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VITAMIN A SUPPLEMENTATION UPTAKE BY MOTHERS AND CAREGIVERS OF CHILDREN UNDER-FIVE IN MUTARE RURAL DISTRICT, ZIMBABWE, 2020

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN THE COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

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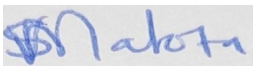
Abstract

Micronutrient deficiencies are a problem of public health significance globally and they contribute significantly to stunting, poor health outcomes and impaired development. One of the most prevalent micronutrient deficiencies affecting children in developing countries is Vitamin A deficiency. Preventive vitamin A supplementation is provided twice yearly to children below 5 years of age as part of a package of child survival services in Zimbabwe. Despite vitamin A supplementation having been decentralized to village health workers Mutare rural district has not managed to reach the recommended 85% coverage as guided by World Health Organisation for the 12-59 months age group. Vitamin A supplementation in Mutare rural was at 31% between June and December 2020. This study sought to establish factors influencing low Vitamin A supplementation uptake among children 12-59 months in Mutare rural district. A 1:2 unmatched case control study was carried out in Mutare rural. The source population for this study where mothers and caregivers of children 12-59 months resident in Mutare rural district. A sample size of 264 participants was calculated using Epi info 7.2.4.0. Participants were identified from the village health worker Zimbabwe expanded program in immunization register for cases and controls were randomly picked from the same village as cases. Data was collected using an interviewer administered structured questionnaire. Epi info version 7.2.4.0 was used for data analysis. The results of this study showed that the mean age for cases was 28 while the mean age for the controls was 29 the combined mean age was 28years. Most of the primary respondents in this study were older than 30 years in both cases and controls with thirty-eight (43%) of the cases being older than 30 years and eighty-seven (49%) of the controls being older than 30 years. The age group 15-19 had the least number of respondents with seventeen (19%) and eighteen (10%) for cases and controls respectively. The majority of the caregivers were married for both cases and controls with seventy-five (85%) of the cases being married and one hundred and fifty-five (88%) of the controls being married. A multivariate analysis showed age of child in months [AOR = 1.9, 95% CI (1.17 – 5.33)], knowledge on how often vitamin A supplementation should be given to a child [AOR = 18.77, 95% CI (5.13 – 21.21)], perception on the importance of vitamin A supplementation [AOR = 11.8, 95% CI (1.03 – 13.41)], religion [AOR = 2.55, 95% CI (2.01 –5.32)] and wealth index [AOR = 16.06, 95% CI (5.71 – 22.56)] were statistically significant predictors of uptake of vitamin A supplementation. Ministry of health and Child Care needs to share awareness messages on the importance of Vitamin A targeting the apostolic religion church leadership to review their religious doctrines to support child health as well as having village health worker conducting door to door visits to give vitamin A supplementation at the household level.

Keywords: Vitamin A supplementation, children under 5, Mutare rural

Declaration Page

I declare that this dissertation is my original work except where sources have been cited and acknowledged. The work has never been submitted, nor will it ever be submitted to another university for the award of a degree



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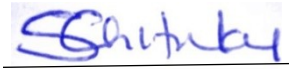

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Dedication

I started school nursing my first born and now as I complete, I am nursing my daughter it hasn't been any easy road but required dedication hard work and perseverance. I dedicate this dissertation to my children I pray you will also reach and surpass this level.

List of abbreviations and Acronyms

EPI- Expanded Program in immunizations

FCH- Family Child Health

MoHCC- Ministry of Health and Child Care

NIDs- National Immunization days

UN- United Nations

UNICEF – United Nations International Children's Education Fund

VA - Vitamin A

VAD - Vitamin A Deficiency

VAS - Vitamin A Supplementation

VHW- Village Health Worker

WHO - World Health Organization

ZEPI- Zimbabwe Expanded Program on immunization

Operational Definitions of Terms

Supplementation: Provision of a specified dose of nutrient preparation which may be in form of a tablet, capsule, oil solution or modified food, for either treating an identified deficiency or prevention of the occurrence of such deficiency in an individual or a community (World Health Organization [WHO] 2011)

Supplementation Coverage: The proportion of children of a given age in a particular location receiving Vitamin A supplementation. (WHO, 2011)

Caregiver -A person who is very closely attached to the child and responsible for their daily care and support. This includes mothers, aunt, and grandmothers

Vitamins- Are essential micronutrients required for the proper functioning of the body, growth, and development

Under- five- a child below the age of 59months

Table of contents

List of tables

List of figures

List of appendices

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Micronutrient deficiencies are a problem of public health significance globally and they contribute significantly to stunting, poor health outcomes and impaired development. One of the most prevalent micronutrient deficiencies affecting children in developing countries is Vitamin A deficiency (VAD) (Wirth et al., 2017). The United Nations Children's Education Fund (UNICEF) State of the World's Children report on Vitamin A supplementation database estimated that between 1995 and 2005, 190 million pre-school aged children had Vitamin A deficiency as defined by serum retinol level <0.7µmol/L while 5.17 million preschool aged children had vitamin A deficiency as defined by night blindness.

Global commitment for vitamin A supplementation programs is declining. Vitamin A supplementation is a cost-effective strategy for child survival however what is worrying is that the decline in vitamin A supplementation coverage is also happening in contexts where the program is critically needed. An analysis published in 2018 on the UNICEF global vitamin A supplementation coverage database demonstrated that annual coverage with two doses of vitamin A dropped dramatically in 2016 and that the drop was concentrated in populations exhibiting high child mortality rates and therefore most likely to benefit from the vitamin A supplementation program.

Further to that the Global Alliance to Vitamin A (GAVA) supplementation in 2016 estimated that globally the epidemiological patterns of under 5 deaths have shifted with neonatal mortality representing a greater proportion of child deaths in the last two decades. The number of deaths in children over six months remains too high reaching a million in sub-Saharan Africa in 2015. In

the absence of vitamin, A supplementation these deaths could have been higher. Despite the high deaths in under 5 children a few were as a result of measles. Vitamin A deficiency remains a pervasive problem in sub-Saharan Africa. (GAVA, 2016).

A child with vitamin A deficiency faces 25% greater risk of dying from several childhood diseases such as measles, malaria, or diarrhea. Increasing evidence now shows that improving vitamin A status among children under the age of 5 increases their chances of survival by as much as 30%. Vitamin A is very crucial in the treatment of malnutrition. Supplementation of vitamin A reduces overall child mortality by 23%, with a 50% reduction for those infected with measles. A study conducted by (Bushra Chaudry, Hajat & Rizkallah, 2018) showed an increased risk of mortality in vitamin A deficient children, with a relative risk of 1.5 for diarrhea and 1.4 for measles, the study further showed that vitamin A deficiency (VAD) increases vulnerability to other disorders such as iron deficiency anemia.

The World Health Organization (WHO) recommends that all children aged 6–59 months should receive supplements if they live in a community where vitamin A deficiency is a public health problem. These are communities where the prevalence of night blindness is ≥ 1% in children aged 24–59 months, or where the prevalence of vitamin A deficiency is ≥ 20% in infants and children aged 6–59 months (Imad, Bhutta, Herzer & Mayo-Wilson, 2017). Zimbabwe was categorized by the World Health Organization (WHO) as being at high risk of vitamin A deficiency in 1997. A micronutrient survey was conducted in Zimbabwe in 1999. The survey showed a 35.8% prevalence of vitamin A deficiency among young children (aged 6-59months) and 18% among school going children. The results of the 1999 micronutrient survey, which showed high levels of vitamin A deficiency in Zimbabwe, led to the country adopting WHO

recommendations for vitamin A supplementation in children (Dube, Makoni, Nyadzayo & Covic, 2014).

1.2 Background of the study

Sommer (1993), notes that Vitamin A was first discovered in 1913.Vitamin A deficiency was then associated with animal models and case reports with stunting, infection, and ocular changes (xerophthalmia) resulting in blindness. Visual consequences of vitamin A deficiency dominated clinical interest in the early 1980s. McLean et al., (2020) conducted a longitudinal prospective study of risk factors contributing to vitamin A deficiency and xerophthalmia the study revealed that a close, dose-response relationship between the severity of mild preexisting vitamin A deficiency and the subsequent incidence of respiratory and diarrheal infection (relative risk, 2.0-3.0) and, most dramatically, death (3.0-10.0) exists. Subsequent community-based prophylaxis trials of varying design confirmed that vitamin A supplementation of deficient populations could reduce childhood (1-5 years old) mortality by an average of 35%. Concurrent hospital-based treatment trials with vitamin A in children with measles revealed a consistent reduction in measles-associated mortality in Africa of at least 50%. It is now estimated that improving the vitamin A status of all deficient children worldwide would prevent 1-3 million childhood deaths annually.

The burden of Vitamin A deficiency is highest in low-resource settings where poor-quality diets provide inadequate intakes of vitamin A and high rates of infection and illness perpetuate chronic undernutrition (Kamau, Makokha, Mutai & Mugoya, 2012). A study conducted by Berde, Bester &Kruger (2019), showed that the prevalence of vitamin A deficiency was highest in sub-Saharan Africa at (48 %) and has remained stagnant for almost 20 years. Further, in 2019, vitamin A

deficiency accounted for 2 % of all deaths in children under 5 years of age in sub-Saharan Africa.

WHO recommends initiating vitamin A supplementation programs for children 6–59 months of age in settings where vitamin A deficiency is a public health problem, to reduce child morbidity and mortality. Simultaneously, countries are expected to develop and implement interventions that sustainably increase availability and consumption of nutrient-rich foods and improve overall public health conditions to eliminate vitamin A deficiency , so that vitamin A supplementation will no longer be required. This is because efforts to ensure the population can meet their dietary requirements through available and affordable nutritious food obviates the need for supplementation, which is a short- term intervention to mitigate the impact of vitamin A deficiency on mortality. While the relationship between vitamin A deficiency and mortality is not linear, evidence demonstrate an association between high vitamin A deficiency prevalence and high child mortality. Therefore, once vitamin A nutrition through the diet is adequate, vitamin A supplementation programs can be scaled back. (McLean, Klemm, Subramaniam, Greig, 2020)

In Zimbabwe, the National Vitamin A Supplementation Programme was initiated in 2001 as a public health strategy under the auspices of primary health care following the 1999 micronutrient survey results. In 2002, with funding from the United Nations Children's Fund (UNICEF), Vitamin A supplementation was integrated into the national immunisation days (NIDs) and the Expanded Programme on Immunisation (EPI) to maximize the number of children who receive vitamin A supplementation (Dube et al.,2014).

Despite these efforts in 2003 a National Nutrition and EPI survey was conducted, and it found that the vitamin A capsules distributed through the NIDs, and EPI had reached only 46% of the

targeted population. A food and nutrition survey conducted in 2004 found that up to 90% of children in remote rural areas did not receive vitamin A supplementation. Previously, vitamin A supplements were only administered at health facilities by professional healthcare workers. In 2015 with funding from Johanniter and additional support from Maternal and Child Health Integrated Project (MCHIP), the Ministry of Health and Child Care in Zimbabwe piloted a strategy in Manicaland Province in which vitamin A supplements were administered in the community by VHWs in addition to continuing facility-based administration. The aim was to capture all children in hard-to-reach areas with Vitamin A supplementation. The program was scaled up to include all the districts in the country 2018.

To-date Vitamin A supplementation has been decentralized to Village Health Workers, but it is still not reaching the set targets (Dube et al.,2014). Preventive vitamin A supplementation is provided twice yearly to children below 5 years of age as part of a package of child survival services. Children between 6 to 11 months are supplemented with single dose of 100,000 International Units (IU) and children of 12-59 months are supplemented with a single dose of 200,000IU every 4-6 months this is in accordance with WHO guidelines for Vitamin A supplementation. According to the implementation plan for Zimbabwe VHWs get supplies of Vitamin A capsules from clinics according to their caseloads for administration to children 6-59 months in their respective villages. Administration of Vitamin A by VHWs is done on a door-to-door basis or at a central meeting point within their village (Dube et al., 2014). In a bid to increase Vitamin A supplementation coverage catch up campaigns are also conducted where mass Vitamin A supplementation is conducted.

1.3 Statement of the problem

According to the (WHO, 2011) guidelines it is strongly recommended that in countries like Zimbabwe where Vitamin A deficiency is a concern supplementation is conducted for all children 6-59 months. However, despite the potential benefits of the key child survival strategy less than 50% of targeted children were reached with the supplement in Zimbabwe in 2020. Mutare rural has not been performing well in Vitamin A supplementation coverage since 2019. Mutare district was one of the pilot districts in 2015 for the administration of Vitamin A supplements by village health workers and in that year vitamin A supplementation was above 85% in the district as a result administration of vitamin A by village health workers was adopted as a national strategy. Despite Vitamin A supplementation having been decentralized to village health workers Mutare rural district has not managed to reach the recommended 85% coverage as guided by WHO for the 12-59 months age group as shown below:

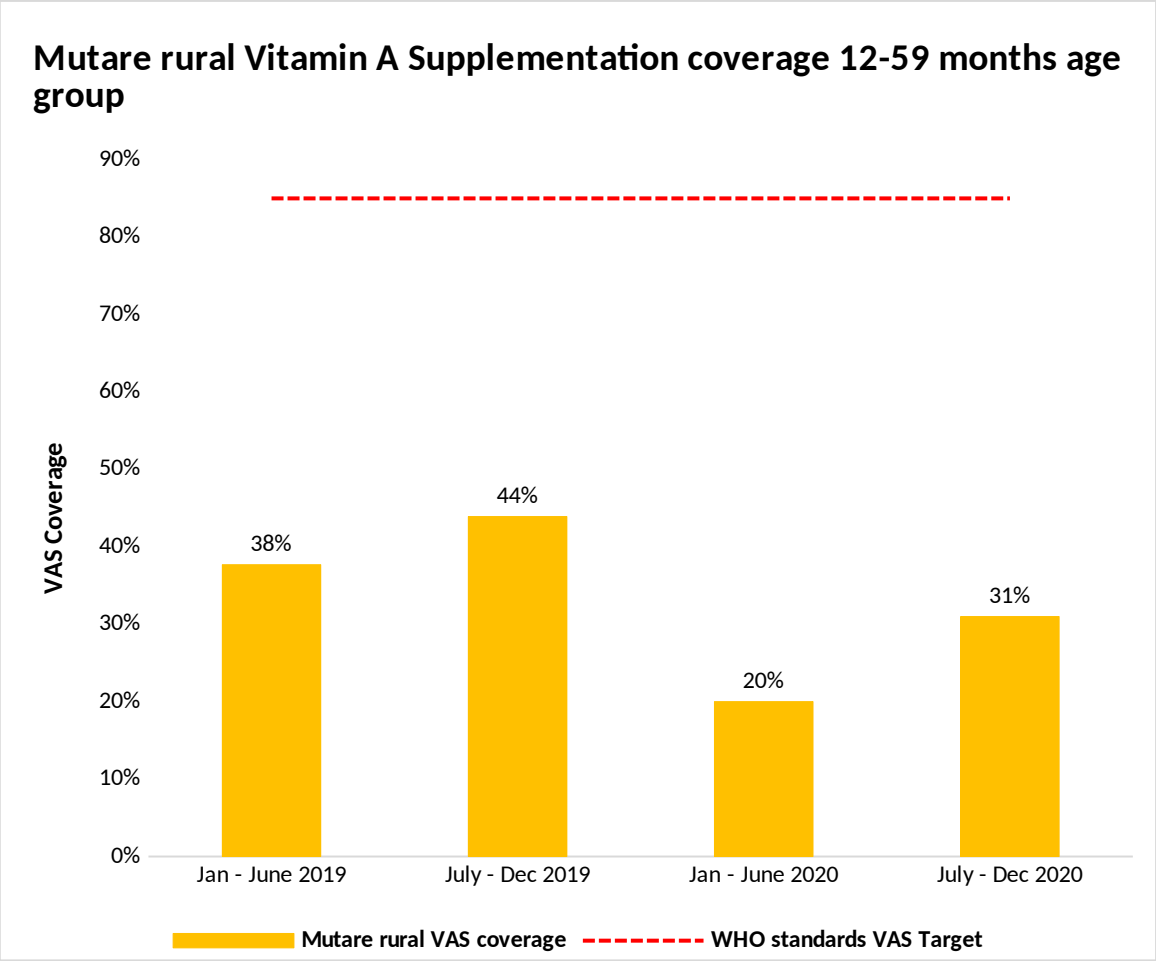

Figure 1:Mutare rural Vitamin A supplementation coverage 12-59 months age group

The researcher therefore needs to establish what is causing the low vitamin A supplementation uptake.

1.4 Research objectives

1.4.1 Broad Objective

To establish factors influencing low Vitamin A supplementation uptake among children 12-59 months in Mutare rural district in 2020

1.4.2 Specific Objectives

1. To determine the influence of demographic characteristics on Vitamin A supplementation in Mutare rural district 2020
2. To establish care-givers knowledge and practices regarding Vitamin A supplementation in Mutare rural district 2020
3. To determine the socio- cultural and socio- economic determinants influencing Vitamin A supplementation in Mutare rural in 2020

1.5 Research Questions

1. What are the demographic factors related to low Vitamin A supplementation in Mutare rural?
2. What are the knowledge and practices of mothers / caregivers regarding Vitamin A supplementation uptake for children 12- 59 months?
3. What are the socio-cultural and socio-economic determinants affecting Vitamin A supplementation in Mutare rural?

1.6 Significance of the study

The low Vitamin A supplementation coverage for the 12-59 months' age group greatly predisposes the children to several childhood diseases such as measles, malaria, or diarrhea. Vitamin A supplementation is therefore an important component of the strategies required to decrease childhood morbidity and mortality associated with these diseases. The study will help in understanding the factors related to the low Vitamin A supplementation uptake and aid in

coming up with strategies that can inform policy and health workers on how to increase the coverage.

1.7 Delimitations of the study

The study was conducted in a rural set up therefore the results of the study can be extrapolated to other rural settings in Manicaland this is because districts in Manicaland have almost the same ecological regions and as such growing of Vitamin A rich foods is a challenge as a result children largely depend on supplementation to get the recommended amounts.

1.8 Limitations of the study

The study worked with the assumption that village health workers were adequately supplied with vitamin A supplementation capsules. Information on VAS status for some mothers was based on the mother's recall which might have been affected by recall bias as some stated that their children had no health cards. Time and resource constraints were also a limitation to the researcher however the researcher calculated an adequate sample size for statistical generalization of results.

1.9 Summary

This chapter introduced the study, outlining the context of the study, the rationale, statement of the problem, research objectives, research questions, research hypothesis and limitations of the study.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews literature on factors affecting Vitamin A supplementation among children 12-59 months globally regionally and locally. Special focus is given to what other studies have reported as factors leading to uptake of Vitamin A supplementation. The researcher made reference to information from Pubmed, Lancet and google scholar.

2.2 Conceptual framework

The study conceptual framework was developed guided by the World Health Organization social determinants of health framework as shown below:

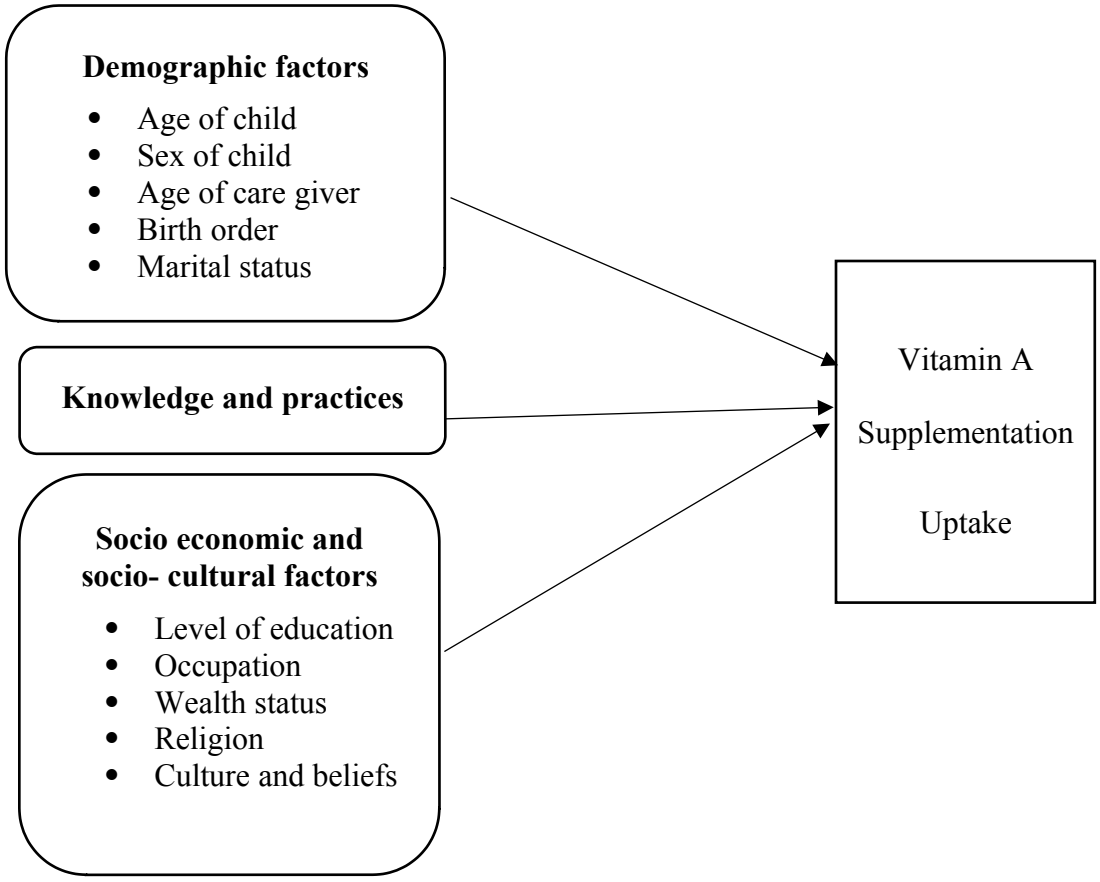

Figure 2: Study conceptual framework

2.2.1 Description of the conceptual framework

The conceptual framework above shows that health outcomes/ behaviors are not only influenced by individual factors but are also depended upon the environment which people live. Social determinants of health are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. Social determinants of health have a major impact on people's health, well-being, and quality of life. The above conceptual framework thereby shows that Vitamin A supplementation uptake is influenced by many factors which include the demographic factors the socio-economic and socio-cultural factors in which people live as well as the knowledge and practices of the individuals.

Using the social determinants of health in developing the conceptual framework for this study was critical because it provided a theoretical base on what influences behavior towards the uptake of vitamin A supplementation. The conceptual framework developed by the researcher offered a wider horizon in explaining factors affecting uptake of vitamin A supplementation. The researcher was guided by the conceptual framework to develop the questionnaires for this research.

2.3 Rational for Vitamin A supplementation

Vitamin A is an essential nutrient for growth and development of infants and young children. This is because vitamin A is important for the proper function in growth and differentiation of epithelial cells. In Zimbabwe, available data show the prevalence of vitamin A deficiency (retinol-binding protein <0.825 μmol/l) among 6-59 months children at 19% which is a moderate public health importance based on World Health Organisation (WHO) classification

(Micronutrient Survey 2012). Vitamin A supplementation from six months into infancy is a routine health services and is one of the cost-effective public health interventions. The supplementation program is based on the hope that caregivers will bring their children twice a year to the nearest health facility, outreach point or take their children to the community worker in their community.

Vitamin A supplementation coverage remains far below the target, though no major stock-out has been reported. A key barrier to sustainable programming remains the lack of recognition of the need for vitamin A supplementation. Although linkages with other interventions produce high coverage, minimum efforts have been made to effectively communicate the importance of vitamin A for child survival. The national health information system provides national and sub-national coverage estimates but does not analyse for the possible caregiver and child determining factors for vitamin A supplementation. Only few data are available to provide information on how household and caretakers' characteristics influence adherence to or uptake with this periodic supplementation program. The determining factors may be area or context specific and can inform public health programming. The desired effects of Vitamin A supplementation could be achieved if the number of participants is high.

In Zimbabwe, vitamin A supplementation has performed poorly compared to immunisation services despite the two using the same delivery strategies and structures. The core to understanding factors affecting vitamin A supplementation countrywide lie in gaining a basic understanding of the knowledge, awareness, attitudes, beliefs, constraints, and practices of caregivers, who mostly are the children's mothers, because this determines their demand and utilisation of vitamin A services.

2.4 Demographic characteristics and Vitamin A supplementation

Children aged 6-59 months have increased vitamin A requirements to promote rapid growth and to help combat infections. Inadequate intake of vitamin A during childhood leads to vitamin A deficiency, which, when severe, may cause visual impairment (night blindness) or increase the risk of illness and mortality from childhood infections such as measles and diarrhoea (Agrawal, Agrawal & South, 2018). According to Hadzi, Asalu, Avedzi, Appiah & Tarkang, (2016) significant differences in coverage of Vitamin A supplementation among age groups was noted in South Dayi district in Ghana, a high Vitamin A supplementation coverage of (90.7%) was observed among 6 to 11 months group while a low Vitamin A supplementation coverage of (44.4%) was observed among 24 to 59 months group showing that receipt of Vitamin A decreases as age increases. A study conducted by Janmohamed , Klemm , Doledec ., (2016) also found that children of age group 13–24 months are higher likely to receive vitamin A capsules. However, after 24 months, this study showed that children are less likely to consume vitamin A capsules than 6–12 months aged children in urban and rural areas. The researcher concluded that the results were probably due to the assorted carrying attitudes of parents or caregivers to their offspring in different age groups.

Children with low Vitamin A serum levels have reduced ability to fight infections and are therefore susceptible to diseases. The odds of receipt of vitamin A among age group 24 to 59 months in the study by Hadzi et al., (2016) was 0.1 less than in age group 6 to 11 months. The study concluded that the huge difference could be attributed to the fact that the last antigen, measles vaccine, is given at 18 months is taken before the child reaches age 24 months therefore, most caregivers did not send their children to clinics again for them to be given vitamin A supplements after the last vaccine. These findings concur with those of Haile, Biadgilign &

Azange, (2015) in Ethiopia where children 12-59 months of age were less likely to receive vitamin A supplementation. Vitamin A deficiency alone is responsible for almost 6% of child deaths for children under the age of 5 years in Africa. Not receiving vitamin, A supplementation in a community where vitamin A consumption is low puts children at a huge risk of morbidity due to preventable diseases such as diarrhoea and other infectious diseases

According to a study conducted by Kamau et al., (2012) in Kenya children older than 36 months were 2 times likely greater risk to lack of adherence to the vitamin A supplementation program. The proportion of children older than 36 months who participated regularly in the program tended to be lower compared with children under the 36 months who participated ($p < 0.001$). The same study identified that there was no relation between age and MUAC of caretakers with participation adherence in the vitamin A supplementation program.

The findings of the 2012 Zimbabwe National Micronutrient study differ from (Hadzi et al., 2016) findings. The 2012 Zimbabwe National Micronutrient survey however showed that Vitamin A supplementation increases with increasing age with 71% for children 6-8 months, 88% for children 9-11 months and 91% for children 12 - 17 months. It however gradually dropped to 89% for children 18 -23 months and 86 % for children 48 – 59 months. This survey showed that children from 9-59months were receiving the recommended doses of Vitamin A meaning children would have good eyesight, healthy skin and able to fight diseases.

(Mostafa et al.,2019) in their study showed that the sex of the child was also a determinant of Vitamin A uptake, females had a higher coverage (70.7%) than males (58.2%) with an odds ratio of 2.3 showing that females were 2.3 times more likely to receive vitamin A supplements than males.(OR=2.3, P=0.001, 95% CI=1.38, 3.72) , the findings of this study are similar to those of a study in southern Israel, where males were almost 4 times more likely not to receive vitamin A

supplementation (OR: 4.2, 95%CI 1.14–15.3 $p = 0.03$).These findings however differ from those of Marjan, Rahman, Rois & Rahman (2021) were no significant association were found between gender and vitamin A supplementation uptake.

The age of the caregiver has been noted as a significant contribution to `the child's vitamin A supplementation status. In their study (Mostafa et al., 2019) noted that vitamin A supplementation coverage was higher among children whose mothers were in the age group 30 – 35 years than children with mothers aged 15-19 years. Sicińska, Pietruszka, Januszko, & Kałuża, (2019) in their study noted that children with older mothers (30 years and above) were more likely to receive vitamin A supplementation than children with teenage mothers. This finding is similar to that in a study by Aremu, Lawoko, Moradi, & Dalal (2011),which revealed that children with mothers aged 15-19 years were less likely to receive vitamin A supplementation with an odds of 1.7 showing that children of mothers aged 30 years and above were 1.7 times more likely to receive vitamin A supplementation. These results may be explained by the fact that on the mother's part, nutritional knowledge may increase with the age of the caregiver. Children who receive the recommended Vitamin A supplementation doses are protected from all-cause mortality by 23% in populations known to be vitamin A supplementation deficient.

Marital status and vitamin A supplementation have been researched widely and findings from a study by, (Kamau et al., 2012) showed that respondents who were married were less likely to know the vitamin A supplementation schedule as compared to their single counterparts. Post-primary education and being married were associated with higher likelihood of being aware of the correct timing of vitamin A supplementation for mothers. Problems reported by married women associated with vitamin A supplementation and believed to affect vitamin A supplementation utilization included lack of time, (busy work schedule) for working mothers,

long waiting period at clinic, unfriendly staff, and lack of transport to the health facilities were reported as challenges hindering mothers from taking their children for vitamin A supplementation.

2.5 Knowledge of caregivers on Vitamin A supplementation

(Gretchen et al.,2015) noted that globally 30% of children >5 years old are vitamin A deficient and 2% of child deaths in this age group are attributable to Vitamin A deficiency. A report by the World Health Organisation (2011) further states that the combination of childhood underweight, micronutrient deficiencies (iron, vitamin A and zinc) and suboptimal breastfeeding is responsible for 7% of deaths and 10% of the total disease burden in children 6-59 months in Africa. Lack of knowledge on the importance of vitamin A supplementation is a key barrier to sustainable vitamin A supplementation programming. Knowledge, attitude, and practice surveys have revealed unless the knowledge gap is addressed, a transition from a push-driven to a demand-driven intervention cannot be expected (Dalmiya, Palmer, and Hill, 2006).

Knowledge of caregivers greatly affects uptake of Vitamin A supplementation, a study conducted by (Mills, Mills, & Reicks, 2007), showed that caregiver knowledge regarding vitamin A was low in all villages regardless of differences in socio-economic status and level of education leading to low vitamin A supplementation in the area of study. (Kassa, Mesfin, & Gebremedhin, 2020), in their study on uptake of routine vitamin A supplementation for children in Humbo district, southern Ethiopia showed that mothers with positive knowledge and attitude towards vitamin A supplementation had better uptake of the supplement, the study concluded that caregivers with better knowledge were 2 times more likely to accept vitamin A supplementation to their children as compared to caregivers without knowledge on Vitamin A supplementation. It was concluded in this study that supporting vitamin A supplementation

program with strong information, education and communication strategies is likely to increase demand and utilization of the supplement. The findings of this study are consistent with those of Lima et al. (2020) who also noted that respondents who had received nutrition education had better knowledge than other respondents related to vitamin A supplementation, showing that nutrition education is of utmost importance in increasing vitamin A supplementation.

According to a study conducted by Bushra Chaudry et al., (2018) 62.7% of the caregivers interviewed could not tell any medical effect of vitamin A deficiency only 3.4% mentioned night blindness as a medical effect and none mentioned death because of vitamin A deficiency. In this study caregivers showed poor knowledge in mentioning the health effects of vitamin A deficiency. Children of those who had good knowledge on vitamin A from this study were 2.2 times more likely to receive vitamin A than children of caregivers who had poor knowledge on vitamin A. (Bushra Chaudhry et al., 2018) concluded that good knowledge on vitamin A is identified as a prerequisite to increase vitamin A supplementation coverage.

Agrawal et al., (2013) in their study demonstrated that lack of knowledge about the Vitamin A supplementation and about Vitamin A deficiency prevails among mothers in the northern Cape South Africa. It was revealed in this study that some mothers see vitamin A as the "vitamin of the health center", which indicates the primary conception of this nutrient as a medicine and not as a food element. The conception of vitamin A as a vaccine or simply as a vitamin (in a generic way) was pointed out and, finally, it was demonstrated that this vitamin is valued by the mothers, even if at times they do not understand its importance. In conclusion (Elisangella & Marques , 2017) noted the need to strengthen educational activities aimed at the population level on vitamin A supplementation and actions aimed at controlling vitamin A deficiency.

According to a study by Panganibuan et al., (2013), caregivers who were aware about the health benefit of the vitamin A supplementation program participated more regularly ($p < 0.05$; 74.9 %) than caregivers who were not informed about the benefit of the program (63.9 %). This study showed a strong positive association ($p < 0.001$; $r = 0.3$) between caregivers' level of education and the knowledge of vitamin A supplementation. Caregivers with higher education levels were more responsive (72.4%) about the advantage of vitamin A supplementation compared to caregivers who only had primary school education only (45.9%).

Further a study by Swain et.al (2006) noted that mothers stopped attending clinics after a child completed the routine immunization schedule. This is consistent with a study done in Congo where mothers were found to stop attending the clinic after one year because the child had got all the routine vaccines (Chibindant et.al, 2004). Despite 45% of the children not being up to date with vitamin A supplementation, some mothers did not give any reason for missing vitamin A supplementation. Caregivers noted that they were bored and lacked motivation, which is consistent with a study in Ghana where mothers lacked motivation to adhere to vitamin A supplementation indicating a gap in the awareness of the importance of vitamin A supplementation.

Akhtar, Ahmed, Randhawa, Atukorala , Arlappa & Ismail , et al (2013) in their study noted that mass media exposure has a positive impact on taking vitamin A capsule. This finding is supported by Lima et al. (2020) who found that mass media led to increased intake vitamin A supplementation.

2.6 Socio-cultural factors that affect vitamin A supplementation

In most developing countries nutrition status is influenced by social cultural and traditional feeding practices. Food insecurity and traditional feeding practices (taboos, social, cultural influences) both contribute to malnutrition. Food may be available, affordable, and accessible but due to traditional beliefs, a group might be prohibited from consuming certain types of food, which eventually limits their micronutrient intake (Berde et al., 2019). Public health programs that aim to prevent vitamin A deficiency need to proceed with clear ideas on how to accomplish this within the context of the religion, culture, and environment of the target population.

Religion largely influences decisions on health and religious objection is often used by parents as an excuse to avoid the vitamin A supplementation for their children. Some studies show that the number religious exemptions have been increasing, leading to preventable disease outbreaks. Religious leaders are highly esteemed, and their authority can convince members of their congregations to accept or reject vaccination (Lima et al. 2020).

Religious teaching and church regulations of apostolic faith groups fundamentally shape health care seeking behavior, and hence the differences in healthcare-seeking behavior among them can be attributed to differences in religious teaching and church doctrine (regulations) as well as levels of adherence to these teachings and doctrines. The religious teaching, doctrine, and regulations of the ultra-conservative Apostolic groups (e.g., Johanne Marange, some subgroup within Johanne Masowe, and Madhidha), which emphasize faith healing and strict adherence to church beliefs and practices undermine modern healthcare-seeking practices. Often, violation of church doctrine or regulation on non-use of modern healthcare services attracts sanctions. (Apostolic Religion, Health and Utilization of Maternal and Child Health Services in Zimbabwe.2011). According to the World Health Organization epidemiological bulletin reported

that the worst measles outbreak in Zimbabwe was experienced in 2010 and the cases were skewed towards the Johanne Marange Apostolic sect believers this being largely a result of low vaccination coverage as well as low Vitamin A supplementation among the apostolic sect believers.

Birth order has also been identified as a contributing factor for vitamin A supplementation. In their study (Agrawal et al., 2013) showed that children born in the higher birth order (6+) (OR: 0.5; 95% CI: 0.46-0.63; $P < 0.0001$) with low social and economic development status (OR: 0.5; 95% CI: 0.46-0.57; $P < 0.0001$) were half as likely to receive vitamin A supplementation than children born in the lower birth order of birth and residing in areas with high social and economic development status. This is consistent with another study conducted by Lima, et al. (2020) which showed that children with more siblings have lower percentage of vitamin A supplementation coverage. Children born in families with high birth order are not spaced and when another sibling comes, they are not yet able to self-manage themselves. Thus, caregivers neglect taking the children for Vitamin A supplementation as they sometimes cannot manage carrying them at once. Care givers are advised to space their children to enable children to self-manage for certain tasks

The intake of vitamin A capsule is almost equally likely in families which have 1 or 2 children but less likely in families with 3 or more children. This finding was similar to that by Agrawal and Agrawal, (2013) where they noticed that families with more than 1 child were more likely not to consume vitamin A supplementation

Community participation in promoting and sustaining health was championed in the Declaration of Alma Ata on Primary Health Care, which stated “the people have the right and duty to participate individually and collectively in the planning and implementation of their health care”

(Alma Ata 1978). Community perception and their participation in nutrition programs aids as a positive reinforcement in parental perception. Parental concern regarding vitamin A safety occurs within the context of the community and may be shared by other parents in the same community.

Parental perception on vitamin A supplementation is a major player on the decision to receive supplementation. Strong desire to keep the children and the community healthy and protected against diseases is a consistent theme that influences people to have their children take up vitamin A supplementation. According to a study by (Mostafa et al., 2019), parents who considered vitamin A to be safe were more likely to have their children receive vitamin A supplementation compared to those who were neutral and those who thought that vitamin A supplementation was not safe

2.7 Socio- economic factors affecting vitamin A supplementation

Sicińska, Pietruszka, Januszko, & Kałuża, (2019), in their study found an association between mother's education level and usage of Vitamin A supplementation in children. Compared to children of mothers with primary education, those whose mothers had high school or university education had a higher probability of Vitamin A supplement use (OR: 2.2, 95% CI: 1.17–4.01 and OR: 2.1, 95% CI: 1.14–4.07, respectively). The odds of receiving Vitamin A supplementation were 2 times higher in mothers who received high school or university education as compared to those who only received primary education. According to a study by Aghaji, Duke, & Aghaji, (2019) the odds of the child of a mother with higher education receiving vitamin A supplementation was over three times that of the child of a mother without education (Kamau, Makokha, Mutai, & Mugoya, 2012). In their study however, found that the mothers and fathers who were highly educated took both their children boys and girls for vitamin

A supplementation. This therefore positively contributed to both boys and girls having equal access to vitamin A supplementation as both parents would be knowledgeable and aware of the benefits of vitamin A supplementation.

The literature reports that factors such as mother and father's education and living in rural areas are important determinants of coverage Mahajan, Srivastav, & Mukherjee, (2016), reported an association between poverty and poor coverage. Children whose mothers did not complete primary education and children living in poor households were less likely to receive vitamin A supplementation.

Imdad et al., (2017) in their study indicated that occupation is an indicator of wealth, social class and/or stability which might influence child's diet, access to health care and the level of care that he or she receives from parents. The association between father's occupation and vitamin A deficiency indicates that children with fathers who work a monthly salaried job have higher mean serum retinol levels and lower prevalence of vitamin A deficiency than children with fathers who are unemployed. Children of households of higher socioeconomic status were more likely to have received a vitamin A capsule. Children from "rich" families had 1.8 times higher odds of receiving vitamin A supplementation than those from the "poor" households.

On the other hand, children with mothers having no formal education had increased odds of not receiving a vitamin A supplementation. Education increases a person's knowledge and that includes knowledge on good nutrition and child caring practices. Mothers who would have received formal education are more likely to understand the benefits of vitamin A supplementation as a result they take their children for vitamin A supplementation as compared to those who do not have formal education. According to a study by Hossain., Yeasmin, & Abdulla (2021) conducted in Bangladesh, mother's education is the most important factor for

receiving vitamin A capsule in Bangladesh. The study found that the rates of vitamin A capsule supplementation are increased when mother's educational level are increased. This was consistent with a study by Kamau, et al. (2012) which found that children whose mothers had no education were less likely to consume vitamin A supplementation

Kassa et al., (2020) states that mothers who were aware of the benefit of vitamin A supplementation had 1.5 times increased odds of receiving the supplement. Further, mothers who obtained information on vitamin A supplementation from village health workers had 1.5 times increased odds of utilizing the service than those who did not receive any information in addition lower use of health services was noted among women living in polygamous relationships compared to women living in monogamous relationships.

2.8 Summary

In this chapter demographic, knowledge, socio-economic and socio-cultural issues which affect vitamin A supplementation have been discussed. The literature review has pointed out that there are various reasons that could lead to low vitamin A supplementation uptake in a community ranging from the age of the care giver, knowledge religion and even a household's wealth index. The literature review has shown that there is need to explore the factors that are specific to the context to which the study is being implemented and come up with policies and strategies that can increase vitamin A supplementation in that specific community.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter specifically focuses on the methodological strategies that were utilized in this study. Addressing aspects of the study design and population, sampling procedure and sample size, data collection methods, reliability, validity, and data analysis and ethical considerations. The methodological strategies utilized in this study were meant to understand the factors which have led to low compliance to vitamin A supplementation in Mutare rural district.

3.2 Study design

A community based 1: 2 unmatched case control study was utilized. This design was selected by the researcher as it is cheap and less time consuming furthermore it allows the researcher to make a comparison of why caregivers in the same community are taking their children for Vitamin A supplementation while others are not.

3.3 Study setting

The study was carried out in Mutare rural. Mutare rural is located 300km east of Zimbabwe's capital Harare bordered by Mutasa district to the east, Buhera district to the west and Chipinge district on the South. The district has 39 health facilities. Mutare rural was selected by the researcher because it was the first district to implement the VHW door to door vitamin A supplementation and was successful however vitamin A supplementation coverage has dropped significantly. The researcher would like to explore factors which might have led to this decline as it may inform policy as well as the findings of this study may inform new strategies of implementation.

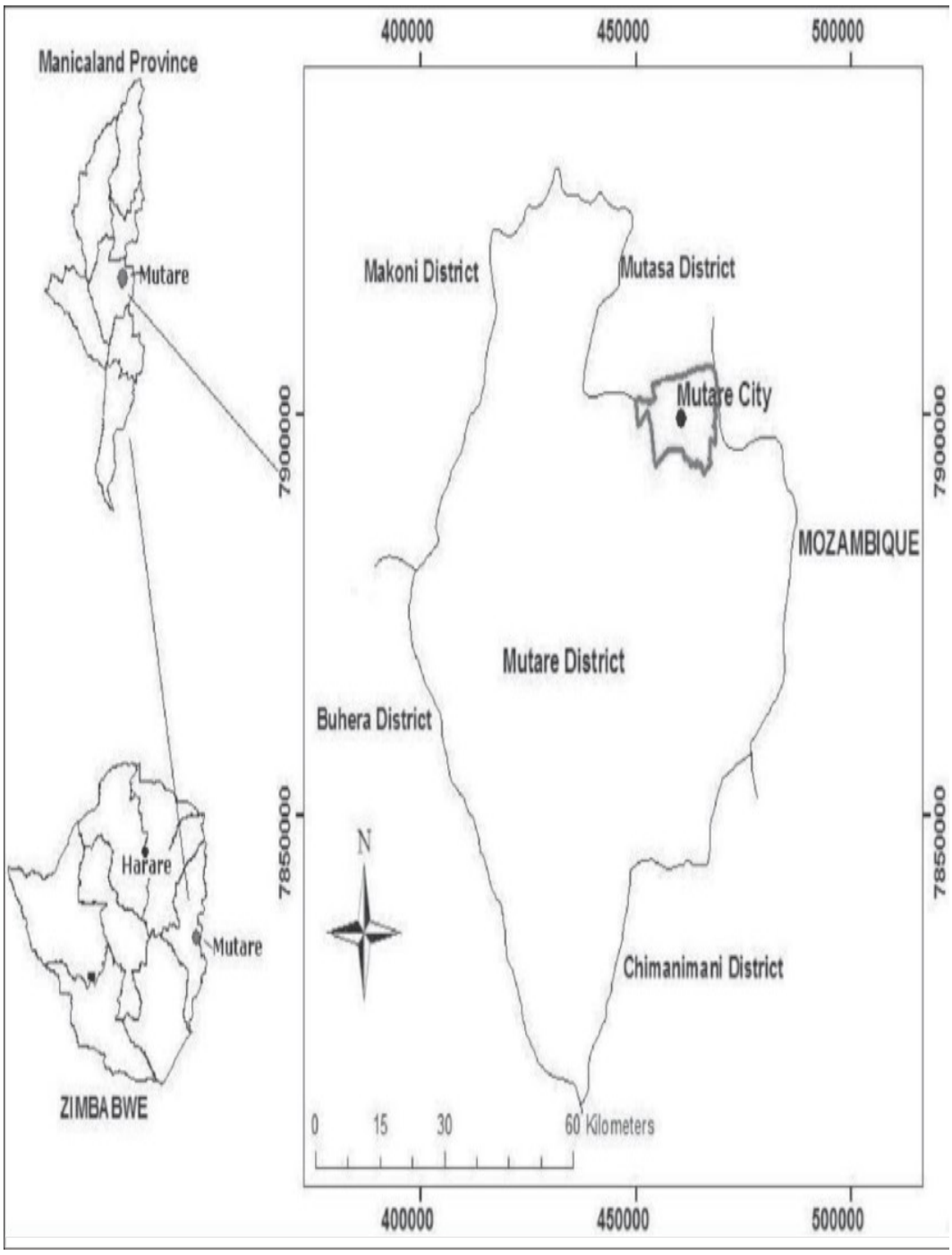

Figure 3:Study area

3.4 Study population

The study population was made up of caregivers of children 12-59 months resident in the catchment area of the four randomly selected health facilities namely Chitora, Odzi, Zimunya and Zvipiripiri.

Case definition: a child 12-59 months who received two doses of Vitamin A supplementation in 2020 and was up to date with their vitamin A supplementation.

Control definition: a child 12-59 months who received one or no Vitamin A supplementation in 2020 and was not up-to date with their Vitamin A supplementation

3.4.1 Inclusion criteria

All caregivers of children 12-59 months permanently residing in the catchment area of the targeted health facilities willing and able to give consent were included in the study.

3.4.2 Exclusion criteria

All caregivers of children 6- 11 months as well as caregivers of children 60 months and above were excluded from the study. Furthermore, caregivers who were not willing to participate were excluded in the study.

3.5 Sample size

Using 1:2 unmatched case control study, sample size was calculated using StatCal of Epi Info package at 95% confidence interval, 80% power, assuming that children whose mothers had high school and higher education were 2.4 times more likely (OR: 2.4; 95% CI: 2.04-2.8; $P < 0.0001$) to receive vitamin A supplementation than children whose mothers were illiterate and 75% of the

controls were exposed (Agrawal & Agrawal, 2013). A sample size of 88 Cases and 176 controls giving a total sample size of 264 was calculated.

3.6 Sampling procedure

Mutare rural district has 39 health facilities, using simple random sampling hat method 4 health facilities were selected where the study was conducted. The randomly selected health facilities were Chitora, Odzi, Zimunya and Zvipiripiri. At the selected health facility simple random sampling hat method was used to select the villages where the participants would be drawn. The village health worker Zimbabwe Expanded Program on Immunisation (ZEPI) register was used by the researcher as the sampling frame. Children up to-date for their Vitamin A supplementation were selected as cases until a sample size of 88 cases was reached, 176 controls were randomly selected from the same villages as cases.

3.7 Data collection instruments

An interviewer administered structured questionnaire was designed and used to capture information from the study participants.

3.7.1 Dependent variable

In this study receipt of Vitamin, A supplementation was the dependent variable

3.7.2 Independent variable

The demographic, knowledge, socioeconomic and sociocultural factors were the independent variables of the study.

3.8 Pretesting of instruments

Pretesting was conducted to test the data collection instrument and data collection procedure before data collection begun. The objective was to ensure that the questions being asked accurately to reflect the information the researcher desires. The researcher conducted the pre-test at the Victoria Chitepo Hospital Family Child Health (FCH) department, which is the referral hospital for Mutare rural district. 4 cases and 4 controls were interviewed.

The data was collected from the 16th of August to the 17th of September 2021. Environmental Health Technicians (EHTs) from the selected clinics were employed as research assistants to collect the data together with the researcher. The data was collected by use of interviewer administered questionnaires. The EHTs were trained on the data collection tool before data collection begun. During the interviews responses were captured on the questionnaire.

3.9 Analysis and organization of data

Epi info version 7.2.4.0 was used to analyze the data univariant analysis was conducted to describe the social determinants of participants by their characteristics. A bivariant analysis was utilized to determine the association between vitamin A supplementation and the independent variables, multivariant binary regression analysis was conducted to generate odds ratios for all factors showing a significant association with the outcome variable.

3.10 Ethical considerations

Permission to carry out the study was sought from the Africa University Research and Ethics Committee and the District Medical Officer for Mutare rural. Only sampled participants (care givers of children 12-59 months) with consents were interviewed. Participation in the study was voluntary, participants filled an informed consent before participating in the study. Study

participants were identified by codes no names were written on the questionnaire. All hard copy questionnaires are being kept securely under lock and key. Research assistants together with study participants were encouraged to wear masks correctly covering their nose and mouth and to ensure they were sitting at least one meter apart as the interview was being conducted. Research assistants had a bottle of sanitizer which they would continuously sanitize their hands as well as those of study participants. Disposable gloves were worn by the researcher during capturing the data. The questionnaires have been put in a plastic and kept in a secure place away from where people can touch them.

3.11 Summary

This chapter presented the study methodology clearly outlining the study design, study setting, study population, sample and sampling procedure and data collection procedure as well as the ethical considerations to be observed in carrying out the study.

CHAPTER FOUR: DATA PRESENTATION ANALYSIS AND INTEPRETATION

4.1 Introduction

This chapter presents, describes, and explains the findings which were gathered from the study participants. The results of this study were analyzed using Epi info version 7.2.4.0 A univariate, bivariate and multivariate analysis was done for the variables. Tables are used to show the data focusing on demographic factors, knowledge and perception on Vitamin A supplementation, socio-cultural and socio-economic factors. This chapter presents the interpretation and discussion of the key results of the study as guided by the study conceptual framework. The study hypothesized that demographic factors, knowledge and practices, socio-economic and socio-cultural factors are associated with uptake of Vitamin A supplementation in Mutare Rural. These assumptions were confirmed in this study as presented in the discussion of key results in this section. The data was collected from the 16th of August to the 17th of September 2021**.** The response rate was 100%.

4.2 Data Analysis and presentation

Table 1: Demographic Characteristics of the study participants

Variable	Category	Case N=88 n (%)	Control N=176 n (%)
Age of the Caregiver	15-19	17 (19)	18 (10)
	20-29	33 (38)	71 (40)
	30+	38 (43)	87 (49)
Age of Child in months	12-36	54(61)	86(49)
	37-59	34(39)	90(51)
Sex of child	Male	38(43)	82(47)
	Female	50(57)	94(53)
Marital status	Married	75(85)	155 (88)
	Single/Divorced/ Widowed	13(15)	21(12)
Type of Marriage	Monogamous	27(31)	54(34)
	Polygamous	54(69)	104(66)
Number of children in the family	1	6(7)	24(14)
	2-3	36(41)	22(13)
	4+	46(52)	130(73)
Birth order of the Child	1	12(14)	31(18)
	2-3	26(30)	37(22)
	4+	50(57)	108(60)

The mean age for cases was 28 while the mean age for the controls was 29 the combined mean age was 28years. The interquartile range for age was Q1=33 while Q3=21.7. Most of the primary respondents in this study were older than 30 years in both cases and controls with thirty-eight (43%) of the cases being older than 30 years and eighty-seven (49%) of the controls being older than 30 years. The age group 15-19 had the least number of respondents with seventeen (19%) and eighteen (10%) for cases and controls respectively.

The majority of the caregivers were married for both cases and controls with seventy-five (85%) of the cases being married and one hundred and fifty-five (88%) of the controls being married. Of these twenty-seven (31%) of the cases were in a monogamous marriage while fifty-four (69%) were in a polygamous marriage while fifty-four (34%) of the controls were in a monogamous marriage and one hundred and six (66%) of the controls were in a polygamous marriage showing that most of the respondents in this study for both cases and controls were coming from polygamous marriages.

A larger proportion of children in the study were from the age group 12-36 months for the cases fifty-four (61%) while for the controls ninety (51%) a larger proportion was of the age group 37-59 months. Female children consisted of the larger proportion of the study participants for both cases fifty (57%) and controls ninety-four (53%). The caregivers that were interviewed in the study had 4 or more children forty-six (52%) and one hundred and 30(73%) for both cases and controls respectively. Most of the children interviewed were of birth order 4+ for both the cases fifty (57%) and the controls one hundred and eight (60%).

Table 2:Demographic characteristics associated with Vitamin A supplementation uptake

Variable	Category	Case N=88 n (%)	Control N=176 n (%)	OR (95%CI)	P value
Age of the Caregiver	15-19	17 (19)	18 (10)	Ref	
	20-29	33 (38)	71 (40)	2.0(0.93-4.43)	0.41
	30+	38 (43)	87 (49)	2.2(1.00-4.64)	0.03*
Age of Child in months	12-36	54(61)	86(49)	1.7(0.98-2.79)	0.03*
	37-59	34(39)	90(51)		
Sex of child	Male	38(43)	82(47)	0.9(0.52-1.45)	0.30
	Female	50(57)	94(53)		
Marital status	Married	75(85)	155 (88)	0.8(0.37-1.64)	0.26
	Single/Divorced/ Widowed	13(15)	21(12)		
Type of Marriage	Monogamous	27(33)	54(34)	1.0(0.54-1.69)	0.45
	Polygamous	54(67)	104(66)		
Number of children in the family	1	6(7)	24(14)		
	2-3	36(41)	22(13)	1.6(0.56-4.33)	0.20
	4+	46(52)	130(74)	0.7(0.27-1.84)	0.25
Birth order of the Child	1	26(30)	31(18)		
	2	50(57)	37(22)	0.5(0.24-1.17)	0.06
	3+	12(14)	108(60)	3.0(1.23-7.175)	0.01*

*The *represents statistically significant results*

The above table shows that age of the care giver was found to be statistically significant [OR=2.2, 95%CI = (1.01-4.64), p =0.03] showing that receipt of vitamin A supplementation increased with the care-giver's age. Care-givers aged 30+ were 2.2 times more likely to take their children for vitamin A supplementation as compared to care-givers of the age 15-19 and those of the age group 20-29. This may be explained by the fact that as the mother's age increases nutrition knowledge increases too as they would have had more encounters with information on nutrition education through various platforms.

The age of the child was found to be statistically significant [OR=1.7, 95%CI= (0.99-2.79), p=0.03], this shows that children of the age 12-36 months were 1.7 times more likely to take VAS as compared to their older counterparts of the age 37-59. This is further shown by fifty - four (61%) of the cases coming from the age group 12-36 while ninety (51%) of the controls were drawn from the age group 37-59. The findings show that vitamin A supplementation decreases with the age of the child.

Birth order of the child was found to be statistically significant [OR=3.0, 95% CI= (1.23-7.18), p=0.01] children with a lower birth order were 3 times more likely to receive vitamin A supplementation as compared to those of a higher birth order. As the birth order increased vitamin A supplementation uptake decreased this is evidenced by birth order 3+ having more controls one hundred and eight (60%) as compared to cases which are mostly from birth order 2.

Table 3: Knowledge and Perception characteristics of the study participants

Variable	Category	Case N=88 n (%)	Control N=176 n (%)
Knowledge on Vitamin A Supplementation	Yes	65(74)	73(42)
	No	23(26)	103(58)
Route of Administration for Vitamin A Supplementation	Orally	86(98)	61(35)
	I don't know	2(2)	115(65)
Knowledge on when to stop VAS dose	59 months	77(88)	35(20)
	I don't know	11(12)	141(80)
Importance of VAS	Protects my child from illnesses	35(40)	12(7)
	Helps my child's skin and vision	38(42)	4(2)
	Sick child gets well fast	11(13)	2(1)
	Do not know	4(5)	158(90)
Knowledge on how often vitamin A supplementation should be given to a child	Every 6 months	77(88)	44(25)
	I don't know	11(12)	134(75)
Perception on importance of vitamin A supplementation	Yes	79(90)	49(27)
	No	9(10)	127(73)
Perceived effect of child missing vitamin A supplementation	Poor growth	41(47)	46(26)

	Night blindness	11(12)	12 (7)
	Frequent illness	35(40)	1 (1)
	I don’t know	1 (1)	117(66)
Who gives you information about Vitamin A supplementation	Health workers (VHWs /Nurse /EHT)	83(94)	73(41)
	No one	1(1)	103(59)
	Friends and Family	4(5)	0
Exposure to media	Yes	86(98)	140(80)
	No	2(2)	36(20)
Which type of media is the care giver exposed to	Newspaper	3(3)	5(3)
	Listens to the Radio	66(75)	122(69)
	Reads IEC material at the clinic	15(17)	7(4)
	None	4(5)	42(24)

Knowledge factors affecting uptake of vitamin A supplementation were assessed. The results show that sixty-five (74%) of the cases while only seventy-three (42%) of the controls had knowledge on vitamin A supplementation a larger proportion one hundred and three (58%) of the controls felt they were not knowledgeable on Vitamin A supplementation. Eighty-six (98%) of the cases knew that vitamin A is administered orally however one hundred and fifteen (65%) of the controls did not know how vitamin A is administered. Seventy-seven (88%) of the cases knew when children should stop receiving vitamin A supplementation on the contrary only thirty-five (20%) of the controls were aware of this, the majority one hundred and forty-one (80%) of the controls were not aware when children should stop receiving vitamin A supplementation.

Majority of the cases were aware of the importance of vitamin A supplementation to the child with thirty five (40%) citing that it protects the children from illness, thirty eight (42%) stated that it helps their child's skin and fourteen(7%) stated that a sick child gets well fast on the other hand one hundred and fifty-eight (90%) of the controls did not know why it is important for the child to receive vitamin A supplementation. Cases seventy-seven (99%) were knowledgeable on how often children should receive vitamin A supplementation as compared to controls thirty-five (20%). Seventy-nine (90%) of cases perceived vitamin A to be important while one hundred and twenty-seven (73%) of the control did not perceive vitamin A to be important. Ninety nine percent (99%) of the controls were aware of the effects of a child not receiving vitamin A supplementation with forty-one (47%) citing poor growth, eleven (12%) cited night blindness and thirty-five (40%) cited frequent illness on the other hand one hundred and seventeen (66%) of the controls did not know the effects of a child not receiving their vitamin A supplementation.

Eighty-three (94%) of the cases receive information on vitamin A supplementation from health workers while one hundred and three (59%) of the controls do not receive information on vitamin A supplementation from anyone. Both cases and controls were exposed to the media with eighty-six (99%) and one hundred and forty (80%) respectively the source of media which the study participants are mostly exposed to was found to be the radio as sixty-six (75%) of the cases and one hundred and twenty-two (69%) of the controls cited that they listened to the radio.

Table 4: Knowledge and Perception characteristics associated with Vitamin A supplementation uptake

Variable	Category	Case N=88 n (%)	Control N=176 n (%)	OR (95%CI)	P value
Knowledge on Vitamin A Supplementation	Yes	65(74)	73(42)	2.0(1.14-3.51)	0.01*
	No	23(26)	103(58)		
Route of Administration for Vitamin A Supplementation	Orally	86(98)	61(35)	3.3(1.83-6.20)	0.30
	I don't know	2(2)	115(65)		
Knowledge on when to stop vitamin A supplementation dose	59 months	77(88)	35(20)	1.6(0.78-3.25)	0.01*
	I don't know	11(12)	141(80)		
Importance of vitamin A supplementation	Protects my child from illnesses	35(40)	12(7)	0.47(0.12-1.86)	0.15
	Helps my child's skin and vision	38(42)	4(2)	3.2(0.32-34.9)	0.18
	Sick child gets well fast	14(7)	2(1)	0.8(0.04-16.9)	0.46
	Do not know	1(1)	158(90)	1.9(0.19-18.6)	0.32
Knowledge on how often vitamin A supplementation should be given to a child	Every 6 months	77(99)	44(19)	2.3(1.12-4.71)	0.01*

	I don't know	11(1)	134(81)		
Perception on importance of vitamin A supplementation	Yes	79(90)	49(28)	2.7(1.30-5.43)	0.003*
	No	9(10)	127(72)		
Perceived effect of child missing vitamin A supplementation	Poor growth	41(47)	46(26)	0.3(0.06-1.78)	0.11
	Night blindness	11(12)	12 (7)	1.1(0.09-14.3)	0.45
	Frequent illness	35(40)	1 (1)	1.1(0.09-12.9)	0.46
	I don't know	1 (1)	117(66)	0.7(0.12-4.55)	0.37
Who gives you information about Vitamin A supplementation	Health workers (VHWs /Nurse /EHT)	83(94)	73(41)	0.8(0.38-1.49)	0.22
	No one	1(1)	103(59)	1.3(0.50-3.19)	0.31
	Friends and family	4(5)	0		
Exposure to media	Yes	86(99)	140(80)	0.65(0.29-1.43)	0.15
	No	2(1)	36(20)		
Which type of media is the care giver exposed to	Newspaper	3(3)	5(3)		
	Listens to the Radio	66(75)	122(69)	1.0(0.54-1.85)	0.5
	Reads IEC material at the clinic	15(17)	7(4)	1.5(0.24-9.29)	0.34
	None	4(5)	42(24)	1.3(0.08-22.)	0.43

*The *represents statistically significant results*

The findings of this study show that knowledge on vitamin A supplementation was statistically significant [OR=2.0, 95% CI= (1.14-3.51) p=0.01] meaning that people who had knowledge on VAS were 2 times more likely to take their children for vitamin A supplementation than those who did not , further the study showed statistical significance on knowledge on when to stop VAS [OR= 1.6, 95% CI =(0.78-3.25), p=0.01] which showed that those who knew when children should stop vitamin A supplementation were 1.6 times more likely to have their children receiving vitamin A supplementation as compared to those who do not know when vitamin A supplementation stops. In addition, knowledge on how often children should receive vitamin A supplementation was found to be statistically significant [OR=2.3, 95%CI= (1.12-4.71), p=0.01] showing that caregivers who know how often children should take their vitamin A supplementation were 2.3 times more likely to take their children for vitamin A supplementation as compared to caregivers who are not aware how often their children should take vitamin A supplementation.

The findings of this study also found perception on vitamin A supplementation to be statistically significant [OR=2.7, 95%CI= (1.30-5.42), p =0.003] showing that study participants who perceived vitamin A supplementation to be beneficial to their children were 2.7 times more likely to have their children receive vitamin A supplementation as compared to those who did not.

Table 5: Socio-economic and socio-cultural factors

Variable	Category	Case N=88 n (%)	Control N=176 n (%)
Level of education (Father)	Never went to school	10(11)	33(19)
	Primary	30(45)	54(32)
	Secondary	38(44)	83(49)
	Tertiary	0	0
Level of education (Mother)	Never went to school	10(11)	27(15)
	Primary	39(44)	75(43)
	Secondary	38(43)	74(42)
	Tertiary	1(1)	0(0)
Religion	Apostolic	53(60)	138(78)
	Non-apostolic	35(40)	38(22)
Occupation of mother	Unemployed	86 (98)	173 (98)
	Formerly employed	2 (2)	3(2)
Occupation of father	Unemployed	71(84)	150(90)
	Formerly employed	14 (16)	17(10)
Average monthly Household Expenditure	<100USD	4 (5)	3 (2)
	>100USD	84 (95)	173 (98)
Wealth Index	Poor	34(39)	144 (82)
	Middle	54(61)	32 (18)
	Rich	0(0)	0 (0)

The table above shows that none of the study participants interviewed had reached tertiary level education for both the fathers and mothers except for one responded (a mother) who reached tertiary level education. Most of the respondents had reached primary and secondary level education for both the fathers and the mothers. The percentage of those who had never went to school was relatively low for both the fathers and the mothers in both the cases and controls. On religion both cases and controls had participants from the apostolic sect with fifty-three (60%) and one hundred and thirty-eight (78%) respectively.

Of the mothers interviewed eighty-six (98) % of the cases and one hundred and seventy-three (98%) of the controls interviewed were unemployed while seventy-one (84%) cases and one hundred and seventy-three (90%) controls were unemployed for the fathers. The average

monthly household expenditure was less than 100 USD for both cases and controls at eighty-four (95%) and one hundred and seventy-three (98%) respectively. The wealth index for most cases was in the middle range fifty-four (61%) followed by poor with thirty-four (39%) of the cases however one hundred and forty-four (82%) of the controls were in the poor category and thirty-two (18%) of the controls lied in the middle rage. None of the interviewed participants both cases and control were rich.

Table 6:Socio economic and sociocultural factors associated with Vitamin A supplementation uptake

Variable	Category	Case N=88 n (%)	Control N=176 n (%)	OR (95%CI)	P value
Level of education (Father)	Never went to school	10(11)	33(19)		
	Primary	30(45)	54(32)	0.5(0.2363-1.2591)	0.08
	Secondary	38(44)	83(49)	0.7(0.2959)	0.16
	Tertiary	0	0		
Level of education (Mother)	Never went to school	10(11)	27(15)		
	Primary	39(44)	75(43)	0.7(0.313-1.6209)	0.21
	Secondary	38(43)	74(42)	0.7(0.3163-1.6446)	0.22
	Tertiary	1(1)	0(0)		
Religion	Apostolic	53(60)	138(78)	0.4(0.2387-0.7284)	0.001*
	Non-apostolic	35(40)	38(22)		
Occupation of mother	Unemployed	86(98)	173 (98)	0.8(0.1223-4.5464)	0.37
	Formerly employed	2 (2)	3 (2)		
Occupation of father	Unemployed	71(81)	150(85)	0.6(0.2684-1.231)	0.08
	Formerly employed	14(19)	17(15)		
Average monthly Household Expenditure	<100USD	4 (5)	3 (2)	2.7(0.6009-12.5492)	0.11
	>100USD	84 (95)	173 (98)		
Wealth Index	Poor	34(39)	144(82)	2.8(1.594-5.036)	0.0002*
	Middle	54(61)	32(18)		
	Rich	0 (0)	0(0)		

*The *represents statistically significant results*

The results of this study show that religion was statistically significant [OR =0.4, 95% CI = (0.24-0.73), p= 0.001] thus being a believer of the apostolic sect reduced the uptake of vitamin A supplementation by 60%. 58(60%) of the cases were from the apostolic sect this could be comprised of some caregivers who stated that they take their children secretly to receive vitamin A supplementation as they have understood the benefits of taking it as well as those women who would after taking their children for vitamin A supplementation take them for a cleansing ceremony. This finding shows that belonging to the apostolic sect negatively affects compliance to vitamin A supplementation and it therefore places children as a higher risk of dying

Wealth index was found to be statistically significant [OR=2.8, 95%CI = (1.59-5.04), p=0.0002] this shows that those who were coming from wealthier families were 2.8 times more likely to receive vitamin A supplementation as compared to those coming from poor families this is evidenced by fifty four(61%) of the cases coming from the middle wealth index as compared to one hundred and forty four(82%) of the controls coming from the poor wealth index. These findings show that there could be an association between poverty and vitamin A supplementation.

Table 7:Predictors of uptake of Vitamin A Supplementation in Mutare Rural

VAS and:	Adjusted Odds ratio (AOR)	Z	P value	95% Confidence Interval
Age of caregiver	2.14.	1.15	0.07	0.08 – 3.34
Age of Child in months	1.96	-0.05	0.04*	1.17 – 5.33
Knowledge on Vitamin A Supplementation	2.64	1.08	0.06	0.46 – 7.30
Knowledge on when to stop vitamin A supplementation dose	3.91	1.92	0.051	0.95 – 14.90
Knowledge on how often vitamin A supplementation should be given to a child	18.77	3.21	0.001*	5.13 – 21.21
Perception on importance of vitamin A supplementation	11.78	1.99	0.037*	1.03 – 13.41
Religion	2.55	1.61	0.010*	2.01 – 5.32
Wealth Index	16.06	0.82	0.013*	5.71 – 22.56

*The * represents statistically significant results*

Predictors of uptake of Vitamin A Supplementation in Mutare rural

Table 7 above summarizes the results on the predictors of uptake of vitamin A supplementation in Mutare rural. The study did a multivariate binary regression analysis to determine the predictors of uptake of vitamin A supplementation uptake in Mutare rural. All factors that had a statistically significant association with uptake of vitamin A supplementation were controlled for, which included age of the caregiver, age of the child in months, knowledge on Vitamin A supplementation, knowledge on when to stop vitamin A supplementation dose, knowledge on how often vitamin A supplementation should be given to a child, perception on the importance of vitamin A supplementation, religion, and wealth index. Only age of child in months [AOR = 1.96, 95% CI (1.17 – 5.33)], knowledge on how often vitamin A supplementation should be given to a child [AOR = 18.8, 95% CI (5.13 – 21.21)], perception on the importance of vitamin

A supplementation [AOR = 11.8, 95% CI (1.03 – 13.41)], religion [AOR = 2.6, 95% CI (2.01 – 5.32)] and wealth index [AOR = 16.1, 95% CI (5.71 – 22.56)] were statistically significant predictors of vitamin A supplementation compliance.

4.3 Summary

The study sought establish factors influencing low Vitamin A supplementation among children 12-59 months in Mutare rural district. The findings of this study showed that both the age of the care giver and that of the child were determinants for a child to receive vitamin A supplementation. Mothers and caregivers from the apostolic religion were less likely to comply to vitamin A supplementation. Knowledge on how often a child should receive Vitamin A as well as the mother or caregiver's perception on the importance of vitamin A supplementation were crucial in determining levels of compliance to vitamin A supplementation in the study. The study found that wealth index was a determinant for vitamin A supplementation with children coming from the middle wealth index receiving vitamin A supplementation as compared to those from poor families.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter highlights the summary of the whole study focusing on discussion of the key findings, recommendations, and suggestions for further research

5.2 Discussion

Vitamin A supplementation is one of priority public health strategies that has been put in place to improve child survival. Empirical evidence from Mutare rural showed that in the year 2020 Vitamin A supplementation for children 12-59 months could not reach the recommended 85% coverage mark as guided by the WHO regulations. This study sought to identify demographic, knowledge, socio economic and socio-cultural factors that influence Vitamin A uptake in Mutare rural. The findings of this study showed that the age of the child [AOR = 1.96, 95% CI (1.17 – 5.33)], knowledge on how often vitamin A supplementation should be given[AOR = 18.77, 95% CI (5.13 – 21.21)], perception on importance of Vitamin A supplementation[AOR = 11.78, 95% CI (1.03 – 13.41)], religion[AOR = 2.55, 95% CI (2.01 –5.32)] and wealth index [AOR = 16.06, 95% CI (5.71 – 22.56)] were found to be significantly associated with vitamin A supplementation uptake in this study.

It was observed in this study that as the child's age increased the likelihood of receiving vitamin A supplementation reduced [AOR = 1.96, 95% CI (1.17 – 5.33)]. This can to a greater extent be a result of socio-cultural influences as most of the study participants were from the apostolic sect where there is a high probability of low birth spacing and the children are very close to each

other as a result the moment a mother gives birth to another sibling they start to concentrate more on the younger sibling and neglect the older one resulting in the older child starts missing their vitamin A supplementation doses. The findings of this study were similar to those by (Agrawal et al., 2013) and (Lima et al., 2020) who reported a steady decline in vitamin A supplementation with increasing age of the child.

Knowledge on how often should be given was found to be associated with uptake of vitamin A supplementation. Mothers who knew how often their children should receive vitamin A supplementation in this study were 2.3 times more likely to take their children for vitamin A supplementation as compared to their counterparts who did not know how often vitamin A supplementation should be given. When a caregiver is aware on when their child is to receive their next vitamin A supplementation dose it makes the caregiver compliant, and the child receives the recommended doses in time. Similar to findings in this study (Kamau et al., 2012) in their study from Kenya found that the reasons why mothers were not compliant to the vitamin A supplementation schedule was that they were not aware of the supplementation schedule. In addition to information on importance of vitamin A supplementation caregivers need notification and reminders on when they should take their children for the next dose.

Perception on importance of vitamin A supplementation was found to be significantly associated with uptake of vitamin A supplementation. The study found that caregivers who perceived vitamin A supplementation to be safe where 2.7 times more likely to take their children for vitamin A supplementation. The finding of this study concurs with that of (Mostafa et al., 2019) who also found that caregivers who perceived vitamin A supplementation to be safe were more likely to take their children for vitamin A supplementation the study further showed that older children were not compliant to vitamin A supplementation schedule due to the perception of the

ineffectiveness of vitamin A supplementation for older children by caregivers. This shows that the perception of caregivers on child health significantly affect children's health.

This study found that nonadherence to vitamin A supplementation was more pronounced in children from the apostolic sect believers. Apostolic sect believers were 60% less likely to take their children for vitamin A supplementation. Apostolic sect believers cited that their religious teachings, doctrines, and church regulations do not allow the consumption of vitamin A supplementation and for that reason they would not take their children for vitamin A supplementation. Caregivers from the apostolic sect believers further explained that having a child taking vitamin A supplementation is regarded as an unclean practice. Similar findings were reported in a study by (Abedin, Ali, Ahmed, & Ahammed, 2019) in Bangladesh were religion negatively affected uptake of vitamin A supplementation in their study the Muslims were objectors of the practice and would not take their children for vitamin A supplementation.

In this study wealth index was found to be significantly associated with vitamin A supplementation uptake [AOR = 16.06, 95% CI (5.71 – 22.56)]. The study showed that children from the wealth index poor where not complying to vitamin A supplementation while those in the middle wealth index were taking their children for vitamin A supplementation. The findings of this study are similar to the findings made by (Haile et al., 2015) where children in the poorest wealth index where less likely to get vitamin A supplementation further to that (Mahajan et al.,2016) in their study reported an association between poverty and poor vitamin A supplementation coverage.

5.3 Conclusion

In conclusion, Vitamin A supplementation in Mutare rural for children 12-59mnths is below the WHO target of 85% meaning the program has not been able to reach all the most vulnerable children in the area. The factors significantly associated with Vitamin A supplementation were age of the child, knowledge on when the child should receive vitamin A supplementation, perception of the caregiver on vitamin A supplementation, religion, and wealth index.

5.4 Recommendations

To ensure that vitamin A supplementation in Mutare rural increases to reach the WHO standards the following should be done:

UNICEF as the Nutrition cluster chair together with Ministry of Health and Child Care and other Non-Governmental Organizations and UN agencies (Nutrition cluster) should come up with strategies to increase social behavior change communication programs, targeting the apostolic religion church leadership to review their religious doctrines to support child health

- Ministry of Health and Child Care to extend to care-group leaders who will be reporting to a VHW
- Ministry of Health and Child Care to come up with a strategy for VHWs to conduct door to door household visits to provide vitamin A supplementation to the children at the household level
- Ministry of Health and Child Care and other nutrition actors should conduct accelerated vitamin A supplementation catch up campaigns at community level to reach marginalized areas with vitamin A

- Ministry of Health and Child Care together with telecommunications service providers to use the bulk SMS system to send reminders to mothers and caregivers reminding them on vitamin A supplementation
- Local radio stations to work with Ministry of Health and Child Care to ensure that health behaviors lagging are shared on radio this ensures increased media use in sharing messages on nutrition since many study participants highlighted that they listen to the radio, but radio programs are not sharing as much information on vitamin A supplementation.

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Appendix 1: Interviewer administered questionnaire English

Questionnaire number…….

My name is Starlet Makota I am currently conducting a study on Vitamin A supplementation among children 12-59 months in Mutare District. The findings from this study will help to strengthen the program in this district and the whole province at large. The information generated from this interview will be private and confidential and your participation in this study is voluntary. You are free to withdraw from this study at any stage without penalty.

Do you agree to participate in this study? Yes [] No []

Signature…… Date …….

Case [] (a child who received the recommended 2 Vit A supplementation doses in 2020)

Control [] (a child who received 1 or no Vitamin A supplementation doses in 2020)

DEMOGRAPHIC DATA			
1	Age of caregiver in years	15-19 (1) 20-29 (2) 30+ (3)	[ ]
2	Age of child in months	12-36 (1) 37- 59(2)	[ ]
3	Sex of child	Male (1) Female (2)	[ ]
4	Marital status of the caregiver	Single/Divorced/Widowed (1) Married (2)	[ ]

5	Type of marriage	Monogamous (1) Polygamous (2)	[ ]
6	Number of children in the family	1 (1) 2-3 (2) 4+ (3)	[ ]
7	Birth order of the child	1 (1) 2 (2) 3+ (3)	[ ]
8	When last Vitamin A supplementation was received *Check child health card*	Date ……	
KNOWLEDGE AND PERCEPTIONS ABOUT VITAMIN A SUPPLEMENTATION			
9	Do you know what Vitamin A supplementation is	Yes (1) No (2)	[ ]
10	What is the route of administration of Vitamin A supplementation	Orally (1) I don't know (2)	[ ]
11	At what age does the child stop receiving their Vitamin A supplementation dose	59 months (1) I don't know (2)	[ ]
12	Why is it important for your child to get Vitamin A supplementation? *(Select all that apply*)	Protects my child from illnesses (1) Helps my child's skin and vision (2) Sick child gets well fast	[ ]

		(3) Do not know (4)	
13	How often should the child get Vitamin A supplementation	Every six months (1) I do not know (2)	[ ]
14	Do you think it is important for your child to get Vitamin A supplementation	Yes (1) No (2)	[ ]
15	What happens if your child does not get Vitamin A supplementation	Poor growth (1) Night blindness (2) Frequent illness (3) I don't know (4)	[ ]
16 16b	Have you experienced any problems with Vitamin A supplementation? *If yes explain*, ……. …….	Yes (1) No (2)	[ ]
17	Who gives you information about Vitamin A supplementation	Health workers (VHWs /Nurse /EHT) (1) Friends and family (2) No one (3)	[ ]
SOCIO-ECONOMIC AND SOCIO- CULTURAL FACTORS			
18	What is the highest level of education attained by mother	Never went to school	[ ]

		(1) Primary (2) Secondary (3) Tertiary (4)	
19	What is the highest level of education attained by father	Never went to school (1) Primary (2) Secondary (3) Tertiary (4)	[ ]
20	Is the caregiver exposed to any media	Yes (1) No (2)	[ ]
21	Which type of media is the care giver exposed to	Newspaper (1) Listens to the Radio (2) Reads IEC material at the clinic (3) None (4)	[ ]
22	What is your religion	Apostolic (1) Non apostolic (2)	[ ]
23	Occupation of mother	Unemployed (1) Formerly employed (2)	[ ]
24	Occupation of father	Unemployed (1) Formerly employed (2)	[ ]
25	On average how much is the monthly household	<$100USD (1)	[ ]

	expenditure	$100USD+ (2)	
26	Wealth Index (*Observe)*	Poor (1) Middle (2) Rich (3)	[ ]
27 27b	Are there any socio-cultural rules or regulations that would hinder your child from getting Vitamin A supplementation? If yes, please explain …… …….	Yes (1) No (2)	[ ]

Appendix 2: Interviewer administered questionnaire: Shona

Questionnaire number …….

Zita rangu ndinonzi Starlet Makota parizvino ndirikuita tsvakurudzo maringe nekudonhedzerwa Vitamin A kwevana vane makore 12-59 vanogara mudungu re Mutare Rural.Zvichawanikwa kubva muongororo iyi zvichabatsira kusimbisa chirongwa chekudonhedzerwa Vitamin A kwevana mudunhu rino. Ruzivo rwamuchandipa kubva kutsvakurudzo iyi ruchava rwakavanzika uye makasununguka kubvuma kana kuramba kupindura mibvunzo iyi. Makasununguka kuregera tsvakurudzo iyi panguva ipi neipi yamungada pasina chirango.

Makasuninguka here kupindura mibvunzo? [] Hongu [] Kwete

Case [] (Mwana akawana Vitamin A supplementation kaviri mugore ra2020)

Control [] (Mwana asina kubvira awana Vitamin A supplementation kana akaiwana kamwe chete mugore ra 2020)

Signature …… Date ……...

1	Muchengeti wemwana ane makore mangani	15-19 (1) 20-29 (2) 30+ (3)	[ ]
2	Mwana ane makore mangani (*tichiverenga mwedzi*)	12-36 (1) 37- 59(2)	[ ]
3	Mwana mukomana kana kuti musikana	Mukomana (1) Musikana (2)	[ ]
4	Panyaya dzewanano zvakamira sei	Handinakuroorwa /Takarambana/Ndakafirwa (1)	[ ]

		Ndakaroorwa (2)	
5	Pawanano muri pabarika here kana kuti muri mukadzi mumwe	Ndiri mukadzi umwe (1) Tiri pabarika (2)	[ ]
6	Munevana vangani	1 (1) 2-3 (2) 4+ (3)	[ ]
7	Uyu mwana ndewechingani	1 (1) 2 (2) 3+ (3)	[ ]
8	Mwana akapedzisira kupiwa Vitamin A rini (*Tarisa pacard rekuchipatara*)	Date …….	
RUZIVO NEMAONERO MARINGE NEKUPIWA KWEVANA VITAMIN A			
9	Munoziva here nezvechirongwa chekupiwa Vitamin A kwevana	Hongu (1) Kwete (2)	[ ]
10	Vitamin A inopiwasei	Nemumuromo (1) Handizivi (2)	
11	Mwana ano mira kupiwa vitamin A	Ava nemwedzi 59 (1)	

	supplementation kana akura sei	Handizivi (2)	
12	Zvakakosherei kuti mwana apiwe Vitamin A	Inodzivirira mwana kubva kuzvirwere (1) Inobatsira ganda remwana uye kuti meso aone zvakanaka (2) Mwana anokasira kupora kana achirwara (3) Handizivi (4)	[ ]
13	Mwana anotarisirwa kuwana Vitamin A kakawanda sei	Mwedzi mitanhatu yoga yoya (1) Handizivi (2)	[ ]
14	Munoona sezvakakosha here kuti mwana wenyu awane Vitamin A	Hongu (1) Kwete (2)	[ ]
15	Chii chingaitika kana mwana wenyu akasawana Vitamin A yakakwana	Haakurizvanaka (1) Anotanga kusaona zvakanaka usiku (2) Anorwara-rwara (3) Handizivi (4)	[ ]
16	Makambosangana nezvibingaidzo here	Hongu (1)	[ ]

16 b	muchida kuti mwana awane Vitamin A Tsanangurai zvibingaidzo zvamakasangana nazvo …… ……..	Kwete (2)	
17	Ndiyani unokupai ruzivonezve Vitamin A supplementation	Veutano (Mbuya utano, Vana mukoti, Utsanana (1) Hapana (2)	[ ]
TSIKA DZINGAVAPO MARINGE NE VITAMIN A			
18	Mai vakagumira papi chikoro	Havana kumboenda (1) Kuprimary (2) Kusecondary (3) KuUniversity (4)	[ ]
19	Baba vakagumira papi chikoro	Havana kumboenda (1) Kuprimary (2) Kusecondary (3) KuUniversity (4)	[ ]

20	Munomboverengawo here kana kuteerera wairesi	Yes (1) No (2)	[ ]
21	Chii chamunowanzoverenga kana kuteerera	Newspaper (1) Wairesi (2) Kuverenga chenjedzo dzinenge dzakanamirwa kumadziro pachipatara (3) Hapana (4)	[ ]
22	Chitendero chenyu chakamira sei	Tirimapositori (1) Hatisi mapositori (2)	[ ]
23	Mai vanoshandepi	Havaendikubasa (1) Vanoendakubasa (2)	[ ]
24	Baba vanoshandepi	Havaendikubasa (1) Vanoendakubasa (2)	[ ]
25	Pamwedzi munowana marii yamunorarama nayo pamba penyu	<$100USD (1) $100USD+ (2)	[ ]
26	Pamawaniro zvakamirasei (*Ongorora*)	Vanoshaya (1) Varipakatinepakati (2)	[ ]

		Vanowana (3)	
27 27 b	Kune here mitemo yemunharaunda kana yekuchechi ingatadzisa kuti mwana adonhedzerwe Vitamin A supplementation. *Kana matihongu titsanagurireiwo* ……	Hongu (1) Kwete (2)	[ ]

Appendix 3: Informed Consent: English

STUDY TITLE:

Assessing Vitamin, A supplementation compliance by caregivers of children under 5 in Mutare rural district 2020.

Introduction

You are asked to participate in the study on Vitamin A supplementation among 12-59months in Mutare. The purpose of the Vitamin A supplementation program is to improve child survival, yet the Vitamin A supplementation coverage for Mutare district is below the 85% recommended by the WHO guideline. This study desires to assess the demographic, knowledge, socio- cultural and socioeconomic factors that contribute to the low VAS coverage.

Choice to withdraw or leave the study.

Participation is purely voluntary. You can choose to or not to participate in this study. If you choose not to participate or leave the study during the interview process, you may do so freely without any consequences against you.

Harm and/or risks and/or discomforts

We anticipate no harm/risk/discomfort to occur during the discussion. Privacy and confidentiality will be observed and protected. Interview will take place in private. If risks do appear, interviews will be foregone and rescheduled.

Benefits

No costs are expected during the interviews, there is no remuneration for participating in this study. You are free to ask for further clarifications as need be. Your participation will help the MOHCC to improve on the implementation of the Vitamin A supplementation program and enable them to take the necessary steps to coming up with strategies that would help to come up with better interventions on how to increase Vitamin A supplementation coverage.

Privacy of records

All information provided will be kept confidential. You will only be identified by the questionnaire code and personal information from the interview will not be released without your written permission.

In case of any questions, please contact:

Africa University Research and Ethics Committee

Box 1320

Mutare

Phone: 60075/26 Ex 1156

Email: aurec@africau.edu

Appendix 4: Informed Consent: Shona

Chinangwa chetsvakurudzo:

Assessing Vitamin, A supplementation compliance by caregivers of children under 5 in Mutare rural district 2020.

Introduction

Munokumbirwa kuti muve chikamu chirikuongorora nezve chirongwa chekudonhedzerwa Vitamin A kwevana. Chinangwa chetsvakurudzo iyi ndechekuona kuti sei vana vasiri kudonhedzerwa zvinotarisirwa nyika yose takanangana ne Mutare district. Tsvakurudzo iyi inoda kunzwisisa zvikonzero zvirikuita kuti vachengeti vevana vane 12-59 months vasaenda nevana kunodonhedzerwa Vitamin A.

Kuva nesarudzoye kuvamuhurukuro kana kurega

Kuva chikamu chetsvakurudzo iyi hakumanikidzwe. Munokwanisa kusarudza kuvachikamu kana kuzosarudza kuzoregamavapakati. Kana muchingemasarudza kusavachikamu chetsvakurudzoiyi, kana kuzosarudza kuregamavapakati, makasununguka chose.

Njodzi kana zvingakonzera njodzipanguva yehurukuro

Hatitarisire njodzi panguva yetsvakurudzo. Hurukuro iyi iri pakati pedu chete uye hakuna umwe angazive zvatine takurukura. Kana pakava nejodzi kana zvingangokonzera njodzi hurukuro iyi icharegwa.

Benefits

Hapana muripo wamuchapiva pakuva chikamu chetsvakurudzo iyi, uye hatitarisire kuti mubudisewo mari yenyu. Makasununguka kubvunza kana paine zvamusina kunzwisisa. Mhinduro dzenyu dzichabatsira bazi rinooona nezveutano nekuchengetwa kwevana kwakanaka muZimbabwe kuti rivandudze chirongwa chekudonhedzerwa Vitamin A

Kuchengetedzeka kwemagwaro

Magwaro uye zvose zvichabva patsvakurudzo iyi zvichachengetedzwa pasina umwe ungazviona kana kushandisa. Muchazivikanwa chete kuburikidza ne nhamba yatichakupai pabepa. Zvose zvamuchataura pamusoro penyu hazvishandiswe pasina mvumo yenyu.

Kana muine mibvunzo pamusoro petsvakurudzo munogonakubata

Vanoona kuti tsvakuridzo iri kuitwa zvakanaka:

Africa University Research and Ethics Committee

Box 1320

Mutare

Phone: 60075/26 Ex 1156

Email: aurec@africau.edu

Appendix 5: Approval letter from the District Medical officer

Appendix 6: AUREC Approval letter

AFRICA UNIVERSITY
(A United Methodist-Related Institution)
INVESTING IN AFRICA'S FUTURE

AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE (AUREC)

P.O. Box 1320 Mutare, Zimbabwe, Off Nyanga Road, Old Mutare-Tel (+263-20) 60075/60026/61611 Fax: (+263 20) 61785 website: www.africau.edu

Ref: AU2125/21 19 July, 2021

Starlet Makota
C/O CHANS
Africa University
Box 1320
Mutare

RE: **ASSESSING VITAMIN, A SUPPLEMENTATION COMPLIANCE BY CAREGIVERS OF CHILDREN UNDER-FIVE IN MUTARE RURAL DISTRICT, ZIMBABWE, 2020**

Thank you for the above titled proposal that you submitted to the Africa University Research Ethics Committee for review. Please be advised that AUREC has reviewed and approved your application to conduct the above research.

The approval is based on the following.

a) Research proposal
b) Data collection instruments
c) Informed consent guide

- **APPROVAL NUMBER** AUREC 2125/21
  This number should be used on all correspondences, consent forms, and appropriate documents.
- **AUREC MEETING DATE** NA
- **APPROVAL DATE** July 19, 2021
- **EXPIRATION DATE** July 19, 2022
- **TYPE OF MEETING** Expedited
  After the expiration date this research may only continue upon renewal. For purposes of renewal, a progress report on a standard AUREC form should be submitted a month before expiration date.
- **SERIOUS ADVERSE EVENTS** All serious problems having to do with subject safety must be reported to AUREC within 3 working days on standard AUREC form.
- **MODIFICATIONS** Prior AUREC approval is required before implementing any changes in the proposal (including changes in the consent documents)
- **TERMINATION OF STUDY** Upon termination of the study a report has to be submitted to AUREC.

AFRICA UNIVERSITY
RESEARCH ETHICS COMMITTEE (AUREC)
APPROVED
P.O. BOX 1320, MUTARE, ZIMBABWE

Yours Faithfully

MARY CHINZOU – A/AUREC ADMINISTRATORFOR CHAIRPERSON, AFRICA UNIVERSITY RESEARCH ETHICS COMMITTEE