiyø 4.thalabījën	b u n g g ø . d a a 1--------- -------	

	5.ogut 6.ogut mar øttø 7.pīrīj 8. tharubīītha tharu biija 9.köömi 10.cööpë 11.macīīn mar thaal 12.maaw		
019	1.okweeny 2.atatät 3.okweeny 4.jääy 5.baajaac	d a a . b u n g ø 1------- 2---------	
020	k i d ë ë t j ø p a a c mooy di dhaanhø mo jïrë di pwödhö keere	d a a - - - - - - - - - bungngö-----------	ni näk mo bunggö päär ri pïëc 023
021	n i n ä k m o k a r e dööng pwödhö		

	nyïëdï ?		
022	d i d h a a n h ø m o j ï r ë di teeng jappi ni piny kany ii ka teeng lääc paac ki møøk	d a a - - - - - - - - - - - - - - - - - - bungngö------------------	
023	jø paac di teeng jappi ni piny kany ii 1.caak mo dhieng 2.okweeny lääy 3.diel 4.røømø 5.nyigwienø 6.ateea	D a a b u n g o	

kwänynyö mana joot mëë kanyo näk mo ngëët ge ena maal kiper caami mo cïppī ki teek dëël (remø)

015	cam man näk angøøni ngäyyi ?	ëëngë. 2 kuc wa
016	løny man gäyyi caami mo ki per dööng dëël	1.ëëngë 2.pakare
017	løny kiman ngäyyu caami ki yi jöör cam geni bëët .	1.ëëngë. 2.kucwa
018	løny ki man ngäyyu caami mo okänni ki teek dëël	1.ëëng 2.kucwa
019	løny kiman ngäyyu caami mo cïppï ki lïëth dëël.	1.ëëngë 2.kucwa
020	kanyo joot irän yiee	1.ëëngë.2.kucwa
021	løny man ngäyyu kanyo joot baadiman yiee	1.ëëngë 2.kucwa
022	ayudïīn kanyo joodi yiee ngäyu	1. ëëngë.2.kucwa
023	løny kiman ngäyyu gø kiman näk mo cam mo thiinh kännö ki døøn dëël piny	1.ëë 2.kucwa
024	løny ki man ngäyyu cam man ni taboo en wal tïïc mare angøøni ?	1.ëëngë 2.kucwa
024	ngäyyu ni nook cam kanyo en ngëëdi maal ba kunynyi	1.ëëngë 2.kucwa
025	løny kiman cämi ki nyï jen kanyo en ngëëdi maal	1.kare. 2.pakare
026	løny ki man cämi ki caap ya angøtta	1.kare 2.palare
027	løny ki man cämi ki mwøt kanyo en ngëëdi maal	1.kare. 2.pakare
028	løny ki man nyämi ki thieng kanyo en ngëëti maal	1.kare 2.pakare
029	løny kiman cämi ki kïc kanyo en ngëëdi maal	1.kare 2.pakare

030	l ø n y k i m a n c ä m i k i c ë ë r ø l (t h e r e c e r) kanyo en ngëëdï maal ?	1.kare 2.pakare