MATERNAL KNOWLEDGE, ATTITUDE AND THEIR UTILIZATION OF NUTRITION INFORMATION IN THE MOTHER AND CHILD HEALTH HANDBOOK IN BUNGOMA COUNTY, KENYA

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university

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DEDICATION

This thesis is dedicated to my parents and siblings, my husband George and sons Cecil, Adriel and Leo for their encouragement and support.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMNS

ANC	Ante Natal Clinic
CHMT	County Health Management Team
CWC	Child Welfare Clinic
DHIS2	District Health Information Software 2
FATVAH	Frequency Adequacy Texture Variety Active feeding Hygiene
FBO	Faith Based Organization
FGD	Focus Group Discussion
GOK	Government of Kenya
HCWs	Health Care Workers
IEBC	Independent Electoral Boundaries Commission
KDHS	Kenya Demographic and Health Survey
KII	Key Informant Interviews
KNBS	Kenya National Bureau of Statistics
MICS	Multiple Indicator Cluster Survey
MIYCN	Maternal Infant and Young Child Nutrition
MNCHN	Maternal Neonatal Child Health and Nutrition
MOH	Ministry of Health
PNC	Post Natal Care
SCHMT	Sub County Health Management Team
SPSS	Statistical Package for Social Studies
WHO	World health organization

OPERATIONAL DEFINITION OF TERMS

Attitude - the perception that the women attending ANC and the caregivers attending the CWC have on the nutrition information in the MCH handbook. This influences their decisions on whether to use the information in the handbook or not.

Caregiver - A person taking care of a child below 5 years of age, is well known to the child and is involved in feeding him/her, taking the child to the health facility for clinic appointments or treatment. This could be the mother, father, aunt, grandmother or older sibling charged with these responsibilities.

Knowledge – the ability of the caregiver or woman attending clinic in a health facility to understand and explain the nutrition information in the MCH booklet. This was measured by using a scale of '1' for a correct response and '0' for an incorrect one.

Utilization - the uptake and use of the nutrition information in the MCH handbook by performing activities related to the information. This could include taking a child with danger signs to a health facility or a pregnant woman visiting a health facility upon noticing danger signs as depicted in the MCH booklet, or feeding a child below 5 years correctly as per the guidelines in the handbook.

Woman attending ANC – this is a pregnant woman seeking ante-natal services in a health facility related to her pregnancy. The services include micro nutrient supplementation with IFAS, deworming, counseling on diet among others.

ABSTRACT

The use of the Mother and Child Health handbook in most countries that have adopted it has shown provision of a good continuum of care to children. The information captured in the handbook about the mother during pregnancy until delivery is crucial to help health care workers as they offer health services to the mother. In Kenya, the proportion of children below 6 months who are exclusively breastfed is 60% while only 43.3% in Bungoma County are exclusively breastfed. Only 21 % of children in Kenya aged 6-23 months receive an appropriate diet in line with the recommended infant and young child feeding guidelines. In Bungoma County, only 22% of children in that age group are fed appropriately. The prevalence of stunting in Bungoma County stands at 19%, wasting 2.3% and underweight 9.6%. Poor breastfeeding practices and inappropriate complementary feeding are some of the main contributors to these poor indicators. Strengthening the use of the Maternal and Child Health handbook can help in curbing some of these preventable problems. Minimal information exists on maternal and caregivers' knowledge, attitude and utilization of nutrition information in mother and child health handbook. In Bungoma County, 98.6% of pregnant women attended Ante Natal Clinic (ANC), 69% took the iron supplements and only 7% took folic acid and iron supplements for 90 days or more as recommended by the Ministry of Health. On skilled deliveries, only 79.3% of the women delivered in a health facility. About 49% of the mothers attended post-natal clinic within 48 hours while only 31% of newborns received neonatal checkups. The aim of this study was to assess the maternal and caregivers' knowledge, attitude and utilization of nutrition information in mother and child health handbook in Kanduyi Sub-county of Bungoma County. Systematic random sampling was used to select the targeted sample form each health facility. A semi-structured questionnaire was administered to 216 mothers who were randomly selected with children below 5 years. Focus Group Discussion guides and Key Informant Interviews were used to gather more information. For data analysis, version 22 of SPSS was used. Socio-economic and demographic characteristics, knowledge, and attitude were described using descriptive statistics. Relationships and associations among dependent and independent variables were determined by use of chi-square test logistic regression. Qualitative data from Focus Group Discussions and Key Informant Interviews were translated, coded and arranged in an orderly manner to determine the evolving concepts. The mean age of respondents was 28 years. Majority had attained secondary education at 36.9% while casual labour was the main source of income at 21.8%. Findings showed that 83.5% of the caregivers had high knowledge on duration of breastfeeding and 38.0% had low knowledge on weight and height taking. Statistically significant associations were noted between knowledge of breastfeeding and utilization p=0.004 (COR, 0.42, 95% CI 0.23-0.75, as well as attitude on sufficiency of breast milk and utilization p=0.004 COR,1.68, 95% CI,1.18-2.41. Health education should be enhanced at antenatal and child welfare clinics so that mothers get knowledge on all aspects of nutrition.

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Before the year 2007 in Kenya, three separate medical records were used by the mother infant pair when seeking health services in health facilities. These were the ante natal card for the period of pregnancy and delivery, a separate one for post-natal care as well as family planning and a child welfare card for immunization and growth monitoring. The use of the ante-natal clinic (ANC) card ended with delivery and therefore mothers did not carry any record of events during their pregnancy to the child immunization clinic. There was therefore a disconnect between the mother's information and the child's health and nutrition status. The Mother and Child Health handbook coded as MOH 216 was thus launched in April, 2010 (IMC, 2010). It is an essential document given to pregnant mothers on their first visit to ante natal clinic in health facilities in Kenya. It has information on various health services concerning the pregnant mother until she delivers and thereafter information on the newborn baby up to 5 years of age. The information includes ANC, delivery, infant and young child feeding, growth monitoring, and post-natal care.

The prevalence of stunting in children below 5 years in Kenya is 18%, underweight 10.1% and wasting at 5% (KNBS, 2022). Children aged 6-11 months are at the highest risk of being stunted, a time when introduction to complementary food is done (*Child Health and Mortality Surveillance Network. Infant and child—CHAMPS health*, 2021). Inappropriate complementary feeding is a leading contributor to a high number of malnourished children and is also responsible for stunting(Tanaka, Yoshizawa, Hirayama, 2019). Thirty one percent of children in Kenya aged 6-23 months are fed on a minimum acceptable diet

(KNBS, 2022). The information on appropriate complementary feeding in the MCH handbook and the knowledge gained from it can help prevent malnutrition.

1.2 Statement of the problem

According to the KDHS (2022), approximately 98.56% of all pregnant mothers in Bungoma County received ANC care from skilled health care providers. 87% of them had skilled delivery in a health facility. 54.3% of caregivers with children having diarrhea sought treatment in a health facility. Of all infants below 6 months, only 60% were exclusively breastfed and 60% were initiated on breastfeeding within the first hour of birth. By 12 – 15 months of age, 75% of the babies are on continued breastfeeding but by 20-23 months only 40% are still being breastfed. For all the children below 3 years, the median duration of any breastfeeding was 21 months. On dietary diversity, 37% of children 6-23 months were fed on a diverse diet while 71% were fed a minimum number of times appropriate for their age.

According to a study done by Nutrition International in its implementation counties, Iron supplementation for pregnant women in Bungoma County is at 69%. Folic acid and iron supplementation for at least 90 days and more is at 7% while post-natal care (PNC) within 48 hours is at 49%. The findings from the study also showed that neonatal checkup for newborns was at only 31% (Nutrition International, 2016). In terms of malnutrition levels in Bungoma County, stunting, underweight and wasting are at a prevalence of 19%, 9.6% and 2.3%, respectively (KNBS, 2022). Various studies on nutrition of infants and young children have been done and results show that inappropriate complementary feeding practices predispose them to under nutrition (Masuke et al., 2021). Children who are

undernourished suffer from impaired growth and development with a high rate of morbidity and mortality. This results to motor and mental developmental delay (Partha De a, 2021). Giving complementary foods as the child continues to breastfeed until two years improves the nutritional status of children, prevents stunting and reduces occurrence of diarrhea and upper respiratory tract infections (Partha De a, 2021).

Many studies have been done on the MCH handbook but there is limited information on the mothers' knowledge, attitude and how the information on nutrition in the handbook is utilized. Therefore, this study focuses on the knowledge, attitude and the extent to which nutrition information in the handbook is utilized by women attending ANC and mothers of children below 5 years attending child welfare clinics in health facilities within Kanduyi sub-county. This was to identify the gaps on the low utilization of the information on nutrition in the MCH handbook.

1.3 Purpose of the study

The purpose of the study is to determine the knowledge, attitude and level of utilization of the MCH handbook by mothers of children below 5 years attending the Child Welfare Clinic in health facilities within Kanduyi Sub County, in the county of Bungoma.

1.4 Objectives of the study

1. To determine the demographic and socio-economic characteristics of mothers with children below 5 years attending the CWC in Kanduyi Sub County.

2. To establish the knowledge on nutrition information in the MCH handbook among the mothers of children below 5 years attending CWC in Kanduyi Sub County.
3. To assess the attitude of mothers with children below 5 years at the CWC on the use of nutrition information regarding nutrition in the MCH handbook in Kanduyi Sub County.
4. To determine the level of utilization of the nutrition information in the MCH handbook by mothers of children below 5 years at the CWC in Kanduyi.
5. To establish the relationships between knowledge, attitude and utilization of the nutrition information in the MCH handbook by the mothers of children aged below 5 years attending CWC in Kanduyi Sub County.

1.5 Research hypotheses

$H0_1$: There is no significant relationship between demographic and socio-economic characteristics and utilization of the nutrition information in the MCH handbook by mothers of children aged below 5 years attending CWC in Kanduyi Sub-County

$H0_2$: There isn't a significant relationship between knowledge and utilization of the nutrition information in the MCH handbook by mothers with children aged below 5 years attending CWC in Kanduyi Sub- County.

$H0_3$: There is no significant relationship between the attitude and utilization of the nutrition information in the MCH handbook by mothers of children aged below 5 years attending CWC in Kanduyi Sub-County.

$H0_4$: There is no significant relationship between the knowledge and attitude of the nutrition information in the MCH handbook by mothers of children aged below 5 years attending CWC in Kanduyi Sub- County.

1.6 Significance of the study

The findings from the study are beneficial to the Ministry of Health staff at national and county levels as well as other stakeholders supporting health and nutrition services. This assisted in identifying the gaps that mothers of children below 5 years have in utilization of the information on nutrition in the MCH handbook. This provides some useful information in addressing the gaps and the findings provides be a source of baseline data on the extent of the use of nutrition information in the handbook by mothers of children below 5 years.

1.7 Delimitations of the study

The study was carried out among mothers of children below 5 years attending CWC in Kanduyi, Bungoma County. Therefore, the findings from the research can only be applied to that area and other areas with the same characteristics.

1.8 Limitation of the study

This study focused on the level of utilization of nutrition information in the MCH handbook by mothers of children below 5 years but did not evaluate the same for clinical or other health services.

Use of the respondents' salary as a measure of economic stability was a limitation.

1.9 Conceptual framework

The socio-economic and demographic characteristics namely age, sex, education, occupation and marital status of the mothers of children below 5 years affect their knowledge, skills and utilization of the information on nutrition in the MCH handbook. It is perceived that the more educated mothers and caregivers might have more knowledge regarding the information on nutrition in the MCH handbook and in turn utilize it. They could also enlighten their peers who are less educated.

The age, sex and occupation of the mothers may have an influence on whether the nutrition information is utilized or not. The conceptualization of the nutrition information by the mothers reflects on their acquired knowledge from the MCH handbook and vice versa. Eventually, both have an influence on their skills and utilization of the nutrition information.

This study adapted the conceptual framework by (Mulingwa, 2014), as shown in Figure 1.1**.**

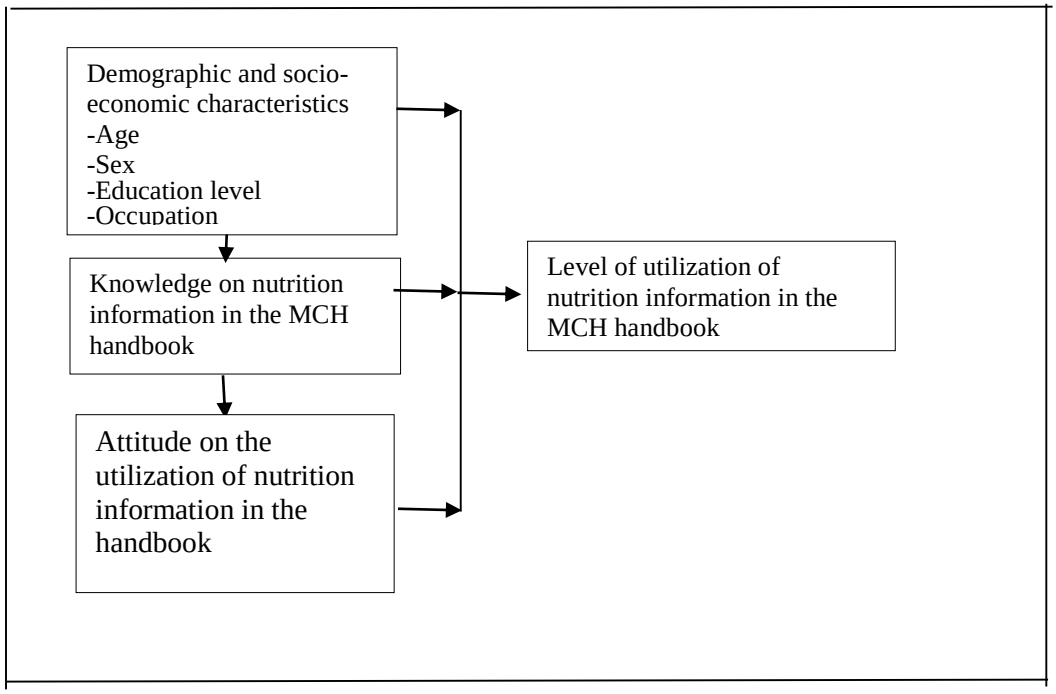

Figure 1.1: Conceptual Framework on determinants of utilization of information on nutrition in the MCH handbook

Adapted and modified from Mulingwa (2014).

CHAPTER TWO: LITERATURE REVIEW

2.1 Use of the Maternal Child Health handbook

The Maternal Child Health handbook is an important health record for health service providers to provide care for a pregnant woman until she delivers. The same handbook is used to record health information for the baby until the age of 5 years. The handbook has been in existence in Japan for over 70 years now and since its inception, it has served a major function in health promotion for children and mothers. It has all information on health integrated in one book (Nakamura, 2019). Many countries have since embraced the use of the MCH handbook such as Indonesia, Cambodia, Vietnam, Palestine, Bangladesh, Kenya and Burundi among others.

A research in Ethiopia showed that while there is increased service coverage in maternal, newborn and child health care, gaps still remain when providing a continuum of care (Partha De a, 2021). A study in Java, Indonesia showed that women who use the MCH handbook are more likely to accept continuum of care and also showed a positive association between ownership of the MCH handbook and active health personnel with facilitation for care (Osaki et al., 2019). In Mongolia, a study confirmed that using the MCH handbook led to frequent ante natal clinic appointments and families' healthier behavior (Mori,Yonemoto et al., 2015).

Access to a health facility in Mongolia promoted husbands' participation in home care of pregnant women and young children (Dagradorj, Nakayama, 2017).

In Kenya, the MCH handbook has a lot of helpful information for caregivers and families to prevent malnutrition in children who have started complementary feeding. The complementary foods should adhere to the main criteria of frequency, amount, texture, variety, active feeding and hygiene (FATVAH) (MOH, 2018). In Bungoma county, only 32 % of caregivers of children 6-11 months received advice on complementary feeding and 35% of caregivers of children 12-23 months received the advice from a health worker (Performance Monitoring and Accountability 2020, 2017). Furthermore, a study done in the Western region of Kenya, showed that the knowledge on consumption of a variety of foods was fair but adding legumes and cereals in baby porridge was still an issue (Keding, Waswa, 2015). According to a research done in Tanzania, the practice of mixing cereals to make composite flours for porridge possibly increases the risk of exposure to aflatoxins which is strongly linked to stunting in young children (Makori, Matenu, 2018).

2.2 Health seeking behaviour of pregnant and lactating mothers

A woman's health seeking behavior during pregnancy has been found to have significant repercussions on her well-being and that of the unborn child. The risk of poor pregnancy outcomes and maternal deaths is higher among women who do not attend ANC. A recommendation by the World Health Organization is that a pregnant woman should attend at least four ANC appointments (WHO, 2016). A study done in Kenya showed women who reported a wanted pregnancy were more likely to receive ante natal care as compared to those who had unwanted pregnancies (Rhoune & Wanjiru 2016). Another study showed that over 41.9% of pregnant women in Kenya get unwanted pregnancies (Solanke, 2019). This greatly affects the quality of care that the woman needs and some pre -existing

conditions like diabetes and high blood pressure can be missed out hence affecting the outcome of the pregnancy.

A study done in India revealed that the risk of having an unplanned pregnancy decreased among women with a higher level of education (Dutta, Shukhar, 2015). In a study done in Ghana, single young pregnant women were less likely to attend ANC due to societal stigma associated with it (Alfred Kwesi Manyeh, Alberta Amu, 2020). In such cases, high risk pregnancies may easily be missed out thus compromising the health of the mother and that of the unborn baby. Furthermore, older women aged between 35 and 49 years were more likely to delay initiation of ANC and had fewer visits to the health facility. Women aged 15 to 24 years were likely to hide their pregnancies to avoid social implications since most are school going age and single. A study conducted in Ghana showed that women with more than 4 children started ANC quite late and had fewer follow up visits. This is because they relied on the experiences of past pregnancies (Boah, 2019). Women in hardship areas such as Garissa in the North Eastern region of Kenya were more likely to start ANC late and have fewer visits as compared to those in Nairobi or other towns. This is due to poor road network as well as the distance to the nearest health facility (Kisiangani et al., 2020). Another study in Ethiopia revealed that women with a secondary education were more likely to attend ANC clinics more times as compared to those with primary level education or none at all. The same study showed that women from medium to wealthy households were more likely to start ANC early and have frequent visits to the health facilities (Gebresilassie et al., 2019).

In Bangladesh, a woman with a higher level of education, residing in an urban area and being in the richest wealth quintile also determined ANC attendance (Aminur Rahman et al., 2017). To address the gap and meet the target of SDG 3 of increasing ANC attendance to 98% by 2030, the country's officials concluded that there is a need to have a comprehensive strategy to address the issue (National Institute of Population Research and Training, 2016). Another study showed that providing 4 ANC for all pregnant women irrespective of their economic status and residence could ensure universal maternal health coverage in Bangladesh (Ministry of Health and Family Welfare, Bangladesh 2016). In Mali, a study revealed that insignificant socio-economic inequity also exists in utilization of 4 ANC visits where economically well off mothers had more visits as compared to the poor ones (Bain LE et al., 2020).

2.3 Mothers' knowledge on the Mother and Child Health handbook

The findings from previous research done in Indonesia showed that more first time mothers used the MCH handbook compared to those who had given birth multiple times (Okatrina, 2015). Another research done in Nepal showed that a mother with some level of education was more knowledgeable and this would facilitate her in receiving information and analyzing it as compared to those who did not or had lower levels (Shahabuddin et al., 2019).

In a study done in Indonesia, it was found that the handbook is an effective tool for communication with health care providers. This was attributed to the frequent consultations by the care providers which motivated them to be aware of their children's health needs (Carandang et al., 2021). The results from another study also done in rural Java showed

that husbands were supportive of their wives by providing money to attend clinic during pregnancy as well as clinic visits for the children (Keiko et al., 2019). The results from a study carried out in Rongo sub county, Migori county in the Western region of Kenya, showed that higher knowledge of the caregiver on health was necessary for proper health seeking behavior for fever and diarrhea in children below 5 years (Rogers et al., 2022).

2.4 Mothers' Attitude on the Mother and Child Health handbook

In Indonesia, the use of the MCH handbook is not optimal, though all pregnant women visiting the health facilities for ANC services have the handbooks. Puskesmas officials stated that the mothers and their families rarely studied the booklets for various reasons such as not having time, not understanding the contents and assuming that the handbook was a notebook for HCWs (Vetty, 2018). Another study reported an increase in the proportion of women with more than 3 ANC visits and an increase in the number of mothers doing exclusive breastfeeding in the first 6 months of life (Aiga, Nguyen et al., 2016). In Mongolia, use of the MCH handbook was found to be useful by caregivers in monitoring developmental milestones of their children. (Dagvadorj et al., 2017).

2.5 Nutrition information in the Mother and Child Health handbook

The nutrition information in the MCH handbook includes infant feeding which covers breastfeeding and complementary feeding. There is growth monitoring, vitamin A supplementation and deworming for children above one year. There is also information for pregnant women on folic acid and iron supplementation in pregnancy, nutrition in pregnancy and general guidelines for healthy eating. There is a section on feeding

recommendations for all children from birth to 2 years and older. Guidelines on feeding a child during sickness including HIV exposed and children on ARV prophylaxis are also in the handbook (MOH, 2016).

2.6 Factors that affect the utilization of the nutrition information in the mother and child health handbook

In Nepal, results on previous studies showed that mothers of reproductive age were more interested in implementing the instructions in the handbook and always carried it as a medium to communicate with HCWs. Further, the research showed that mothers from wealthier families were more exposed to information from various media such as television, internet and newspapers. This access to media increases their knowledge on ANC services, hence utilization of the service (Thapa, 2020). On the other hand, low income was a perceived barrier in ranking health as a priority at a higher order than basic needs and so people with less income could neglect the use of the MCH handbook (Sari, 2017).

In another research done in Bangladesh, the perceived quality of care greatly determined service utilization by women attending ANC (Akter et al., 2020). In Burundi, the MCH handbook appeared to help the health care workers to provide guidance on Post Natal Care and thus may have increased attendance in Gitega District (Kayo et al., 2017). Utilization of information on nutrition from the MCH handbook in rural Java resulted in more children being given supplements (Osaki et al., 2018).

2.7 Summary of literature review

The MCH handbook is a good option especially for developing countries which are keen on ensuring a continuum of care for MNCH. It helps in the inter linkage of health programs and health professionals and in turn empower families to be responsible for their own health. It is important for health care workers to enlighten mothers and other caregivers of children below 5 years on the contents of the MCH handbook so that they can utilize the information and seek assistance whenever necessary.

Studies have been done on variables for instance knowledge practices and attitude, but without indicating the various relationships between them. The focus on the studies is on the use of the book by health workers and not about their knowledge and how they utilize the information on nutrition in the handbook. The reviewed literature has indicated a gap on how demographic and socio-economic characteristics of mothers with children below 5 years attending CWC affect the utilization of information on nutrition in the MCH handbook. Furthermore, there is a gap in utilization of the handbook in Kenya. Through this study, the knowledge, attitude and utilization of information on nutrition in the handbook were determined.

CHAPTER THREE: METHODOLOGY

3.1 Research design

This study adopted a cross-sectional analytical design which is suitable in determining the links among dependent and independent variables. It was also suitable since the selected sample was analyzed at once and would be a representation of the whole population. Qualitative and quantitative methods to data collection, analysis and presentation were used. The design is also justified as it allowed collection of data at a single point in time as well as establish the relationship between the study variables (Mugenda & Mugenda, 2003).

3.2 Study variables

3.2.1 Dependent variables

The dependent variables were the level of utilization of the information on nutrition in the MCH handbook by mothers of children below 5 years attending CWC. This is in terms of to what extent did the mothers use the MCH handbook

3.2.2 Independent variables

The independent variables were the demographic and socio-economic characteristics (age, education level, occupation and income), knowledge level on nutrition information in the book and attitude on the use of the information on nutrition in the handbook.

3.3 Study area

The research was carried out in Kanduyi Sub-county with a projected population of 268, 662 projected from census, an area of 318.8Km^2 (KNBS, 2022) and 949 people per Km^2 (KNBS Population Analytical Report, 2016). Administratively, there are 8 wards (IEBC, 2017). It has 1 county referral hospital, 6 private level IV hospitals, 1 GOK level III and 1 FBO level III hospital, 14 level II GOK facilities and 14 community units (DHIS2, 2018). The average distance to the nearest health facility is 11 Km. Kanduyi sub county was selected because it is the county's headquarters, is the largest and has the highest population size among the 10 sub counties. It is also more cosmopolitan and hosts the county referral hospital and other lower level facilities. Community members engage in farming, small businesses, casual labour and formal employment.

3.4 Target population

This study targeted all mothers who had children below 5 years attending CWC in selected health facilities within Kanduyi.

3.4.1 Inclusion criteria

The mothers with children aged below 5 years at the CWC in the selected health facilities within Kanduyi.

3.4.2 Exclusion criteria

These were the mothers who had children below 5 years but who were sick or were born with congenital abnormalities and those not ready to take part in the study.

3.5 Sample size determination

To determine the study sample size, the John (2003) formula was applied with a confidence level of 95% and a 7% margin of error.

$N= Z^2P (100-P)/e^2)$ Where:

N = is the desired sample size.
Z is the standard normal deviate that corresponds to 1.96 (at 95% confidence level)
e= margin of error 7%
p= anticipated proportion to be measured. Anticipated proportion of 50% is the most conservative estimate (Frances, 2006).
Thus, using the above formula, the sample size was:
$N= 1.96^2$ x 0.50 (1-05.0) / 7^2) = 3.8416 x 0.5 (0.5) / 0.0049 = 0.9604/0.0049
= 196
To cater for non-response 10% of the sample size was added.
10/100 * 196 = 19.6 = 20
Therefore 20 was added to 196 to make 216 as the total sample size and this was the number of participants who were interviewed from 5 health facilities as shown in Table 3.1.

3.6 Sampling technique

Purposive sampling was used to select one referral hospital, one level 4 and three level 3 health facilities. The targeted sample was distributed to the selected health facilities in the sub county by use of proportionate to size sampling (Table 3.1).

Table 3.1: Sample size distribution in health facilities

Health facility	Population of mothers	Sample size
GOK Level 5 – Bungoma County Referral Hospital	56	56
FBO Level 4 – St. Damiano Mission Hospital	96	40
GOK Level 3 – Mechimeru H/C	136	40
GOK Level 3 – Bulondo H/C	176	40
FBO Level 3 – Kibabii Mission Hospital	216	40
Total	**480**	**216**

From the selected health facilities, a list of mothers attending the CWC was generated. Then systematic random sampling was used to select the targeted sample form each health facility.

3.7 Research instruments

3.7.1 Questionnaire

A researcher-administered structured questionnaire was used to collect information on socio-economic and demographic information of mothers with children below 5 years attending CWC. Information collected included how the knowledge of the mothers and their attitude affected utilization of nutrition information. The section with nutrition information in the handbook was used to formulate questions for the questionnaire. Some questions were modified and adopted from the Iowa Infant Feeding Attitude scale (De la Mora, Russell, Dungy, Losch, 1999) as well as the guiding principles for complementary feeding for a breastfed child by PAHO/WHO (PAHO/WHO Guiding principles for Complementary Feeding of the Breastfed Child. 2001).

3.7.2 Focus Group Discussion Guide (FGD)

A FGD guide was used to gather information from the participants so as to elicit information on their knowledge, attitude and utilization of the information on nutrition in the MCH handbook.

3.7.3 Key Informant Interview (KII) Guide

A KII guide was used to gather information from the HCWs in charge of the CWC in the health facilities that had been selected. Data on knowledge regarding the information on nutrition in the MCH handbook was collected.

3.8 Pte-testing of the tools

This was done on 10% of the sample size in Kanduyi Sub County in one of the health facilities to enable the research assistants better understand the tool.

3.9 Validity and reliability

3.9.1 Validity

A standardized validated nutrition information questionnaire formulated from the MCH handbook (MOH 216, revised edition June 2016) was applied for the study. This questionnaire was evaluated by the researcher's supervisors of Kenyatta university department of Foods, Nutrition and Dietetics to ensure that it was consistent with the study objectives.

3.9.2 Reliability

Test-retest reliability of the research instruments was determined during pretesting. Two pretest sessions were done among 10 respondents from a health facility that had not been sampled for the study. Test-retest reliability was determined by investigating the uniformity of responses. A correlation coefficient obtained was 0.81 which was regarded as adequate.

3.10 Recruiting and training of research assistants

Four Research Assistants with a minimum qualification of a Kenya Certificate of Secondary Education and a Nutrition & Dietetics certificate, diploma or degree were recruited. They were required to be conversant with Kiswahili and Luhya, (the local language) and speak it fluently. An added advantage was having participated in previous surveys.

3.11 Data collection procedures

The researcher sought support, cooperation and assistance from the mothers with children below 5 years attending CWC in the sampled health facility. Before the interview date, the health facility in charge was contacted so that she/he could be briefed about the impending study.

3.11.1. Face to face interviews with mothers of children below 5 years

These were done to the mothers at a private place in the facility. The questionnaires were administered by the research assistants and the responses recorded appropriately. This was done to all respondents until the required sample size was reached.

3.11.2 Focus Group Discussions

These were done with the mothers of children below 5 years at the CWC. One round of discussion took between 30-45 minutes. Each group had 8-12 participants. The facilitator took control of the discussion and ensured that everyone participated actively. The discussion was recorded as an audio tape.

3.11.3 Key Informant interviews

Four key informant interviews (KII) were done for HCWs in Bungoma county referral hospital. This triggered information on how the HCWs perceived the information regarding nutrition in the MCH handbook and any challenges they faced while using it.

3.12 Analysis of data

Statistical package for social sciences (SPSS) version 22 was used to examine quantitative data. The descriptive statistics like frequencies, percentages and means were applied to discuss the socio-economic and demographic attributes, knowledge and attitude of the mothers with children below 5 years at the CWC. The overall knowledge level from the respondents corresponded to the overall correct answers in percentages classified as <40% (low), 41-69% (moderate) and ≥70% (high) (Kigaru et al., 2016). The attitude of the respondents was measured using a 5-point likert scale. To determine the level of utilization of nutrition information, the respondents were asked how frequently they read the information in the handbook, the clarity of the information and any challenges experienced while reading the information. To determine the link between the dependent and independent variables, the Chi-square test was applied. Logistic regression is also used to estimate the relationship between a dependent variable and independent variables. A p value of <0.05 was considered as the statistical significance. Qualitative data obtained from FGDs and KIIs was transcribed, coded, analyzed, and arranged in an orderly manner to augment the quantitative data.

3.13 Logistical and ethical considerations

The researcher sought clearance from Kenyatta University Graduate School then ethical clearance by Kenyatta University Ethics Review Committee (KUERC). Thereafter, a permit for the research was obtained from the National Commission of Science and Technology Innovation (NACOSTI). Bungoma County Health Management Team (CHMT) and the Kanduyi Sub-County Health Management Team (SCHMT) gave approval for the study to be done. Informed consent was obtained from the respondents before the questionnaires were administered. The participants were informed that there would be no compensation or individual benefits by taking part in the study. They were also informed that there would be no risks associated with the study.

CHAPTER FOUR: RESULTS

4.1 Demographic and socio-economic and characteristics of mothers with children below 5 years attending the CWC in Kanduyi Sub-county

4.1.1 Response rate

Two hundred and sixteen (216) caregivers were interviewed in Kanduyi Sub County, Bungoma County. The response rate for the study was 95.4% (206) of the expected sample size.

4.1.2 Demographic characteristics of mothers with children below 5 years attending the CWC in Kanduyi Sub County

The age category with the most number of respondents was 25 to 29 years of age translating to 55.3% and a mean age of 28 years. This was followed by 20.4% who were aged between 30 and 34 years of age. Those less than 20 years of age were 1.9% (Figure 4.1).

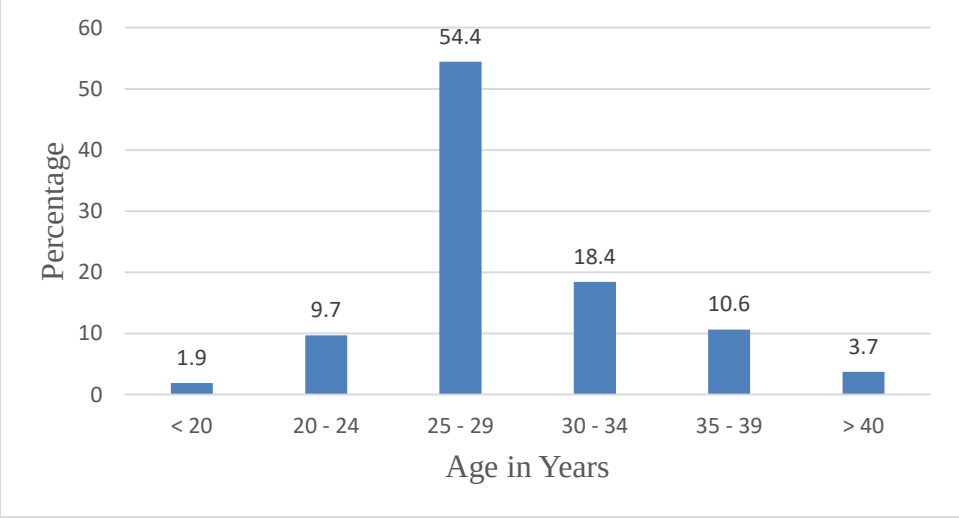

Figure 4.1: Age Category of the mothers with children under five

As per marital status, most of the respondents, 81.0% were married while a few were single, 15.3% with only one respondent being a divorcee 0.1%. On the number of people living within the respondents' household, the highest recorded number of respondents was 56.8% who had the between 2 to 4 people. This was followed by 42.2% respondents who had 5 and more people living within their households. Only 0.9% respondents recorded 0 number of people living with them in their households. Most respondents 51.9% had only 1 child below 5 years of age, 31.9% had 2 children below 5 years of age while 6.48% had none below 5 years of age. A majority of the respondents, 54.6% had between 2 to 4 children, then 31.5% had one child.

Table 4.1: Demographic characteristics of mothers with children below 5 years attending the CWC in Kanduyi Sub County

Variable	**Characteristic**	**Respondent n (206)**	**%**
Age of mothers in years	<20	4	1.9
	20-24	19	9.2
	25-29	114	55.3
	30-34	42	20.4
	35-39	21	10.2
	>40	6	2.9
Marital status	Married	168	81.6
	Single parent	32	15.3
	Divorced/separated	2	0.1
	Widowed	4	1.9
Number of children	1	65	31.5
	2-4	112	54.6
	5 and above	29	14

4.1.3 Socio-economic characteristics of mothers with children below 5 years attending the CWC in Kanduyi Sub County

The level of education attained by the respondents varied with 36.9% of them having attained Secondary level of education, 31.5% had attained up to Primary level of education, 30.6% had attended tertiary level colleges, while 2 of them 0.9% had no education at all. About occupation, 36.6% of the respondents reported having no occupation at all, 11.6% were self-employed and engaged in small scale trading, 8.8% were in formal employment, while 20.8% were in informal employment. About the main source of family income, (21.8%) indicated casual labour followed by (20.9%) who indicated informal salaried employment then a minority of 9.2% indicated formal employment as their main source of family income.

Table 4.2: Socio-economic characteristics of mothers with children below 5 years attending the CWC in Kanduyi Sub County

		n	%
Education level	Below primary	2	0.9
	Primary	65	31.6
	Secondary	76	36.9
	Tertiary	63	30.6
Occupation	Formal employment	19	9.2
	Informal employment	43	20.9
	Casual labour	45	21.8
	Own business	22	10.7
	Housewife	77	37.4

Most of the respondents, 45.1%, lived below the poverty line, meaning that they survived on less than 1US dollar per day (Kshs.100 to 1USD exchange rate as at the time of the

study) as per the World Bank definition while 5.8% of them lived on more than 8 US dollars per day. (Figure 4.2).

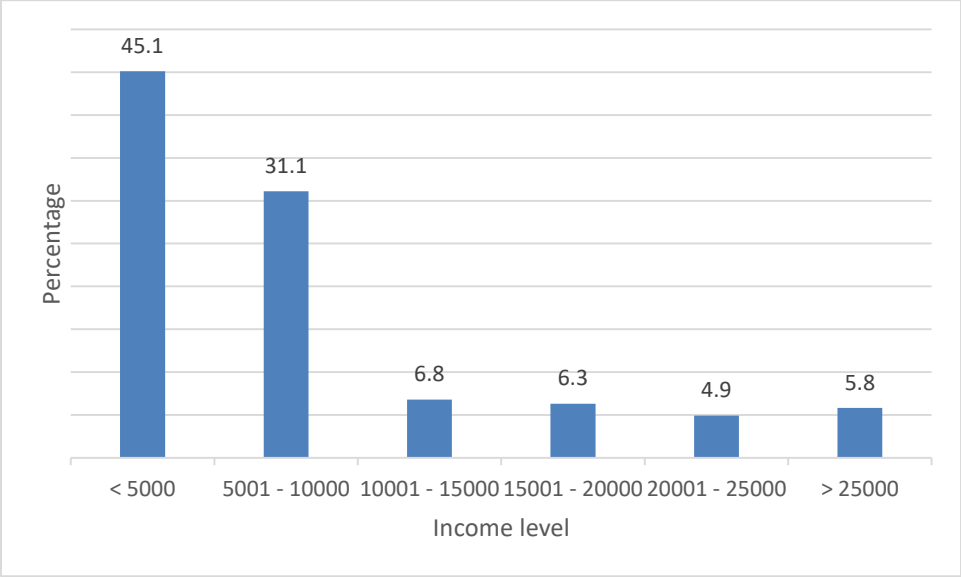

Figure 4.2 Percentage Distribution of Income

4.2 Knowledge on nutrition information in the MCH handbook among the mothers of children below 5 years attending CWC in Kanduyi Sub County

Results indicates that most of the respondents, 54.6% have been taken through the information in the MCH handbook while 44.9% have not been taken through, and 0.5% respondent reported that they don't know. Among those who have been taken through the information in the handbook, 74.2% had been taken through by a nurse, 12.8% by others, 9.28% by a nutritionist and only 4.1% reported to have been taken through by a doctor.

Concerning the areas that were covered in the handbook, 77.3% mentioned care of mother and baby after birth, 47.4% mentioned exclusive breastfeeding, and deworming was the least mentioned by only 8.25% respondents. On supplements given to pregnant women, iron and folic acid was highly mentioned by 74.6% respondents, followed by 7.4% who mentioned iron tablets only, 6.1% mentioned folic acid only, while 10.2% didn't know about supplements. The minority at 1.9% mentioned others like multivitamins.

About the importance of IFAS during pregnancy, 94.2% agreed that it is important, 4.4% didn't know its importance while 1.5% disagreed. 38.89% respondents mentioned severe headache as a danger sign during pregnancy, 38.43% mentioned severe abdominal pain while 7.4% mentioned paleness. Eating a balanced diet as a nutrition care during pregnancy was highly mentioned by 57.9% respondents followed by eating of plenty fruits and vegetables mentioned by 54.6% respondents while taking IFAS for more than 90 days was the least mentioned by only 2.78% respondents.

Considering the respondents' knowledge on the meaning of EBF, 65.05% gave the correct the definition, 31.1% were not aware of the meaning, while 3.9% didn't know about EBF. The recommended duration for EBF was known to 83.5% respondents, not known to 9.2% respondents while 7.3% were not sure about the recommended duration of EBF. On complementary feeding, 87.9% of the respondents reported that they knew the age at which it should be started, while 7.3% registered that they didn't know and 4.9% didn't know about complementary feeding. On the knowledge of foods used for complementary feeding, 85.0% reported that they knew the foods, 11.7% didn't know while 3.4% were not

sure. About the examples of foods used for complimentary feeding, carbohydrates were highly mentioned by 80.6%) respondents, followed by vegetable and fruits by 50.6% respondents and the least mentioned was fats by 12.8% respondents.

Concerning the issue of continued breastfeeding up to 2 years and beyond, 86.9% respondents agreed while 8.7% registered a no and 4.4% reported that they didn't know. On the issue of encouraging children to eat even if they refuse, 93.2% of the respondents agreed that it was a good idea, while this was rejected by 5.3%. Only 1.5% didn't know their stand concerning the issue. On children being fed more times during and after illness, 92.2% respondents agreed with the statement, while 5.3% disagreed. Those who didn't have an opinion on the issue were 2.43%.

Knowledge on supplements given to children from 6 months to 5 years had 53.4% respondents reporting that they knew the supplements, 27.7% reported a lack of knowledge about the supplements and 18.0% reported that they did not know the supplements given. For those who admitted to be knowing the supplements given to children from 6 months to 5 years, 88.4% mentioned vitamin A, 8.8% did not know the name while 2.63% mentioned any others like antihelminths or deworming drugs. The 6-month interval of administering the supplement was known to 57.9% respondents, was not known to 15.8% respondents while 26.3% had no idea about the supplementation interval. About 56.1% respondents mentioned the correct interval to be after every 6 months, 25.8% respondents mentioned the interval to be after every month while a few, 4.6% mentioned yearly. When asked how to tell if a child is growing well, 42.1% respondents mentioned about taking the child's

weight only, 38.0% highlighted other ways like the child growing fat, tall, being active and eating well, while 19.9% highlighted taking the child's weight and height (Table 4.3).

Table 4.3: Knowledge Scores of Mothers on Nutrition Information in the MCH Handbook

	Low		Moderate		High	
	n	**%**	**n**	**%**	**n**	**%**
Knowledge aspect						
The number of mothers who knew the meaning of exclusive breastfeeding	64	31.1	134	65.05	0	0.00
Those who knew the new recommended duration of EBF	19	9.2	15	7.30	172	83.5
Mothers who knew when to start complementary feeding	24	11.7	7	3.4	175	85.0
Those who knew the type of supplements given to children 6-59 months	57	27.7	37	18.0	112	53.4
The number of mothers who knew that taking weight and height of a child show how the child is growing	82	37.96	91	42.13	43	…19.91
Those who knew that continued breast feeding of children goes for two years and beyond	9	4.4	18	8.72	179	86.9
The mothers who knew the importance of feeding a child more times when they are ill	5	2.43	11	5.3	190	92.2
Mothers who knew the type of supplements given to pregnant women	22	10.19	16	7.41	161	74.5
The number of mothers who knew the importance of IFAS	3	1.5	9	4.4	194	94.2

n = respondents who gave correct responses

For the above aspects regarding the knowledge on nutrition information, the percentage score was based on the correct responses given by the mothers. Each response was presented as a percentage and categorized as low (0-40%), moderate (41-69%) and high (≥70%) (Kigaru et al., 2016). Majority of the mothers had high knowledge on the recommended duration of exclusive breastfeeding, when to start complementary feeding,

continued feeding for two years and beyond, encouraging children to feed, feeding children more times during illness, supplements given to pregnant women and the importance of IFAS. The mothers had moderate knowledge on the meaning of exclusive breastfeeding, supplements given to children 6-59 months, the use of weight and height as a sign that a child is growing, danger signs and nutrition care in pregnancy (Figure 4.3).

4.3 Attitude of mothers on use of nutrition information in the MCH handbook among the mothers of children below 5 years attending CWC in Kanduyi Sub County

Table 4.3 shows that most respondents agreed to the fact that a pregnant woman should eat an extra meal every day, with a mean response of 3.45 ± 1.03. Similarly, most respondents agreed that a pregnant woman should eat plenty of fruits and vegetables, with a mean response of 3.47 ± 1.12. Again, the issue of a pregnant woman drinking at least 8 glasses of water daily was agreed by most respondents, with a mean response of 3.42 ± 1.05. Also, most respondents agreed that breast milk alone is sufficient for 6 months for a baby aged 0 – 6 months, with a mean response of 3.14 ± 1.10. Further, averagely, respondents agreed that it is possible to do exclusive breastfeeding for 6 months, with a mean response of 2.99 ± 1.04. Moreover, averagely, respondents agreed that HIV positive mothers are not allowed to breastfeed, with a mean response of 2.55 ± 1.09. Concerning complementary feeding, most respondents agreed that it should begin from 6 months of age, with a mean response of 3.26 ± 1.08 and concerning complementary foods, most respondents agreed, with a mean response of 3.3 ± 1.11, that they should be well balanced with nutrients that supports the growth of the child. Most respondents agreed, with a mean response of 3.26 ± 0.98, that a young child who has started complementary feeding should breastfeed up to 2 years or

beyond. Similarly, most respondents agreed that a child should be given snacks in between meals and continue breastfeeding as the child grows, with a mean response 3.21 ± 1.05.

Most respondents agreed, with a mean response of 3.22 ± 1.03, that a sick child should breastfeed frequently and for longer periods. Also, most respondents agreed that it is safe for pregnant women to take IFAS throughout pregnancy, with a mean response of 3.38 ± 1.07. Further, most agreed, with a mean response of 3.21 ± 1.03, that vitamin A is important for the growth and development of young children. Moreover, majority of the respondents agreed that vitamin A capsules should be given to children from 6 months to 5 years of age, with a mean response of 3.19 ± 1.05. In conclusion, most respondents agreed, with a mean of 3.31 ± 1.04, that it is important to give young children vitamin A every 6 months for good health. …… *''I took IFAS throughout my pregnancy because I was told it is beneficial to the developing baby,''* said one of the mothers during a FGD.

Table 4.3: Attitude of Mothers on the Nutrition Information in the MCH handbook

	Strongly disagree n (%)	**Slightly disagree n (%)**	**Neutral n (%)**	**Slightly agree n (%)**	**Strongly agree n (%)**
Attitude aspect					
A pregnant woman should eat an extra meal everyday	5 (2.4)	11 (5.3)	25 (12.1)	48.(23.3)	117 (56.8)
A pregnant woman should eat plenty of fruits and vegetables	3 (1.6)	1 (0.5)	17 (8.3)	75 (36.4)	110 (53.4)
A pregnant woman should drink at least 8 glasses of water daily	5 (2.4)	5 (2.4)	16 (7.8)	78 (37.9)	102 (49.5)
Breast milk alone is sufficient for a baby aged 0 – 6 months	3 (1.3)	34 (16.5)	15 (7.3)	73 (35.3)	81 (39.3)
Complementary feeding should start from 6 months	0 (0.0)	13 (6.3)	22 (10.7)	112 (54.4)	69 (33.5)
A child on complementary feeding should continue breastfeeding up to 2 years and beyond	2 (1.0)	20 (9.7)	31 (15.0)	77 (37.4)	76 (36.9)
Give snacks to children in between meals	2 (1.0)	5 (2.4)	21 (10.2)	123 (59.7)	55 (26.7)
It is safe for pregnant women to take IFAS during pregnancy	2 (1.0)	5 (2.4)	27 (13.1)	81 (39.3	91(44.2)
Vitamin A is important for the growth and development of young children	0 (0.0)	1 (0.5)	15 (7.3)	143 (69.4	47 (22.8)
A sick child should breastfeed frequently and for longer periods	0 (0.0)	13 (6.3)	19 (9.2)	107 (51.9	67 (32.5)

4.4 Level of utilization of nutrition information in the mother and child health handbook by the mothers of children below 5 years attending CWC in Kanduyi Sub County

From the study findings, the respondents who were knowledgeable and had a positive attitude towards nutrition information in the mother child health handbook had a higher level of utilization of the information. The level of utilization of mother child health handbook was good at 61.7% of the respondents. Those whose knowledge score was low coupled with a negative or lower attitude on the likert scale were found to slightly or not

utilize the nutrition information in the mother and child health handbook. This translated to 5.8% and 1.9% respectively.

The respondents who were found to moderately utilize the nutrition information in the mother and child health handbook were 63(30.6%). This group of respondents had moderate knowledge scores on various aspects of nutrition information in the mother and child health handbook. They also agreed or slightly agreed with some of the information as far as their attitude towards nutrition information is concerned.

Table 4.4: Level of Utilization of Nutrition Information in the Mother and Child Health Handbook

	n	%
Number of mothers who did not utilize the information	4	1.9
Number of mothers who had poor utilization	12	5.8
Number of mothers who had moderate utilization	63	30.6
Number of mothers who had good utilization	127	61.7

4.5 Relationship between demographic and socio-economic characteristics, knowledge, attitude and utilization of nutrition information in the mother child handbook by mothers of children below 5 years attending CWC in Kanduyi Sub County

4.5.1 Relationship between demographic and socio-economic characteristics of Mothers with Children Below 5 Years Attending CWC and Utilization of Nutrition Information in the Mother and Child Health Handbook

Considering the socio-economic and demographic characteristics of the respondents on utilization of nutrition information in the mother and child health handbook in the bivariate logistic regression there was no significant p-value (<0.05) showing there was no factor associated with the utilization on this category, while on the other hand considering all the factors influencing the utilization of nutrition information in the mother and child health handbook the multivariate logistic regression revealed that marital status had an influence on the utilization where by married respondents were less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who were single, p<0.006 (AOR,0.2, 95%CI, 0.06-0.63) while other factors had no significant influence on the utilization of nutrition information in the mother and child health handbook.

4.5.2 Relationship between knowledge and utilization of nutrition information in the mother and child health handbook

In reference to the knowledge on the meaning of EBF, the findings indicate that 134(65.05%) of the participants knew the meaning of EBF whereas 64(31.1%) didn't know the meaning of EBF. From bivariate logistic regression the study revealed that those who didn't know the meaning of EBF were less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who knew the meaning of EBF, the finding was statistically significance p<0.004 (COR, 0.42, 95% CI, 0.23-0.75).

172(83.5%) of the respondents were aware of the recommended duration of EBF while 19(9.19%) did not know the recommended duration. The respondents who didn't know the recommended duration of EBF were 0.25 times less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who knew the recommended duration of EBF, this recorded a high statistical significance level p<0.004 (COR, 0.25, 95% CI, 0.10-0.65), from bivariate logistic regression.

In addition, 175(85.0%) of the respondents were knowledgeable on the required age at which a child should start complementary feeding, 24(11.7%) of the participants had low knowledge and 7(3.4%) had moderate knowledge about the suitable age at which a child should start complementary feeding. The bivariate logistic regression further revealed that the respondents who were not knowledgeable on the required age at which a child should start complementary feeding were 0.33 times less likely to have good utilization of nutrition information in the mother and child health handbook as compared to the respondents who were knowledgeable on the required age at which a child should start complementary feeding, the finding was statistically significant p<0.017 (COR, 0.33, 95% CI, 0.13-0.82).

Considering the supplements given to children from 6 months to 5 years, majority112(53.4%) of the respondents had high knowledge on the supplements, followed by respondents who had moderate knowledge 57(27.7%) while those with low knowledge were 37(18.0%). From bivariate logistic regression to check whether it had an influence on

the utilization of nutrition information in the mother and child health handbook, it was noted that the respondents who had low knowledge were less likely to have good utilization of nutrition information in the mother and child health handbook in comparison to those who had a high level of knowledge of the supplements given to children from 6 months to 5 years. This finding also indicates a high significance level; p<0.045 (COR, 0.52, 95% CI, 0.28-0.98).

Majority 91(44.2%), of the participants were able to tell if their child is growing well by taking child's weight only followed by 72(35.0%) while the least 43(20.9%) of the participants were able to tell if their child is growing well by taking the child's weight and height. Considering bivariate logistic regression, those who took child's weight and height were 2.49 times more likely to have good utilization of nutrition information in the mother and child health handbook in comparison to those who just took child's weight only, the finding was statistically significant p<0.025 (COR, 2.49, 95% CI, 1.12-5.55).

On the other hand, multivariate logistic regression analysis revealed that the significant association with utilization was realized on two factors; the respondents who didn't know the recommended duration of EBF were 0.28 times less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who knew the recommended duration of EBF. This recorded a high statistical significance level p<0.035 (AOR, 0.28, 95% CI ,0.09-0.92). *''breast milk alone is not sufficient for the baby as he keeps on crying even after breastfeeding, so I have to give him cow's milk or porridge before he reaches 6 months''* said one of the mothers. Furthermore,

for those whose child's weight and height were taken were 2.45 times more likely to have good utilization of nutrition information in the mother and child health handbook in comparison to those who just took child's weight only, the finding was statistically significant, p<0.038 (AOR,2.45, 95% CI ,1.05-5.7)

4.5.3 Relationship between attitude and utilization of nutrition information in the mother and child health handbook by the mothers of children below 5 years attending CWC

From the bivariate logistic regression analysis, the findings revealed that a positive increase in the level of agreement from one to five on whether breast milk alone is sufficient for 6 months for a baby aged 0-6 months was associated with good utilization of nutrition information in the mother and child health handbook by 1.68 times, this finding was statistically significant p<0.004 (COR, 1.68, 95% CI, 1.18-2.41). Also, those who were at the highest positive level of agreement in the Likert scale on whether complementary feeding should begin from 6 months of age were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the lowest level, this finding was statistically significant p<0.003 (COR, 2.21, 95% CI, 1.31-3.71). Moreover, the respondents who agreed that complementary foods should be well balanced with nutrients that will support the growth of the child were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who didn't agree, this finding was statistically significant, p< 0.001 (COR,2.46, 95% CI, 1.42-4.29).

Those who were at the highest positive level of agreement in the Likert scale of one to five on whether a young child who has started complementary feeding should breastfeed up to 2 years or beyond were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level, and this finding was statistically significant, $p<0.001$ (COR,2.16, 95% CI, 1.39-3.36). Moreover, the same respondents who were at the highest positive level of agreement in the Likert scale of one to five on whether to give a child snacks in between meals and continue breastfeeding as the child grows were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level, and this finding was statistically significant, $p<0.015$ (COR, 2.01, 95% CI, 1.14-3.55).

The study also revealed that the respondents who had a positive attitude on whether a sick child should breastfeed frequently and for longer periods were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who had a negative attitude towards the same, and this finding was statistically significant, $p<0.019$(COR,1.77, 95%CI, 1.10-2.85). Furthermore, the individuals who agreed that it is safe for pregnant women to take IFAS throughout pregnancy were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who strongly disagreed, and this finding was statistically significant, $p<0.007$ (COR,1.99, 95% CI, 1.21-3.25).

The respondents at the top level of agreement in the Likert scale on whether Vitamin A is important for the growth and development of young children, Vitamin A capsules should be given to children from 6 months to 5 years of age and It is important to give young children vitamin A every 6 months for good health were 2.37, 1.64 and 1.84 times more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level respectively, and these findings were statistically significant, p<0.018 (COR, 2.37, 95% CI, 1.16-4.84), p<0.013 (COR,1.64, 95% CI, 1.11-2.42) and p-0.035 (COR,1.84, 95% CI,1.04-3.23), respectively. Considering multivariate logistic regression, the respondents at the top level of agreement in the Likert scale on whether a pregnant woman should drink at least 8 glasses of water daily, complementary foods should be well balanced with nutrients that will support the growth of the child and a young child who has started complementary feeding should breastfeed up to 2 years or beyond were 2.46, 2.07 and 1.95 times more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level respectively, and these findings were statistically significant p<0.042 (AOR,2.46, 95%CI,1.03-5.86), p<0.034 (AOR,2.07, 95%CI,1.06-4.06) and p<0.01 (AOR,1.95, 95% CI, 1.17-3.26), respectively.

CHAPTER FIVE: DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

5.1.1 Socio-economic and demographic characteristics of the mothers

On matters education, 36.9% of the respondents had attained up to secondary level of education. Various researches have shown that educational attainment for women of reproductive age is strongly associated with improved reproductive health and decreased child mortality. A study in Ethiopia showed that mothers with higher levels of education had higher cognitive abilities associated with greater well being among children and the women themselves (Miedema et al., 2018).

5.1.2 Knowledge of mothers on nutrition information in the Mother and Child Health Handbook

In reference to the knowledge on the meaning of EBF, the findings indicate that 65.1% of the participants had high knowledge on the meaning of EBF, 31.1% had moderate knowledge while 3.9% weren't sure of the meaning thus had low knowledge. From bivariate logistic regression the study revealed that those who didn't know the meaning of EBF were less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who knew the meaning of EBF, the finding was statistically significant $p<0.004$ (COR, 0.42, 95% CI, 0.23-0.75). This finding agrees with a study done in America where women who had no knowledge on EBF recommendations had a lower probability of practicing it as compared to those who knew (Wallenborn et al., 2017).

Of all the respondents, 83.5% were aware of the recommended duration of EBF, 9.2% did not know the recommended duration of EBF and lastly 7.3% of the respondents were not sure if they knew the recommended duration of EBF. The respondents who didn't know the recommended duration of EBF were 0.25 times less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who knew the recommended duration of EBF, this recorded a high statistical significance level $p<0.004$ (COR, 0.25, 95% CI, 0.10-0.65).

In addition, 85.0% of the respondents were knowledgeable on the correct age at which a child should start complementary feeding whereas 11.7% of the participants had low knowledge on the suitable age for a child to start complementary feeding. The bivariate logistic regression further revealed that the respondents who had low knowledge on the correct age at which a child should start complementary feeding were 0.33 times less likely to have good utilization of nutrition information in the mother and child health handbook as compared to the respondents who were knowledgeable. The finding was statistically significant $p<0.017$ (COR, 0.33, 95% CI, 0.13-0.82) and corroborates the results of an investigation done in Uganda where mothers had improved knowledge on complementary feeding as a result of nutrition education given to them at the health facility (Mokori et al., 2017). On the other hand, another study done in Bangladesh opposes this theory and concludes that maternal education or knowledge may not be a foremost driver of child caring practices including complementary feeding (Yu et al., 2015).

Considering the supplements given to children from 6 months to 5 years, a majority 53.4% of the respondents had moderate knowledge, while the least 18.0% respondents had low knowledge. By applying bivariate logistic regression to check whether it had an influence on the utilization of nutrition information in the mother and child health handbook, it was noted that the respondents who had low knowledge were less likely to have good utilization of nutrition information in the mother and child health handbook in comparison to those who knew the supplements given to children from 6 months to 5 years, this finding also indicates a high significance level; $p<0.045$ (COR, 0.52, 95% CI, 0.28-0.98). A study done in Libya showed that women who were aware of the benefits of Vitamin A were more likely to take their children for supplementation (Abdulmalek, 2018). This agrees with another study done in some African and Asian countries which showed that maternal education was significantly associated with the receipt of Vitamin A (Al, 2019) while Haile et al. found no association between the mother's knowledge and supplementation of the child with Vitamin A (Haile & Biadgilign, 2015).

Majority 44.2%, of the participants were able to tell if their child is growing well by taking child's weight only followed by 35.0% while the least 20.9% of the participants were able to tell if their child is growing well by taking the child's weight and height. Considering bivariate logistic regression, those who took child's weight and height were 2.49 times more likely to have good utilization of nutrition information in the mother and child health handbook in comparison to those who just took child's weight only, the finding was statistically significant $p<0.025$ (COR, 2.49, 95% CI, 1.12-5.55).

On the other hand, on multivariate logistic regression analysis, the study revealed that the significant association with the utilization was realized on two factors; the respondents who had low knowledge on the recommended duration of EBF were 0.28 times less likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the respondents who had high knowledge. This recorded a high statistical significance level p<0.035 (AOR, 0.28, 95% CI ,0.09-0.92), furthermore, those who took child's weight and height were 2.45 times more likely to have good utilization of nutrition information in the mother and child health handbook in comparison to those who just took child's weight only, the finding was statistically significant, p<0.038 (AOR,2.45, 95% CI ,1.05-5.7)

Regarding complementary feeding, most of the mothers 85.0% knew the correct age at which to start while 83.3% knew the suitable foods that constitutes a complementary diet for a child from the age of 6 months. Investigations done in Uganda reported that when mothers were given nutrition education, they improved feeding practices of their children (Mokori et al., 2017). "*I was advised on the types of food to give my child from the age of 6 months but some are expensive and I cannot afford to buy on a daily basis*'' said one of the mothers. A study done in Ghana also showed that unavailability of a variety of foods and insufficient funds was a hindrance to appropriate complementary feeding (Tampah-Naah & Kumi-Kyereme, 2019).

On IFAS, 74.5% of the mothers knew that iron and folic acid tablets are given to pregnant mothers and 7.4% mentioned only iron. On its importance, 94.2% had high knowledge on

the benefits. The mothers who had the knowledge on the importance of IFAS were more likely to take the tablets as compared to those who did not. The finding in this study agrees with another one done in Kenya which showed that women who were slightly knowledgeable on IFAS were more likely to continue taking the tablets than those with low knowledge (Siekmans et al., 2018). These finding corroborates another one done in Tanzania which showed that women who had high knowledge on IFAS were 3.9 times more likely to take the tablets compared to those with low knowledge (Lyoba et al., 2020). "*Whenever I take the IFAS, I end up feeling nauseated and eventually vomiting. This makes me not complete the dose*,'' a mother said. These sentiments are similar to those in the Tanzanian study where some mothers said that poor adherence was occasioned by the side effects brought about by the IFAS. The Tanzanian study further revealed that the time a health care worker takes to counsel mothers on the benefits and consequences of not taking IFAS also affects adherence.

The knowledge on danger signs during pregnancy was also assessed for the mothers and 43.1% had moderate knowledge. The most mentioned danger sign was vaginal bleeding followed by fever. A study done in rural Indonesia showed that the education status of the mother is a good predictor of knowledge of danger signs in pregnancy (Wulandaria, 2020). This finding agrees with the one done in Papua New Guinea that showed that women with secondary education were more likely to know the danger signs as compared to those who had no education or only had primary school education(Vallely, 2019). These findings further agree with an Ethiopian study which revealed that maternal education status had significant association with being knowledgeable on matters of obstetric danger signs. In

the same study, mothers who had two or more pregnancies had an increased likelihood of having knowledge on danger signs associated with pregnancy (Woldeamanuel, 2019). This could be attributed to the fact education exposes one to knowledge and more appropriate information thus a higher likelihood of making better choices.

Findings from another study on obstetric danger signs done in Indonesia revealed that older women or those who had more than two children had a better chance of knowing the danger signs than the younger mothers that only had one child (Wulandari, 2020). The Indonesian study findings agree with a study done in Tanzania on the issue of increased knowledge of danger signs with more pregnancies and age (Mwilike et al., 2018). Generally, the number of respondents who had knowledge on danger signs was quite low given that vaginal bleeding and fever were the only ones frequently mentioned yet there are others like reduced fetal movement, swelling of legs, hands, face, severe backache, convulsions and others.

On nutrition care during pregnancy, 52.3% of the mothers had moderate knowledge. ''I *was told at the clinic to eat a balanced diet but sometimes I could not afford to buy the various types of food and so I ate what was available at the time*'' a mother said. Household income and occupational status was found to be significantly associated with increased nutritional knowledge score in a study done in Malaysia (Lim et al., 2018) and this corroborates another study finding in Ethiopia which revealed that family income was an important factor in implementing nutrition knowledge given at the health facility. On the contrary, knowledge, attitude and practices were low in the study area (Tachbele, 2018).

5.1.3 Attitude of mothers on nutrition information in the Mother and Child Health Handbook

From the bivariate logistic regression analysis, the findings revealed that a positive increase in the level of agreement from one to five on whether breast milk alone is sufficient for 6 months for a baby aged 0-6 months was associated with good utilization of nutrition information in the mother and child health handbook by 1.68 times. This finding was statistically significant $p<0.004$ (COR, 1.68, 95% CI, 1.18-2.41). The finding agrees with another one done in China which showed that a mother's good knowledge and positive attitude played a key role in the whole process of breastfeeding (Hamze & Mao, 2019).

Some mothers however believe that the incessant crying of a baby signifies hunger and are therefore compelled to give other liquids to satiate the baby's hunger. A study done in Kenya showed that mothers perceived that a child is thirsty hence the need to give water or introduce herbal medicines for cultural purposes (Mututho & Kiboi, 2017).

Another study carried out in Tanzania reported that breastfeeding counselling during ANC visits had an influence on the mother's willingness to breastfeed. It showed that more than 91% of mothers attended ANC but only 39% pregnant and 25% post-partum women received breast feeding counseling (Maonga et al., 2016). This finding agrees with a Kenyan study also showed that individualized counseling of mothers can improve knowledge, correct misconceptions, knowledge on composition and benefits of breast milk (Gewa, 2016). The findings are similar to another study done in Ghana which showed that mothers who received counseling on EBF were over two times more likely to intend or practice EBF as compared to those who did not (Dun-Dery, 2016). In Abu Dhabi, being

married and having an income significantly increased the attitude towards breastfeeding (Mai et al., 2018). Furthermore, a mother's negative attitude regarding breast feeding had a significant association towards early cessation of EBF as shown in a study conducted in Sri Lanka (Rowel, 2018).

Also, those who were at the highest positive level of agreement in the Likert scale on whether complementary feeding should begin from 6 months of age were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to the lowest level, this finding was statistically significant $p<0.003$ (COR, 2.21, 95% CI, 1.31-3.71). Moreover, the respondents who agreed that complementary foods should be well balanced with nutrients that will support the growth of the child were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who didn't agree, this finding was statistically significant, $p<0.001$ (COR,2.46, 95% CI, 1.42-4.29). According to a study done in Indonesia, complementary feeding practices for children above six months was related to knowledge, perception, attitude, belief, skill of the mother and the home environment ((Blaney & Februhartanty, 2015). Another study done in Kenya revealed that giving fathers information on complementary feeding influences their support towards infant feeding resulting in positive outcomes (Dinga & Kiage, 2018).

On complementary feeding and continued breast feeding, respondents who were at the highest positive level of agreement in the Likert scale were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared

to those who were at the lowest level, and this finding was statistically significant, p<0.001 (COR,2.16, 95% CI, 1.39-3.36). This also applies to giving a child snacks in between meals with continued breastfeeding as the child grows. The mothers were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level, and this finding was statistically significant, p<0.015 (COR, 2.01, 95% CI, 1.14-3.55).

The study also revealed that the respondents who had a positive attitude on whether a sick child should breastfeed frequently and for longer periods were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who had a negative attitude towards the same, and this finding was statistically significant, p<0.019(COR,1.77, 95%CI, 1.10-2.85). It is recommended that a sick child should breastfeed more frequently and additional food given so as to maintain strength, reduce weight loss and enable them recover faster. The sick child should also be encouraged to eat since the appetite may be decreased due to the illness and therefore small frequent meals might stimulate appetite (*Maternal Infant & Young Child Nutrition Counseling Card,* 2019).

Furthermore, the individuals who agreed that it is safe for pregnant women to take IFAS throughout pregnancy were more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who strongly disagreed, and this finding was statistically significant, p<0.007 (COR,1.99, 95% CI, 1.21-3.25). This finding corroborates that of a study done in Kiambu, Kenya which showed that attitude

towards IFAS improved in pregnant mothers who were taught about its benefits and were given the supplies at the community level. It showed that there was positive change in beliefs, opinions and perceptions about IFAS (Kamau et al., 2019). Another study conducted in Ethiopia showed a positive association between maternal attitude and nutritional knowledge of pregnant women to their practices thus a positive attitude will most likely influence the uptake of IFAS (Tenaw, 2018). In addition to the two studies Alam et al. established that attitude and perception of pregnant women is based on the information they have which in turn determines their practices (Alam et al., 2015).

The respondents at the top level of agreement in the Likert scale on their attitude towards Vitamin A being important for the growth and development of young children were 2.37 times more likely to have a good utilization of the information in the mother and child health handbook as compared to those who were at the lowest level of the scale. Those who agreed that Vitamin A capsules should be given to children from 6 months to 5 years every 6 months for good health were 1.64 times more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level respectively. These findings were statistically significant at $p<0.018$ (COR, 2.37, 95% CI, 1.16-4.84), p-0.013 (COR,1.64, 95% CI, 1.11-2.42) and $p<0.035$ (COR,1.84, 95% CI,1.04-3.23), respectively. Findings in a study done in Nigeria showed that lack of awareness about the benefits of Vitamin A supplementation and a negative attitude towards VAS were barriers to receipt of vitamin A (Anjorin, 2020). A similar study in Libya showed that overall knowledge on VAS translates to a positive perception or attitude hence uptake of VAS (Abdulmalek, 2018).

Considering multivariate logistic regression, the respondents at the top level of agreement in the Likert scale who agreed that a pregnant woman should drink at least 8 glasses of water daily were 2.46 times, to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level. The MIYCN counseling cards recommend intake of at least 8 glasses of water by pregnant women to prevent dehydration and aid in digestion.

The respondents who agreed that complementary foods should be well balanced with nutrients that will support the growth of the child were 2.07 times more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level. Those who were in agreement that a young child who has started complementary feeding should breastfeed up to 2 years or beyond were 1.95 times more likely to have a good utilization of nutrition information in the mother and child health handbook as compared to those who were at the lowest level. These findings were statistically significant $p<0.042$ (AOR,2.46, 95%CI,1.03-5.86), $p<0.034$ (AOR,2.07, 95%CI,1.06-4.06) and $p<0.01$ (AOR,1.95, 95% CI, 1.17-3.26) respectively.

5.1.4 Level of utilization of nutrition information in the mother and child health handbook by the mothers of children below 5 years attending CWC in Kanduyi Sub County

The level of utilization of mother child health handbook was high at 61.7% of the respondents. The rest had low utilization indicating that they did not understand the

importance of the health book. These findings are similar to a study in Indonesia which showed the level of utilization being 56.3%

5.1.5 Factors affecting utilization of nutrition information in the Mother and Child Health Handbook

Apart from the factors mentioned above namely socio-economic and demographic characteristics, knowledge and attitude that affect utilization of nutrition information in the Mother and Child Health Handbook, other factors have been widely mentioned. One of these factors concerns local cultural taboos which dictate the types of foods a pregnant mother or a child can or cannot eat. This may in the long run affect the nutritional status of the mother or child if the food provides nutrients which are beneficial and result to malnutrition or nutritional deficiencies. A study done in South Africa corroborates these findings where the pregnant woman was not allowed to eat meat, fish and eggs. Most of these practices were passed from one generation to another (Chakona & Shackleton, 2019).

The results from another study done in Ethiopia showed that pregnant women had sub optimal dietary practices due to cultural prohibitions. The women were found to frequently consume cereals, legumes and oil as compared to animal source foods (Yeshalem, 2020). In Brazil, research findings also showed that cultural beliefs are strongly associated with pregnant women food patterns and eating habits which in turn affect the nutrition status of the mothers and their babies (Rocío de Diego-Cordero., 2020).

The health seeking behaviour of people has also been shown to affect utilization of health services. A study done in Kenya showed that motivation to seek medical assistance resulted from partner support as well as the extended family. This is quite common in social networks and closely knit family units and linkages synonymous with the African culture. On the other hand, some caregivers expressed dissatisfaction on service delivery such as lack of or inadequate supplies in health facilities, slow pace of services and improper assessment of children as reasons for not seeking health services. In rural areas, the distance to the health facilities was also found to affect utilization of health services. People who lived nearer the facilities were more likely to seek health services as compared to those who had to walk or travel for long distances (Wambui, 2018). In some cases, if a child is born without complications and with acceptable or normal weight, the mother is not likely to take the child to a health facility as compared to that who was born prematurely or with low weight. These were findings in 31 countries in sub Saharan Africa (Yaya, 2020).

5.1.6 Summary of key findings

Majority of the mothers were married, and had attained secondary level of education. The main source of livelihood was from casual and informal work. Gauging the knowledge of the mothers and their attitude towards the nutrition information in the mother and child health handbook was done so as to determine the utilization of the same information. The knowledge level on duration of breastfeeding, when to start complementary feeding, feeding a sick child more times and importance of IFAS was high (> 70%) while knowledge on nutrition care during pregnancy, danger signs in pregnancy and supplements given to children was moderate (41-69%).

Most of the respondents agreed that the knowledge in the mother and child health handbook is important and useful in in assisting in understanding the child health performance and growth. The level of utilization of mother child health handbook was high at 61.7% of the respondents. Those found to slightly or not utilize the nutrition information in the mother and child health handbook were 5.8% and 1.9%, respectively.

A significant association was seen between a high level of knowledge on the indicators and the utilization of the nutrition information in the mother and child health handbook by the mothers. Those who had moderate knowledge and scored low in attitude had a lower level of utilization of the nutrition information in the mother and child health handbook. Additionally, the mothers with a high knowledge level and positive attitude were able to explain why they adhere to the nutrition information in the mother and child health handbook compared to those with low knowledge and poor attitude. There was however no significant relationship between the number of children in a household and utilization of nutrition information in the mother and child health handbook.

5.2 CONCLUSION

Majority of the mothers were married, and had attained secondary level of education. The main source of livelihood was from casual and informal work. The study findings show that more than half of the mothers did not know about the supplements given to children aged 6-59 months. It was also noted that majority of the mothers had moderate knowledge regarding danger signs as well as nutrition care in pregnancy. Another notable finding was

that more than half of the mothers did not know that a child's weight and height is used to determine whether a child is growing well or not. The practice in most health facilities as far as growth monitoring is concerned is only taking of the weight. On the other hand, low height versus weight could mean stunting and thus health care providers at the growth monitoring section could educate mothers on the same.

The findings from the study revealed that mothers who had a positive attitude were more likely to utilize nutrition information in the mother and child health handbook since they felt the information was beneficial. The level of utilization of mother child health handbook was high at 61.7% of the respondents with only 1.9% not utilizing

From this study, a significant relationship was noted between knowledge and attitude of the mothers and their level of education, occupation and source of income. This shows that the level of education and income determine utilization of nutrition information in the mother and child health handbook. The null hypotheses 'there is no significant relationship between socio-economic and demographic characteristics and utilization of nutrition information by mothers with children below 5 years' is therefore rejected. The study further revealed that there was a significant relationship between knowledge and utilization of the nutrition information in the MCH handbook by the mothers. Therefore, the second hypothesis that 'there is no significant relationship between knowledge and utilization of the nutrition information in the MCH handbook by mothers with children aged below 5 years attending CWC in Kanduyi sub- county' is rejected.

Therefore, the third hypothesis that 'there is no significant relationship between the attitude and utilization of the nutrition information in the MCH handbook by mothers of children aged below 5 years attending CWC in Kanduyi sub- county' is also rejected. This study revealed that there was a relationship between knowledge and education level of the mothers. There was however no relationship between the number of children in a household and the utilization of nutrition information in the mother and child health handbook.

5.3 RECOMMENDATIONS

5.3.1 Recommendations for practice

1. The health care workers should enhance health education sessions at the child welfare clinics as well as the ANC so that mothers can get knowledge on all aspects of health including nutrition. This can be done by encouraging the mothers to go through the handbook during the session so that they can easily find the sections and refer to them while at home.

2. The CHVs also have a role to play in assisting the mothers understand the information in the mother and child health handbook as they conduct their routine household visits. They can also follow up pregnant mothers to ensure that they keep the clinic appointments and understand the importance of doing so. This should also apply to children who are eligible for supplementation, growth monitoring, complementary feeding and other health related services.

3. The mothers can be encouraged to share what they are practising at home through demonstrations, role plays or discussions among themselves with the support of a

health care worker to establish if they are putting in to practice what they have learnt from the MCH handbook.

5.3.2 Recommendations for policy

1. The national and the county governments together with the partners and stakeholders in health should consider supporting frequent radio and television spots so that information in the Maternal and Child Health handbook can be passed to the larger population.

5.3.3 Recommendations for further research

1. This study recommends further research on the effect of using audio visual media in health education sessions in addition to the handbook for mothers at CWC as well as ANC.

2. Further research can also be done to determine factors affecting or influencing the father's/ husband's support to the pregnant mothers and young children.

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APPENDICES

APPENDIX I: INFORMED CONSENT

Introduction

Dear participant,

My name is Juliet Walukana. I am a post graduate student at Kenyatta University undertaking a Master of Science degree in Food, Nutrition and Dietetics. I am conducting a study on the maternal knowledge, attitude and utilization of nutrition information in the mother and child health handbook in Kanduyi sub county, Bungoma County, Kenya

Study procedures

I am going to ask you some questions regarding knowledge, attitude and utilization of nutrition information in the MCH handbook. Questions on your socio-economic and demographic factors will also be asked. All the responses that you will give will be recorded on the questionnaire. The interview will take 20-30 minutes.

Benefits and compensation

There will be no direct individual benefits or compensation that will be gained by participating in this study. Your participation is however very important since it will assist the ministry of health both at the National and County level in coming up with ways that will help mothers of children below 5 years to better utilize the nutrition information in the MCH booklet. This will then be useful to the community at large.

Risks

All the procedures that will be performed will be safe and thus no risks are associated with this study.

Voluntary participation

Participation in this study is voluntary and you may choose not to respond to any of the questions. You may also opt out of the study without any consequences. However, your participation will be of great importance to this study. You are free to seek clarification on any question that is not clear in this study. I will greatly appreciate your participation in responding to the questions that you will be asked.

Confidentiality

The responses you are going to give will be completely confidential and your name will not be written anywhere in the questionnaire. In place of your name, a code will be used. The information you are going to give will only be used for this study and will not be discussed with other people other than those concerned with the study. After the study, the questionnaires will be coded and locked in a cabinet to prevent accessibility by unauthorized persons.

Participant's statement

I agree……. or disagree…….to participate in this study

The information concerning this study has been well explained to me and my confidentiality well assured. My participation will be voluntary and no incentives will be offered to me.

Participant's code……Signature/thumbprint…… Date……

Interviewer's statement

I, the undersigned, have explained to the participant the procedures involved in this study and the participation processes in a simple and clear language understandable to the interviewee.

Interviewer's name: Signature……. …. Date: …….

Contact Person

If you have any question(s), or concern you may contact:

Juliet Walukana

Mobile Number: 0718532782

Email: jluswetis@yahoo.com

First Supervisor:

Dr. Peter Chege

Department of Food, Nutrition & Dietetics

Kenyatta University

Mobile Number: 0722642356

Second Supervisor:

Dr. Winfreda Nyamota

Department of Food, Nutrition & Dietetics

Kenyatta University

Mobile Number: 0721347144

And

Kenyatta University Ethical Review Committee Secretariat on chairman.kuerc@ku.ac.ke, secretary.kuerc@ku.ac.ke, secretariat.kuerc@ku.ac.ke:

Telephone number: +254 (20) 8714388

APPENDIX II: RESEACHER ADMINISTERED QUESTIONNAIRE

SOCIO-ECONOMIC AND DEMOGRAPHIC CHARACTERISTICS OF THE MOTHER OF A CHILD BELOW 5 YEARS ATTENDING CWC

Date of Interview……

	QUESTION	**RESPONSES**	**CHOICES**
B1	Gender	Male Female	1 2
B2	Age	< 18 years 18 – 35 years 36 – 45 years > 45 years	1 2 3 4
B3	Marital status	Single Married Divorced/Separated	1 2 3
B4	Number of children	0 1 2- 4 5 and above	1 2 3 4
B5	Occupation	Formal employment Informal employment (e.g. casual labourer)	1 2

		Self-employed (e.g. small scale trading, kiosk owner, vegetable/ fruit vendor Farmer Any other (specify) None	3 4 5 6
B6	Education level	None Primary Secondary Tertiary (middle level colleges) University	1 2 3 4 5
B7	What is your religious affiliation?	Christian Muslim Any other None	1 2 3 4
B8	How many people do you live with in your household?	0 1 2- 4 5 and above	1 2 3 4
B9	How many children are below 5 years of age?	None 1	1 2

		2 3 or more	3 4
B10	What is the main source of family income?	Formal employment Informal salaried employment Farming Small scale business Any other	1 2 3 4 5
B11	What is your average monthly income in Kshs.?	< Kshs. 5, 000 Kshs. 5, 000 to 10, 000 Kshs. 10,001 to 15, 000 Kshs. 15,001 to 20,000 Kshs. 20, 001 to 25,000 > Kshs. 25,000	1 2 3 4 5 6

MOTHER'S KNOWLEDGE ON THE NUTRITION INFORMATION IN THE MCH HANDBOOK

	Questions	**Responses**	**Choices**
	Section 1: Familiarization with the MCH Handbook		
C1	Have you been taken through the information in the MCH handbook?	Yes No DNK	1 2 3
C2	If yes in C1, by whom? (Specify)	Doctor Nurse Nutritionist Any other	1 2 3 4
C3	If yes in C 1, which areas in the handbook were covered? (Don't read out the choices)	Exclusive breastfeeding Care of mother and baby after birth Monthly growth monitoring of children < 5 years Vitamin A supplementation Deworming Feeding recommendations for children < 5 years	1 2 3 4 5 6
	Section 2: Knowledge		

C4	Which supplements are given to pregnant women	Iron and folic acid Iron only Folic acid only Other DNK	1 2 3 4 5
C5	Is IFAS important during pregnancy?	Yes No DNK	1 2 3
C6	Name some of the danger signs during pregnancy (Do not read out the choices)	Severe headache Paleness Vaginal bleeding Severe abdominal pain Reduced/ no fetal movements Convulsions Fever	1 2 3 4 5 6 7
C7	Mention any examples of nutrition care during pregnancy (let respondent give examples)	Eat a balanced diet Eat an extra meal per day Eat plenty of fruits and vegetables Drink at least 8 glasses of water per day	1 2 3 4

		Take IFAS for more than 90 days	5
C8	Do you know the meaning of EBF?	Yes No DNK	1 2 3
C9	Do you know the recommended duration of EBF?	Yes No DNK	1 2 3
C10	Do you know the age at which a child should start complementary feeding?	Yes No DNK	1 2 3
C11	Do you know the foods suitable for complementary feeding?	Yes No DNK	1 2 3
C12	If Yes in C8 above, give examples (do not mention the choices)	Rich in protein Carbohydrates Vegetables and fruits Fats	1 2 3 4

C13	Should breastfeeding continue up to two years and beyond?	Yes No DNK	1 2 3
C14	Should young children should be encouraged to feed even if they refuse to eat?	Yes No DNK	1 2 3
C15	Should young children be fed more times during and after illness?	Yes No DNK	1 2 3
C16	Do you know the supplements given to children from 6 months to 5 years?	Yes No DNK	1 2 3
C17	If yes in C16 above, give the name	Vitamin A Any other DNK	1 2 3
C18	Do you know how often the supplements are given to the children? (interval)	Yes No DNK	1 2 3
C19	If yes in C18 above, mention the time interval	After every month After every 6 months Yearly	1 2 3

		Other	4
C20	How can you know or tell if your child is growing well?	Taking child's weight only Taking child's weight and height Other response	1 2 3

MOTHER'S ATTITUDE ON THE NUTRITION INFORMATION IN THE MCH HANDBOOK

		RESPONSE	CHOICES
	Nutrition during pregnancy		
D1	A pregnant woman should eat an extra meal everyday	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D2	A pregnant woman should eat plenty of fruits and vegetables	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D3	A pregnant woman should drink at least 8 glasses of water daily	Strongly disagree Disagree Neither agree nor disagree	1 2 3

		Agree Strongly agree	4 5
	Infant and Young child feeding		
D4	Breast milk alone is sufficient for 6 months for a baby aged 0 – 6 months	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D5	It is possible to do exclusive breastfeeding for 6 months	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D6	HIV positive mothers are not allowed to breastfeed	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D7	Complementary feeding should begin from 6 months of age	Strongly disagree Disagree Neither agree nor disagree Agree	1 2 3 4

		Strongly agree	5
D8	Complementary foods should be well balanced with nutrients that will support the growth of the child	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D9	A young child who has started complementary feeding should breastfeed up to 2 years or beyond	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D10	Give the child snacks in between meals and continue breastfeeding as the child grows	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D11	A sick child should breastfeed frequently and for longer periods	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
	Micronutrient supplementation		

D12	It is safe for pregnant women to take IFAS throught pregnancy	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D13	Vitamin A is important for the growth and development of young children	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D14	Vitamin A capsules should be given to children from 6 months to 5 years of age	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5
D15	It is important to give young children vitamin A every 6 months for good health	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree	1 2 3 4 5

LEVEL OF UTILIZATION OF NUTRITION INFORMATION BY MOTHERS OF CHILDREN BELOW 5 YEARS ATTENDING CWC

	Nutrition information	**Response**
E1	How many times did you attend ANC clinic when you became pregnant?	Once Twice to three times Four times
E2	How many IFAS tablets did you take per day?	None One Two and more
E3	How many extra meals did you take per day?	No extra meal 1 2
E4	How many glasses of water did you take per day?	None 1-4 4-7 8 or more
	Breastfeeding	
E5	Was this child initiated on breastfeeding within 1 hour of delivery?	Yes Know DNK

E6	After delivery, for how many months was the child fed on breast milk alone?	< 6 months 6 months > 6 months
	Complementary feeding	
E7	When was the child started on complementary foods?	Before 6 months After 6 months
E8	(for a child above 6 months on CF) How many times is the child fed per day?	Once Twice More than twice
	Growth monitoring	
E9	How often is the child taken to the health facility for growth monitoring?	Monthly After 2 months or more
	Vitamin A supplementation and deworming	
E10	How often is the child taken to the health facility for vitamin A supplementation and deworming?	Monthly After every 6 months After more than 6 months

APPENDIX III: FOCUS GROUP DISCUSSION GUIDE

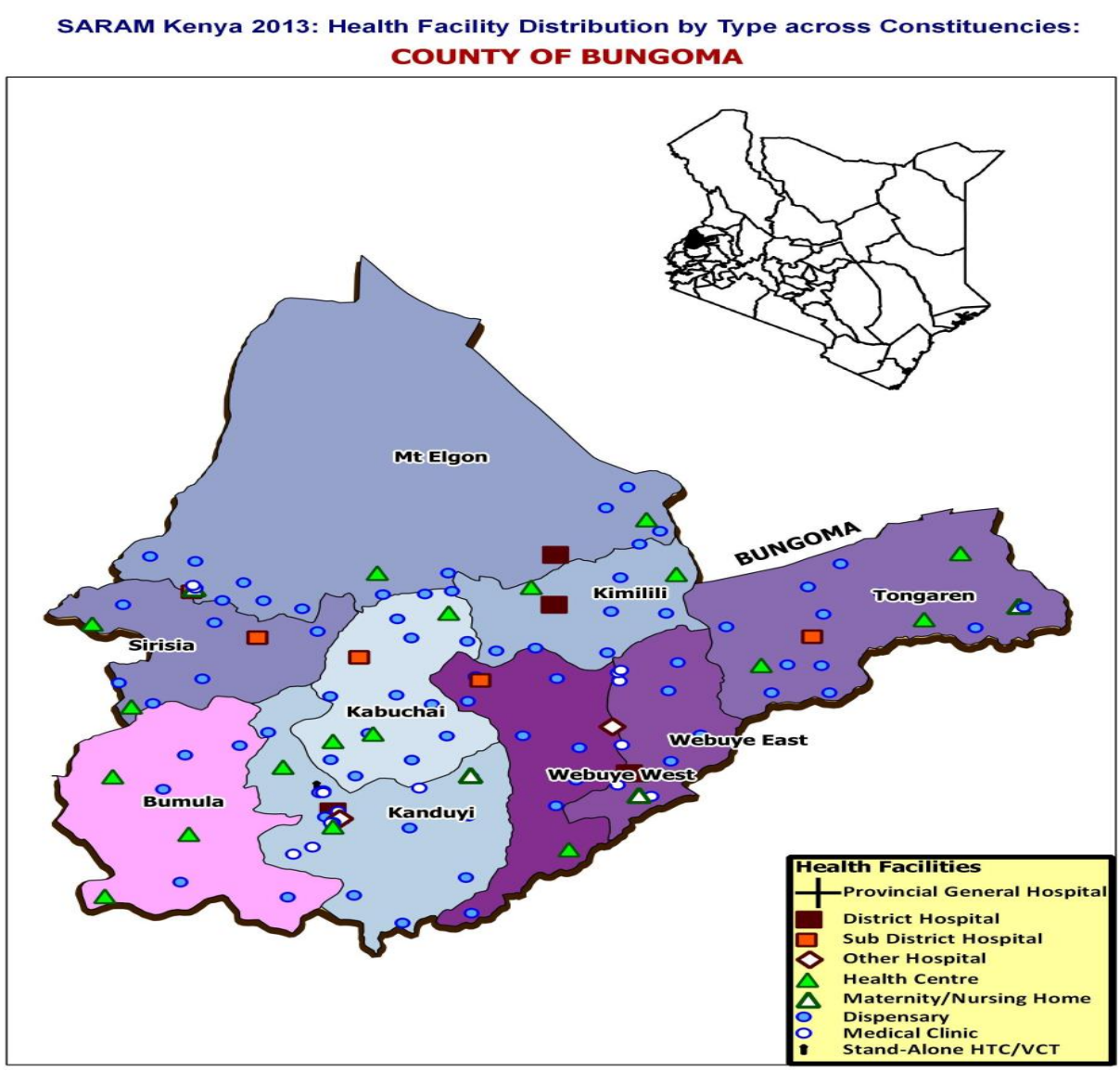
1. Have you gone through the nutrition information in the MCH handbook?
2. During your ANC visits:
    a) Was your weight taken and do you think it was of any importance?
    b) Were you given IFAS? If yes, do you think it was beneficial to you?
    c) For how long did you take the tablets?
3. Did you receive any information on maternal nutrition?
4. What are the common foods that pregnant women eat in this region?
5. Are there foods that these women are not supposed to eat?
6. What challenges did you face in getting information on nutrition during pregnancy?
7. Whom would you consult if you had a question concerning your pregnancy?
8. For how long does a baby in this community breastfeed before being started on other foods?
9. At what age is a child introduced to other foods apart from breast milk?
10. Please share with me some information on:
    i) The types of food that are given to these children
    ii) Examples of foods that the children are not allowed to eat
    iii) Who feeds the children
    iv) How many times do the children eat in a day?
11. To your understanding, what is a balanced diet?
12. Where do you get information on complementary feeding for children above 6 months?
13. Do you get any challenges in giving complementary foods to your children?
14. In your own opinion, do the children above 6 months need vitamin A supplements? If yes why?
15. Is it important to bring your children to the health facility for growth monitoring? If yes, why?

16. Does the health worker give you feedback on the progress of your child regarding his/ her weight?

APPENDIX IV: KEY INFORMANT INTERVIEW WITH HEALTH WORKERS

1. How do you pass nutrition information to mothers or caregivers of children below 5 years attending clinic in your facility?
2. Have you heard a chance to go through the nutrition information in the MCH handbook?
3. Do you experience any challenges in passing this information to mothers of children below 5 years who come to your MCH? If yes, please give examples.
4. In your opinion, is it important for the mothers to have knowledge on the nutrition information in the MCH handbook?
5. In your opinion, do you think mothers with children below 5 years have enough nutrition information? If no, which areas do you think need to be emphasized on?
6. Do you give feedback on the nutrition status of children below 5 years to their mothers after attending to them at the CWC?
7. What are your views on the nutrition information in the MCH handbook?

APPENDIX V: MAP OF KANDUYI SUB COUNTY



APPENDIX VI: ETHICAL CLEARANCE

Kenyatta University
P.O Box 43844-00100
Nairobi-Kenya

REF: KU/ERC/APPROVAL/VOL1/1 Date: 31st January, 2020

Juliet Walukana
P.O Box 43844-00100
NAIROBI

Dear Ms. Walukana

RE: MATERNAL KNOWLEDGE, ATTITUDE AND UTILIZATION OF NUTRITION INFORMATION IN THE MOTHER AND CHILD HEALTH HANDBOOK IN BUNGOMA COUNTY, KENYA

This is to inform you that ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** has reviewed and approved your above research proposal. Your application approval number is **PKU/2011/I1159.** The approval period is ***31st January, 2020- 31st January, 2021.***

This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE.***
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***KENYATTA UNIVERSITY ETHICS REVIEW COMMITTEE.***

APPENDIX VII: AUTHORIZATION LETTER BY NACOSTI

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 880022

Date of Issue: 31/March/2020

RESEARCH LICENSE

This is to Certify that Ms.. JULIET NAMIKOYE WALUKANA of Kenyatta University, has been licensed to conduct research in Bungoma on the topic: MATERNAL KNOWLEDGE, ATTITUDE AND UTILIZATION OF NUTRITION INFORMATION IN THE MOTHER AND CHILD HEALTH HANDBOOK IN BUNGOMA COUNTY, KENYA for the period ending : 31/March/2021.

License No: NACOSTI/P/20/4291

880022

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

APPENDIX VIII: PERMIT FROM THE MINISTRY OF INTERIOR

REPUBLIC OF KENYA

THE PRESIDENCY
MINISTRY OF INTERIOR AND COORDINATION OF NATIONAL GOVERNMENT

Telephone: 055- 30326
FAX: 055-30326
E-mail: ccbungoma@yahoo.com
When replying please Quote

REF:ADM.15/13/VOL.111/70

Office of the County Commissioner
P.O. Box 550 - 50200
BUNGOMA

1st February , 2021

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION – Ms. JULIET NAMIKOYE WALUKANA

Reference is here made on the letter Ref; NACOSTI/P/20/4291 dated 31st March, 2020 from the National Commission for Science, Technology and Innovation on the above subject.

The bearer of this letter Ms. Juliet Namikoye Walukana of Kenyatta University, has sought authority to carry out research on, **"MATERNAL KNOWLEDGE. ATTITUDE AND UTILIZATION OF NUTRITION INFORMATION IN THE MOTHER AND CHILD HEALTH HANDBOOK''** in Bungoma county" for a period ending 31st March, 2021.

Authority is hereby granted for the specific period and any assistance accorded to her in this pursuit would highly appreciated by this office.

Stephen N,Wamalwa
For: County Commissioner
BUNGOMA COUNTY

APPENDIX IX: PERMIT FROM THE COUNTY DIRECTOR OF EDUCATION

REPUBLIC OF KENYA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
State Department of Basic Education and Early childhood – Bungoma County

When Replying please quote
e-mail: bungomacde@gmail.com

County Director of Education
P.O. Box 1620-50200
BUNGOMA

Ref No: BCE/DE/19/VOL.II1/183

Date: 1st February 2021

TO WHOM IT MAY CONCERN

RE: AUTHORITY TO CARRY OUT RESEARCH – MS. JULIET NAMIKOYE WALUKANA NACOSTI/P/20/4291

The bearer of this letter Ms. Juliet Namikoye Walukana of Kenyatta University has been authorized to carry out research on "***Maternal Knowledge, Attitude and Utilization of Nutrition Information in the Mother and Child Health Handbook in Bungoma County, Kenya***" for a period ending 1st February 2022.

Kindly accord her the necessary assistance

CHRISTINE OWINO
For: COUNTY DIRECTOR OF EDUCATION
BUNGOMA COUNTY

APPENDIX X: PERMIT FROM THE COUNTY DIRECTOR OF HEALTH

REPUBLIC OF KENYA

COUNTY GOVERNMENT OF BUNGOMA
MINISTRY OF HEALTH
OFFICE OF THE COUNTY DIRECTOR
HEALTH

Telegrams: "MEDICAL", BUNGOMA
Telephone: (055) 30230 Fax: (055) 30650
E-mail: docakatu@yahoo.com
When replaying please quote

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. BOX 18 – 50200
BUNGOMA

OUR REF: CG/BGM/CDH/RESRC/VOL.1 **DATE:** 9TH FEBRUARY, 2021

Juliet Walukana
P.O. Box 18 – 50200
Bungoma

RE: PERMISSION TO CARRY OUT RESEARCH IN BUNGOMA COUNTY

Following your application for authority to carry out research in **"Maternal Knowledge, Attitude and Utilization of Nutrition Information in the Mother and Child Health Handbook in Kanduyi Sub County"**, I am pleased to inform you that you have been authorized to undertake the research for the period ending 31st March, 2021.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the County Director of Health. The soft copy of the same should be submitted through the online Research Information system.

Thank you.

COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY
P. O. Box 18-50200
BUNGOMA

DR. JOHNSTON AKATU
COUNTY DIRECTOR OF HEALTH
BUNGOMA COUNTY

APPENDIX XI: PERMIT FROM MEDICAL OFFICER OF HEALTH KADUYI

REPUBLIC OF KENYA

MINISTRY OF HEALTH

Telegrams: "MEDICAL", BUNGOMA
Telephone: 055-30230
E-mail: lusikesikolia@gmail.com

REF: SCMOH/RESRC/1 VOL. 1 (2)/2021

MEDICAL OFFICER OF HEALTH,
KANDUYI SUB COUNTY,
P. O. BOX 2495-50200
BUNGOMA

9TH FEBRUARY, 2021

Juliet Walukana
P.O Box 18-50200
Bungoma

RE: PERMISSION TO CARRY OUT RESEARCH IN KANDUYI SUB COUNTY.

Following your application for permission to carry out research in 'Maternal knowledge, attitude and utilization of Nutrition information in the Mother and Child Health Handbook in Kanduyi Sub county', at Bungoma county referral hospital, Mechimeru health centre, Bulondo dispensary, Kibabii health centre and St. Damiano hospital, I am pleased to inform you that you have been granted permission to undertake the research for the period ending 31st March, 2021.

Kindly note that, as an applicant licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall be required to deposit a copy of your research findings to the County Director of Health, Bungoma County and submit a soft copy of the same to the online Research Information System.

Thank you.

DR. ROSE LUSIKE SIKOLIA
SUB COUNTY MOH
KANDUYI.