THE IMPACT OF COMMUNITY INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS IMPLEMENTATION IN KIBAHA AND MBARALI DISTRICTS OF TANZANIA

By

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A dissertation submitted in partial fulfillment of the requirements for the degree of Master of Medicine (Paediatrics and Child Health) of the Muhimbili University of Health and Allied Sciences.

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by the Muhimbili University of Health and Allied Sciences (MUHAS), a dissertation entitled: ***The Impact of community Integrated Management of Childhood Illness Implementation in Kibaha and Mbarali districts of Tanzania,*** in partial fulfillment of the requirements for the degree of Master of Medicine (Paediatrics and Child Health).

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Supervisor

Date 20.5.2008

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I, **Mary B Charles**, hereby declare that this dissertation is my own original work and it is a product of my own efforts and that it has not been presented and will not be presented in any other University for a similar or any other degree award.

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ACKNOWLEDGEMENT

I first wish to convey my thanks to my supervisor, Dr. Emmanuel Munubhi for his help during the write up of this dissertation.

Special appreciations go to Dr Sulciman. Kimatta, formerly working with UNICEF Tanzania Country Office whose contribution and constructive criticism have made this work possible.

My sincere thanks also go to Ms. Candida Moshiro and Mr. Faustine Mayunga of the Department of Biostatistics for their statistical assistance.

My gratitude should also go to all caregivers of the children that made this study possible.

I would like to thank the National Institute of Medical Research (NIMR) for the financial support provided for this study.

Last, but not least I am grateful to my dear husband and my son for their moral support and their patience during the whole period of study. I glorify the Almighty God for taking me through this work and my studies. AMEN.

DEDICATION

I dedicate this work to my family for all their prayers and support.

To My dear husband Prosper,

Our dearest son Kaizirege Paul and daughter Kokushubira Patricia,

My wonderful parents, Nyesigile and Dharmasen,

My dearest nephew Amani Sean Jordan and niece Imani Chanel Ester,

My young sisters: Jacqueline and Doreen.

ABSTRACT

Background: The Integrated Management of Childhood Illness (IMCI) Strategy was introduced in Tanzania in 1992, to reduce morbidity and mortality associated with the major causes of childhood illness namely malaria, diarrhoea, measles, acute respiratory infections, and the emerging HIV/AIDS pandemic.

Objective: To determine the changes in practices of child caregivers regarding the recommended practices for child survival, growth and development, following implementation of community IMCI in the study areas.

Study design and setting: This was a cross-sectional community based descriptive study conducted in Kibaha and Mbarali districts from May to June 2006; whereby interviews to determine the performance of caregivers with regard to the key c-IMCI practices were carried out in 392 households. The subset of 392 households was selected by using multi-stage sampling technique at the initial stages and convenient sampling at later stages.

Methodology: Data was collected using a structured questionnaire addressing the key c-IMCI practices in the two districts. Analysis of the findings was done using Epi-info version 6 programme.

Results: Child Health and communities have a natural affinity for one another. Results show areas of strength such as immunization, vitamin A, ITN and iodized salt use attaining 75 to 85% coverage. Areas of weakness are exclusive breast feeding and complementary feeding in 23.4 to 32.4% and psychosocial growth and development to be worked on.

Conclusion and recommendation: Regarding the good practices observed in this study; vitamin A supplementation, iodized salt use, immunization coverage and use of insecticide treated bed nets; it calls for scaling out community IMCI implementation to other districts in Tanzania. More studies are needed to establish the reasons as to why breast feeding and apropriate complementary feeding are not widely practiced in our community..

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ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
BCG	Bacillus Calmette Guerin Vaccine
CAP	Community Action Plan
CBMIS	Community Based Management Information System
CORP	Community-own-resource-person
CSPD	Child Survival Protection and Development
DHS	Demographic and Health Survey
DMO	District Medical Officer
DPT-Hep B	Diphtheria, Pertusis, Tetanus- Hepatitis B Vaccine
EPI	Expanded Program of Immunization
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illness
IPT	Intermittent Presumptive Treatment
ITN	Insecticide Treated Bed net
MUHAS	Muhimbili University of Health and allied Sciences
NACP	National HIV/AIDS Control Programme
NSGRP	National Strategy for Growth and Reduction of Poverty
OPV	Oral Polio Virus Vaccine
RBM	Roll Back Malaria
TACAIDS	Tanzania Commission for AIDS
TOT	Trainer of Trainers

U-5MR	Under-five Mortality Rate
UN	United Nations
UNICEF	United Nations and International Children Education Fund
VEO	Village Executive Officer
WHO	World Health Organization

DEFINITION OF TERMS

- Exclusive breastfeeding is feeding an infant with breast milk only without giving any other foods. It allows for prescribed medicines, immunizations, vitamins and minerals supplements.
- Complementary feeding is feeding children starting at six months of age, on freshly prepared energy and nutrient rich foods, while continuing to breastfeed up to 2 years or longer.
- Micronutrients consist of the elements in the body found in very small quantities which are essential for normal metabolic activity and processing of nutrients for energy and for protein synthesis.
- Immunization is given to initiate/ augment resistance to an infectious disease; it provides a specialized form of immunity that provides long-lasting protection against specific antigens which cause a particular disease.
- The primary caregiver is defined as the person primarily responsible for daily care of the child.
- Critically ill child is a sick child who can no longer be taken care of at home and needs immediate medical attention.

1.0 INTRODUCTION

1.1 Background Information

Integrated Management of Childhood Illness (IMCI), a strategy fostering holistic approach to child health and development, is built upon successful experiences gained from effective child health interventions like immunization, oral rehydration therapy, management of acute respiratory infections and improved infant feeding.[1]

The core intervention of IMCI is integrated management of the five most important causes of childhood deaths, which are, acute respiratory infections, diarrheal diseases, measles, malaria and malnutrition. Using a set of interventions for the integrated treatment and prevention of major childhood illnesses, the IMCI strategy aims at reducing deaths as well as the frequency and severity of illness and disability, thus contributing to improved growth and development.[1]

The strategy was developed by the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and other technical partners to address major child health problems in the developing world.[1]

Diseases of children less than five years account for 30% of the total burden of disease in developing countries. Out of the 10.8 million under fives who die every year, seven million die from known preventable causes. Among the 10.5 million who died in 1999, 99% were from developing countries, 36% of them died in Asia, and 33% died in Africa.[2] Although there has been a steady global decline in child deaths during the period from 1955 to 1999, however, this decline has not been uniform in all countries of

the world. A significant equity gap in health among these children has been observed regionally, with sub-Saharan Africa experiencing the least reduction of 3% in under-five mortality compared to industrialized countries with the highest reduction of 32%.[2] Each year almost 11 million children in developing countries die before they reach their fifth birthday. Five in 10 of these deaths are due to just five conditions: malaria, pneumonia, diarrhoea, measles and HIV/AIDS, often in combination. Malnutrition contributes to over 60% of these deaths. IMCI seeks to address these problems through three components – improved case-management; health systems support; and family and community practices.[3, 4]

In Tanzania 223,000 children die every year before they reach their fifth birthday.[2,5] The majority of those who die are born to poor families and illiterate caregivers, living in rural areas.[5] Tanzania is ranked the 9th contributor to overall world child deaths, and the 23rd leading country with high under-5 mortality rate.[2] The mortality rates ranges from 105 deaths per 1000 live births in the Northern Zone of the country to 153 deaths per 1000 live births in the Southern Zone of the country. Again the rates are generally lower in urban than in rural areas, with 108 and 138 deaths per live 1000 live births, respectively.[6]

The major causes of morbidity and mortality among children in Tanzania are the same as those mentioned above, that is, malaria, diarrhoea, measles, acute respiratory infections, and now HIV/AIDS.[7] According to the *2000 Census Report*, the leading causes of inpatient admissions of children were malaria (54.7%), pneumonia (15.5%), anaemia (13.3%), diarrhoeal diseases (8.5%), acute respiratory infections (4.3%), and

other causes (3.7%). Malnutrition is a major underlying factor to child deaths. Forty three percent (43%) of children are stunted and 29% are under-weight.[8]

Success in reducing childhood mortality requires more than the availability of adequate health services with well-trained personnel. As families have the major responsibility for caring for their children, effective implementation of the strategy requires a sound working partnership between health care workers and the families, and support from their communities.[9]

Health care providers need to work with families and their communities to ensure that families can provide adequate home care to support the healthy growth and development of their children. Families also need to be able to respond appropriately when their children are sick, seeking appropriate and timely assistance when children need additional care and should fully comply with the recommended treatments.[9]

Improving family and community practices is one of the three components of the Integrated Management of Childhood Illness (IMCI) strategy, promoted by the WHO Division of Child Health and Development (CHD) and UNICEF has three main components. The third component is community IMCI (c-IMCI) which emphasizes good household and community child rearing practices with the primary aim to initiate, reinforce and sustain family practices that are important for child survival, growth and development.[9]

Tanzania was one of the first countries in Africa to introduce IMCI in 1996. By 1999, twenty other countries in the Africa Region had introduced the strategy, and 6 countries were considering expansion to cover more districts within the countries. By 2001, IMCI

was introduced in 39 countries in Africa, and by 2002, the number had increased to 43, with 17 of them expanding the implementation of the strategy to new districts.[10]

The Government of Tanzania, through the Ministry of Health and Social Welfare, has also developed a National Package of Essential Health Interventions in which the IMCI has been incorporated as a strategy for controlling child morbidity and mortality. IMCI is closely linked to the other major interventions like Roll Back Malaria (RBM), nutrition interventions, EPI, and HIV/AIDS prevention and care. These interventions combined, have the potential of greatly reducing childhood morbidity and mortality and improve the wellbeing of children in Tanzania.[7]

1.2 Implementation Process of IMCI in Tanzania

According to the Ministry of Health and Social Welfare Reports, implementation of community-IMCI in Tanzania has been undertaken both at the national and district levels.[10, 11]

The National level plays a major role of providing the districts with both technical and financial support.[11] This includes development of implementation tools, training of the District Health Management Teams, co-ordination of the district activities, as well as monitoring and evaluation of the entire implementation process.

1.2.1 National Level Process

In 1999, the Ministry of Health and Social Welfare, in collaboration with UNICEF and WHO identified seven districts where community IMCI implementation was to be started. This was done so as to provide relevant experiences and lessons for scaling up the intervention to other districts.[11] The districts were selected on the basis of their geographic location (covering 5 out of 6 zones in the country at the time of introduction of the intervention) and their burden of disease, especially among the under-fives. From the Lake Zone, Magu district was selected; Northern Zone - Hai, Eastern Zone - Kibaha and Kilosa; Southern Highland Zone - Mbarali; and Southern Zone - Mtwara Rural and Masasi.[11]

(A map showing these districts is shown in Appendix I)

1.2.2 District Level Process

At districts level, existence of Community Based Management Information System (CBMIS) provided a relevant framework for consolidating and strengthening a wide range of community-based interventions that target children. CBMIS had been significantly strengthened in the initial seven districts which are Magu, Mbarali, Kilosa, Kibaha, Hai, Mtwara rural and Masasi prior to introduction of community-IMCI, with support from UNICEF through its Child Survival Protection and Development (CSPD) Programme.[11]

The CBMIS involves the following activities: [11]

- Growth monitoring and promotion among children under-five years of age using village registers and follow-up forms
- Monitoring of vaccination status of children
- Monitoring of deaths among adults and children
- Quarterly meetings to discuss status of health in the community and to give reports to higher levels and feedback to the community people
- Basic training of Community-own-resource-persons
- Sensitisation and advocacy on the CSPD package, targeting district, ward and village authorities
- Provision of basic supplies and equipment to key actors at the village and ward levels. For example, all the 4,572 villages in the CSPD districts have each received stationery and 2 bicycles, village registers, follow-up forms and weighing scales.

The CBMIS interventions have been intensified in the 7 c-IMCI learning districts and additional interventions introduced in the effort to strengthen the capacity of households and the community to provide quality care to children. The on-going interventions in the c-IMCI districts include community-based malaria control, prevention of low birth weight, participatory hygiene and sanitation transformation (PHAST), immunisation promotion, strengthening of demographic surveillance system (DSS), Vitamin A supplementation and iodated salt monitoring. Psychosocial stimulation is also being implemented in one of the seven districts, namely Kibaha.[10, 11]

2.0 LITERATURE REVIEW

2.1 Key Family and Community Practices for Children in Tanzania

Tanzania is one of the countries that adopted the 16 key family and community practices in 1999.[11] The country also introduced an additional practice emphasising the need for the household and community to ensure that every pregnant and lactating woman gets time to rest by reducing her workload. Thus, in Tanzania, there are 17 key family and community care practices targeting for children and their mothers.[11]

The practices have been categorised into four result areas, in order to facilitate effective monitoring of implementation and the impact of the interventions. The key result areas include:

(a) Growth Promotion and Development: These are practices that help a child to grow and develop physically and mentally, and include good nutrition and psychosocial development.

(b) Disease Prevention: These are practices undertaken in the household before onset of a disease to prevent it from occurring.

(c) Home Care for a Sick Child: These are practices undertaken at home to help a child once it is realised that the child is sick or unwell in any way.

(d) Care Seeking and Compliance to Treatment and Advice: These are practices that involve getting out of the home to seek help, on recognising that a sick child can no longer be managed at home.

Table 1: The seventeen key household practices according to the four categories of result areas.

(a) Growth Promotion and Development (Physical and Mental)
1. Breastfeed infant exclusively up to six months (taking into account of WHO, UNICEF, UNAIDS policy and recommendations on HIV and infant feeding).
2. Starting at six months of age, feed children on freshly prepared energy and nutrient rich complementary foods, while continuing to breastfeed up to 2 years or longer.
3. Provide children with adequate amounts of micronutrients (Vitamin A, Iodine and Iron, in particular), either in their diet or through supplementation.
4. Promote child mental and social development by being responsive to child's need for care, and stimulating the child through talking, playing, and other appropriate physical and effective interactions
(b) Disease Prevention
5. Take children as scheduled to complete a full course of immunisation (BCG, DPT-Hep B, OPV and Measles).
6. Dispose faeces (including children's faeces) safely and wash hands with soap after defecation, and before preparing meals and feeding children.
7. Ensure children sleep under insecticide treated mosquito nets.
8. Adopt and sustain appropriate behaviour regarding prevention and care for HIV/AIDS affected people, including orphans.
(c) Home Care for a Sick Child
9. Continue to feed and offer more fluids to children when they are sick.
10. Give sick children appropriate home treatment for illness.
11. Take appropriate actions to prevent and manage child injuries and accidents.
12. Prevent child abuse/neglect and take appropriate action when it occurs.

(d) Care Seeking and Compliance

13. Recognise when sick children need treatment outside the home and take them for health care to appropriate providers.
14. Ensure that every pregnant woman receives 4 antenatal visits, recommended doses of tetanus toxoid vaccination, and is supported by family and community in seeking appropriate care, especially at the time of delivery and during the postpartum/lactation period.
15. Ensure that men actively participate in provision of childcare and are involved in reproductive health initiatives.
16. Follow instructions given by health workers, nutritionist and community based health workers in relation to:
    - Treatment, follow-up and referral
    - Completion of immunisation
    - Sleeping under insecticide treated mosquito nets
    - Feeding advice
17. Ensure that every pregnant and lactating woman gets time to rest by reducing her workload.

Evidence has shown that improving specific family and community practices can reduce childhood mortality by 10 to 50%.[9] Documented global experiences on child survival also indicate the following major benefits of specific family practices for child survival.

2.1.1 Breastfeeding

To all infants, breastfeeding remains the simplest, healthiest and least expensive feeding method that fulfils the infant's nutritional needs.[9] Exclusive breastfeeding has been defined as feeding an infant with breast milk only without giving any other foods. The definition allows for prescribed medicines, immunizations, vitamins and minerals supplements.[9] Breastfeeding alone could reduce the number of child deaths by more than 10%.[9] The duration of breastfeeding is, therefore, recognized as important health indicator in child's health and development.[12]

The World Health Organization (WHO) recommends the practice of exclusive breastfeeding for the first six months of life, with continued breastfeeding up to two years of age and beyond.[12,13] Studies have demonstrated that children who are exclusively breastfed are less susceptible to diseases such as diarrhea. There is evidence that breastfeeding during the first 6 months of life reduces the risk of hospital admissions due to pneumonia. Further advantages include gains in cognitive domains and protection against atopic diseases. It has been estimated that exclusive

breastfeeding for the first six months of life could reduce infant mortality rate by a remarkable 13%.[12,13]

Exclusive breastfeeding rates are still low globally, at about 25% in Africa, 45% in Asia and 31% in Latin America and the Caribbean, in infants less than 6 months of age.[12] The prevalence of continued breastfeeding is about 86% for infants 6–11 months of age in the developing world, and ranges from 92% and 88% in Africa and Asia, respectively, to 60% in Latin America and the Caribbean. For children aged 12–23 months of age, the prevalence of continued breastfeeding drops to about 70% and 72% in Africa and Asia, respectively, and to 37% in Latin America and the Caribbean.[12]

In a study to determine the prevalence of exclusive breastfeeding and its determiners in the first three months of life in the South of Brazil, exclusive breastfeeding at three months, was observed to be just 39% in a sample size of 3,449 infants. The use of water and tea was observed in 13% of the sample. The main reason that mothers gave for introducing liquids was colic (41%). Around 19% were on partial breastfeeding and the reason given for the introduction of supplementary foods was that babies were hungry (46%).[13]

In a study to establish knowledge, attitude and practice of breastfeeding in the north of Jordan, of the 344 interviewed mothers, 58.3% were exclusively breastfeeding for 0-6 months, 32% did so for 6 months. More than thirty percent (30.3%) were practicing mixed feeding, that is breastfeeding and formula feeding. Eleven percent (11.4%)

'when replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV-positive women is recommended.[12]

A study conducted in Zimbabwe in 2005 showed that postnatal transmission of HIV could be halved from 14% to 7% by exclusive breastfeeding in the first three months of life.[16]

There was circumstantial evidence that the fear of mothers spreading HIV to their infants through breast milk has scared them. Some of them may not know their HIV sero-status, with resultant negative influences on their breastfeeding practices. For some mothers who are HIV-positive they are under pressure to continue to breastfeed to avoid stigmatization by their families and communities.[16]

2.1.2 Complementary Feeding

The introduction of complementary foods to the diet (weaning) is a critical nutritional stage in an infant's life. The decision when to wean must balance the risk that weaning too early will stress the immature gut, kidneys, and immune system as well as decreasing exposure to the protective effects of breast milk. On the other hand weaning too late may result in under-nutrition and feeding problems.[17]

Infant-feeding practices constitute a major component of child caring practices apart from socio-cultural, economic and demographic factors. Somehow, these practices constitute one of the most neglected determinants of young child malnutrition in spite of

their important role in growth of children. Proper nutrition of children leading to adequate growth and good health is an essential foundation of human development.[18]

WHO and IMCI recommend that starting at six months of age; children should be given freshly prepared energy and nutrient rich complementary foods, while continuing to breastfeed up to two years or longer.[9]

Improved complementary feeding could prevent more than 10% of deaths from diarrhea and acute respiratory infections, in particular pneumonia. It could also reduce the prevalence of malnutrition by over 20%, and increase resistance to measles and other illnesses.[9]

Despite the above advice, successive infant feeding surveys have shown that the majority of UK children continue to be weaned before the age of 4 months. In a study to determine why the UK infants are weaned early done in 2004, parents of 923 term infants born in a defined geographical area and recruited shortly after birth were studied prospectively using postal questionnaires, weaning diaries, and routinely collected weights.[17]

The median age of first weaning solids was 3.5 months, with 21% commencing before 3 months and only 6% after 4 months of age. Most parents did not perceive professional advice or written materials to be a major influence. The independent predictor of earlier age at weaning was the parents' perception that their babies were hungry. Babies weaned before 3 months, compared to after 4 months had an increased risk of diarrhoea.[17]

Despite global efforts for improving maternal and child health and specific efforts like Integrated Child Development Services (ICDS), malnutrition among children remained a significant problem in India.[18] A cross-sectional study was conducted during 2003-04 in four selected areas of urban Allahabad - India. The optimum sample size of 217 study subjects was obtained.

Late initiation of breast-feeding beyond six hours and deprivation from colostrum came out to be significant risk factors for stunting. The proportions of stunting among children whose mothers initiated breastfeeding within six hours (49.6%) was significantly less ($P<0.02$) than those whose mothers initiated breastfeeding after six hours (64.6%). Stunting among children who were fed colostrum (42.1%) was significantly less ($P<0.01$) than that among those who were not fed colostrum (59.0%).[18]

In a study done in Kenya, maternal recall of infant feeding practices suggested that exclusive breastfeeding was rarely practiced beyond 3 months. Porridge was introduced during the first month of life for 23% of children, and by 4 months for 86%. Fruits were introduced between 3 and 6 months for the majority of children. About 15% of mothers reported giving fruits to their children before 3 months of age and, at the other extreme, about 15% delayed offering fruits until 12 months of age or later. Gruel, prepared from either one or a combination of the following carbohydrate flour maize, sorghum, millet and cassava flour, was a constituent of all children's diets. Green leafy vegetables were used by 69% of the sampled population.[18]

Fish, consumed by 39% of the children, was more commonly used than meat. Milk, both fresh and sour, was reported for approximately half the children.[18]

The Tanzanian DHS-2004-05 showed that, complementary feeding starts early. Seven percent of children below 2 months, 32% of children 2 to 3 months, and 58% of children 4-5 months are given complementary foods. Although many children receive complementary foods too early, others receive too late. All children 6 to 9 months should receive complementary foods, but 91% of them actually consume complementary foods, the remaining percentage start as late as two to three years.[6]

The complementary foods most commonly consumed by the under fives were starches 97.9%, proteins 47.8%, vegetables 70.2%, fruits 42.0%, dairy foods (milk/yogurt) 49.0%, fats/oils 23.2%, and other liquids excluding water 36.1%.[6]

From the Baseline Survey, in Mbarali, it was found that, complementary foods were given earlier than recommended, that is at 4 months in 17.2% of the children. Those weaned at 6 months were 58%.

The complementary foods consumed were as follows: starches 80.4%, proteins 79.8%, vegetables 63.3%, fruits 26.5% and dairy products 38.2%.[19]

In Kibaha, 44.7% were started on complementary foods at 4 months. The complementary foods consumed were as follows: starches 86.9%, proteins 47.3%, vegetables 68.3%, fruits 58.8% and dairy products 30.4%.[19]

2.1.3 Micronutrients

Vitamin A

Vitamin A is crucial for effective immune-system functioning. Severe vitamin A deficiency causes xerophthalmia, which if untreated can lead to permanent blindness. In areas of vitamin A deficiency, child mortality could be reduced by over 20% by improving the intake of vitamin A through diet or supplementation.[9]

Vitamin A supplementation is one of the best proven, safest and most cost effective interventions in public health. In populations where vitamin A deficiency is of public health importance, vitamin A supplements are recommended as prophylaxis and as treatment for at-risk groups and sick individuals respectively.[20]

Vitamin A supplements are given in two main contexts; as prophylaxis to groups of eligible individuals and as part of the treatment of sick individuals; prophylactic vitamin A supplementation of three groups i.e. infants and young children (0–59 mo), pregnant women and postpartum women within 6 weeks after delivery.[20]

High-dose vitamin A supplements should be included as part of the routine treatment of all individuals with xerophthalmia and of infants and children with severe malnutrition or measles since these children are at very high risk of vitamin A deficiency.[20]

The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) jointly recommend that vitamin A supplementation efforts be integrated into routine and supplemental immunization activities such as national and sub-national

immunization days in countries where vitamin A deficiency is a significant public health problem. Countries carrying out immunization days for polio eradication were encouraged to provide one age appropriate oral high dose of vitamin A to all children aged 6 to 59 months during this activity.[21]

Vitamin A supplements were integrated into immunization campaigns that primarily targeted children aged 6 to 59 months in 41 countries with a vitamin A–deficiency problem in 1998 and in 50 such countries in 1999.

More than 94 million doses were administered in 1998 and more than 97 million doses were administered in 1999, although some of the doses reached the same children in the same year because of a 2-dose strategy. In all, 31 (59%) of 53 campaigns in 1998 and 35 (54%) of 65 campaigns in 1999 achieved 80% coverage.[21]

After the administration of vitamin A supplementation during the above immunization campaigns, child mortality rates declined in the Philippines from 26.2 per 1000 births between the periods 1988–1992 to 13.8 per 1000 births in 1993–1997 and in Vietnam from 14.0 per 1000 births between the periods 1987–1991 to 9.8 per 1000 births 1992–1996.[20]

A meta-analysis of several large vitamin A trials has shown that improving vitamin A status reduces mortality rates between 23-34% among children six months to five years of age if vitamin.[22]

In Tanzania, efforts to combat vitamin A deficiency (VAD) started through a disease-targeted approach in 1987. This was confined to government-owned primary health care

iodization programs, endemic goiter persists in some countries with iodization programs and even in some countries with mandatory iodization programs.[25]

In the 2003 WHO report, the lowest prevalence of iodine deficiency was found in the Americans (10.1%), where the proportion of households consuming iodized salt is the highest in the world (90%). Surprisingly, the highest prevalence of iodine deficiency was in Europe (59.9%), where the proportion of households consuming iodized salt is the lowest (27%), and most countries have weak or nonexistent national programs. The prevalence of iodine deficiency in school-aged children was 36.4%.[24]

In a study done in South Africa in January 2000, to assess the change in the proportion of households using iodized salt as a result of the introduction of mandatory iodization, at baseline, a low percentage of households 25%, reported the use of iodized salt. A year later, more than 70% of households in each of the communities, for an overall percentage of 82.4% in the whole study area, were using iodized salt.[25]

The 2004-05 Tanzania Demographic and Health Survey tested the cooking salt found in the households, where 93% of the salt had iodine. Adequately iodized salt, that is, fortified salt that contain 15 parts per million (ppm) of iodine, was 43%. The percentage of households using adequately iodized salt in urban areas (72%) was twice that in rural areas (34%). The regions which had high percentage of adequately iodized salt were Arusha (93%), Dar-es-Salaam (87%), and Kilimanjaro (80%). The lowest percentages were found in Lindi and Pemba North (20%). The national average was 43.4%.[6]

From the baseline survey those who used iodized cooking salt in Mbarali were 31.1% and in Kibaha were 55.3%.[19]

Vitamin A deficiency (VAD), iodine deficiency disorders (IDD) and iron deficiency anemia (IDA); affect more than 30% of the world's population. These deficiencies often coexist in children in developing countries. IDA interferes with the thyroidal metabolism of iodine and may reduce the efficacy of iodine prophylaxis. VAD may impair iron metabolism and aggravate anemia. In Africa, universal salt iodization is effective against IDD, but the control of IDA and VAD on a national scale remains a challenge. Triple fortification of salt could be highly effective because of the beneficial interactions of iron, iodine, and vitamin A in metabolism. The addition of all three micronutrients to a single foodstuff might cost less than separate fortification programs.[27]

2.1.4 Child Mental and Social Development

Every child is a unique person with an individual temperament, learning style, family background, and pattern and timing of growth. As children develop, they need different types of stimulation and interaction to exercise their evolving skills and to develop new ones. Experiences for children, at whatever age, should be designed around their developmental needs and abilities.[28]

Child development has been defined by different scholars as growth and increase in body size, mental capacity, understanding and acquisition of new skills. These

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developments occur in series and at different stages one after the other. This process needs stimulation, which means the variety of opportunities which a child can get to experience, explore and play with things around him/her. It involves body movement and touching.[29]

Every society has different child rearing practices used to facilitate child development. The practices depend on cultures, beliefs, and socio- economic as well as environmental factors. These different factors influence child development as societies at the same time have different perceptions and expectations on child development.[29]

Early stimulation is important as this gives opportunity for the child to experience, explore and play with things around him. By touching, feeling, tasting and moving around, he will discover a variety of things, which encourage more exploration and hence better development for the future.[28, 29]

Play is a means by which humans and animals explore a variety of experiences in different situations for diverse purposes. Play has been emphasized as an important aspect, as it helps to stimulate the child's mind, body and social interactions. Through play, a child can identify his surroundings and manage to cope with it. In general, play helps the child to enjoy the beauty of the world, explore the adventures and face the challenges in adulthood.[29]

In a study done in Kibaha (December 2002), it was found that 71.6% of caregivers praised and encouraged their children as a positive motivation when they behaved well.

Thirty seven percent (37%) of caregivers said that they would thank their children and 37.4 % said that they would provide gifts as a kind of motivation to their children when

behaving well or when they did something new. In responding to child's bad behavior 74% of the caregivers said that they would spank the child, 78% yelled at the child. Only 27.7% of caregivers discussed with the child about his or her behaviour.[30]

Seventy three percent (73%) of caregivers had children who had play materials, 60.3 % of these materials were made by children themselves. It was found that 44.8 % of caregivers purchased toys for their children. Caregivers were also asked whether they help their children to make play materials. The study revealed that there were no materials made by adult caregivers in the households. Older siblings aged 6-10 were the ones helping their young sisters and brothers to make play materials.[30]

In another study also done in Kibaha (July 2004), the most frequently mentioned types of things done or taught were some of the daily practical skills such as playing (47.7%), singing and teaching songs (19.1%), feeding (19.8%), and story telling (9.1%) and walking with the child around (3.2%). Other things mentioned during the group discussions included to help the child walk, dress or wash clothes and dishes or to teach him/her good behaviours such as showing respect to people and greeting them.[31]

Although parents did not it admit openly, it was noted that, children's misbehaviour exposed them to negative rewards ranging from mere words to caning and slapping. This mainly happened to older children above three years. Parents were asked what they did or would have done when annoyed by children. The majority mentioned that they would spank or cane the child (44.1%), while those who yelled at the child were 34.9% and only 21% would discuss with him or her about his/her behaviour. When pleased

with their children most of the caregivers praised them (63.9%), 19% encouraged them to do the activities again and those who provided gifts were 16%.[31]

Interviews and observations done in Kibaha indicated that there were no specific areas/locations for children to play in except at schools. Although adults accepted that playing is very important to their children but families and communities did not take trouble to allocate places where children could go to play. These problems led children to play in risky and dangerous environment.[31]

The baseline survey showed that, in Mbarali, parents who sang to their children were 20.4% and those who told stories were 14.3%. Children, who behaved well, were praised by their caregivers (28.6%), 1.2% of the caregivers gave their children gifts and 39.0% thanked them. When children misbehaved, 69.3% of the caregivers spanked them and 53.6% yelled at them.[19]

In Kibaha, parents who sang to their children were 50.2% and those who told stories were 19.3%. Children, who behaved well, were praised by their caregivers (71.6%). Thirty seven percent of the caregivers gave their children gifts and 37.7% thanked them. When children misbehaved, 73.4% of the caregivers spanked them and 78.8% yelled at them.[19]

2.1.5 Immunization

Tremendous progress has been made over the past 20 years toward development of effective national immunization programmes throughout the world. The major contributor to this success is the Expanded Program on Immunization (EPI) of the

WHO, usually implemented through UNICEF. The EPI was created in 1974 as a worldwide alliance of collaborating nations whose goal was to expand immunization services and coverage.[32, 33]

The program consists of vaccination against six childhood diseases: polio, measles, pertussis, tetanus, diphtheria and tuberculosis. Top priority was given to developing countries because the seriousness of these diseases and the problem of immunization services delivery were more severe in these areas.[32]

A recent estimate suggested that these programmes prevent 3.2 million child deaths annually, and represent one of the most cost-effective health interventions. [32, 33]

The achievement of immunization program in Bangladesh has been impressive. According to an estimate of the Bangladesh EPI Project, during the period of 1987-1997, 1.2 million child deaths have been prevented by immunization. In ten years complete immunization among children 12 to 23 months old increased ten-folds, from negligible numbers in 1984 to 60% in 1993-4.[32]

EPI in Mozambique started in 1979 following the national immunization campaign against smallpox. The EPI targeted seven vaccine preventable diseases in children less than two years of age plus neonatal tetanus through immunization of pregnant women. These were: Bacillus Calmette Guerin (BCG), Diphtheria, Pertussis, Tetanus and Hepatitis B (DTP+HepB), Polio and Measles vaccines. The national coverage estimates for 2003 were 87% for BCG, 70% for the third dose of Polio vaccine, 72% for DTP+HepB and 77% for measles vaccine.[33]

The Government of Tanzania has adopted the WHO guidelines for vaccinating children. The immunization programme in Tanzania was implemented by the Ministry of Health through the Expanded Programme on Immunization (EPI), which started in 1975 and was established throughout the country in 1996. According to the above guidelines, to be considered fully vaccinated a child should receive one dose of BCG given at birth or at first clinic contact, three doses each of DPT-HB and polio vaccine given at 4, 8 and 12 weeks of age respectively, and one dose of measles at 9 months. Recently, a dose of polio vaccine at birth has been added to the schedule. It is recommended that children receive the complete schedule of vaccination before 12 months of age. This should be recorded on a health card given to the parents/caretakers.[6]

The 2004-05 TDHS collected information on immunization coverage for all children in the five years before the survey. The information was obtained in two ways- from health cards and from mothers' verbal report. Seventy one percent of children were fully immunized. Those with health cards were 78.8%. The coverage was 75.3% for BCG, OPV_1 -77.5%, OPV_2 -74.8%, OPV_3 -71.9% DTP+$HepB_1$ -77.3%, DTP+$HepB_2$ -74.7%, DTP+$HepB_3$ -72.6% and for measles 65.8%.[6]

From the baseline survey children with health cards were 85.9%. The average immunization coverage in both Kibaha and Mbarali was 56.1% for BCG, OPV_3 -57.4%, DTP+$HepB_3$ -57.3% and measles-51.3%.[19]

2.1.6 Proper Disposal of Faeces and Hand-washing.

Hand washing is one of the most effective means of preventing diarrheal diseases, along with safe stool disposal and safe and adequate household water supply. Evidence suggests that improved hand washing can have a major impact on public health in any country and significantly reduce the two leading causes of childhood mortality-diarrhoea and acute respiratory infection.[34] Improved hygiene practices, including safe disposal of excreta and hand-washing, can reduce the incidence of diarrhoea by more than 10 %.[9]

Table 2: The observed rates of hand washing in some of the studied countries were as follows: [34]

Country	After cleaning up a child (%)	After toilet use (%)
Northern England	47	-
Brazil	16	-
Peru	30	06
Kyrgyzstan	00	18
India	35	34
Senegal	26	31
Nigeria	10	-

In Ghana, an extensive study was done to see how hand washing was practiced and later campaign was done so as to improve these practices. The comparison was as follows, before the campaign: hand washing practices before eating 14%, after eating 53%, before preparing meals 11%, before feeding a baby 6% and after toilet use 76%. After the campaign results of hand washing practices were 55%, 31%, 26%, 89% and 25% respectively.[34]

In a study done in Egypt, caregivers declared that they and their children always washed their hands before eating (62.3%), while 44.5% of them did the same after defecation. Although it was reported that 76.7% of the children used latrines, 22.5% of them defecate somewhere else other than in latrines.[35]

The proper disposal of children's faeces is extremely important in preventing the spread of diseases. If faeces are left uncontained, disease may be spread by direct contact or through animal contact. In the 2004-05 TDHS, three-fourths of children's stools were contained, in the urban areas being 90% and rural areas 71%.[6] Regarding hand washing practices, the Baseline Survey showed that, 85.3% of the caregivers were washing their hands before eating, 85.3% after eating and 70.9% did so after toilet use. Few practiced hand washing before preparing meals 43.7 %.[19]

2.1.7 Ensuring Children sleep under Insecticide Treated Bed nets

Malaria remains one of the most serious global health problems and a threat to almost 50% of the world's population. With 200 million estimated new cases and 1– 2million deaths per year, the disease remains a major cause of morbidity and mortality. The burden of malaria in sub-Saharan Africa remains intolerable, with more than 20% of all deaths of children younger than 5 years attributed to malaria, resulting in up to 11.9 deaths per 1000 children living in malaria-endemic settings per year. With the above estimate of one million deaths each year, nearly 75% occur in children living in sub-Saharan Africa.[36, 40, 41] A key goal of malaria control is to provide insecticide-treated bed nets (ITNs) to 60% of African children aged younger than 5 years. However, in 2001 WHO and UNICEF reported that ITN coverage in 19 sub-Saharan countries was 2%.[37] Malaria control in resource poor countries has been severely affected by growing resistance to commonly used anti-malarial drugs and low utilization of preventative measures, as evidenced by the above poor use(2%) of the ITNs.[36, 41]

Insecticide-treated bed nets (ITNs) have been shown to significantly reduce malaria transmission and concomitant malaria related morbidity and all-cause child mortality across a range of transmission settings. ITN use during pregnancy has also been shown to significantly reduce the prevalence of low birth weight deliveries and malaria related morbidity among pregnant women. If children in malaria endemic areas slept under bed nets that have been treated with insecticide, child deaths due to malaria could be reduced by as much as 35%.[39]

The Roll Back Malaria global partnership, founded by the World Health Organization, the United Nations Development Program, the United Nations Children's Fund, and the World Bank, aimed to halve malaria mortality by 2010 through implementation of four key technical strategies: insecticide-treated bed nets, improved case management, and control of malaria in pregnancy, and early warning and containment of epidemics. Reductions in all-cause child mortality by an average of 17% have been demonstrated in controlled efficacy trials of insecticide-treated bed nets. With high coverage in malaria-endemic settings, insecticide-treated bed nets could save 6 to 8 child lives (1-59 months) per 1000 protected each year, resulting in significant progress toward Roll Back Malaria goals.[38, 40]

In Vietnam, a baseline survey of knowledge, attitude and practice (KAP) on Malaria, was held in 50 households in Phan Tien in 1995 and 2000. On the basis of the survey's findings, a continuous health education programme was instituted, which was regularly adapted. A double-sized bed net impregnated with permethrin was supplied to each family in 1994, and a second net was supplied in 1995. From then until 1997, the number of double-bed nets was gradually increased to one net for every two persons. Bed nets were re-impregnated with permethrin twice yearly. Nets and the drug for re-impregnation of bed nets were supplied free of charge. Those who reported to use ITNs in 1995 were 10%, whereas in year 2000 this went up to 88%.[36]

Since 2001 the Measles Initiative has supported mass measles vaccination campaigns in 25 sub-Saharan countries, delivering vaccinations to more than 120 million children and achieving high coverage (more than 90%) in virtually all campaigns.[37]

In Ghana, during the week of 9-13 December 2002, a mass measles vaccination campaign was conducted in 9 of the 10 provinces. It targeted 7.9 million children aged 9 months to 15 years. Lawra district, in the Upper West Region of Ghana, is a rural area of extreme poverty with no social marketing schemes for insecticide-treated bed nets. Household coverage of ITNs in northern Ghana was estimated at 4.4%.[37]

At the campaign exit interview 636/776 (82.0%) caregivers reported that they had received a home visit by a Red Cross volunteer before the campaign and that 32/776 (4.1%) of the youngest children in each household who were less than 5 years of age slept under an insecticide-treated bed net. Five months after distribution caregivers reported that 204/219 (93.2%) of children aged 9 months to 5 years had been vaccinated during the campaign; 234/248 (94.4%) of households were observed to have an insecticide-treated bed net; and 170/249 (68.3%) were observed to have a net hung over a bed.[37]

To reduce the prevalence of malaria and polio eradication measures, Niger's Ministry of Health, with support from international partners, launched a nationwide integrated health campaign in 2005. In coordination with a supplemental immunization activity

distributing OPV, long-lasting insecticide-treated bed nets (ITNs) for malaria prevention were provided free of charge to mothers of children aged less than 5 years. [38]

Respondents reported that 82.3% of the children had received one or more dose of OPV before (or independent of) the integrated campaign. During the campaign, 87.3% (95% confidence interval [CI] = 85.1%-89.5%) received OPV. Before the campaign, 6.0% (CI = 4.1%-7.9%) of households with children aged less than 5 years owned an ITN. After the campaign, 69.9% (CI = 63.6-76.3%) of households with children aged less than 5 years owned an ITN (range among regions: 58.2%-84.4%).[38]

The Eritrean National Malaria Control Programme began a scaled-up ITN distribution and re-impregnation programme at the end of 2002. The programme was designed to provide each household with two ITNs free of charge, while providing insecticide treatment annually for all existing bed nets. As part of this programme, ITNs were also distributed free of charge to all pregnant women in the programme area through antenatal clinics. It is estimated that by the end of the 2003 over 500,000 ITNs had been distributed within the programme area.[39]

Over three-quarters (76.1%; 95% CI 69.9–82.2) of children under five years old were estimated to have slept under an ITN the previous night on the Bed net Survey, as compared to only 7.8% (95% CI 5.7–9.9) on the Eritrean DHS, resulting in gross programme effect of 68.3% [76.1% (Bed-net Survey) – 7.8% (Eritrea DHS)]. Over half (52.4%; 95% CI 38.2–66.6) of pregnant women were estimated to have slept under an

ITN the previous night on the Bed-net Survey, as compared to only 4.4% (95% CI 1.2–7.5) on the Eritrea DHS, resulting in a gross programme effect of 48.0% [52.4% (Bed-net Survey) – 4.4% (Eritrea DHS)].[39]

In Kenya, 79 villages in Asembo district and 142 villages in Gem district were randomized by public lottery to receive insecticide-treated bed nets at the beginning of either phase1 or phase2 of the ITN intervention survey. Every 6 to 11 months, project staff went door to door to re-treat nets with permethrin. Re-treatment of nets throughout phase 2 continued using the same methods as in phase 1, with all costs borne by the project. Adherence to use of insecticide-treated bed nets among all children younger than 5 years increased in intervention villages from an average 65.9% in phase 1 to 82.5% in phase 2 ($P<.001$). During phase 2, observed adherence was higher among the former intervention villages than the former control villages but the difference was not statistically significant.[40]

In Uganda, among the census population, bed net use was reported by 45% with 12% reporting use of an ITN. Bed-net coverage was highest among children less than one year of age (63%) and decreased with increasing age through adolescence (29% in persons aged 11 to 17 years) followed by an increase in adults 18 years or older (46%).Trends in ITN use across age groups were similar; however, only 27% of bed nets were reported to be treated with insecticide. Only 6% of enrolled children used an ITN and 68% of these ITNs were either new or retreated within the last 6 months. Observed bed nets were generally in poor condition with 56% having visible holes.[41]

In a study done in Muheza town 93.2% of households had bought at least some nets and the total number of nets was about 50% of the human population revealed by our census, implying very high coverage of the population by nets, considering that many of the nets would be used by two or more people. It was reported that 27.2% of nets were insecticidal, i.e. had been treated at some time with an *Ngao* insecticide sachet (or in a few cases there were Permanet® Long Lasting Insecticidal nets).[42]

Community-based malaria control initiatives included promotion of Insecticide Treated Net (ITN) use at the household level, sensitisation and advocacy using various IEC materials, training of health workers, and follow-up and supervision of the trained health workers. In 2001, each of the 7 districts were provided with ITN materials (3,600 mosquito nets and 10,800 insecticide tabs). [43] Following the change in the national malaria treatment policy from Chloroquine to SP (as first line drugs for malaria treatment) in 2002, all the 7 the districts were again provided with various IEC materials including posters, leaflets and comic magazine, for use in sensitising the community on malaria prevention and case management using SP. [43]

Multisectoral teams were also trained at the district and at community levels on ITN promotion and SP use.[43] The teams included district trainers of trainers, ward extension staff, village health workers, and shopkeepers. Periodic sensitisation and advocacy on malaria control and prevention are also conducted periodically in the districts.[43] Apart from that, some of the districts are already implementing the National ITN Voucher Scheme (*Hati Punguzo*), which involves providing every pregnant woman

with a voucher valued at Tsh.2, 750/= to enable her buy an ITN by toping up the difference in price.[44]

The mothers are also provided with a free packet of insecticide for net re-treatment, during the first and the second immunisation visits of the newborn baby. Apart from protecting the mother from malaria, the idea is also to protect the unborn child and newborns. The scheme was first piloted in two c-IMCI districts (Kilosa and Kibaha), in fiscal year 2003/2004, before rolling it out nationally, using the Global Fund for HIV/AIDS, TB and Malaria.[44]

2.1.8 Appropriate Behavior regarding Prevention and Treatment of HIV/AIDS

Acquired immunodeficiency syndrome (AIDS) is one of the most serious public health and development challenges in sub-Saharan Africa. According to the 2003-2004 Tanzania HIV Indicator Survey, which covered Mainland Tanzania, 7% of adults aged 15-49 were infected with the HIV. The impact of HIV/AIDS is now felt across all sectors of Tanzanian society. In response to this epidemic, the Tanzanian Government with technical assistance from the World Health Organization's Global Programme on AIDS (WHO-GPA) formed the National HIV/AIDS Control Programme (NACP) under the Ministry of Health.[6]

The NACP is responsible for developing strategies for prevention, control and mitigate the effect of the HIV/AIDS epidemic through health education and community participation. The second organ, TACAIDS, established in 2001, was designed to monitor and evaluate progress, to mobilize resources, and undertake advocacy.[6]

In Tanzania, knowledge of AIDS is widespread, with 99% of respondents having heard of AIDS. Ninety five percent of all respondents, regardless of the educational level, have heard of the epidemic.[6]

The HIV/AIDS awareness among Tanzanians aged 15-49 years is as follows: [45]

Table 3: Knowledge of HIV and its transmission, Tanzania 2003-04 [45]

Percentage of respondents who:	**Women**	**Men**
Have heard of AIDS	***99.1***	***99.8***
Say having just one uninfected, faithful partner can reduce the chances of getting AIDS	***86.6***	***88.4***
Say using condoms every time can reduce the chances of getting AIDS	***67.6***	***74.8***
Say having one faithful partner and using condoms can reduce the chances of getting AIDS	***62.5***	***68.9***
Say not having sex at all can reduce the chances of getting AIDS	***87.0***	***87.3***

Table 4: Knowledge on mother-to-child transmission of HIV, Tanzania 2003-04[45]

Percentage who know that:	Women	Men
AIDS virus can be transmitted to child through breastfeeding	*69.3*	*63.0*
An HIV-infected pregnant woman can take special drugs to reduce risk of AIDS transmission to the baby	*16.6*	*18.7*
AIDS virus can be transmitted through breastfeeding and there are special drugs for pregnant women	*14.7*	*14.5*

Table 5: Rejection of misconception about AIDS, Tanzania 2003-04[45]

Percentage who know that:	Women	Men
A healthy-looking person can have the AIDS virus	*78.0*	*84.1*
People can not get AIDS virus from mosquito bites	*71.3*	*72.9*
People cannot get AIDS virus by sharing food with a person who has AIDS	*75.5*	*81.2*
A healthy-looking person can have AIDS and mosquito bites, sharing food cannot transmit AIDS	*66.3*	*73.9*
People cannot get the AIDS virus from witchcraft or other supernatural means	*82.1*	*89.0*

2.1.9 Home Care for a Sick Child, Care Seeking and Compliance to Treatment

Nearly all the 1.2 million child deaths each year caused by acute watery diarrhoea could be prevented by correct home care for diarrhoea. This means giving increased fluids, continuing feeding, seeking appropriate medical attention when needed, and following treatment recommendations. Acute respiratory infections (ARI) cause over 2 million child deaths annually. Timely and appropriate care seeking, combined with adequate treatment, could reduce ARI mortality by over 20%.[9]

In Indonesia, in order to examine the patterns of seeking care for gravely ill infants and children, all deaths in children under 5 in 10,000 households in Indramayu, were studied between July 1, 1991, and Dec 31, 1992. 141 deaths were identified (mortality rate 80.7 per 1000), of which 139 were due to causes other than trauma. No treatment of any kind was sought outside the home for 30 (22%) of the children who died from natural causes, and for 59 (42%) others only a traditional healer or other source of non-western medical advice was consulted.[46]

To study care seeking behavior and home treatment in Blantyre District (Malawi), and provide valuable follow-up to the Chloroquine to SP transition, a 2-stage cluster-sample survey was performed in February 2000. A sample of 1080 households included 672 households with children aged less than 5 years; 292 (32.2%, 95% CI 28.7-35.8%) of the 912 children in these households had completed a febrile episode within the past 14 days.

Among recently febrile children, 210 (72.0%, 95% CI 67.0-77.1%) received medication at home during their illness, but only 36 (12.2%, 95% CI 8.4-16.0%) received an appropriate antimalarial drug. Overall, 111 (37.4%, 95% CI 30.9-43.9%) received prompt, appropriate treatment. Only rural location was statistically associated with failure to receive prompt appropriate treatment (risk ratio estimate 1.2, 95% CI 1.01-1.5). Current care seeking practices suggest interventions should stress promptness of health facility visits, improved access to appropriate drugs, and accurate dosing for home-based treatments.[47]

In the TDHS 2004-05, the most reported illnesses (affecting under fives 0-59 months) were malaria, acute respiratory infection/pneumonia followed by diarrhoea. The percentage of those who received antimalarials (either at the health facility or were available at home) were 57%. The types of medication given were SP/Fansidar-23.5%, Amodiaquine-21%, Quinine-11%, Chloroquine-2%, Artemesinin-1.7%. Availability at home of antimalarials received by these children was: Chloroquine-9.4%, SP/Fansidar-2.7%, Amodiaquine-2.2% and Quinine-2.0%.[6]

The major symptoms for ARI/pneumonia identified by caregivers were fast breathing and fever. Fifty-seven percent of the children suffering from the above were taken to a health facility and received appropriate treatment.[6]

The prevalence of diarrhea in the above survey was found to be 12.6%. Mothers reported to give homemade mixtures usually containing sugar, salt and water before taking these children to a nearby health facility. Other fluids which were given at home were coconut milk, rice water or soup. Ninety-six percent of the mothers knew about the use of ORS, 77% of the sick children were given some form of ORT and 54% were given a solution prepared from an ORS packet. Fourty percent received pills/syrups.[6]

In a study which documented care-seeking events in 320 children less than five years of age with fatal malaria seen between 1999 and 2001 in southern Tanzania, verbal autopsy histories were analyzed to determine providers attended and the sequence of choices made as the patients' condition deteriorated.[48]

Within modern care, government providers were most prominent (44.7%) followed by home care with antimalarials from private shops (20%). Children were statistically more likely to be taken to government health centers and government and non-government dispensaries and less likely to be served by drug shops as the initial resort to care ($p \leq 0.05$).[48]

2.1.10 Specific Country Experiences on IMCI

Baseline health facility survey was carried out in 19 of the 20 first-level facilities in some selected villages in Bangladesh. The classification of illness most frequently presenting was fever (20%), cough or cold (49%), pneumonia (25%), diarrhoea (19%) and measles (4%). The treatment practices at these facilities were poor, only 13% of children with pneumonia were correctly treated. Among those who needed antibiotics (81%), 11% only received a correct prescription. Health providers made little effort to explain the necessary home treatment to the caregivers. None of the caregivers of the children who were prescribed oral rehydration solution and/or antibiotics could report correctly, as they left the facility, on how to give the treatment to the child at home.[3]

Apart from introducing community IMCI, Benin found it rewarding by training community health mobilizers who organized sessions and disseminated information regarding behavioural change and preventive mechanisms for the benefit of the entire community. This was evidenced by an increase in immunization and ITN coverage in Pobe district that is BCG 91%, TT1 83%, TT2 among pregnant women 67% and ITN use by pregnant women 45%.[49]

Malawi conducted a national community IMCI baseline survey in 2000, the results of which further indicated the need to initiate and implement community IMCI if the country were to see reduction in child mortality.[49] Evaluation of the effect of implementation was conducted 3 years later and the findings were as follows:

Table 6: Comparison of baseline survey in 2000 and evaluation in 2003 in Malawi[49]

Key Behaviour	Baseline Survey (2000)	Assessment (2003)
Care Seeking	20 % of mothers took children to the health facility within 24 hours of onset of illness	At least 60% of caretakers went to hospital did so within 24 hours of onset of illness
Antenatal attendance	73% of pregnant women attended at least 4 ANC visits	85% of pregnant women attended at least 4 ANC visits
Care for development	5% of parents could tell stories to their children 13% of parents played with their children 5% of fathers could comfort or hold their children	80% of parents tell stories to their children 82% of parents play with their children 75% of fathers comfort or hold their children

In Zimbabwe community IMCI was initially implemented in six districts namely Chipinge, Chegutu, Hwange, Zaka, Bulilimamangwe, and Mt. Darwin. Recent program audits reveal that the communities in IMCI were more alert and better prepared to respond to emergencies, for example alerting the authorities when potential cholera outbreaks were suspected and also quick decision making in terms of emergencies, for example identifying resources, organizing committees to undertake special tasks and actions to address emergencies.[49]

When implementing community IMCI in Swaziland capacity gaps were identified in nutrition, psychosocial care, home management and access to health services. A health and nutrition survey was conducted in one district in November 2002. A national prevalence study on worm infestation among under-fives was also conducted in August 2002. Routine Vitamin A distribution rose to 80% as compared to 10% coverage reported from Multiple Indicator Cluster Survey in 2000. EPI coverage improved from 72% in 2001 to 93% in 2003 and 50,000 children were de-wormed according to a study carried by the Public Health Unit.[49]

In Uganda AFRICARE assisted in implementing community IMCI and supplementary projects of water and sanitation and HIV\AIDS in Ntungamo, Kabale, Rukungiri, Kisoro, and Kanungu.[49]

The results were as follows:

- Increase in proportion of under fives who slept under ITNs from 3.6% at baseline to 11% at midterm and to 23% at final evaluation,
- Increase in proportion of mothers who reported receiving Chloroquine and SP from 43% at midterm to 50% at final evaluation.
- Vitamin A rich foods intake increased from 21% at baseline, 22% at midterm and 50% at final evaluation.
- Households with designated hand wash facilities with soap/ash increased from 6% at baseline 12% at midterm to 20% at final evaluation.
- Safe water coverage moved from 18% to 74%
- Community IMCI activities were included in the districts budgets and work plans, a good indicator of sustainability.

In Tanzania, nearly all the indicators used to assess sick children in selected health facilities suggested better case-management in areas with IMCI compared with those without IMCI. Children in IMCI districts received more thorough assessment and were more likely to be classified correctly than children in non-IMCI districts. In the two districts with IMCI, 95% (95% CI 90–99) of children observed were assessed for the presence of cough, diarrhoea and fever while only 36% (23–48) of children in comparison districts were assessed ($p < 0.0001$). Only 5% (0–12) of children in districts without IMCI had their weight checked against a growth chart and none were checked

for feeding problems, while in IMCI districts 77% (66–88) and 86% (77–95), respectively, were checked.[50]

Vaccination status was checked in nearly all children observed from IMCI districts (93%; 87–98) but in less than one-quarter of children from comparison districts (24%: 14–33). Evidence also suggested that children observed in IMCI districts were more likely to be diagnosed correctly than in the comparison districts (63%; 55–72 vs. 38%; 31–44). Sick children were more likely to receive appropriate treatment in the IMCI districts than in the comparison districts. Pneumonia was correctly treated for 75% (58–92) of the children in IMCI districts but for only 40% (28–52) in comparison districts. IMCI was also associated with major improvements in the treatment of malaria, with 88% (81–95) of children in IMCI districts correctly treated compared with only 25% (14–36) in the comparison areas.[50]

Ninety percent (90%;84–96) of the caretakers of sick children in these districts were advised to give extra fluids and continue feeding, while only 4% (0–8) were advised to do so in the comparison districts. For children who needed an oral medication (ORS and/or oral antibiotic and/or oral antimalarials) and were prescribed one by the health worker, 96% of caretakers in IMCI districts were advised on how to administer the treatment, compared with only 18% of caretakers in comparison districts.[50]

Caretakers in IMCI districts also reported higher levels of correct knowledge about how to care for their sick children: 72% (64–81) knew when leaving the facility how to give ORS solution to their child with diarrhoea to prevent dehydration and/or how to give oral antibiotics and/or oral antimalarials to those children who needed them, compared

with 56% (45–66) in the comparison districts. For all oral medications together, almost all caretakers (96%; 91–100) knew how to administer the treatment in IMCI districts but less than one-fifth (18%; 6–29) had this knowledge in comparison districts.[50]

3.0 PROBLEM STATEMENT

Mothers/caregivers at the household level as the primary duty bearers, must provide adequate nutrition and care to the child, and respond appropriately when the child falls sick. They must seek medical care when the child needs it, and correctly follow treatment instruction prescribed by health workers. In order to achieve this, families require knowledge, skills, motivation and support. They also need to learn how to prevent illness and know what to do when children get sick.

In Tanzania, a Household and Community IMCI Baseline Survey was conducted in seven districts initially ear-marked for review in 2000. The survey showed deficiencies in the quality care provided to children in the seven districts. It showed, among other things, that 15% of children were introduced to complementary foods prior to 4 months of age, while 24% of the children were weaned after the 12 months of age. Fifteen percent (15%) of the under-fives were fed only 1 to 2 meals per day and when they fell sick, only 24% of caregivers gave them more fluids, 6% gave more feeds and 39% of the caregivers fed the sick children less food. Regarding signs of pneumonia, a leading cause of infant and under-five mortality, only 44% recognized cough, 62% difficulty in breathing and 37% fast breathing, as signs of pneumonia. Regarding knowledge of critical illness, only 24% recognized vomiting everything eaten, 30% unconsciousness, 49% child's inability to drink or eat, and 20% convulsions, as signs of potentially life-threatening illness. Thirty five percent of all the caregivers interviewed believed that

convulsions and 33% of them considered HIV/AIDS could be better managed by alternative medicine other than the modern scientific medicine.[19]

It is against this background that the Ministry of Health and Social Welfare, in collaboration with developmental partners (mainly UNICEF and WHO) started implementing community IMCI, in the seven initial districts namely Kibaha, Kilosa, Hai, Magu, Mbarali, Masasi and Mtwara Rural in 2000. The aim was to improve, the knowledge and skills of mothers/caregivers, by reinforcing and sustaining key household and community practices, considered crucial for child survival, growth and development.

The other aim was also to strengthen the support given to the households by the community and institutions, in order to improve child health care, and to provide useful lessons for scaling out community IMCI implementation to other districts.

However, since the Baseline Survey 2000 in the seven "learning districts" and implementation of the 17-key household practices in 2004, no formal evaluation or studies have been done at the household and community levels, to document changes in practices of child caregivers in these districts.

4.0 RATIONALE OF THE STUDY

Community IMCI aims at improving the practices and skills of child caregivers, by reinforcing and sustaining key household and community practices, considered crucial for child survival, growth and development.

The implementation of the strategy was started in Tanzania in the late 1990s, with identification of the 17 key family and community care practices for children. This was followed by a baseline survey in the seven learning districts to establish the knowledge and skills of child caregivers regarding the recommended practices for quality childcare. Currently, the Ministry of Health and Social Welfare, in collaboration with partners such as UNICEF and WHO, is in the process of scaling up community IMCI implementation to other districts in the country. However no follow up study has been conducted in the seven "learning districts" after the baseline survey (2000) and community IMCI implementation (2004), to document the changes in practices of the caregivers at household level. Such information would be important in demonstrating effectiveness of the c-IMCI approach and in justifying expansion of the strategy to other districts in the country. It is also necessary to identify good practices by provided very well by caregivers at the household level for replication in other areas in the scaling-up process of the c-IMCI.

5.0 RESEARCH OBJECTIVES

5.1 Broad Objective

The objective of the study was to establish caregiver practice after the introduction of community IMCI in the study areas and any specific objectives.

5.2 Specific objectives were to determine:

1. The proportion of child caregivers who implement the recommended practices for promoting growth and development of children: exclusive breast feeding for 6 months, freshly prepared energy and nutrient rich complementary feeding, micronutrient supplementation and psychosocial stimulation.
2. The proportion of child caregivers who implement the recommended practices to prevent illness among children below five-years of age: immunization, proper hand washing and use of ITNs.
3. The proportion of child caregivers who implement the recommended practices for homecare of a sick child: continued feeding, offering of more fluids and appropriate home treatment.
4. The proportion of child caregivers who implement the recommended health-seeking behaviours when a sick child can no longer be managed at home: early treatment seeking and complying with treatment advice.

6.0 METHODOLOGY

6.1 Description of the study districts

6.1.1 Kibaha

Kibaha is a district located in eastern Tanzania. It was established officially in 1978. It is one of the six districts of the Pwani region. It is the headquarters of the region. The district is bordered by the Bagamoyo district in the north-west, Dar-es-Salaam region in the north-east, Kisarawe district in the south, and Morogoro region in the south-west.

The district has an area of 1,630 square km. The area, which is suitable for agricultural activities, is 142,162 hacters, which is about 87% of the total arable land. Currently only 31% of the arable land is utilized. According to the 2002 Tanzania National Census, the population was 132,045.

The district has 3 administrative divisions, these are: Ruvu, Kibaha and Mlandizi. There are 9 wards and 39 registered villages (Under the 1975 Village registration Act.). The nine wards of Kibaha district are Kibaha, Kwala, Magindu, Maili moja, Mlandizi, Ruvu, Soga, Tumbi and Visiga.

Agricultural sector is the major employment while 80% of the people make living in farming. Maize, paddy, cassava and millet are the major food crops while tropical fruits and cashew nuts are major cash crops. There are pastoral activities particularly in Magindu ward.

There is one Designated District Hospital, 2 Health Centers, 8 government dispensaries and 17 private dispensaries.

6.1.2 Mbarali

Mbarali is one of the 8 districts of the Mbeya Region. Until 6 years ago; it was part of Mbeya Rural District. Rujewa, a small township, is the district headquarters. The district borders Iringa rural in the northeast, Mufindi in the east, Njombe in the southeast, Makete in the south, Mbeya rural in the west and Chunya in the north.

It has a total area of 16,000 square km of which 12% is arable, 33 % is game reserve, 35% settlement and swamps. The rest the percentage is grazing land and stony/rocky hills.According to the 2002 Tanzania National Census, the population was 215,015 people.

The Mbarali District is administratively divided into 11 wards and 77 registered Villages. The wards are Chimala, Igurusi, Madibira, Mahongole, Mapogoro, Mawindi, Msangaji, Ruiwa, Rujewa, Ubaruku, and Utengule/Usangu.

Eighty percent of the district population depends on agriculture and livestock keeping with paddy and maize being the main food and cash crops.

There are 48 health facilities, which make a facility-client ratio of 1:5,000; a ratio well off from the national of 1:10,000.

6.2 Selection of the study area

The Kibaha district was chosen because it is the only district that has been able to implement the complete c-IMCI package, including early psychosocial stimulation and care. The second district, Mbarali, was selected because the Mbarali District Council volunteered to facilitate in data collection by providing transport, allowed four workers who participated in the IMCI implementation process to participate in the study as data collectors, which made the work much easier.

6.3 Study design

The study was a cross-sectional survey which involved the primary caregivers of children whose age was between one to sixty months.

6.4 Study Population

In both districts, the study focused on the child caregivers at the household level, especially mothers with under-five children, as the key study population, that is, the study unit. Other potential target groups were fathers and guardians taking care of children at the household level.

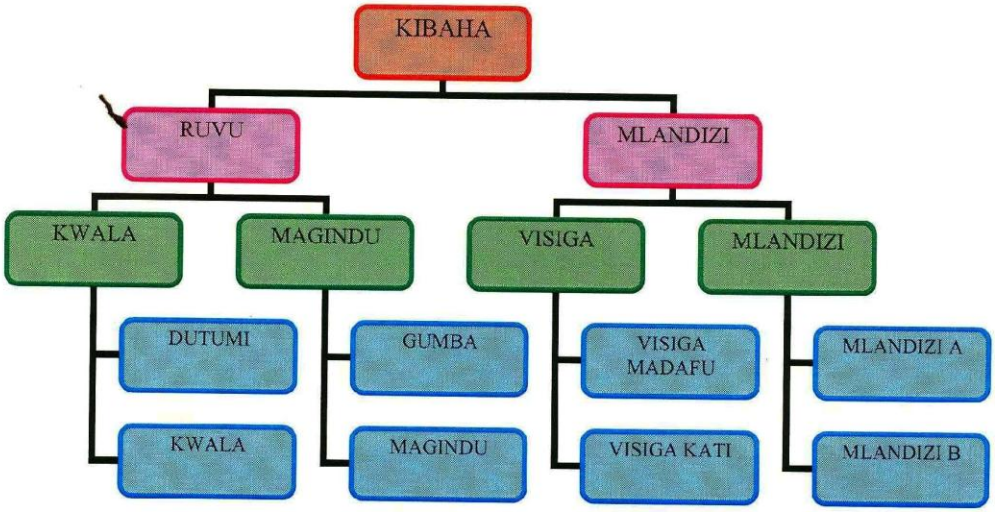
6.5 Sampling Procedures

The sampling procedure was done using a multistage sampling approach. Random sampling was used to select 2 divisions from the districts. Thereafter, 2 wards from each division were selected before selecting 2 villages in each ward. In Kibaha, the names of

the 3 divisions were written in 3 small pieces of papers, one piece was picked, the first division was obtained, and the process was repeated to obtain the second division. The same process was done on selecting wards, the two divisions had 3 wards each and therefore the two wards were selected out of the six wards. Again, from each ward selected, the names of the villages which belonged to it were written in small pieces of paper, randomly picked, this was done twice to get the two villages. In total 16 villages were worked on, that is 8 villages per district.

In Kibaha district, Ruvu and Mlandizi divisions were randomly selected. In Ruvu division, the wards chosen were Kwala and Magindu. The villages selected in Kwala ward were Dutumi and Kwala. Magindu and Gumba were the villages chosen in Magindu ward. In Mlandizi division, Visiga and Mlandizi wards were selected. The villages chosen in Mlandizi ward were Mlandizi A and Mlandizi B, and those in Visiga ward were Visiga madafu and Visiga kati.

Figure 1: The divisions, wards and villages which were visited in Kibaha district

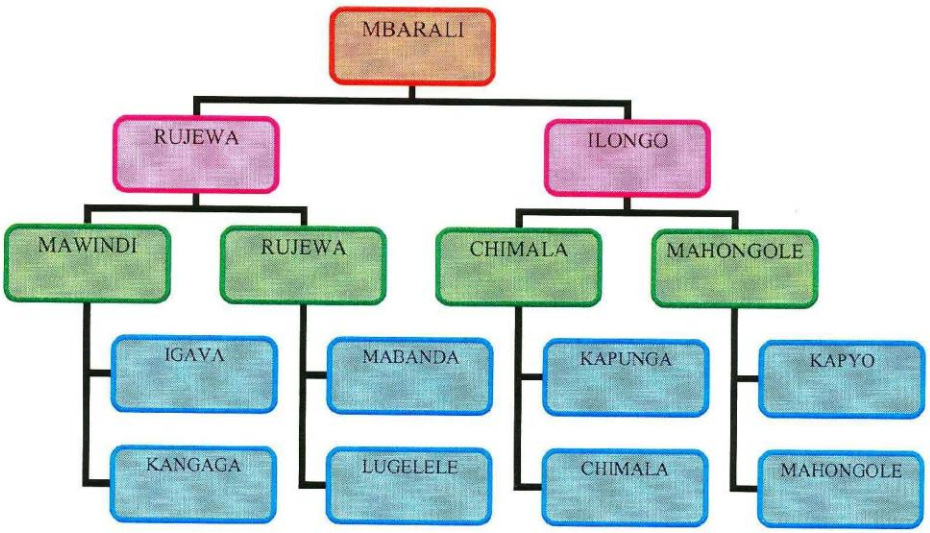


Mbarali district has two divisions and hence the process of selection started at the ward level. The two wards were randomly selected out of the 9 wards. The division were Rujewa and Ilongo. From Rujewa division, Mawindi and Rujewa wards were randomly selected. Villages selected in Mawindi ward were Igava and Kangaga. In Rujewa ward, the villages were Mabanda and Lugelele. The wards selected in Ilongo division were Chimala and Mahongole. Villages selected in Chimala ward were Kapunga and Chimala, and lastly, the villages selected in Mahongole ward were Kapyo and Mahongole.

With assistances from village leaders, 24 households with under-five children were finally selected by convenience sampling since accessibility of these households was

considered so as to ensure that assessment could be carried out at any time of the year without any hindrance.

Figure 2: The divisions, wards and villages which were visited in Mbarali district



6.6 Sample size

The study involved the caregivers who were found at home during our visits, since this was a cross-sectional study, the following formula was used:

$n = 4p(100-p)/E^2$

Where,

n was the estimated sample size

p was taken as the proportion of children who were adequately fed. This was a key finding in the baseline survey. An average of the two districts (in Kibaha it is 20.6% and Mbarali 12.9%) was calculated to be 16.75

E was the margin of error in this case it was taken as an average of the difference between the two proportions above.

Therefore:

- $p = 20.6+12.9 /2 =16.75$

  $E = 20.6-12.9$

  $n = 4(16.75)\ (100-16.75) / (3.75)^2$

  $n =$ **376**

Hence a total of **376** households were to be visited. From the sampling procedure a total of 16 villages were obtained. Therefore, the 376 households divided by 16 villages gave 23.5 households, which were approximated to 24 households. This brought a total number of **384** households. Extra 8 houses were visited as a diplomatic gesture to these neighbouring households and therefore the grand total of **392** households were visited

6.7 Data Collection Tool

Structured Questionnaires addressing selected key areas in c-IMCI implementation and the main variables of the study.

6.8 Pre-testing of the research instrument

Prior to commencement of the study, pre testing of the study instrument was done to caregivers with children under fives years in Ihanga village (this was not amongst villages chosen for the main study). The aim of this exercise was to test the extent to

which the target population would understand the tool. The process led to identification of areas of the tool that needed modification. Noticeable changes were on the way some of the questions were phrased, for example in question 3, we had to give the definition of the primary caregiver as is defined in the definition of terms (page xv), since for them, they perceived it as a family's financial provider. In question 15, where examples of mental/social activities which caregivers were supposed to do with their children, were to be given since they perceived it as an unimportant activity so they were rather slow in responding to this question. In question 41, among other factors which were put as options which might have discouraged caregivers to seek treatment for a sick child in a health facility, caregivers mentioned an important option of cost sharing which was added as a new option to this question. Therefore the above changes were made before the actual field work was started.

6.9 Data collection, manpower and quality assurance

The principle investigator trained eight research assistants, four from each district in order to standardize the data collection process. All of them were ward facilitators, who in turn, were responsible for training Community Resource Persons in community IMCI. They did participate in the implementation of c-IMCI in their respective villages; hence the task was rather familiar to them. The training was basically on how to interview and to fill the questionnaires. The questions were based on the four specific objectives, that is, growth promotion and development of children, disease prevention, home care for a sick child and early care seeking behaviour when a child could no

longer be treated at home. The rest of the questions which were indirectly related to the specific objectives were used as preamble to introduce those which targeted the specific objectives. The interview was conducted in Kiswahili. Micronutrient fortification measure of the iodized cooking salt was done using the iodine test kit, while vitamin A supplementation was checked in the RCH cards no.1. Information on vaccination coverage was obtained from the children's RCH cards, whereby in all age groups, recorded was as to whether the child received all the above mention vaccines or not. The caregivers were asked to mention some of the signs of the five commonest diseases affecting the under fives. It was done so in order to be sure if the caregivers knew the exact diseases that affected their children and how they would go on to treat them at home before taking them for further management at the health facility- appendix II. At the end of each day the research team reviewed the questionnaires for consistency, completeness and clarity.

6.10 Data Processing and Analysis

The data was entered into a personal computer and was analysed using Epi-info version 6 programme. The analysis used descriptive statistics, which included frequencies and percentage distribution.

6.11 Ethical Clearance

The ethical approval was obtained from the Research and Publication Committee of MUHAS and permission to collect data and information from participants was sought at

the Local Government Authority. Official letters were written to ward and Village Executive Officers three to five days prior to our visit in their respective villages. Informed verbal consent was obtained from participants, by explaining to them the purpose of the study and that the information they gave was not only for the research purpose but was also for improving health care at the community level.

6.12 Study Limitations

The questionnaire was long and hence the time used for interviewing was more than the actual time estimated, that is, 40-45 minutes instead of 30 minutes. This could have taken up to one hour if the interviewers were not familiar to this exercise.

In Mbarali it was a harvesting period therefore some villagers with the under-fives (specifically mothers) were not available for the interview.

The villages were selected basing on convenience, taking into account their accessibility for easier evaluation and time management posing selection bias.

7.0 RESULTS

In order to establish the changes in practices of the caregivers regarding the recommended practices for child survival, growth and development, 2 years after the implementation of community IMCI, it was necessary to compared the prevailing situation in the study area to the findings from the Baseline Survey 2000, in the same areas, prior to introduction of the community IMCI approach. Out of the 17 key practices (as depicted on page 8), 10 have been studied and reported on. These are numbers; 1,2,3,4,5,6,7,9,10 and 16. Six have been left out because of the many variables involved. These are numbers; 8, 11, 12,13,14,15, and 17.

a) Growth Promotion and Development

i) The proportion of caregivers who practiced exclusive breastfeeding for the period of six months 2 years after c-IMCI implementation was 32.4%. More than eighty one percent of the caregivers breastfed for 24 months and beyond. During the baseline survey, children were exclusively breastfed up to four months only. Information on breastfeeding duration was not available. Caregivers who started complementary feeding at the appropriate age, that is, at six months, were 23.4%. In the baseline survey, 58% of the caregivers in Mbarali district started complementary feeding at the age of six months. Vitamin A supplementation was very low during the baseline survey (16.5%) compared to that of 2 years post c-IMCI implementation (75.0%). The same was observed in the case of iodized salt use, 43.2%- baseline survey, 80.4% post c-IMCI implementation.

ii) The caregivers interacted with and stimulated their children mentally mainly through singing 46.9%, an observation also seen during baseline survey, though at a slightly lower percentage- 35.4%. The caregivers responded mainly by praising their children when they behaved well (66.1%). Same was observed during the baseline survey, again at a slightly lower percentage, 50.2%. In the baseline survey children who misbehaved were spanked, 71.4% and yelled at 66.2%. This trend decreased 2 years post c-IMCI implementation where spanking stood at 47.2% and yelling at 39.5%. Seventy eight percent of the children had playing materials as compared to70.2% in the baseline survey.

Table 7: Comparison of results on Growth Promotion and Development between the Baseline Survey and 2 years post c-IMCI Implementation.

VARIABLES	Baseline Survey-2000			Two years post c-IMCI Implementation		
i) Breastfeeding practices and complementary feeding/ micronutrients						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Exclusive B/feeding	N/A	N/A	N/A	49.5	15.7	32.4
B/feeding duration	N/A	N/A	N/A	84.0	79.3	81.6
Complementary feeds	N/A	58	N/A	23.2	23.5	23.4
Vitamin A	20.3	12.7	16.5	70.6	79.3	75.0
Iodized salt	55.3	31.1	43.2	92.3	68.7	80.4
ii) Promotion of Mental/Social Development.						
Activities which caregivers practice with their children						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Story telling	19.3	14.3	16.8	29.4	8.6	18.9
Singing	50.2	20.4	35.4	64.4	29.8	46.9
Read and count	46.5	6.8	26.7	32.0	27.3	29.6
Responses provided to children when they behave well						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Praising	71.6	28.6	50.2	85.6	47.0	66.1
Providing gifts	37.4	1.2	19.3	30.4	19.2	24.7
Thank the child	37.7	39.0	38.4	22.2	15.7	18.9
Ways of disciplining children when they misbehave						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Yelling	78.8	53.6	66.2	37.1	41.9	39.5
Spanking	73.4	69.3	71.4	42.3	52.0	47.2
Does nothing	N/A	N/A	N/A	3.6	7.6	5.6
Availability of playing items						
Toys, balls etc	73.4	66.9	70.2	92.8	64.6	78.6
Availability of playing space						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
A playing field near the house	N/A	16.9	N/A	94.0	86.8	90.9
A playing field within 50 meters	N/A	4.1	N/A	4.9	3.7	4.4

The numbers above are presented in percentages.

b) Disease prevention

The average coverage for BCG, OPV3, DPT-Hep3 and measles were 98.9%, 84.5%, 83.3% and 95.8% respectively. Lower findings were observed in the baseline survey, that is, BCG- 56.1%, OPV3- 57.4%, DPT-Hep3- 57.3% and measles- 51.3%. Eighty five percent of the children were using insecticide treated bed nets. During the baseline survey children were sleeping under untreated nets. Concerning hand-washing practice, 96% of the caregivers were washing their hands before eating and 75% did after eating. Less practiced were hand-washing before preparing meals and after attending a child who has defecated, which was 22% and 29% respectively.

Results of Baseline Survey showed that caregivers were washing their hands before eating and after eating by 85.3%. Less practiced was hand-washing before preparing meals 43.7% and they did not wash their hands after attending a child who had defecated.

Table 8: Comparison of results on Disease prevention between the Baseline Survey and 2 years post c-IMCI Implementation.

VARIABLES	Baseline Survey-2000			Two years post c-IMCI Implementation		
i) Immunization practices						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Immunization cards	92.7	79.2	85.9	97.4	93.9	95.7
BCG	20.6	91.7	56.1	98.9	98.9	98.9
OPV_3	22.9	91.9	57.4	85.7	83.3	84.5
DPT_3	24.4	90.2	57.3	85.7	80.6	83.2
Measles	19.3	83.3	51.3	61.4	66.7	64.0
ii) Insecticide treated nets	N/A	N/A	N/A	94.0	76.8	85.1
iii) Hand washing practices						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Before preparing food	40.4	47.0	43.7	97.9	94.9	96.4
Before eating	89.9	80.6	85.3	85.6	65.2	75.3
After eating	88.2	82.3	85.3	80.9	66.7	73.7
After toilet use	61.8	80.0	70.9	38.7	19.7	29.1
After attending a child who has defecated	N/A	N/A	N/A	30.9	13.1	21.9

The numbers above are presented in percentages.

c) Home care for Sick Children

More than half of the caregivers, (56.1%) gave their sick children more feeds during illness. In the baseline survey this was done rather less than usual (15.7% in Mbarali, no information was available in Kibaha). More than fifty eight percent of the caregivers gave more fluids than they usually do when their children were sick. The Baseline survey showed that Mbarali caregivers did that by 21.9%, no information was available in Kibaha district.

In treating malaria, sulfadoxine-pyrimethamine (SP) was the most commonly used medication representing an average of 75%, (This was the first line drug for malaria treatment during data collection). Cough remedies (32%) and antibiotics (28%) were used to treat pneumonia. Eighty five percent of the caregivers used oral rehydration solution to treat diarrhea, 37% increased fluid intake and 32% used antibiotics.

Nearly half of the caregivers did not know how to take care of a child with measles at home (49%), a few (27%) provided medication to reduce fever in these children.

More than half of the caregivers knew that providing appropriate food from the main food groups is the proper management of malnutrition-54.3%. Most of the above information was unavailable during the Baseline survey except for a few like the use of ORS in treating diarrhea in Mbarali 55.6%.

Table 9: Comparison of results on Home care for Sick Children between the Baseline Survey and 2 years post c-IMCI Implementation.

VARIABLES	Baseline Survey-2000			Two years post c-IMCI Implementation		
i) Feeding frequency given to a sick child at home						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Usual	N/A	38.3	N/A	41.8	33.8	37.8
More than usual	N/A	N/A	N/A	55.7	56.6	56.1
Less than usual	N/A	15.7	N/A	1.5	8.6	5.1
ii) Fluid frequency given to a sick child at home						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Usual	N/A	30.1	N/A	39.7	28.8	34.2
More than usual	N/A	21.9	N/A	59.3	58.1	58.7
Less than usual	N/A	N/A	N/A	1.0	6.6	3.8
iii) Intervention/medication used for the reported disease						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Malaria						
SP	N/A	0.4	N/A	91.2	59.6	75.3
Amodiaquine	N/A	2.2	N/A	7.2	20.2	13.8
Pneumonia						
Antibiotics	N/A	N/A	N/A	28.4	27.8	28.1
Cough remedies	N/A	N/A	N/A	45.4	19.7	32.4
Seeking medical help	N/A	N/A	N/A	50.5	16.7	33.4
Diarrhoea						
ORS	N/A	55.6	N/A	95.9	74.7	85.2
Increase fluid intake	N/A	N/A	N/A	59.3	15.7	37.2
Antibiotics	N/N	78.4	N/A	27.8	36.4	32.1
Measles						
Reducing fever using antipyretics	N/A	N/A	N/A	45.4	10.6	27.8
Give more fluids	N/A	N/A	N/A	28.4	1.0	14.5
Malnutrition						
Approp food from main food groups	N/A	N/A	N/A	67.0	41.9	54.3
Increase food intake	N/A	N/A	N/A	29.4	26.8	28.1
Increase freq of eating	N/A	N/A	N/A	29.4	21.2	25.3

The numbers above are presented in percentages.

d) Care Seeking and Compliance to Treatment and Advice

The signs of a critically sick child mentioned were high grade fever-62.0%, convulsions- 15.2%, unable to drink-42.4% and vomiting everything 22.8%. Except for high grade fever, the later 3 findings were higher in the baseline survey as compared to the findings in this study. Thirty nine percent of the caregivers took their sick children to the health facility on the same day, 31.5% taking them within ten minutes. This was higher in the baseline survey, 47.9%, though none of them took their sick children to hospital within ten minutes.

Most of the caregivers, 89.8% understood instructions concerning treatment of their sick children at home given by the health personnel who attended them. In the Baseline survey this was 86.1%. For those who found it difficult to follow the instructions, 30.0% said it was because the health personnel gave too much information for them to understand. Twenty seven percent said that language used made it difficult for them to understand the instructions given. In Mbarali 6.1% said that the language used was difficult to understand.

Factors that discouraged caregivers from seeking medical care at health facilities were cost sharing, 19.4%. This was lower compared to 57.5% in the baseline survey. Another factor was easy access of medications outside the health facilities which was 10.7%. In Kibaha, this was reported to be 7.5%, no information was available from Mbarali.

Table 10: Comparison of results on Care Seeking and Compliance to Treatment and Advice between the Baseline Survey and 2 years post c-IMCI Implementation.

VARIABLES	Baseline Survey-2000			Two years post c-IMCI Implementation		
i) Signs of a critically sick child/danger signs						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
High grade fever	N/A	43.0	N/A	87.5	52.9	62.0
Convulsions	10.6	33.3	21.9	33.3	8.8	15.2
Inability to drink	36.5	94.0	65.3	66.7	33.8	42.4
Vomiting everything	28.8	52.0	40.4	54.2	11.8	22.8
ii) Time taken to send a sick child to health center						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Within ten minutes	N/A	N/A	N/A	54.2	23.5	31.5
One day	34.6	61.2	47.9	37.5	39.7	39.1
More than one day	13.4	58.7	36.1	8.3	36.8	29.3
iii) Easy understanding of health care instructions						
	85.6	86.5	86.1	99.0	80.8	89.8
iv) Difficulties involved in understanding / following healthcare instructions						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Too much information	N/A	N/A	N/A	0.0	31.6	30.0
Language used difficult to understand	N/A	6.1	N/A	0.0	28.9	27.5
v) Factors that discourage one to seek treatment from a health facility						
DISTRICT	KIBAHA	MBARALI	Average	KIBAHA	MBARALI	Average
Cost sharing	61.2	53.7	57.5	24.7	14.1	19.4
easy access of medication outside the health facilities	7.5	N/A	N/A	5.2	16.2	10.7

The numbers above are presented in percentages.

8.0 DISCUSSION

To the best of my knowledge, this is the first study that has been done to assess the impact of community IMCI implementation at the community/household level in Tanzania. Two previous studies done in Tanzania to assess the impact of community IMCI implementation were done at the health facilities to see how health personnel were assessing the sick children taken there for treatment and how they gave the treatment advise to caregivers.[4,50]

Hence these studies were health facility-based assessment of IMCI rather than community-based assessment of the impact of c-IMCI.

The discussion of the study findings will be based on the four categories of key household practices. These are (i) Growth promotion and development (ii) Disease prevention (iii) Home care for sick children (iv) Care seeking and compliance to treatment and advice.

8.1 Growth Promotion and Development

This study has shown that in growth promotion and development of children, exclusive breastfeeding was not widely practiced. Children who were exclusively breastfed for six months were 32.4%. The findings in the Tanzanian DHS-2004-05 were lower compared to what was found in this study, that is, exclusive breastfeeding for six months was 1.7% only.[6] Similar results were found in a study done in Jordan, where, of the breastfeeding mothers 32% did so for 6 months.[14]

These findings show exclusive breastfeeding below six months of age is a common occurrence, hence a common problem not only in our society, but also in other developing countries.

Soon after the six months of exclusive breastfeeding, a child requires adequate complementary foods for normal growth.[6] Complementary feeding in this study was started earlier than the recommended time for 56.9% of the children. Similar findings were observed in the Tanzanian DHS-2004-05 which showed that early complementary feeding was 58%.[6] Those who started at the appropriate age were only 23.4%. In an Indian study complementary feeding at appropriate time was found to be 28.6% which was nearly similar to what was found in this study. [18] Lower figures were observed in a study done in England, where, 21% of infants were started on complementary foods before three months of age.[17]

In view of the above findings, it seems that early complementary feeding commencement is also a common practice as it is for exclusive breastfeeding, a challenge not only in the developing but also to developed countries like England.

Results of this study revealed that, on average vitamin A coverage was 75%. Significantly lower findings were observed in the baseline survey results, where, the vitamin A coverage was at an average of 16.5%. [19]Higher coverage was reported during measles vaccine campaigns in children between 6-59 months from mainland Tanzania who also received vitamin A supplements. Post campaign coverage levels were estimated to be 94%.[23] A study done by David A Ross et al, (2002) found that, diets in African societies were based mainly on cereals and legumes that are poor sources of micronutrients. Therefore an increasing number of these countries were providing vitamin A supplements as a part of their immunization campaigns and the coverage stood at 80%, which is higher compared to that found in our study.[20]

In this study, 80.4% of the households added iodized salt to their main meals. Lower findings were revealed in the baseline survey where, those who used iodized cooking salt in Mbarali and Kibaha were 31.1% and 55.3% respectively. [19] Lower figures were also observed in Tanzanian households using adequately iodized salt, where in urban and rural areas was 72% and 34% respectively. The national average was 43.4% [6] A study done in South Africa by Pieter L Jooste et al (2000) had similar findings, that is, a low percentage of households 25%, reported the use of iodized salt. A year later, after introduction of mandatory iodization more than 70% of households in each of the communities were using iodized salt.[25]

Despite a high national coverage of vitamin A and availability of iodized salt, the findings in the study areas during the baseline survey were lower compared to the national findings. The implementation of IMCI had a significant impact in boosting vitamin A supplementation and the use of iodized salt in the study areas.

Parents like to sing and tell stories to their children because it is considered as means of entertainment and also a way of teaching them good manners.[31] In this study, singing (46.9%) and story telling (18.9%) were the two ways which parents practiced with their children. Contrary to these findings, in a study done by Department of Social Welfare in Kibaha and UNICEF-Tanzania (2004), it was found that parents who sang to their children and those who told stories were 19.1% and 9.1% respectively.[31]

In the baseline survey, parents who sang to their children represented 35.3% and those who told stories were 16.3%. Therefore the gradual increase seen in these two entities could probably be attributed to the impact of community IMCI regarding the psychosocial stimulation of children implemented in the study areas.

In order to make a child behave well he/she should be taught good manners by parents and other elders. It is not necessary to punish a child physically; however it is important to discipline a child when he/she misbehaves.[31] In this study, children who behaved well were praised by their caregivers (66.1%). About 25% of the caregivers gave their children gifts and 18.9% thanked them. From the baseline survey, the results were as follows, praising (50.1%), providing gifts (19.3%) which were lower compared to findings of this study. Thanking children (38.4%) was higher compared to this study.[19] Higher percentages were seen in a study done in Kibaha District, where, 71.6% of

caregivers praised their children, 37% thanked them and 37.4 % provided gifts as a kind of motivating their children when behaving well.[30]

Thanking children who behaved well did not show much change from the baseline survey. Praising and providing gifts were probably influenced by the introduction of the psychosocial stimulation component which was done in 2002 two years before the implementation of the entire 17 key household practices. This might explain why the results of Department of Social Welfare in Kibaha were found to be higher than those of the present study.

In this study older children were found to be disciplined by being yelled at (47.0%) more compared to the young ones (31.6%). Furthermore, they were spanked more (55.4%) than the young ones (38.4%). The baseline survey results showed higher percentages than those in the present study, whereby 71.4% of the caregivers spanked their children and (66.3%) yelled at them.[19]

Again, higher percentages were observed from the Kibaha study whereby, in responding to children's bad behaviour 74% of the caregivers spanked and 78% yelled at the children.[30]

The trend of disciplining children by punishing them physically and yelling at them showed a decline in the 2 year post community IMCI implementation as compared to the results showed in the baseline survey.

Playing is very important in both physical and cognitive development of a child. It makes him/her happy and active; it also helps to learn about the environment he/she lives in.

Findings from this study revealed that, 78% of the children had playing materials and 32.1% of these were handmade by children themselves. For children who had toys, balls were the commonest purchased playing items (48.4%).

Department of Social Welfare in Kibaha District (2002) reported similar findings, with a slight difference in toys hand-made by children. In their study 73% of caregivers had children who had play materials and 60.3 % were made by children themselves. Purchased toys represented 44.8%.[31] The similarity in these results could have been attributed by the fact that the psychosocial stimulation component was introduced in Kibaha 2 years (2002) prior to the community IMCI implementation (2004).Hence the caregivers were already sensitized and knew what to do concerning psychosocial stimulation of their children.

More than 81% of the caregivers had playing space for their children. Almost all these children played in the fields attached to the house (91%). Kibaha had more playing space (94.3%) compared to Mbarali (68.7%). Contrary to the above findings, the baseline survey indicated no availability of playing space in Kibaha and only 16.9% of caregivers in Mbarali reported availability of playing space attached to the house. Here a dramatic change in terms of caregivers seeing the importance of playing to their children is observed and their effort in establishing these spaces after the community IMCI implementation.

8.2 Disease Prevention

Concerning disease prevention, satisfactory results were observed in immunization coverage (>80%) and insecticide treated bed-nets use (>85%), however hand washing was inadequately practiced. Immunization coverage, in this study was higher for all the vaccines given (>80%) compared to the baseline survey, which was less than 60%.[51] The 2004-05 Tanzanian DHS had slightly lower coverage as compared to the present study. The coverage was between 60-80%. [6] Again slightly lower figures were found in a study done in Mozambique where their national coverage estimates for 2003 ranged between 70-85%.[33] These findings show that the IMCI implementation has probably increased the immunization coverage, specifically when the study findings are compared to those of the Baseline Survey.

In this study, 85.1% of the children were using insecticide treated bed nets. In Kibaha children using the ITNs were 94.0% compared to those in Mbarali who were 76.8%. There were no records for ITNs use during the Baseline Survey in these two study areas. Fewer children were using ITNs in a Tanzanian study done in Muheza (27.2%) [42] Findings in Sub-Saharan countries were found to be high after campaigns of ITN use. In Ghana, it was 4.4% before and after the campaign it was to 94.4%. [37] In Niger before the campaign, 6.0% of households with children aged less than5 years owned an ITN, after the campaign, 69.9% owned one.[38] In a Kenyan study, adherence to use of insecticide-treated bed nets among all children younger than 5 years increased from an average 65.9% to 82.5%.[40]

Therefore, a satisfactory increase in the ITNs use from no records in the baseline survey and 27.2% from the Muheza study to an average of more than 85%, showing a positive impact as observed in the above mentioned comparative studies, though the methods used to increase the ITN use were different. In this study, the method used was through community IMCI advocacy. In the comparative studies, the method used was direct ITN campaigns.

This study has revealed that 96% of the caregivers were washing their hands before eating and 75% did so after eating. Less practiced were hand-washing before preparing meals (22%) and after attending a child who had defecated (29%). From the baseline survey caregivers who reported to wash their hands before eating were (85.3%), after eating (85.3%) and before preparing food (43.7%). The above entities were less practiced in Ghana, whereby, women who reported to wash their hands before eating were (14%), after eating (53%) and before preparing food (11%).Therefore, community IMCI improved an important practice of hand washing before eating rather than after eating. It also sensitized caregivers to wash their hands after attending a child who had defecated.

8.3 Home Care for Sick Children

In home care for sick children, more than half of the caregivers knew how to help a child once it was realised that the child was sick. Three quarters of the caregivers knew how to treat their children at home when they suffered from malaria and diarrhea but nearly half did not know how to care for children with pneumonia and measles.

Fifty six percent of the caregivers gave their sick children more feeds than usual and they did give more fluids than they usually do when their children were sick (58.7%). This was significant when a primary caregiver was the mother ($p < 0.05$). In contrary to what was found in this study, from the baseline survey results, caregivers who gave their children more fluids than usual were 21.9% only. [19] In the Tanzanian DHS, it was found that, mothers gave homemade mixtures usually containing sugar, salt and water before taking their children to a nearby health facility. Other fluids which were given were coconut milk, rice water or soup. The frequency of fluids given was not indicated.[6] The above findings show that after implementing the community IMCI there was improvement as regards to taking care of a sick child at home in terms of increasing food and fluid intake frequencies.

Almost 11 million children in low-and middle-income countries die each year before they reach their fifth birthday. Five in 10 of these deaths are due to five conditions: malaria, pneumonia, diarrhoea, measles and malnutrition. [3, 4] Findings in this study revealed that, the commonest illness affecting under-fives was malaria (85%), followed by diarrhoea (41%) then pneumonia (36.0%). In the Baseline survey results, caregivers

reported that the commonest disease affecting the under-fives was diarrhoea (95.1%), followed by malaria (86.5%) and pneumonia (69.1%).

Improvement is seen in the control of diarrhoea and pneumonia after IMCI implementation. In the case of malaria, it remains to be a problem as its prevalence remains to be almost the same. The reason as to why the prevalence of malaria remained to be so was not established in this study.

In malaria treatment, medications used were sulfadoxine-pyrimethamine (SP) 75%. This was followed by amodiaquine 13.8%. The painkiller used along with the above two drugs was panadol, 68%. In pneumonia, cough remedies (32%) and antibiotics (28%) were used, 34% of the caregivers did not know how to treat pneumonia at home. Eighty five percent of the caregivers used ORS to treat diarrhea, 37% increased fluid intake and 32% used antibiotics.

In contrast to the above findings, Baseline survey results showed that antimalarials received by children at home were; SP/Fansidar- 0.4% and Amodiaquine-2.2%. In treatment of diarrhoea, 55.6% of the children were given ORS. More than 78% of the children received antibiotics. None of the children were given more fluids. The caregivers did not know how to treat pneumonia at home. [19]

In the Tanzanian DHS 2004-05, antimalarials received by children at home were lower compared to the present study where; SP/Fansidar was 2.7% and Amodiaquine was 2.2%. In treatment of diarrhoea, 54% of the children were given ORS. Fourty percent

received pills/syrups. A study done in Blantyre District of Malawi, for malaria home treatment, 72.0% of the children received medication during their illness, but only 12.2%, received an appropriate antimalarial drug.[47]

The trend above showed improvement in home treatment of malaria and the use of SP (SP was the first line drug for malaria treatment at the time of this study). Good use of ORS for diarrhoea treatment, along with a decline in antibiotics use was noted. These were used in specific occasions such as dysentery/cholera and not in all diarrhoea cases. Some changes were also seen in the management of pneumonia, where at least some caregivers gave cough remedies and antibiotics at home.

8.4 Care Seeking and Compliance to Treatment and Advice

Most of the caregivers, understood instructions given to them by health personnel who attended to their sick children. Those who found it difficult to follow the instructions, attributed this to too much information from the health personnel, the language used and at times no proper explanations were given to them.

Concerning care seeking behavior for critically sick children, this study found that 39.1% of the caregivers took their sick children to health facilities on the same day, 31.5% taking them within ten minutes. A regularly consulted health personnel was a doctor, (80%).

Nearly similar pattern was observed in the Baseline survey results, where caregivers who took their sick children to health facilities on the same day were 47.9%; none did so within 10 minutes but rather within 10 hours, 23.4%. A regularly consulted health personnel was a medical doctor, 40%, less than half of what was found in the present study.[19]

Higher figures were observed in a Malawian study, where they conducted a national community IMCI baseline survey in 2000. Assessment done 3 years later after IMCI implementation showed that; at baseline, 20 % of mothers took their children to health facilities within 24 hours of onset of illness. After IMCI, 60% of caretakers who went to hospital did so within 24 hours of onset of illness.[49]

In the Malawian study, it was observed that community IMCI had no much impact on the immediate actions supposed to be taken by caregivers, such as, taking a sick child to the nearest health facility as fast as possible. Rather, consulting a doctor when a child fell sick doubled from 40% to 80%.

Concerning compliance to treatment and advice given to the caregivers by health workers, most of the caregivers, 89.8% understood the instructions concerning treatment of their sick children. For those who found it difficult to follow the instructions, 30.0% said it was because the health personnel gave too much information, 27.5% said that the language used was difficult for them to understand the instructions given.

Factors that discouraged caregivers from seeking medical care for their sick children at health facilities were cost sharing, 19.4% and easy accessibility of medications outside health facilities, 10.7%.

From the baseline survey results it was also found that most of the caregivers, 86.5% understood instructions concerning treatment of their sick children given to them. For those who found it difficult to follow the instructions, 6.1% said that the language used was difficult to understand.[19]

Factors that discouraged caregivers from seeking medical care at health facilities were again cost sharing (57.5%) and easy accessibility of medication outside the health facilities (7.5%). In addition, a few of them mentioned that it was a waste of time to take children to a health facility (2.3%), the reason for this was not established.

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From the above compared results, it can be seen that, even before the community IMCI implementation, most of the caregivers understood the instructions given to them concerning taking care of their sick children at home. For those few who did not understand the instructions, no much difference was observed as regards to the reasons they gave for not adhering to the health instructions given by health personnel.

9.0 CONCLUSIONS

- With regard to growth promotion and development, there was satisfactory coverage on vitamin A supplementation and use of iodized salt. The majority of mothers initiated breastfeeding and continued to breastfeed well into the second year of life of the child; however compliance to exclusive breastfeeding was low. Early introduction of complementary feeding was a common occurrence. There was very little emphasis on practices that were meant to provide psychosocial stimulation to children.
- In disease prevention, immunization coverage and use of insecticide treated bed nets was satisfactory. As regards to practices promoting personal hygiene such as hand washing there was inadequate level of performance.
- With regard to home care practices for sick children, there is a significant increase in the capacity of caregivers to provide some quality care to their children. More than half of the caregivers knew what to do so as to provide effective care once a child falls sick. Over 75% of the caregivers knew correct home treatment of malaria and diarrhea. Approximately half of the caregivers did not know how to take care/treat children with pneumonia and measles; however nearly all caregivers knew when to seek for medical treatment outside the home when their children could no longer be managed at home.

- With regard to health care seeking behaviour and compliance to treatment and advice, most of the caregivers understood the counseling and instructions given to them by the health providers who attended their sick children. The main constraints that hindered caregivers from seeking medical care at the health facilities were cost sharing and inaccessibility of medications within the heath facility itself.

10.0 RECOMMENDATIONS

- Regarding the good practices observed in this study, that is, vitamin A supplementation, iodized salt use, immunization coverage and use of insecticide treated bed nets; the existing interventions put forward by the Ministry of Health and Social Welfare before the introduction of IMCI should be sustained. This also calls for scaling out community-IMCI implementation to other districts.
- More studies are needed to establish the reasons as to why these exclusive breastfeeding and complementary feeding are not widely practiced in our community despite the community IMCI implementation.
- As regards to personal hygiene, interventions should be implemented at the community level to establish the constraints faced by caregivers regarding this practice such as availability of water which might hinder the practice despite good knowledge and awareness on how to do this.

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12.0 APPENDIX I

A map of Tanzania showing the seven initial districts which were ear-marked to start c-IMCI.

(Source: Basic Statistics in Education, The Ministry of Education and Culture, June 1999)

