

# Evaluation of Millennium Development Goals in Reduction of Maternal and Child Mortality in Narok County, Kenya

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## Abstract

**Background:** Millennium Development Goals are the 21<sup>st</sup> Century worlds' concern to improve human way of life by 2015. In Kenya the Millennium Development Goals for reduction of maternal and child mortality has been recently powered by the beyond zero initiative which started in the year 2014 with the aim of reducing mortality as well as contributing towards promotion of maternal health for new born and children. Maternal mortality ratio and neonatal mortality rate trends in Kenya have remained unacceptably high in a decade. In 2007, the Ministry of Public Health and Sanitation adopted a community health strategy to reverse the poor health outcomes in order to meet Millennium Development Goals 4 and 5. The study aimed at evaluating the Millennium Development Goals its effectiveness reduction of maternal and child death in Kenya. **Methods:** The study was done in 2015; Survey design was used in this study in Narok County. The target population comprised of mothers with children below five years of age in Narok County. Purposive random sampling was used to arrive at 150 as the accessible population. Questionnaires and interview guides were employed as data collection tools. Face validity of instruments was determined by Maasai Mara University specialist lecturers and health care workers in the clinic while reliability was tested by computing reliability coefficient. Data was analyzed with the aid of statistical package for social science (SPSS); at Maasai Mara University. **Results:** The study findings showed that 39% reduction of mortality rate. Statistic significant of ( $p < 0.05$ ) was observed. Since the start of millennium development goals there has been reduction of child mortality and also improved maternal health. In Narok the four recommended antenatal visits was realized but was still low at 50.5%. Deliveries at the hospital and clinic assisted by skilled health care workers were 44%. Testing for HIV during pregnancy 81.5% and exclusive breastfeeding 36%. **Conclusion:** Increase in significance essential maternal and neonatal care practices demonstrates that, community health strategy is an appropriate platform to deliver community based interventions. The findings will be used by actors in the child survival community to improve current approaches, policies and practice in maternal and neonatal care. Study recommends that there should be a follow up protocol in projects put forward to ensure that the Millennium Development Goals are sustained in Narok County and other areas.

**Key words:** Beyond Zero Campaign, Maternal and Child Mortality, Narok County, Mobile Clinics, Millennium Development Goals.

## 1. Introduction

The world has experienced decrease child mortality by 3.7 million since 1990 to 2008. This however account for a third of child deaths. Maternal mortality ratio has reduced by three-quarters, between 1990 and 2015. The progress is though slow in Sub-Saharan Despite efforts to improve the way of life through MDGs globally and Sub-Saharan Africa. Most the MDGs still remain unachievable after the two decades have elapsed. Many countries including Kenya have found a big challenge in achievement of all the MDGs exclusively. Reasons being many developing countries are still struggling to grow economically and poverty still remains as challenge, with many still in extreme poverty. In the year 2000 a decade after onset of MDGs the world saw there was need for more efforts therefore summit met 1990. Several studies have documented the impact of MDGs on the world economic development; however the MDGs needs to be followed up and more empowered to be sustainable. Achievement of reduction of maternal and child mortality has been slow because of unsafe maternal and child care practices like cleanliness and hygienic delivery environment which has attributed to infections which has increased maternal mortality especially at neonatal stage. This study therefore tries to find out which MDGs directly affects infant mortality and maternal and what mothers feel should be improved to give them sustainable health and reduce child mortality.

In other studies, pregnancy period, childbirth and postnatal period is key in improving maternal and newborn health in order to reduce maternal and child morbidity and mortality However, promotion of change in mothers and child behavior is demanding because of knowledge barriers and service delivery gaps, traditional cultural beliefs and practices, lack of social support networks, financial constraints and inaccessibility of health units. Maternal and neonatal danger signs are usually first treated with herbs, and women and caregivers only seek medical care when the condition worsens.

The elapse of the decade has shown that to improved maternal and newborn health and also reduction of morbidity and mortality rates, depends on building capacities at personal, household, and communal levels to ensure appropriate self-care, prevention, and care-seeking behavior. In the aspect of economic stagnancy,

community-level interventions is potentially effective in addressing these problem at its onset, therefore decisions making seeks and access health care are bound by the socio-cultural environment.

Kenya demographic health survey (KDHS), demonstrated that, proper care during pregnancy and delivery is important for both mother and baby. The WHO recommends four antenatal visits during a woman's pregnancy for effective decrease in perinatal, neonatal, and infant mortality (KDHS 2014). Maternal and neonatal health trend in Kenya is a replica of other sub-Saharan African countries. In Narok less 50% of women, attend the recommended number of four ANC visits (Mugo, 2013). The under five mortality is 52 deaths per 1000 live births meaning that at least 1 in every 19 children born in Kenya dies before their 5<sup>th</sup> birthday. However, the infant mortality rate is 39 deaths per 1000 live births; this has slightly changed over the last decade. This is basically an attribute towards achieving the millennium development goal 4 and 5, within put of extra resources for maternal and child survival. Immunization coverage stands 80%, while Basic vaccination coverage has declined since 2008-09, from 77 percent of children with all basic vaccinations to 71 percent in 2014. (KDHS, 2014).

In seeking to improve the health outcomes in Kenya, Kenya's Ministry of Public Health and Sanitation (MOPHS) through its National Health Sector Strategic Plan II (NHSSP II) emphasizes on promotion of individual and community health. The purpose being to strengthen health services through several strategies, one of which is the community health strategy.

In Kenya beyond zero Campaign has since its inception in 2013, have developed empirical evidence to demonstrate the effectiveness of the strategy in improving maternal and neonatal care practices through health care in the community. The study therefore evaluated the effectiveness of the MDGs in reduction of maternal and child in Narok County, Kenya. This however needs a follow up and empowerment to be sustainable.

### **1.2 Statement of the problem**

There has been slow substantial change in maternal mortality in Sub-Saharan Africa over the past ten years and therefore progress towards MDGs 4 and 5 has remained slow in this region. In Kenya maternal mortality rates remains high therefore there is need to evaluate and strategies towards reduction of maternal mortality rates to ensure sustainability beyond 2015. The proportion of deliveries in health facility in Kenya is 44%. In Rift valley the infant mortality is 60 deaths per 1000 lives. Many of these deaths occur at birth and greater contributor being associated to health care professionals. KNBS/ICF Macro (2010).

The number health facilities in Narok is low with dispensaries 84, health centers 16, sub district 1, district 3. The ratio of doctor's population is 1:100,953 Sayagie (2015). The fifth millennium development goal is to reduce the maternal mortality ratio by 75 percent between 1990 and (2015) KNBS/ICF Macro (2010). Beyond zero initiative was therefore a better strategy to enhance maternal and child mortality rates and ensure that all births are managed by skilled health care professionals.

### **1.3 Purpose of the study**

The purpose of this study was to evaluate the Millennium Development Goals and its effectiveness in reduction of maternal and child death in Kenya.

### **1.4 Objectives of the study**

In order to achieve the above purpose; this study was guided by following objectives:

1. To assess influence of maternal nutrition knowledge on child mortality.
2. To establish the number of deliveries in hospitals in reduction to child and maternal mortality.
3. To examine sustainability of the millennium development goals towards the future of maternal and child health.

### **1.5 Assumptions of the study**

The study was based on several assumptions. One, those who were involved in the study shall have an understanding of the area of study. Similarly, that they are aware of millennium development goals. It also assumed that they understand the factors that affect the implementation process. The study also assumed that the sample populations were willing to provide the relevant data that influenced the success of the study results and that the results provided were accurate and sufficient enough to enable generalizations.

### **1.6 Justification of the study**

Understanding of millennium development goals (MDGs) their sustainability towards achievement of improved maternal and child health and also reduction of maternal and child mortality. There are several studies on MDGs however little research has been documented on the sustainability of the MDG 4 and 5 in developing countries like Kenya. More so, not much has been done in the environment of the pastoralists communities. This is what triggered this study that evaluated Millennium development goals (MDGs) in Narok County.

### **1.7 Significance of the study**

The findings of this study will enable stakeholders to effectively undertake the task of effective implementation of MDGs policies and their sustainability. This study will assist in improving maternal and child health and also reduction of child mortality.

### **1.8 Scope of the study**

The purpose of this study focus was MDG 4 and 5 in Narok County. The study was done between May to June 2015 in Narok County.

### **1.9 limitations of the study**

Limitations of the study cannot be overlooked since some of the key respondents did not participate in the study; however data was available from other respondents and therefore proceeded with analysis. The respondents have to be assured confidentiality to accept to participate in the data collection

## **Chapter Two. Literature Review**

### **2.0 Introduction**

This chapter provides an account of the literature reviewed MDGs introduction, implementations and sustainability. The chapter evaluates studies that have been researched internationally, regionally and within Kenya. Literature links the challenges facing the implementation of MDGs to the ineffectiveness in sustenance.

### **2.1 Evaluation of Millennium Development Goals**

In September 2000 the world met at Millennium Summit which is the largest gathering of world leaders in history. The summit adopted the UN Millennium Declaration, committing the world to a new global partnership to reduce extreme poverty and setting out a series of time-bound targets, with a deadline of 2015, which have become known as the Millennium Development Goals.

The Millennium Development Goals (MDGs) are the world's time-bound and quantified targets for addressing extreme poverty in its many dimensions-income poverty, hunger, disease, lack of adequate shelter, and exclusion-while promoting gender equality, education, and environmental sustainability. They are also basic human rights-the rights of each person on the planet to health, education, shelter, and security. Significant progress has been made in achieving many of the Goals; however much still remain to be done. Between 1990 and 2002 average overall incomes increased by approximately 21 percent. The number of people in extreme poverty declined by an estimated 130 million. Child mortality rates fell from 103 deaths per 1,000 live births a year to 88. Life expectancy rose from 63 years to nearly 65 years. An additional 8 percent of the developing world's people received access to water. And an additional 15 percent acquired access to improved sanitation services.

But progress has been far from uniform across the world-or across the Goals. There are huge disparities across and within countries. Within countries, poverty is greatest for rural areas, though urban poverty is also extensive, growing, and underreported by traditional indicators.

Sub-Saharan Africa is the epicenter of crisis, with continuing food insecurity, a rise of extreme poverty, stunningly high child and maternal mortality, and large numbers of people living in slums, and a widespread shortfall for most of the MDGs. Asia is the region with the fastest progress, but even there hundreds of millions of people remain in extreme poverty, and even fast-growing countries fail to achieve some of the non-income Goals. Other regions have mixed records, notably Latin America, the transition economies, and the Middle East and North Africa, often with slow or no progress on some of the Goals and persistent inequalities undermining progress on others.

### **2.2 Goal 4 reduction of Child Mortality**

The world health organization targets that the between 1990 and 2015 that the under-five mortality would be reduced by two thirds. Globally the number of children under five of age fell from 12.7 million to 6.3 in the year 1990 to 2013 respectively. In the year 2013 44% of under five deaths occurred during the neonatal period. In evaluating of MDGs in reduction of child mortality requires rapid scale of key effective, affordable interventions (WHO 2015).

### **2.3 Goal 5 improving Maternal Health**

Maternal mortality remains unacceptably high in the developing world. According to UNICEF and WHO up to 15% of pregnant women in all population group experience potentially fatal complications during birth. The world experience 80% deaths due to five direct causes which are experienced during pregnancy.

Majority of maternal deaths can be prevented in industrialized countries, deaths due to pregnancy and child birth are rare, and however the case is different in developing countries.

## **2.4 Maternal Nutrition Knowledge and Child Mortality**

Maternal nutrition knowledge acts as pathway for mothers to influence their children nutrition status. Many studies show that education affects health related choices by raising the allocated efficiency of health input in use.

## **2.5 Health care deliveries in reduction of Child Mortality**

Effective health care for newborns and their mothers; proper feeding; vaccinations and pneumonia control, diarrhea and malaria control; prevention and care of HIV/AIDS patient. In 2006 61% of births in developing world were attended by skilled health personnel, however maternal deaths are as low as 47% in Sub Saharan Africa.

## **2.6 Sustainability of Millennium Development Goals**

The world needs to accelerate progress towards achieving MDGs 4 and 5. Much advances have been seen throughout the years but there are still diverse cases whereby the maternal deaths experienced are preventable. Progress differs across countries though income might be similar (WHO 2010).

## **2.7 Recommendations**

Provide sufficient financial support to facilities and programmers that provide health care to the community this introduced to reduce maternal mortality

Effective training of competent health care workers is crucial towards attending to emergencies and complications during delivery. Ensuring nil charges in deliveries

## **Chapter Three. Methodology**

### **3.1 Study setting**

The study was carried out in Narok County, Kenya, between May-June, 2015. Narok County hospital and Maasai Mara University clinic will be the study area. It is located in the Great Rift Valley. It has a population of 850, 920 residence (District Development Plan, Narok, (2002-2008). The Primary inhabitants are the Maasai who are traditionally nomadic. The area is a semi arid (Mugo, 2003).

The maternal mortality ratio in Kenya is estimated at 495 per 100,000 live births which have increased from 488 per 100,000 live births. (KDHS, 2009). Approximately 80% of the Maasai in this region have lost their cattle due to increasingly frequent drought, thought to be a result of climate change. Water is becoming harder to find and in many places grass has stopped growing, leaving no food for cattle, the main source of food and income in this community.

The main causes of poverty include: lack of markets for produce, mainly meat and milk; poor communication and transport infrastructure; and unreliable weather conditions.

### **3.2 Study sample**

This cross-sectional descriptive study carried out among women of child bearing age of ages 14-49 years who attended both health facilities in May and June 2015.

#### **3.2.1 Inclusion criteria**

- i. All women of child bearing age were included who were sane or stable mind.
- ii. All women 14-49 years of age who willingly accepted to participate in the study.

#### **3.2.2 Exclusion criteria**

- i. Women below 14 years or above 49 years of age.
- ii. Women who are not physically, emotionally and mentally fit at time of study.
- iii. Women who are unwilling to respond or volunteer for the study.

### **3.3 Data collection**

Data collection was done by the principal researcher and two research assistants who were interns in the hospital but qualified nurse and nutritionists. They were trained on anthropometric measurements and interviewing of mothers. Data collection tools were pre-tested this include WHO structured questionnaire; they were completed by questioning women 14-49 years of age. Information collected included social demographic factors. Data were collected about awareness of MDGs. How many they are? The impact they have, and their achievement and challenges. Referrals were made to those women seen requiring clinical examination.

### **3.4 Variables**

#### **3.4.1 Independent variables**

Women age was categorized from 14-24; 25-35; 36-49: Education level categorized as no education; primary education; secondary and tertiary: occupation, marital status and social economic and parity were part of the questionnaire. Access to health care facilities, which include service delivery by health care workers. Socio-

economic status of household and income accessibility.

### 3.4.2 Outcome variables

An outcomes variable is the proportion of women who had knowledge/awareness of MDGs. Health status indicators like nutrition status and neonatal deaths. Global burden of communicable diseases.

### 3.5 The intervention

Implementation of the Child Survival and Development Strategy 2008-2015 and targeting children less than 5 years. Follow up on Integrated Management of Childhood Illness (IMCI) guidelines, Child-Mother Health Nutrition Strategy (Malezi Bora). "Beyond Zero Campaign" aimed at fundraising for mobile clinics to address pregnancy and HIV related complications.

### 3.6 Study design, population and sampling

A pre-determined sample size of 30 from each of 5 strata was used in the stratified technique to estimate the required sample size of women with children less than 5 years. Multiple stage sampling design was used to sample mothers with children  $\leq 59$  months to participate in the survey. Using villages with their respective number of households as a sample frame, 30 villages from each of the five strata were randomly selected based on probability proportional to size. In each sampled village, a list of household heads provided the sampling frame and one household head was randomly sampled from the list to give a random start. Systematic sampling and parallel sampling were used to sample eligible respondents in the village. This process was followed in each of the sampled villages.

### 3.7 Data collection and data quality control

A structured questionnaire was administered to eligible respondents through face-to-face interviews by trained research assistants. At each of the measurement time points, data collection was carried out for five days. Data collected included millennium development goals in relation to practices on antenatal care, infant and maternal care practices, delivery services, post-delivery care. Quality control measures put in place included selecting experienced research assistants and training them for three days, pre-testing the questionnaires, supervision of interviews by observing at least one interview per interviewer on each day, editing completed questionnaires in the field, and monitoring quality of data entry by verifying 10% of entered records.

### 3.8 Data analysis

Inferential statistical analysis by use of Fisher's exact test was done to compute p-values with 95% confidence intervals (CIs) using SPSS software (version 16). Univariate analysis was done to determine the statistics for dependent variables that included: 50.5% of women with children below years who attended at least 4 ANC visits; 76.6% of mothers with children below 5 years whose children were delivered with assistance of skilled health personnel; 44%. Testing for HIV during pregnancy 81.5%) and exclusive breastfeeding 36%). 62.4% of women with children 0-59 months counseled and tested for HIV at ANC during their most recent pregnancy and knew their HIV status.

## Chapter Four.

### 4.0 Results

Data was collected from 150 mothers with children under five, 120 was from 5th Narok county referral hospital and 20 from the Maasai Mara university clinic. Awareness of MDGs in the study was (95.3%) and its goals were (82.0%) however, only 33.5% knew all the millennium development Goals in the study population. Despite these disparities they knew that the government has helped in giving free maternity. The mean age of respondents was 20.6 years (SD = 4.6). Eighty-seven percent were married. Educational attainment was low, with 11% reporting having attained at least secondary level of education. There was no significant difference in demographic characteristics of the respondents.

There was a statistically significant ( $p \leq 0.78$ ) increase in essential maternal and infant care practices of four ANC visits, deliveries by skilled birth attendants, exclusive breastfeeding and knowledge of HIV status was portrayed, However, the increase in postnatal check-up was not statistically significant ( $p \leq 0.78$ ).

### 4.1 Discussion

The results show that community health strategy is an effective approach to delivering community-based intervention. This is evidenced by the significant changes in essential maternal and infant care practices of ANC attendance, skilled deliveries and exclusive breastfeeding. The positive health outcomes documented by the study came about because household members had been empowered to make healthy decisions to respond to maternal and neonatal health needs. The strengthened linkages between the community and dispensaries and health centre's enabled effective referrals from the community. Education level of mothers will also determine



their health status or the health of the children.

A continuum of care is needed throughout pregnancy, childbirth and the postnatal period in order to improve maternal and child health for effective reduction of morbidity and mortality rates. Efforts should focus on building capacities at individual and family levels. This is confirmed by community based interventional studies in Narok by Christian Aid, World vision and Narok county hospital where infant mortality reduced by 85% respectively. These positive changes facilitate behavior change that improves pregnancy outcomes for women and health outcomes for newborns and infants. It also breaks the inherent traditional practices in future generations.

Most maternal and infants recommended practices are acceptable to the community. However health system and community barriers are prevalent and need longer period to overcome. Women in rural settings prefer to deliver in health facilities but are constrained by the exorbitant delivery charges in such poverty stricken regions, absence of emergency transportation and inaccessible health units; however the government and county government has tried to remove delivery charges to improve maternal health care. In the study one-third of the pregnant women did not complete the recommended four ANC visits despite making one visit. They only attended one ANC visit to secure an ANC card for use in case of emergencies or also get other benefits. Other barriers to completing four visits are cultural disparities and lack of support from spouses.

The study had certain limitations that were not controlled for because of policy shifts during the study period. The study did not establish criteria to determine the weighted impact of number of household visits on dependent variables.

## Tables and Pictures

### Picture 1

Pictures of children under 5 years receiving services from the health workers



MUAC measurements (This done to determine the weight of children)

**Picture 2**  
 Health check of children

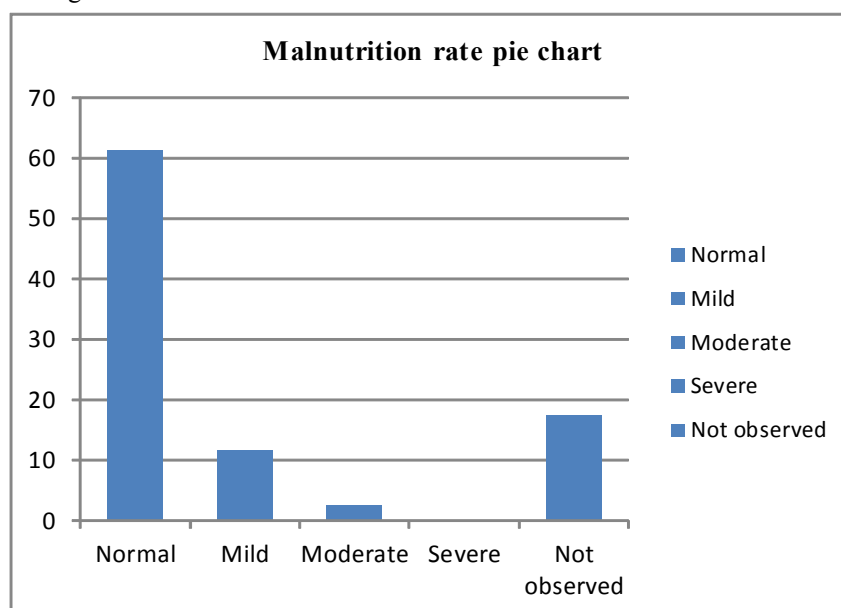


**Table 2**

The summary of the data collected in Narok county referral hospital on the table below:

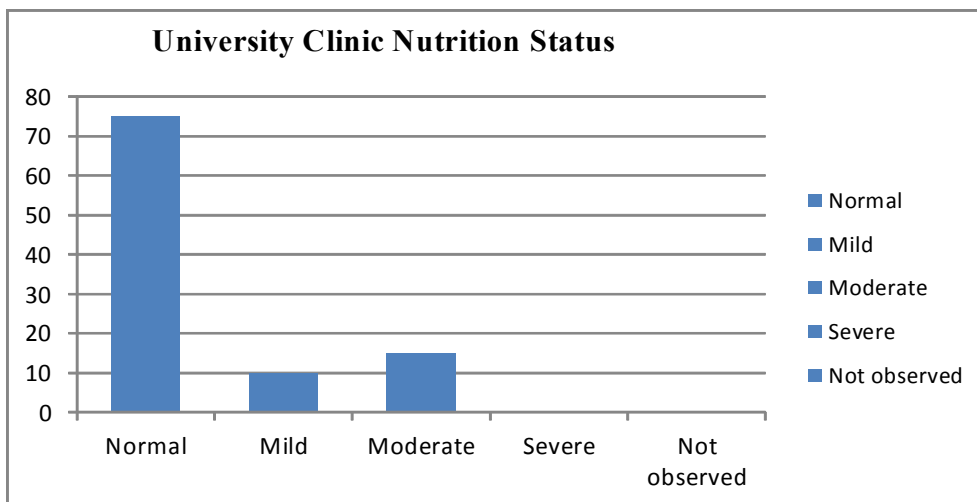
1	Total	120	80%
2	Normal	92	61.3%
3	Mild	14	11.6%
4	Moderate	3	2.5%
5	Severe	0	0%
6	Not observed	21	17.5%

See figure below



As observed in the pie chart the study results that at this period of study malnutrition rate for children under 5 was normal with slightly % being with mild nutrition status.

- The team plans to return to the area later as a follow up to assess the situation further and to ensure continued support.



- And excel sheet providing further data analysis into bar and pie charts is attached.

1	Total	20	100%
2	Normal	15	75%
3	Mild / at risk	2	10%
4	Moderate	3	15%
5	Severe	0	0%
6	Not observed	0	0%

Nutrition status is slightly better than the overall nutrition status of the general sub-county. This can be concluded to be resulting through better health care and higher social economic status as determined by the staff income.

**Picture showing high impact Nutrition interventions  
 Community members waiting for service**







**A kwashiorkor child**

**MUAC measurements of a Marasmic child**



**Counseling a malnourished mother in the community**



### Why target high impact nutrition interventions in Narok County

The research done shows that there is a major problem of malnutrition in Narok County. The worst figures are those for severe acute malnutrition at 4.4% critical by WHO standards, vitamin A coverage twice a year for children 12-59 months at 25.7%, Dewormed 32.6% and children under 6 months on exclusive breastfeeding is 35.8%. These figures show that there is a need for up- scaling nutrition programs to intervene on the worsening situation. The table below shows the magnitude of the problem,

Characteristics	N	n	% (95% C.I)
Overall GAM (WFH <-2 Z score or presence of oedema) - WHO 2006	110	85	7.7 % (5.3 – 11.0, 95% C.I.)
Overall SAM (WFH <-3 Z score or presence of oedema) - WHO 2006	110	49	4.4 % (2.7 – 7.3, 95% C.I.)
Overall underweight (WFA <-2 Z score or presence of oedema) – WHO	106	135	12.6 % (9.7 - 16.3, 95% C.I.)
Overall Severe underweight (WFA <-3 Z score or presence of oedema)-WHO	106	25	2.3 % (1.5 – 3.6, 95% C.I.)
Overall Stunting (HFA <-2 Z score)- WHO	110	309	27.9 % (23.2 – 30.0, 95% C.I.)
Overall Severe stunting (Height for age <-3 Z score) –WHO	110	103	9.3 % (6.9 – 12.4, 95% C.I.)
Vitamin A supplementation coverage	62		52.7%
Vitamin A supplementation (twice within the last year-12-59)			25.7%
Dewormed			32.6%
Measles coverage	103		52.6%
Exclusive Breastfeeding	96	268	35.8%
Proportion of children introduced to timely breast feeding	268		80.6%

### The high impact nutrition interventions have the following benefits

No.	INTERVENTION	IMPACT
1	Promotion of Exclusive Breastfeeding for the first 6 months of life	13% deaths prevented
2	Promotion of optimal complementary feeding for infants after the age of 6 months	6% deaths prevented
3	Vitamin A supplementation (2 doses per year for children 6- 59 months)	2% deaths prevented & 70% reduction in childhood blindness
4	Zinc supplementation for diarrhea management	5% deaths prevented
5	Iron-Folic Acid supplementation for pregnant mothers	20 % reduction in maternal mortality
6	Multiple Micronutrients for children under five years	Prevents micronutrient deficiencies for populations not accessing micronutrient rich foods
7	De - worming for children (2 doses per year for children 2-5 years)	Promotes physical growth and cognitive development while preventing anaemia.
8	Prevention and treatment of severe and moderate acute malnutrition	Lifesaving intervention. Prevention of deterioration from moderate to severe stage
9	Promotion of improved hygiene practices including hand washing	The single most cost-effective intervention in preventing diarrheal diseases
10	Salt Iodization	13 point increase in intelligence Quotation (IQ)
11	Iron fortification of staple foods	5-17% increase in productivity

The HINI have therefore the highest contribution in reducing child and maternal mortality at 26% combined for the under fives and 20% for maternal mortality while at 70% vitamin A has the highest reduction in childhood blindness.

### Chapter Five Conclusion

This study evaluated millennium development Goal 4 and 5 and its progress in improving human life. In the midst of this achievements many lives have improved and still more needs to be done for still there still 1.2

billion there who live in extreme poverty (WHO 2014). Improving the status of mothers and child health status has been challenging due to cultural beliefs and practices that has subjected women to complications before and after birth among the pastoral communities. In the evaluation of MDGs 4 and 5, Health improvement is directly related to reduction of morbidity and mortality. The study shows huge disparities across the communities in Narok. Poverty which is common among the rural communities in the county significantly impacts the health status of mothers and children. Therefore establishing community-based governance structures to organize and coordinate the activities of health workers at community level, and linking the community with the formal health care system facilitated change in essential maternal and child care practices. However, some practices like postnatal care attendance did not change significantly. The implication on the Kenya health policy and practice is for the policy to focus on people centeredness and participatory approaches in delivery of health care services. Further formative research is necessary to investigate barriers to postnatal care attendance this aspects may increase student awareness towards reduction of maternal and child deaths.

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