KNOWLEDGE, ATTITUDES AND PRACTICES ASSOCIATED WITH COMPLIANCE TO MATERNAL NUTRITION SUPPLEMENTATION INTAKE AMONG ANTENATAL WOMEN AT MUHIMBILI NATIONAL HOSPITAL

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By

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A Dissertation Submitted in Partial Fulfillment of the Requirements

for the Degree of Master of Public Health of

Muhimbili University of Health and Allied Sciences

October, 2024

CERTIFICATION

The undersigned certifies that we have read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences (MUHAS) a dissertation titled: "Knowledge, attitudes and practices associated with compliance to maternal nutrition supplementation intake among antenatal women at Muhimbili National Hospital" in (partial) fulfillment of the requirements for the degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences.

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DECLARATION AND COPYRIGHT

I, **Halima Barack Guga** declare that this **dissertation** is my original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature: ……. Date: …….

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DEDICATION

I am dedicating this dissertation to my lovely mother Zahra Said for her endless support and love.

ABSTRACT

Background: Maternal nutrition supplementation is crucial in the prevention and management of pregnancy complications and ensuring fetal health. Proper intake of essential nutrients such as iron, folate, calcium, and vitamins can prevent common pregnancy complications including Iron Deficiency Anemia (IDA), preeclampsia, and nausea. In Sub-Saharan Africa (SSA), deficiencies in these key nutrients have been linked to adverse pregnancy outcomes, such as fetal growth restriction, neural tube defects, low birth weight, and increased risks of prenatal and infant mortality and morbidity. Despite efforts to promote the use of supplements and improve maternal nutrition through antenatal care programs, compliance rates remain low in many regions, including Tanzania.

Objective: To assess knowledge, attitudes, and practices associated with compliance to maternal nutrition supplementation intake among antenatal women at Muhimbili National Hospital.

Methodology: This was a facility-based cross-sectional study conducted at Muhimbili National Hospital, involving 200 pregnant women attending antenatal clinic. Simple random sampling was used in the selection of study participants. Data was collected through a questionnaire with structured close-ended questions adopted from the Institute of Nutrition and Food Safety of China Center for Disease Control and Prevention to assess the knowledge, attitude and practice (KAP) of respondents will be used. Compliance with nutrition supplementation (Iron-Folic acid) in this study was defined as daily intake of IFA supplements from the beginning of the first trimester until the day assessment. SPPS vs.25 was used for data analysis.

Results: The study found that 70% of participants had inadequate knowledge about IFA supplementation, with significant gaps in understanding its benefits, usage frequency, and duration. Attitudes were predominantly negative, with 55.3% of participants holding negative views towards IFA intake. Despite high reported consumption of IFA tablets

(98%), only 31% adhered to the recommended regimen. Compliance was significantly associated with knowledge level, employment status, and marital status.

Conclusion: The findings highlight substantial gaps in knowledge and negative attitudes affecting compliance with IFA supplementation. Targeted educational programs, enhanced counseling, and community-based interventions are recommended to address these challenges and improve adherence. Engaging relevant stakeholders, including healthcare providers and community leaders, is essential to promote better practices and support maternal health.

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LIST OF ABBREVIATIONS

ANC	Antenatal care
IFA	Iron Folic Acid
MNH	Muhimbili National Hospital
NTD	Neuro Tube Defect
WHO	World health organization

DEFINITIONS OF TERMS

Maternal Nutrition supplementation: refers to the provision of essential vitamins, minerals, and other nutrients to pregnant and lactating women to ensure optimal health for both the mother and the developing fetus or newborn.

Iron-folic acid (IFA) supplementation: refers to the provision of iron and folic acid in the form of dietary supplements to pregnant women, primarily to prevent and treat iron deficiency anemia and to reduce the risk of neural tube defects in developing fetuses.

Antenatal Women: Pregnant women who are receiving prenatal care or attending antenatal clinics. This term refers to women during the period of pregnancy before childbirth, typically starting from conception until delivery.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

Maternal nutrition supplementation plays a crucial role in prevention and management of pregnancy complications and ensuring fetal health (1). Proper intake of essential nutrients such as iron, folate, calcium, and vitamins can prevent complications including Iron Deficiency Anemia (IDA), preeclampsia, and nausea, which are common during pregnancy (2). In Sub-Saharan Africa (SSA), deficiencies in these key nutrients have been linked to adverse pregnancy outcomes, including fetal growth restriction, neural tube defect, low birth weight, and increased risks of prenatal and infant mortality and morbidity (3). Wherein studies have shown in 9 Sub Saharan African countries with large micronutrient deficiency a prevalence of birth defects has been witnessed (4,5).

In-turn, these complication have significantly brought medical and socio-economic consequences, including high rates of pregnancy terminations, stillbirths, and under-5 deaths, as well as long-term disabilities among affected children (6–8). In SSA, the prevalence of stillbirths is alarmingly high, with an estimated 29.5 per 1,000 births, compared to a global average of 18.4 per 1,000 births (9). NTDs due to malnutrition in these countries ranging between 0.16–7 per 1000 live births compared to Europe (0.45–1 per 1000 live births) (5,6). Additionally, complications related to pregnancy and childbirth are responsible for approximately 200,000 maternal deaths annually in the region (9,10). Creating a clear gap for most countries in realizing sustainable development goals targets.

To address this, strategies have been implemented to reduce these growing rates. These intervention including national campaigns on micronutrient (Iron, Folic acid, Vitamin B) supplementation and nutrition education at antenatal clinic to improve knowledge and maternal attitude toward micronutrient supplement (10). With studies showing maternal nutrition knowledge and attitudes significantly influence compliance with nutrition supplementation guidelines, which in turn impacts pregnancy outcomes (11).

Despite efforts to promote the use of supplements and improve maternal nutrition through antenatal care programs, compliance rates remain low in many regions, including Tanzania (5). Factors such as low social status, limited access to healthcare, and inadequate nutrition education contribute to this challenge (4). This study aims to assess the knowledge, attitudes, and practices associated with compliance to maternal nutrition supplementation intake among pregnant women attending antenatal women at Muhimbili National Hospital (MNH) to allow for the development of targeted interventions to improve maternal and child health outcomes.

1.2 Problem Statement

Regardless of the critical role of maternal nutrition supplementation in preventing and managing pregnancy complications, compliance with recommended supplementation guidelines remains low in many regions, including Tanzania (12). Neural tube defects (NTDs), Iron Deficiency Anemia (IDA), preeclampsia, and other pregnancy-related complications continue to pose significant risks to pregnant women and their offspring (13). These conditions contribute to miscarriages, stillbirths, under-5 deaths, and severe disabilities among affected children. In Tanzania, rate of stillbirth is approximately 18.8 per 1,000 total births, with NTDs ranging between 2 to 10 cases per 1,000 live births. This figure is higher than the global average, which is approximately 0.5 to 1 case per 1,000 live births (5,6).

With the World Health Organization's recommendations and various national interventions promoting iron-folic acid (IFA) supplements for NTD prevention, usage remains low (14). A recent study in Kenya highlighted a significant lack of awareness about the importance of IFA supplements among women, a situation mirrored in Tanzania (15). According to the National Demographic and Health Survey (DHS) data, only 28.5% of Tanzanian women aged 15-49 took IFA supplements for at least 90 days during their pregnancy period (16). This low compliance rate suggests a substantial knowledge-action gap that affects supplementation uptake. Given the socio-economic and medical consequences of poor maternal nutrition supplementation compliance specifically Iron,

Folic acid supplement, there is an urgent need to understand the underlying factors affecting it.

Addressing these barriers is crucial for improving maternal health outcomes. This study seeks to explore the knowledge levels, attitudes, and practices affecting compliance with maternal nutrition supplementation among pregnant women attending antenatal care at MNH.

1.3 Conceptual Framework

The study was built upon the interaction of individual factors, including maternal knowledge, attitudes, socio-demographic characteristics, and obstetric history, which influence compliance with maternal nutrition supplementation practices among pregnant women. These individual factors are situated within the broader context of healthcare access subjective norms, and health education interventions. The study explored how these factors interplay to impact the uptake of maternal nutrition practices among pregnant women.

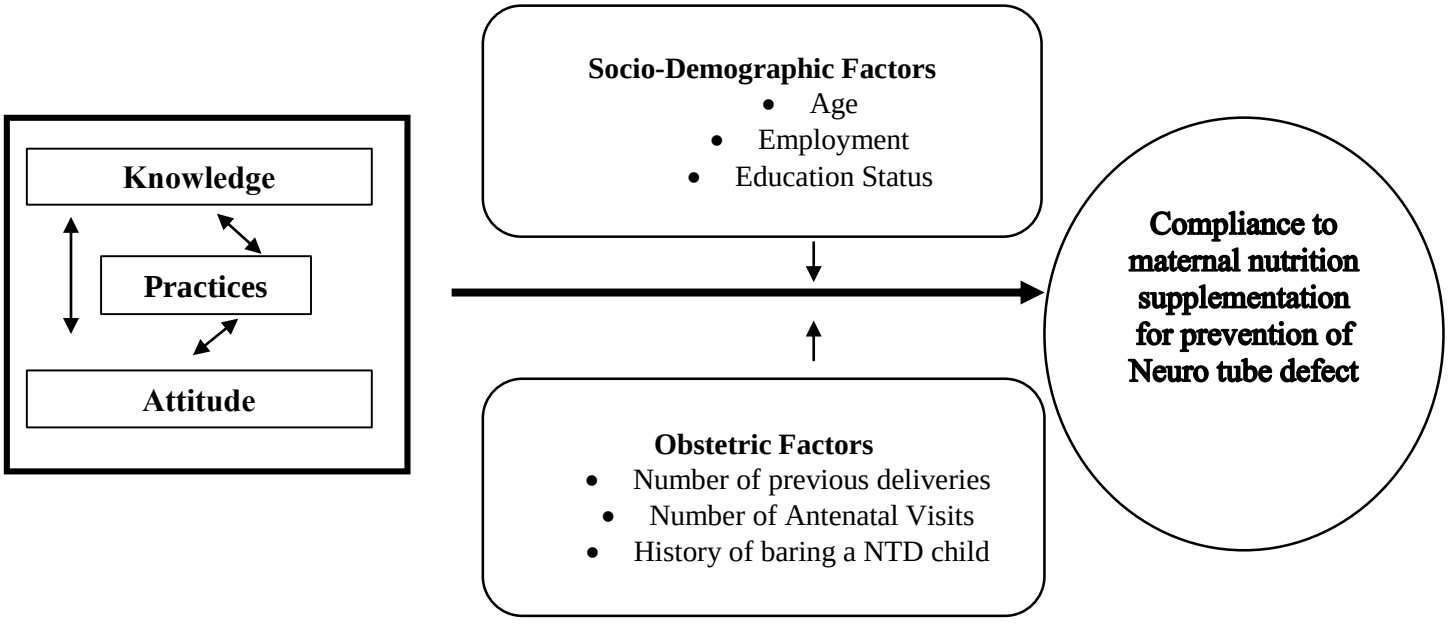


Figure 1: Illustrate of how individual factors are associated with maternal nutrition practices

1.4 Rationale of the study

The study explored into the knowledge, attitudes, and practices of pregnant women regarding nutrition supplementation with a specific focus on compliance to Folic acid supplementation. By engaging key stakeholders such as women themselves, healthcare practitioners, the Ministry of Health, policy makers, and donors, we aim to illuminate crucial insights into maternal nutrition practices and allow for the formation of better and effective interventions. Additionally, the study was able to add up to the body of knowledge and scientific community of drivers and barriers towards improving individual behaviors and practices and hence allow to develop comprehensive human behavior models.

Moreover, by pinpointing the factors influencing maternal nutrition practices, including the roles of doctors, nurses, nutritionists, researchers in maternal and child health, pharmaceutical companies producing supplements, and advocacy groups, the study aims to provide a holistic view of the ecosystem surrounding maternal nutrition. Recognizing these barriers or facilitators is essential for crafting evidence-based interventions that reflect with the needs and realities of antenatal women at Muhimbili National Hospital.

1.5 Research Question

1.5.1. Main Research Question

What is the level of knowledge, attitudes, and practices, associated with compliance to maternal nutrition supplement intake among antenatal women at Muhimbili National Hospital (MNH)?

1.5.2 Specific Research Questions

1. What is the level of knowledge regarding with compliance to maternal nutrition supplement intake among pregnant women attending antenatal clinic at MNH?
2. What are the attitudes of pregnant women towards with compliance to maternal nutrition supplement intake among pregnant women attending antenatal clinic at MNH?

3. What are the practices of pregnant women towards with compliance to maternal nutrition supplement intake among pregnant women attending antenatal clinic at MNH?

1.6 Research Objectives

1.6.1 Broad objective

To assess the level of knowledge, attitudes, and practices associated with compliance to maternal nutrition supplement intake among antenatal women at MNH.

1.6.2 Specific objectives

1. To assess the level of knowledge regarding compliance to maternal nutrition supplement intake among pregnant women attending antenatal clinic at MNH
2. To investigate the attitudes of pregnant women towards compliance to maternal nutrition supplement intake among pregnant women attending antenatal clinic at MNH
3. To identify practices of pregnant women towards compliance to maternal nutrition supplement intake among pregnant women attending antenatal clinic at MNH

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Knowledge on maternal nutrition supplementation

Knowledge play a vital role in influencing pregnant women to comply with the use of Iron Folic Acid (IFA) and other nutrition measure leading to positive and safe delivery (17). In line with recently evidence suggests that mothers knowledge on nutrition during pregnancy is essential for optimal health therefore the insufficient maternal nutrition can result in malnutrition, leading to adverse pregnancy outcomes such as fetal growth restriction, low birth weight, birth defects like Neural Tube Defect (NTDs), premature birth, and increased risks of prenatal and infant mortality and morbidity(18).

An online Swiss survey study showed that a high proportion (≥88%) of participants were aware of role of folate's preventing pregnancy complication and fetal abnormalities, though knowledge about dietary sources and national recommendations of folate supplementation during planning pregnancy was inadequate (19). A study done in China highlighted that, 351 (82.0%) pregnant women were aware of role of IFA towards preventing NTDs, with only 76.0% women understanding the correct time to take IFA (20). Another study conducted in Colombo district Sri Lanka showed that 1.5% of pregnant women did not use folic as they lacked awareness (21). Where a Malaysia study indicated that more than half (63.6%) of the pregnant women had knowledge of the importance of good maternal nutrition before and during pregnancy for prevention of NTDs (22). A Pakistan study assessing knowledge regarding folic acid showed only 172 (43%) had knowledge on importance of folic acid, with 161 (40.25%) thought that folic acid deficiency in pregnant women results in abnormality in newborn (23).

Further in Sub Saharan Africa, a study done in Northwestern Ethiopia showed that, 378(61.4%) of the study participants had good dietary knowledge and 238 (38.6%) had poor dietary knowledge(24). Another study conducted in Ethiopia found that 64.4% of women possessed knowledge about nutrition during pregnancy. This research established

a notable correlation between maternal education level, family income, and the extent of nutritional knowledge among pregnant mothers, indicating a positive association (25). In Tanzania, recently study by Mshanga (26) showed that the knowledge of antenatal women on maternal nutrition was high, in which the findings indicated that IFA supplement use and food with irons product among the subjects was good (92.2%).

2.3 Attitude on towards on maternal nutrition supplementation during pregnancy

Attitudes are individual's stored evaluations of entities including behavior and ideas towards an object or someone. Attitude guides behavior, and exploration of attitude provides a meaningful approach toward behavior change intervention. Thus, several studies have explored how attitude affects adherence to nutritional practice. A study conducted in the United States found that 82.3% of respondents endorsed the belief that increasing folic acid intake during pregnancy was beneficial for the fetus (27). The study found that attitude was associated with the level of knowledge and economic status where pregnant women who had good knowledge on IFA and high economic status were 2 times more likely to comply with supplementation compared to their counterparts. Similarly, an Egyptian study showed that the majority of antenatal women 73.6%, expressed a negative perception towards the consumption of IFA supplements during pregnancy. Another study done by in Syria on assessing knowledge, attitude and practices toward IFA intake during pregnancy concluded that 75% of the populations had positive attitudes towards IFA intake, and maternal nutritional intake (28)**.** Additionally, a Benin study revealed that 90% of pregnant women acknowledge changing their dietary habits, both in terms of quantity and quality, to meet the nutritional requirements (29).

Whereas an Ethiopia study by Kidane (10) found only 3.95% of pregnant mother had positive attitude towards nutrition during pregnancy and they took folate supplements at or before the first trimester of pregnancy. With contributing factors such as cultural norms, economical constrains, and education of nutrition being highlighted. Additionally, a study done in Tanzania found that women attending antenatal clinics exhibited a positive attitude, with 76% acknowledging the importance of nutrient supplements during

pregnancy for the well-being of both the mother and the fetus. However, challenges were noted in the consistent uptake of these supplements as recommended (26).

2.4 Practices on maternal nutrition supplementation during pregnancy

Practices toward an intervention among various populations and individuals, is usually influenced by several factor ranging from national policy to individual perceptions. Better adherence to nutrition and IFA during pregnancy has showed to have positive outcome for both the mother and fetus. A number of studies have investigated the level of practices across different population and inferred it with their outcome of interest. A study conducted in Sri Lanka found that only 1.5% of pregnant women did not use folic with lack of awareness being a common reason. Varying initiation stages were observed among participant who use folic, close to (44.9%) started using folic prior to pregnancy (21) . Furthermore, a study conducted in public hospitals of Ethiopia among pregnant women found that (52.3%) exhibited favorable nutritional behaviors, with nearly three-quarters of the participants adhered to iron supplement intake. In regard to eating behavior 200 (52.9%) reported consuming dark green leafy vegetables one day prior to admission, marking a low consumption pattern compared to their non-pregnant state (61.9%) (30)**.** Another study done in Ethiopia (31) found that (27%) and (31.4%) of pregnant mothers reported consuming fresh vegetables and daily milk respectively, with regard to taking additional measures to meet their iron and folic recommended intake,. Low compliance to IFA practices was observed from a study conducted by Berhane (32) as only (29%) of pregnant women had better IFA intake practices. In East Africa, a study conducted in Kenyan (62%) of pregnant women had better compliance to IFA supplement intake (33). With another study done in Tanzania showing that despite (92.2%) of pregnancy women attending ANC reporting to have heard of the micronutrients, (54.1%) of them did not score better in IFA and nutrition's uptakes (26).

2.5 Factors associated with compliance IFA supplementation during pregnancy.

Compliance to IFA supplementation varies depending on factors such as age, education level, and obstetric factors such as number of pregnancies. Studies showed that pregnancy

represents a crucial period in a woman's life, demanding high-quality nutrients to support the developing fetus (34). Family size has been found to significantly influence IFA intake and nutritional practices during pregnancy where pregnant women from smaller families, typically consisting of 1-2 members, tend to exhibit fewer practices of taking nutritional supplements (25). A study done in Ghana showed household size was identified as a predictor of nutrient intake practices among pregnant women (35). Another study done by Nguyen (36) focusing on factors influencing IFA practices found maternal knowledge strongly correlated with the consumption of Iron-Folic Acid (IFA) and calcium supplements as compared to women with low knowledge levels. Similarly, a study carried out in Ethiopia in 2017, examining folic acid usage and associated factors in the prevention of neural tube defects among pregnant women, revealed that women who are well-informed about the risks and prevention strategies for NTD are more likely to take appropriate health actions (37). Several studies have shown that pregnant women who consistently attend antenatal care appointments tend to prioritize maternal nutrition supplementation by taking iron supplements and receiving information about various food products beneficial for fetal growth and maternal well-being (36,37). A study done in Tanzania assessing usage of IFA and associated factor to anemia showed time to start antenatal care, knowledge of anemia, IFA given during clinical visit (number of meals consumed, number of children and distance to health facility has a statistical significant (p-value <0.05) association with compliance to maternal nutrition supplementation (38). Despite various studies showing that, adherence poses a significant challenge in iron-supplementation programs and maternal nutrition practices, there has been limited research on this subject in Tanzania.

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study design

This was a facility-based cross-sectional analytical study design conducted at Muhimbili National Hospital.

3.2 Study area

The Muhimbili National Hospital is located at Upanga west, Dar es Salaam with a bed capacity of 1500, as it is the largest referral hospital in Tanzania and a teaching hospital for Muhimbili University of Health and Allied Sciences (39). The Muhimbili National hospital receives maternal cases mostly from the Municipal hospitals and the districts of the Coast region with occasionally patients are received from upcountry. MNH makes a suitable site for the study as it allows capturing a majority number of pregnant women who have different socio demographic characteristics.

3.3 Study population.

The study population comprised of pregnant women who attended antenatal services at Muhimbili National Hospital. Where, on average, approximately 750-1000 pregnant women attend ANC at MNH each month, based on 2023 hospital records (40). All women aged 18 and above, who have initiated their antenatal care at Muhimbili ANC, were included in the study. This selection ensured a representative sample of pregnant women seeking care at one of the largest referral hospitals in Tanzania. By including women who have finished their 1st trimester antenatal visit, the study captures crucial early-stage perspectives and practices related to IFA compliance. This approach enhanced the comprehensiveness and relevance of the research findings to the target population.

3.4 Eligibility criteria

3.4.1 Inclusion criteria

All pregnant mothers attending antenatal clinic at MNH, who had finished the first trimester during the study period were included in the study.

3.4.2 Exclusion criteria

1. A sick pregnant mother during the study period
2. Laboring mothers and mothers with hearing abnormality who can't hear
3. Pregnant women diagnosed with diabetes, hypertension, or other basic chronic diseases before pregnancy, or endocrine-related diseases such as hyperthyroidism before pregnancy

3.5 Sample size and sampling

3.5.1 Sample size

According to the study done by Mshanga (41) among pregnant women in a regional hospital in Tanzania, the Knowledge and Dietary Practices on Vitamin A and Iron uptake proportion was 86.4%. Therefore, the sample size for this study will be calculated by the formula:

$$n = \frac{[z^2\ p\ (1-p)]}{e^2}$$

Whereby, n= the Sample size,

z = standard normal deviate set at 95% level of confidence,

e= margin of error of 5% (0.05), and

p = proportion of compliance of nutrition supplements which is 86.4% (0.864).

This resulted into approximately 181 participants and on adding up 10% of non-response rate, the total sample size summed up to 200 participants.

3.5.2 Sampling technique

A simple random sampling technique was employed in selecting pregnant women who were included in the study. As Muhimbili National Hospital has two antenatal wards a total of 100 participants was selected from each ward.

3.6 Study Variables

3.6.1 Independent variables.

1. Socio-demographic characteristics.
2. Knowledge of maternal nutrition.
3. Attitudes on maternal nutrition.
4. Obstetrics factor.

3.6.2 Dependent variables

Compliance with maternal nutrition supplementation

3.7 Data Collection Tools

A questionnaire with structured close ended questions adopted from Kenya was used to assess the knowledge, attitude, and practice (KAP) of respondents (42). The questionnaire was designed in Kobo tool electronic software to allow for easy data collection and security. The questionnaire comprised of six sections to accommodate the assessment of Social-demographic factors, Knowledge, Attitude, Practice, and Compliance to maternal nutrient supplement in each section separately. The level of Knowledge was assessed in 13 questions. The attitude was assessed with 6 questions (37). The questionnaire was adjusted to capture information of social demographic factors such as age, marital status, and Income level and education level of pregnant mothers. While, Obstetric factors such as Number of previous pregnancy, number of delivery, number of ANC Visits (43). Maternal nutrition supplementation will be assessed specifically for Iron-Folic acid, where compliance in this study was defined as daily intake of IFA supplements from the beginning of the first trimester until the day assessment and where individuals will be categorized as compliant or not compliant (44).

3.8 Data Quality Assurance

Quality issues were addressed through the following measures to ensure that the data are generated, complete, reliable, and accurate and above all reproducible using the same methods. These measures contribute towards both internal and external validity of the study. To ensure the quality of data, training of research assistant will be undertaken and administration of pre-test among 5% of the total sample size to assess its clarity, length, completeness and consistency. The questionnaire was translated in to Swahili language to facilitate understanding of the respondents.

3.9 Data Analysis plan

The data was checked for accuracy, cleaned, and entered into an Excel sheet for quality control before being transferred to SPSS version 25 for analysis. Descriptive statistics, including measures of central tendency, frequency distributions, and proportions, were used to summarize the data. Knowledge, attitude, and practice (KAP) was analyzed using structured methods.

Knowledge was assessed with 13 questions, scoring one point for each correct answer, and categorized into adequate and inadequate. Attitude was evaluated with 6 questions, categorizing responses into positive or negative attitudes towards IFA supplementation based on their scores. Bivariate analysis (Chi-square test) was conducted to examine for statistical difference between compliance with nutrition supplementation (dependent variable) and independent variables such as socio-demographic factors (age, marital status, income level, education level), obstetric factors (number of previous pregnancies, number of deliveries, number of ANC visits), knowledge and attitude. Further, multivariable logistic regression analysis was performed to identify factors independently associated with compliance with IFA supplementation, adjusting for potential confounders and providing adjusted odds ratios (AOR) with 95% CIs.

3.10 Ethical consideration

Prior to the commencement of the study, approval was sought from the Research Ethics Committee at Muhimbili University of Health and Allied Sciences. This ensures that the study adheres to the highest ethical standards and safeguards the rights and well-being of participants. Authorization for data collection will be obtained from the administration of Muhimbili National Hospital. Written informed consent was obtained from each study participant after a detailed explanation of the study's purpose, procedures, potential risks, and benefits. Participants had the autonomy to decide whether to participate or decline, and their decision will not impact their access to delivery services. Confidentiality of participant information was rigorously upheld throughout the duration of the study. Participants were assured that their responses would be handled with the utmost confidentiality, ensuring anonymity and non-disclosure of personal information.

3.11 Data dissemination

The study results and recommendations will be shared with the health care antenatal clinic team at MNH to inform of the information's. The results will be presented at the department and the final report will be submitting to the scientific journal for publications. The results will also be presented in other relevant clinical teams during continuous medical education.

3.12 Validity and reliability of the study

Before commencing the main study, the data collection instruments underwent a pre-test to verify their reliability for producing consistent findings. The study's validity was ensured through the principles of imparting knowledge to pregnant mothers and assessing their attitudes, maintaining accuracy and thoroughness in result documentation, ensuring the neatness and completeness of questionnaires, and accurately. These measures aimed to gather relevant data aligned with the study objectives. The study objectives informed the simplification, clarity, and conciseness of the questions.

CHAPTER FOUR

4.0 FINDINGS

4.1 Socio-demographic and clinical Characteristics of Participants

A total of 200 pregnant women were included in this study. The had a median age of 29 year ranging between 19 to 46 yrs. The majority were aged 30 years or below (n=126; 63.0%). Most participants resided within Dar es Salaam (n=130; 65.0%). Employment status varied, with (n=76; 38.0%) being unemployed, and (n=68; 34.0%) being employed. Additionally, more than half had completed secondary education (n=108; 54.0%). In terms of marital status, half of the participants were married (n=100; 50.0%). As shown in Table 1

Table 1: Socio-demographic and clinical characteristics of participants

Variables	n=200	%
Age category		
≤ 30 yrs.	126	63.0
> 30 yrs.	74	37.0
Participant Residency		
Within Dar es Salaam	130	65.0
Outside Dar es Salaam	70	35.0
Participants Occupation		
Employed	68	34.0
Self Employed	56	28.0
Unemployed	76	38.0
Education Level		
Primary	53	26.5
Secondary	108	54.0
College/University	26	13.0
No education	13	5.0
Marital Status		
Single	70	35.0
Married	100	50.0
Divorced/ Widowed	30	15.0
Parity (Number of pregnancies)		
1	40	20.1
2	71	35.7
>2	88	44.2
Number of Children		
1	39	19.6
2	26	13.1
>2	28	14.1
No child	106	53.3

Level of compliance to Iron folic acid Supplementation (IFA supplement)

Overall, among the 200 pregnant women, the majority of participant were not compliant (n=138; 69%) to IFA supplement, with only (n =62; 31%) being compliant. As shown in Figure 2

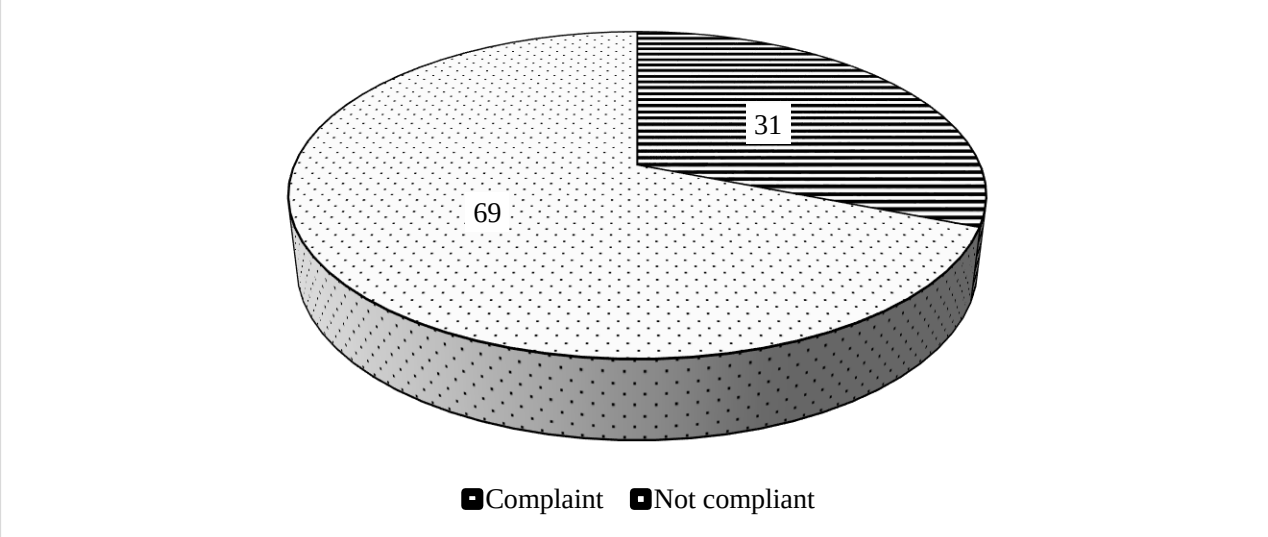


Figure 2: Prevalence of compliance to Iron Folic Acid supplementation

4.2 Knowledge on IFA supplementation among pregnant women

Overall, among the 200 pregnant women, majority had inadequate knowledge on IFA supplementation (n=140; 70%), with only (n=60; 30%) who had adequate knowledge. With most women reporting to receive information from health care workers (n=158; 79%).

Additionally, while there is high awareness about Iron Folic Acid (IFA) supplementation among participants, with (n=184; 92.0%) having heard of IFA, detailed knowledge about various aspects of IFA was lacking. Specifically, only (n=41; 20.5%) understand the benefits of IFA supplementation, and (n=108; 54.0%) know the correct frequency for taking IFA. Knowledge about the appropriate duration for IFA intake is also limited, with just (n=71; 35.5%) being informed.

4.3 Attitude towards IFA intake among pregnant women

A majority of the participants (n=110; 55.3%) hold a negative attitude towards IFA intake, with only (n=89; 44.7%) having a positive attitude. Among participants with a negative attitude towards IFA, the majority (n=73; 66.4%) weren't compliant the supplementation. Where, among the 89 participant who had a positive attitude towards IFA, only (n=25; 28.1%) were not compliant, compared to (n=64; 71.91%) who were compliant. Though this difference was statically significant (p-value=0.401)

4.4 Practices on IFA intake among pregnant women

The majority of participant (n=196; 98%) reported to currently consume IFA tablets. With most reporting that they self-reminded (n=150; 75%) them self on the take tablets followed by family member (n=36; 18%). With half (n=101; 50.5%) of pregnant women suggesting that the stop using the tablet as a measure to reduce side effect of IFA tablets. When probes on what additionally measures, they use to acquire iron and folic acid other than supplement, the majority (n=179; 89.5%) reported they do not take any additional measures. Additionally, most mothers reported to stop use IFA tablets as a measure to manage its side effect

4.5 Factors associated with compliance to IFA supplementation among pregnant women

In examining compliance with Iron Folic Acid (IFA) supplementation, the study considered several factors through bivariate analysis, including age, residency, occupation, marital status, parity, number of children, knowledge about IFA, and attitude towards IFA. Where, occupation, marital status, number of children, and knowledge on IFA showed statistical significance, (p-value<0.005). As shown in Table 2

In the multivariate analysis, employment status, marital status, and knowledge about IFA remained significant predictors. Employed participants had a significantly lower likelihood of compliance (adjusted OR = 0.35 [95%CI: 0.09-0.94], P<0.001). With, married individuals being 71% less likely to comply with IFA supplementation compared to single individuals (p-value= 0.007) compared to single participants. Adequate knowledge about IFA continued to show a significant positive association with compliance, with individual with adequate knowledge being 1.26 times likelier to comply to IFA supplementation compared to those with inadequate knowledge (adjusted OR= 1.26 [95% CI: 1.11 - 3.68], p-value= 0.006) As shown in Table 2.

Table 2: Factors associated with compliance to IFA supplementation among pregnant women

			Multivariable analysis	
Variables	**Compliance n=62 (%)**	**P value**	**Adjusted OR, 95% CI**	**P value**
Age category (yrs.)				
≤ 30	40 (64.5)	0.766		
> 30	22 (35.5)			
Participant Residency				
Within Dar es Salaam	41 (66.1)	0.822		
Outside Dar es Salaam	21 (33.9)			
Participant Occupation				
Employed	20 (32.3)		0.35 (0.09 - 0.94)	**<0.001***
Self Employed	11 (17.7)	**0.032**	0.03 (0.01 - 1.18)	0.126
Unemployed	31 (50.0)		Reference	
Marital Status				
Married	20 (32.3)		0.26 (0.09 - 0.69)	**0.007***
Divorced/ Widowed	18 (29.0)	**<0.001***	0.59 (0.22 - 8.89)	0.876
Single	24 (38.7)		Reference	
Parity (Number of pregnancies)				
1	11 (17.7)			
2	25 (40.3)	0.676		
>2	26 (41.9)			
Number of Children				
1	13 (20.9)		1.09 (0.33 - 3.62)	0.877
2	10 (16.1)	**0.031***	0.38 (0.10 - 1.48)	0.165
>2	2 (3.2)		0.12 (0.01 - 1.01)	0.052
No child	37 (59.7)		Reference	
Knowledge on IFA				
Adequate Knowledge	33 (53.2)	**0.001***	1.26 (1.11 - 3 .68)	**0.006***
Inadequate Knowledge	29 (46.7)		Reference	
Attitude on IFA				
Positive attitude	25 (40.3)	0.401		
Negative attitude	37 (59.7)			

CHAPTER FIVE

5.0 DISCUSSION

The study reveals significant gaps in knowledge about Iron Folic Acid (IFA) supplementation among antenatal women at Muhimbili National Hospital. While awareness of IFA was high 92%, only 20.5% of women understood its benefits, 54% knew the correct frequency, and 35.5% were informed about the duration of intake. The findings align with a study in Ethiopia that found 64.4% of women had knowledge about nutrition during pregnancy, yet comprehensive understanding was limited (30). Contrastingly, a study in Tanzania by Mshanga reported high maternal nutrition knowledge, including IFA supplementation (31). This difference suggests a regional differences and thus highlighting a need for targeted educational interventions in settings with lower knowledge levels. Further a need to focus on detailed aspects of IFA supplementation, including its benefits, correct usage, and management of side effects, could enhance compliance rates.

Most pregnant women held a negative attitude towards IFA intake, though disparities in compliance in relation to attitude was observed, attitude did not significantly influence compliance (p-value=0.401). This finding contrasts with a study in Syria, where 75% of participants had positive attitudes towards IFA intake (33), and a Benin study showing 90% acknowledged dietary changes for nutritional needs (34). In Ethiopia, only 3.95% had a positive attitude towards nutrition supplementation during pregnancy (10), similar study findings. This finding indicates that while attitudes can influence compliance, other factors also play a crucial role. Thus, addressing negative attitudes through counseling and community-based interventions could improve compliance, though a need to look into other non-traditional predictors can lead to more positive outcomes.

Although 98% of participants reported consuming IFA tablets, only 31% were compliant with the recommended intake. Many women self-initiated their reminders, but half reported discontinuing use to manage side effects. Moreover, 89.5% did not take

additional measures to increase iron and folic acid intake. The finding suggesting poor practices to nutrient supplement, with a consequence of increasing the risk of neural tube defect, child malnutrition and anemia among pregnant women. The high reported consumption rate observed is consistent with a study in Sri Lanka, where only 1.5% did not use folic acid (26). However, the low compliance rate is in line with findings from Ethiopia, where 29% of women had better IFA intake practices (37). A study in Kenya reported 62% compliance (38), highlighting the variability in adherence across different regions. Further a study done in Ethiopia (31) found that (27%) and (31.4%) of pregnant mothers consumed fresh vegetables and daily milk as a measures to meet their daily IFA recommended intake, contrasting to our study finding. Thus, addressing barriers to adherence, such as side effects, and encouraging additional dietary measures could improve compliance. Integrating support systems for managing side effects and enhancing awareness about the importance of continuous supplementation might be effective strategies.

The analysis identified that employed participants, married individuals, and those with adequate knowledge about IFA exhibited significant differences in compliance rates. Employed participants and married women were less likely to comply with IFA supplementation, while those with adequate knowledge showed higher compliance. These findings are consistent with studies showing that knowledge and socio-demographic factors influence compliance. For example, maternal knowledge strongly correlates with IFA consumption in Ethiopia (42) and Ghana (40). However, the lower compliance among employed participants and married women contrasts with findings in other regions where employment status and marital status did not significantly affect compliance, with compliance being high among these groups (45–47). The probable reason for low compliance among employed women is they typically face busy schedules, leading to forgetfulness to take tables and lack of time to visit antennal clinic for routine refill. Were married individuals would be more likely to do not comply if they had more than one child, imply to reluctancy to use IFA in relation to previous pervious pregnancy

experiences. Thus, suggesting for an improved approach on IFA campaigns such as supportive supervision for IFA tablet intake.

5.1 Study Limitations and Mitigations

Our study has the potential strength of providing valuable insights into the knowledge, attitudes, and practices associated with maternal nutrition supplementation among antenatal women at Muhimbili National Hospital. However, we acknowledge some limitations, including the risk of participants providing socially desirable responses due to mood changes related to their pregnancy condition. To mitigate this, we were patient and offered encouraging words during interviews. Additionally, there was a risk of participants forgetting information, as pregnant women tend to develop partial amnesia. To address this, we cross-referenced and prompted with extra questions to elicit accurate responses.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

This study revealed significant challenges in compliance with maternal nutrition supplementation among antenatal women at Muhimbili National Hospital. Despite high awareness of Iron Folic Acid (IFA), the majority of participants demonstrated inadequate knowledge about its benefits, correct usage, and management of side effects. Thus, the study highlights a need to develop effective measures such as supportive supervision during IFA campaign and antenatal visit to ensure uptake, while provide alternative iron and folic acid dietary option

6.2 Recommendation

1. The ministry of health, and health care providers should implement comprehensive educational interventions aimed at increasing the knowledge of antenatal women about the benefits, correct usage, and management of Iron Folic Acid (IFA) supplementation
2. Health care provides including community health workers should be equipped with counselling skills to address the negative attitudes and side effects associated with IFA supplementation. This should include regular follow-up visits and access to advice on managing side effects.
3. Government and Non-government agencies should develop targeted interventions to address socio-economic barriers to IFA compliance, such as support for employed women pregnant women to attain these services easily

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APPENDICES

Appendix I (a): Informed consent form (English Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCE

Consent to participate in a study titled: "Assessment of knowledge, attitudes, and practices and the factors associated with maternal nutrition supplementation for the prevention of neurotube defects among antenatal women at Muhimbili National Hospital"

Purpose of the Study

The purpose of this study is to assessment of knowledge, attitudes, practices and the factors associated with maternal nutrition supplementation for the prevention of neuro tube defects among antenatal women at Muhimbili National Hospital

Confidentiality

The information from the study will be kept confidential and kept in a safe place with access to authorized personnel and will be used for research purposes only. No names will be used instead identification numbers will be used to maintain anonymity of participants.

Duration

Participation in the study will take an average of thirty minutes.

Risks

For this study, we do not expect any risk prior, during and/or after participating in this study

Rights to Withdraw

Taking part in this study is completely your choice. You are free to choose either to participate in this study or not. You can decide to stop participating in this study at any time you wish even if you have already given your consent. Refusal to participate or withdrawal from the study will not involve penaltyor loss of any benefits to which you are otherwise entitled.

Benefits

If you agree to take part in this study, there are no direct benefits that you will get from this study but the information obtained from this study

Compensation

There will be no compensation of any kind for participating in this study.

Whom to contact

In case of any questions about this study, don't hesitate to contact me *Halima Barack Guga, Phone:0627638023 or through my email halimabarack98@gmail.com or you can get in touch with my* supervisor Dr. Zuhura Kimera (0621142267) and co-supervisor Dr. J Bachwenkizi (0753480950)

Consent

I …… have read or has been read to me the contents of this form and understood it, my questions have been adequately answered. I agree to participate in this study

Signature of store manager .....

Signature of Investigator .....

Date of signed consent…….

Appendix I (b): Informed consent form (Swahili Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES

Fomu ya ridhaa kushiriki kwenye utafiti wenye kichwa kinachosema: ‘‘Tathmini ya maarifa, mitazamo, na mazoea na mambo yanayohusiana na lishe ya uzazi kwa ajili ya kuzuia kasoro za mishipa ya fahamu miongoni mwa wanawake wajawazito katika Hospitali ya Taifa ya Muhimbili”

Umuhimu wa utafiti huu

Tafuti hii itasaidia kupata uelewa juu ya visabibishi vinyom[peleke mama mjamzito kuweza kutumia virutubishi afya pindi akiwa mjamzito, ili kuweka kuimarisha mifumo ya utaoja amabayo itapelekea kupunguza matatizo ya mishipa ya fahamu kwa watoto wachanga

Usiri

Majibu yote yatakusanywa kutoka katika eneo la utafiti na yatahifadhiwa sehemu maalum ambapo wahusika tu ndio wataruhusiwa kuzipata taarifa hizo na zitatumika kwaajiri ya utafiti tu. Pia majina hayatatumika badala yake tutatumia namba ya utambulisho tu.

Muda

Muda wa kushiriki katika utafiti ni wastani wa dakika therathini

Madhara

Hatutegemei madhara yeyote kukutokea ukiwa na/ama baada ya kushiriki katika utafiti huu.

Haki ya kushiriki au kusitisha kushiriki na mbadala

Kushiriki katika utafiti huu ni chaguo lako, na una uhuru wa kukubali au kukataa kushiriki katika utafiti huu. Pia unaweza kusitisha ushiriki wako katika utafiti huu muda wowote utakapojisikiahatakama umeshakubali kushiriki. Kukataa kushiriki au kusitisha kushiriki katika utafiti huu hakutakufanya upoteze haki zako za msingi au kupata adhabu yoyote.

Faida

Ukikubali kushiriki katika utafiti huu hakuna faida ya moja kwa moja utakayopata lakini tunaamini ushirikiano utakao utoa utasaidia kutaki kutambua changamoto na visambibishi vinanyouepeleka wewe kutumia viturubisho afya pindi unapokua mjamzito

Fidia

Hakuna fidia yoyote zinazotolewa katika utafiti huu.Mawasiliano

Nani wa kuwasiliana naye

Kama utakuwa na swali lolote kuhusu utafiti huu unaweza kuwasiliana na mkuu wa utafiti huu

Halima Barack Guga, Simu namba: 0627638023 au kupitia barua pepe halimabarack98@gmail.com na pia usisite kuwasiliana na wasimamizi wangu Dr. Zuhura Kimera (0621142267) na . J Bachwenkizi (0753480950)

Idhini

Mimi ……nimesoma au nimesomewa yaliyomo katika fomu hii na kuyaelewa, maswali yangu yamejibiwa vya kutosha. Ninakubali kushiriki katika utafiti huu

Sahihi ya mshiriki ……

Sahihi ya mtafiti……

Tarehe ……

Appendix II (a): Questionnaire (English Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES

SECTION A: SOCIO-DEMOGRAPHIC CHARACTERISTICS

Mother's Age _____ D.O.B: (DD/MM/YR) _____

Residence (Village) _____

1. Occupation
   0 = Unemployed
   1 = Housewife
   2 = Casual labourer
   3 = Self-employed
   4 = Formal employment
   5 = Others_____
2. Highest education level
   0 = No education
   1 = Primary
   2 = Secondary incomplete
   3 = Tertiary
3. Marital status
   1 = Married
   2 = Single
   3 = Widow/Separated/Divorced

4. Religion

1 = Protestant Christian

2 = Catholic Christian

3 = Muslim

4 = Others (Specify) _____

5. Parity (Number of pregnancies) _____

a) Number of living children _____

b) Number of bereaved children _____

c) Total children_____ (Add the above)

6. When was your last menstrual period (LMP) _____(If known, go to Qn 12)

Gestation in weeks (as per ANC card) _____

SECTION B: MOTHER'S KNOWLEDGE NUTRTITION SUPPLEMENTATION

7. Have you heard about IFAS? _____

0 = No (If no, skip to question 24)

1 = Yes (If yes, answer all the questions in this section)

8. If yes, how did you get this information? (Wait for answer before probing and check all mentioned) (tick all that apply)

Yes☐ No☐ Health care provider

Yes☐ No☐ Community health worker

Yes☐ No☐ Posters

Yes☐ No☐ Television

Yes☐ No☐ Radio

Yes☐ No☐ Other mothers, relatives, friends or neighbours

Yes☐ No☐ Community leaders

Yes☐ No☐ Newspapers, magazines or books

Others (specify) _____

9. Have you ever received any leaflet/brochure from the health facility on IFAS?

   0 = No

   1 = Yes

10. Were you informed the benefits of IFAS at the health facility?

   0 = No

   1 = Yes

11. What are the benefits of IFAS? (Do not prompt, check all mentioned)

   0 = Don't know

   Yes☐ No☐ Prevents anemia among pregnant women

   Yes☐ No☐ Protects mother from sicknesses

   Yes☐ No☐ Gives mother strength during delivery

   Yes☐ No☐ Increases amount of blood

   Yes☐ No☐ Makes foetus grow healthy and strong

   Yes☐ No☐ Others (Specify) _____

12. How often should IFAS be taken?

   0 = Do not know

   1 = Once every week

   2 = Once daily

   3 = 2-4 times a day

   4 = Others (specify) _____

13. Were you informed for how long you should take IFAS at the health facility?

   0 = No

   1 = Yes

14. For how long should you take IFAS?

   0 = Don't know

   1 = Before becoming pregnant

   2 = At least 3 months

3 = Throughout pregnancy

4 = During pregnancy and 6 weeks after delivery

5 = Others (Specify) _____

15. Have you been informed that you can experience some side-effects from taking IFAS?

0 = No

1 = Yes

16. What are the side-effects of IFAS? (Check all mentioned)

0 = None/Don't know

Yes☐ No☐ Epigastric pain

Yes☐ No☐ Abdominal pain

Yes☐ No☐ Nausea

Yes☐ No☐ Vomiting

Yes☐ No☐ Diarrhoea

Yes☐ No☐ Constipation

Yes☐ No☐ Faeces may turn black

Others (specify) _____

17. Were you informed how you can manage the side-effects at the health facility?

0 = No

1 = Yes

18. How can you manage the side-effects? (Check all mentioned)

0 = Don't know

Yes☐ No☐ Avoid taking high dose Vitamin C supplements together with IFA tablet

Yes☐ No☐ Eat plenty of fruits and vegetables

Yes☐ No☐ Take IFAS with meals

Yes☐ No☐ Take IFAS while going to bed

Yes☐ No☐ Stop using IFAS

Yes☐ No☐ Go back to hospital

Others (specify) _____

19. What happens if you do not get enough iron and folic acid in the body during pregnancy? (Prompt and Check all mentioned)

0 = No effect

Yes☐ No☐ Anaemia/ Low blood levels

Yes☐ No☐ Excessive bleeding during pregnancy/delivery

Yes☐ No☐ Baby gets congenital malformations

Yes☐ No☐ Baby gets mental disability

Yes☐ No☐ Low birth weight baby

Yes☐ No☐ Preterm baby

Others _____

20. What are the signs and symptoms of anaemia (low blood levels)? (Check all mentioned)

0 = Don't know

Yes☐ No☐ Feels weak

Yes☐ No☐ Looks pale

Yes☐ No☐ Palpitations

Yes☐ No☐ Headaches

Yes☐ No☐ Dizziness

Yes☐ No☐ Tiredness and easily fatigued

Yes☐ No☐ Swells legs

Others (specify) _____

21. Can you tell me some food sources that increase the blood levels in the body during pregnancy? (Check all mentioned)

0 = Don't know

Yes☐ No☐ Liver

Yes☐ No☐ Red meat e.g. beef

Yes☐ No☐ White meat e.g. chicken, fish

Yes☐ No☐ Dark-green leafy vegetables

Yes☐ No☐ Whole grain cereals e.g. maize, sorghum

Yes☐ No☐ Legumes e.g. beans, peas

Yes☐ No☐ Eggs

Others (Specify) _____

SECTION C: ATTITUDE

22. How important do you think it is to take iron and folic acid supplements during pregnancy?

0 = Not important

1 = Slightly important

2 = Moderately important

3 = Very important

4 = Extremely important

23. Do you believe that taking iron and folic acid supplements can improve your health and the health of your baby?

0 = Strongly disagree

1 = Disagree

2 = Neutral

3 = Agree

4 = Strongly agree

24. How concerned are you about the side-effects of iron and folic acid supplements?

0 = Not concerned

1 = Slightly concerned

2 = Moderately concerned

3 = Very concerned

4 = Extremely concerned

25. How likely are you to recommend iron and folic acid supplements to other pregnant women?

0 = Very unlikely

1 = Unlikely

2 = Neutral

3 = Likely

4 = Very likely

SECTION D: Practice

26. Are you currently taking iron and folic acid supplements?

0 = No

1 = Yes

27. If yes, how often do you take the supplements?

0 = Not applicable

1 = Once every week

2 = Once daily

3 = 2-4 times a day

4 = Others (specify) _____

28. How long have you been taking iron and folic acid supplements during this pregnancy?

0 = Not applicable

1 = Less than 1 month

2 = 1-3 months

3 = 3-6 months

4 = More than 6 months

29. Who usually reminds you to take your iron and folic acid supplements?

0 = No one

1 = Self

2 = Family member

3 = Healthcare provider

4 = Other (specify) _____

30. How do you ensure that you get enough iron and folic acid in your diet apart from supplements?

0 = Do not take additional measures

1 = Include iron-rich foods in meals

2 = Include folic acid-rich foods in meals

3 = Use fortified foods

4 = Other (specify) _____

Appendix II (b): Questionnaire (Swahili Version)

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES

SEHEMU A: TAARIFA ZA KIJAMII-DEMOGRAFIA

Umri wa Mama _____ Tarehe ya Kuzaliwa: (DD/MM/YR)

_____

Makazi (Kijiji) _____

1. Kazi

   0 = Hana kazi

   1= Mama wa nyumbani

   2= Kazi ya vibarua

   3= Kujiajiri

   4 = Ajira rasmi

   5 = Zingine_____

2. Kiwango cha elimu

   0 = Hakuna elimu

   1 = Msingi

   2 = Sekondari haijakamilika

   3 = Elimu ya juu

3. Hali ya ndoa

   1 = Ameolewa

   2 = Hajaoa/Hajaolewa

3 = Mjane/Amepata talaka/Ameachwa

4. Dini

   1 = Mkristo Mprotestanti

   2 = Mkristo Mkatoliki

   3 = Muislamu

   4 = Zingine (Taja) _____

5. Idadi ya mimba (Parity) _____

   a) Idadi ya watoto hai _____

   b) Idadi ya watoto waliofariki _____

   c) Jumla ya watoto_____ (Jumlisha yote ya hapo juu)

6. Tarehe ya mwisho ya hedhi (LMP) _____(Ikiwa unajua, nenda kwenye swali la 12)

7. Umri wa ujauzito kwa wiki (kulingana na kadi ya ANC) _____ au Kipimo cha Ultrasound

SEHEMU B: UFAHAMU WA MAMA JUU YA VIRUTUBISHO KIPINDI CHA UJAUZITO

8. Je, umesikia kuhusu nyongeza (tembe) za IFAS? _____

   0 = La (Ikiwa hapana, ruka swali la 24)

   1 = Ndio (Ikiwa ndio, jibu maswali yote katika sehemu hii)

9. Kama ndio, ulipata hii habari wapi? (Subiri jibu kabla ya kuuliza zaidi na angalia yote yaliyotajwa) (weka alama kwa yote yanayofaa)

   Ndio☐ Hapana☐ Mhudumu wa afya hospitalini

   Ndio☐ Hapana☐ Mhudumu wa afya wa jamii (kijijini)

   Ndio☐ Hapana☐ Mabango

   Ndio☐ Hapana☐ Televisheni

   Ndio☐ Hapana☐ Redio

   Ndio☐ Hapana☐ Kina mama wengine, watu wa familia, rafiki au jirani

Ndio☐ Hapana☐ Viongozi wa jiji

Ndio☐ Hapana☐ Gazeti, jarida au vitabu

Zingine (taja) _____

10. Je, umewahi kupata kijikaratasi chochote kuhusiana na IFAS kutoka hospitalini?

0 = Hapana

1 = Ndio

11. Je, ulielezewa umuhimu wa IFAS hospitalini?

0 = Hapana

1 = Ndio

12. Nielezee ni yapi manufaa ya IFAS? (Usiongoze, angalia yote yaliyotajwa)

0 = Sijui

Ndio☐ Hapana☐ Huzuia upungufu wa damu kwa kina mama wajawazito

Ndio☐ Hapana☐ Hukinga mama kutokana na maradhi

Ndio☐ Hapana☐ Hupea mama nguvu wakati wa kujifungua

Ndio☐ Hapana☐ Huongeza kiwango cha damu

Ndio☐ Hapana ☐ Hupea mtoto aliye ndani ya tumbo la mama nguvu na afya

Zingine (taja)_____

13. Nielezee jinsi ya kutumia IFAS?

0 = Sijui

1 = Mara moja kwa wiki

2 = Mara moja kila siku

3 = Mara mbili hadi nne kwa siku

4 = Zingine (taja)_____

14. Je, ulielezewa unastahili kutumia IFAS kwa muda gani hospitalini?

0 = Hapana

1 = Ndio

15. Nielezee unastahili kutumia IFAS kwa muda gani?

    0 = Sijui

    1 = Kabla ya kupata mimba

    2 = Kwa miezi kama mitatu hivi

    3 = Wakati wote wa uja uzito

    4 = Wakati wa uja uzito hadi wiki sita baada ya kujifungua

    5 = Zingine (taja) _____

16. Ulielezewa ya kwamba unaweza kupata madhara baada ya kutumia IFAS

    0 = Hapana

    1 = Ndio

17. Ni yapi madhara ya kutumia IFAS? (Check all mentioned)

    0 = sijui

    Ndio☐ Hapana☐ maumivu ya tumbo

    Ndio☐ Hapana☐ kuumwa na tumbo

    Ndio☐ Hapana☐ kichefuchefu

    Ndio☐ Hapana☐ kutapika

    Ndio☐ Hapana☐ kuendesha

    Ndio☐ Hapana☐ kuvimbiwa

    Ndio☐ Hapana☐ kinyesi kugeuka rangi na kuwa cheusi

    Others (specify) / zingine_____

18. Je, ulielezewa unawezaje kukabiliana na madhara haya hosipitalini?

    0 = Hapana

    1 = ndio

19. Nielezee unawezaje kukabiliana na madhara haya? (Check all mentioned)

0 = sijui

Ndio ☐ Hapana☐ epuka kutumia kiasi kikubwa cha Vitamini C supplement, pamoja na vidonge vya IFAS

Ndio☐ Hapana☐ kula matunda na mboga kwa wingi

Ndio☐ Hapana☐ meza IFAS wakati wa kula chakula

Ndio☐ Hapana☐ meza IFAS unapoenda kulala

Ndio☐ Hapana☐ acha kutumia IFAS

Ndio☐ Hapana☐ rudi hospitali

Zingine_____

20. Nielezee dalili za upungufu wa damu mwilini ni gani? (Check all mentioned)

0 = sijui

Ndio☐ Hapana☐ udhaifu

Ndio☐ Hapana☐ kuchujuka rangi kwa kope za macho na viganja

Ndio☐ Hapana☐ kutoweza kupumua vyema

Ndio☐ Hapana☐ kuumwa na kichwa

Ndio☐ Hapana☐ kisunzi

Ndio☐ Hapana☐ uchovu

Ndio☐ Hapana☐ uvimbe kwa miguu

Others (specify) / zingine _____

21. Niambie vyakula vyenye iron kwa wingi (Check all mentioned)

0 = sijui

Ndio☐ Hapana☐ ini

Ndio☐ Hapana☐ nyama nyekundu kama ya ng'ombe

Ndio☐ Hapana☐ nyama nyeupe kama kuku, samaki

Ndio☐ Hapana☐ mboga zenye majani ya rangi ya kijani kibichi

Ndio☐ Hapana☐ mbegu nzima kama mahindi, mtama

Ndio☐ Hapana☐ mbegu kama maharagwe, njahi, minji

Ndio☐ Hapana☐ mayai

Others (Specify) / zingine_____

SECTION C: MTAZAMO

22. Unaona vipi umuhimu wa kuchukua virutubisho vya chuma na asidi ya folic wakati wa ujauzito?

0 = Sio muhimu

1 = Kidogo muhimu

2 = Kiasi muhimu

3 = Sana muhimu

4 = Sana sana muhimu

23. Je, unaamini kwamba kuchukua virutubisho vya chuma na asidi ya folic kunaweza kuboresha afya yako na afya ya mtoto wako?

0 = Sioamini kabisa

1 = Siungi mkono

2 = Sijali

3 = Ninaamini

4 = Ninaunga mkono kabisa

24. Una wasiwasi kiasi gani kuhusu madhara ya virutubisho vya chuma na asidi ya folic?

0 = Sina wasiwasi

1 = Kidogo wenye wasiwasi

2 = Kiasi wenye wasiwasi

3 = Sana wenye wasiwasi

4 = Sana sana wenye wasiwasi

25. Je, kwa kiwango gani unaoweza kupendekeza virutubisho vya chuma na asidi ya folic kwa wanawake wajawazito wengine?

0 = Haiwezekani sana

1 = Haiwezekani

2 = Sijali

3 = Inawezekana

4 = Inawezekana sana

SECTION D: MAZOEZI

26. Je, kwa sasa unachukua virutubisho vya chuma na asidi ya folic?

0 = Hapana

1 = Ndiyo

27. Ikiwa ndiyo, mara ngapi unachukua virutubisho?

0 = Haihusiani

1 = Mara moja kila wiki

2 = Mara moja kila siku

3 = Mara 2-4 kwa siku

4 = Nyingine (taja) _____

28. Kwa muda gani umekuwa ukichukua virutubisho vya chuma na asidi ya folic wakati wa ujauzito huu?

0 = Haihusiani

1 = Chini ya mwezi 1

2 = Miezi 1-3

3 = Miezi 3-6

4 = Zaidi ya miezi 6

29. Nani kawaida hukukumbusha kuchukua virutubisho vya chuma na asidi ya folic?

0 = Hakuna

1 = Mimi mwenyewe

2 = Mjumbe wa familia

3 = Mhudumu wa afya

4 = Mwingine (taja) _____

30. Jinsi gani unahakikisha kwamba unapata chuma na asidi ya folic ya kutosha katika lishe yako isipokuwa virutubisho?

0 = Sichukui hatua yoyote ya ziada
1 = Ninaingiza vyakula vyenye chuma katika milo yangu
2 = Ninaingiza vyakula vyenye asidi ya folic katika milo yangu
3 = Ninautumia vyakula vilivyoimarishwa
4 = Nyingine (taja) _____

Appendix III: Ethical clearance letter

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATIONS

Ref. No.DA.282/298/01.C/2325 Date: 13/06/2024

MUHAS-REC-06-2024-2325
HALIMA BARAKA GUGA
SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: KNOWLEDGE, ATTITUDES, PRACTICES AND OTHER FACTORS ASSOCIATED WITH COMPLIANCE TOMATERNAL NUTRITION SUPPLEMENTATION FOR THE PREVENTION OF NEURO TUBE DEFECTS AMONG ANTENATALWOMEN AT MUHIMBILI NATIONAL HOSPITAL

Reference is made to the above heading,

I am pleased to inform you that the Chairperson has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 13/06/2024
EXPIRATION DATE OF APPROVAL: 13/06/2025

STUDY DESCRIPTION:

Purpose:

The purpose of this facility-based cross-sectional analytical study design is to assess the level of knowledge, attitudes, and practices and the factors associated with maternal nutrition for the prevention of neuro tube defects among antenatal women at MNH.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2015752.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain Data Transfer Agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain Material Transfer Agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
8. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.

Muhimbili University of Health and Allied Sciences
DIRECTOR
Research, Publications & Innovations
Box 65001

Dr. Nahya Salim Masoud,
Chairperson, MUHAS Research and Ethics Committee

Appendix IV: Permission for collect data

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF HEALTH

MUHIMBILI NATIONAL HOSPITAL

In reply please quote:

Ref. No.: MNH/CRTCU/Perm/2024/293 Date: 14th June, 2024

Head of Department,

Maternity – II

Muhimbili National Hospital

RE: PERMISSION TO COLLECT DATA AT MNH

Name of Students	**Halima Baraka Guga**
Title	**"Knowledge Attitudes and Practices Associated with Compliance to Maternal Nutrition Supplementation for the Prevention of Neuro Tube Defects Among Antenatal Women at MNH"**
Institution	Muhimbili University Health and Allied Sciences
Supervisor	Dr. Z. Kimera (MUHAS)
Co – supervisor	Dr. J. Bachwenkizi Ruchius Philbert (MNH)
Period	14th June 2024 to 30th August, 2024

Approval has been granted to the above principal investigators to collect data at MNH. Dissemination of study findings at MNH shall be overseen by **Rchius Philbert** (MNH) supervisor.

Kindly ensure the named principal investigator abide to the ethical principles and other conditions of the research approval.

Sincerely,

Dr. Charles K. Pallangyo

For: Head of Clinical Research, Training and Consultancy Unit

C.c DNMS

C.c Ruchius Philbert

C.c **Halima Baraka Guga**

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