

First Draft Final KPC/KAP Surveys Report

Integrated Health and Agriculture Program

Final KPC/KAP Survey Report

October 2004.

**Catholic Relief Services/Kenya,
Diocese of Homa Bay,
Diocese of Embu,
Catholic Diocese of Garissa.
Ministry of Health
Ministry of Water Resources**

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Washington Omwomo
M&E Technical Support Services (K)

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II. ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
ARI	Acute Respiratory Infections
ASAL	Arid and Semi-Arid Lands
CHW	Community Health Workers
CI	Confidence Intervals
CORPS	Community Own Resource Persons
CRS/K	Catholic Relief Services/Kenya
CSSP	Child Survival Support Project
FANTA	Food and Nutrition Technical Assistance Project
FFP	Office of Food for Peace
HIV	Human Immunodeficiency Virus
IHAP	Integrated Health and Agriculture Program
ITN	Insecticide Treated Bed Nets
KAP	Knowledge Attitude and Practice
KDHS	Kenya Demographic and Health Survey
KPC	Knowledge Practice and Coverage
LQAS	Lots Quality Assurance Sampling
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MtMSG	Mother-to-Mother Support Group
ORS	Oral Rehydration Salt
ORT	Oral Rehydration Therapy
PMCT	Prevention of Mother to Child Transmission
PVO	Private Voluntary Organizations
TBA	Traditional Birth Attendants
TT	Tetanus Toxoid
TTBA	Trained Traditional Birth Attendants
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VHC	Village Health Committee
WHO	World Health Organization
WMC	Water and Sanitation Management Committee
WUA	Water Users Association

III. EXECUTIVE SUMMARY

(Being written please!!!!)

1. INTRODUCTION

1.1 Overview of IHAP

The Integrated Health and Agriculture Program (IHAP), implemented by Catholic Relief Services/Kenya Program (CRS/K), and funded by USAID's Office of Food for Peace (FFP), covered seven districts of Kenya from 2001 – 2005. CRS/K used among others priority health and well being indicators for food insecurity, infant mortality rates, access to water and sanitation facilities and health services, agricultural production, and the potential for effective local partnerships in identifying Arid and Semi-Arid Lands (ASAL) areas in Nyanza, Central, Coast and Eastern Provinces. The seven districts included Homa Bay and Suba Districts in Nyanza Province, Nyandarua, Laikipia and Nyeri Districts in Central Province, Tana River District in Coast Province and Mbeere District in Eastern Province. The program was phased out of Central province during the first year of implementation.

The goal of the program was to increase food security in order to enhance the human dignity and development of targeted, marginalized communities in Kenya. The program has two strategic objectives.

Strategic objective 1: To improve the health and nutritional status of 70, 000 children (under 36 months) and 100,000 women (15 – 49 years) in targeted areas by 2005.

Strategic objective 2: To improve food availability and access for 16,000 smallholder farm and pastoral families in targeted areas by 2005.

Working with local partners and other community-based organizations, targeted communities, government ministries, and technical institutes, CRS/K proposed to achieve these two objectives through the following intermediate results (IR):

Objective 1 had the following IR:

1.1 Increased access to portable water and sanitation for 60,000 people in targeted areas.

1.2 Improved nutritional status of 70,000 children under 36 months in targeted areas.

1.3 Improved maternal health care for 100,000 women aged 15 – 49 years in targeted areas.

Objective 2 had the following IR:

2.1 Reduced soil erosion on 1,000 hectares for 5,000 farm families in Mbeere District

2.2 Increased production of dry land crops on 1,500 hectares for 10,000 farm families in Mbeere and Tana River Districts

2.3 Improved disaster preparedness and mitigation for at least 16,000 families in Mbeere and Tana River Districts.

The specific impact and annual monitoring indicators, with specific annual targets can be found in the indicators tracking table, Annex 1.

1.2 Brief description of interventions

As a means to achieving its proposed intermediate results under the strategic objective one, CRS/K and its implementing partners' adopted community - based strategy. The basis for adopting this strategy was to bring essential health and nutrition services to the target population, through establishment of sustainable community structures. CRS/K and its implementing partners guided each participating village to form Village Health Committee (VHC), whose responsibility was to mobilize the community for vaccinations, growth monitoring and environmental sanitation. In addition, they were to nominate volunteer Community Resource Persons (CORPS), including Community Health Workers (CHWs), Traditional Birth Attendants (TBAs) and Mother-to-Mother Support Groups (MtMSG). Also, the community was supported to form water user associations (WUA) with elected water and sanitation management committees (WMC)

With technical, resources and material support from CRS/K, the implementing partners, provided trainings and supported CORPS to provide guidance to target population through health education sessions, nutritional counseling, and management and prevention of childhood illnesses, hygiene and sanitation.

1.3 Water and Sanitation Interventions:

The IR on increased access to portable water and sanitation for 60,000 people in targeted areas was to be achieved through:

- ↓ Identification off specific communities in the target geographical areas. Also communities to participate were to apply, show demand and demonstrate tangible needs.
- ↓ Implementing partners, working with the Ministry of Water Resources surveyed water sources and selected appropriate technologies in terms of cost efficiency, easy of management and sustainability.
- ↓ Formation of Water User Associations with elected management committees with clear roles and responsibilities.
- ↓ Support communities construct water facilities and latrines through sustained technical assistance from the Ministry of Water Resources and Health.
- ↓ Participation of water users' associations in the monthly hygiene education sessions, using the Participatory Hygiene and Sanitation Transformation (PHAST) methodology.

1.4 Child Survival Interventions:

The IR on improved nutritional status of 70,000 children under 36 months in targeted areas was to be achieved through:

- Selection and training Community Health Workers (CHWs) on planning and conduction health education sessions, conducting growth monitoring, nutritional counseling and establishing community-based management information system.
- Health education and promotion was delivered by CHWs focusing on exclusive breastfeeding, appropriate complementary feeding, appropriate nutritional management of the sick child, adequate intake of Vitamin A, adequate intake of iron and iodine.

- Nutrition promotion included conducting growth monitoring as a tool to determine children whose caretakers need nutrition counseling.
- Nutritional counseling focused home visits of underweight children.
- Management and prevention of prevalent diseases and referrals to health facilities for further management.

1.5 Maternal Health Care Interventions:

The IR on improved maternal health care for 100, 000 women aged 15 – 49 years in targeted areas was to be achieved through:

- Promotion of Antenatal care (ANC) and maternal nutrition including encouraging pregnant women to attend ANC clinics and conducting health education sessions on birth preparedness, danger signs of a high risk pregnancy and complications during delivery, preparation of “safe delivery kits
- Training of Traditional Birth Attendants (TBAs) on use of safe delivery kits, immediate breastfeeding, immediate newborn care, and recognition of danger signs.

CRS/Kenya and implementing partners commissioned the final KPC and KAP surveys to assess the extent of change in maternal and child health, and water and sanitation impact indicators. The baseline and final KPC and KAP results will be compared to show the extent of change after four years of implementation.

1.6 Location/Population

A total of 173 villages in the 3 provinces in Kenya, with a total estimated population of 6,318 children under 23 months were included in the sampling frame. Homa Bay and Suba Districts in Nyanza province had 2382 and 920 children under 23 months respectively, while Tana River District in Coast province had a total of 2,076 children under 23 months of age for both Child Survival and Water and sanitation projects. Mbeere District in Eastern province had 940 children under 23 months.

Of these 6,318 children under 23 months, 190 for KPC and 95 for KAP children aged 0 – 11 and 12 – 23 months respectively were randomly selected and included in the sample surveyed in Nyanza (Homa Bay & Suba Districts) and Coast (Tana River District) provinces. Only 95 children aged 0 – 11 months were randomly selected and participated in the KAP survey for Eastern province (Mbeere District).

2. SPECIFIC OBJECTIVES OF THE KPC & KAP SURVEYS

2.1 Knowledge, Attitude and Practices Survey Objectives

The KAP survey was restricted to the relevant indicators under IR 1.1 as well as the environmental impact indicators. The survey objectives were:

- Establish the current status of targets as set in the indicators outlined in the project document.
- Establish community knowledge, attitude and practices with regard to water safety, water related diseases, hygiene and sanitation.
- Document any unintended benefits/harms in attitudes and practices brought about by the program's activities or strategies.
- Make suggestions on the intervention areas that need further exploration through qualitative assessment to determine factors that worked for and/or against the results attainment.

2.2 Knowledge Practice and Coverage Survey Objectives

The KPC survey was restricted in scope to the relevant indicators under IR 1.2 and IR1.3. The survey objectives were:

- Establish final status of the child health indicators as outlined in the project document
- Establish maternal/caretaker knowledge and practices with regard to immunization, child feeding, growth monitoring, maternal and newborn care and health seeking behavior.
- Use the survey information to compare with available baseline information and ascertain changes that have occurred due to the program's interventions.
- Document any unintended benefits/harms in behavior and practices brought about by the program's activities or strategies.
- Make suggestion on the intervention areas that need further exploration through qualitative assessment to determine factors that worked for and/or against the results attainment.

The schedule of activities for the KPC & KAP survey is attached as Annex 2.

3. SURVEY DESIGN AND METHODOLOGY

3.1 Questionnaires and Observation Checklist

Three questionnaires namely; KPC Household Questionnaire for mothers with children 0 – 11 months, KPC Household Questionnaire for mothers with children 12 – 23 months and KAP Household Questionnaire for mothers with children 0 – 11 months were used in the two surveys run concurrently in the three program areas. The contents of KPC Household Questionnaires for 0-1 and 12-13 months were the same. The questionnaires were adopted based on the recommended parallel sampling technique, for the purposes of ensuring maximum acceptable denominators for all impact indicators. The two questionnaires were adapted from the John Hopkins Private Voluntary Organization – Child Survival Support Program (PVO – CSSP) Standardized KPC 2000+ survey, revised in December 2003. The baseline KPC and KAP questionnaires were used to develop the final questionnaires.

In consultation with CRS/K Monitoring and Evaluation (M&E) staff and Community Health Unit manager, the questionnaires were adapted to the local situations. Related questions were pooled together, in line with water and sanitation, and maternal and child health impact indicators. These questionnaires were translated from English into Kiswahili, Luo, Kikamba and Kimbeere and were further refined during training of survey supervisors and interviewers, and finalized after field pre-test.

KPC questionnaires were used to collect information from all the eligible and randomly selected women of reproductive age with children 0 – 23 months. Questions covered the following topics, guided by the program's impact indicators:

- Background characteristics (age, sex, educational level and socio-economic activities)
- Breastfeeding and child nutrition
- Child immunization and growth monitoring
- Diarrhea diseases
- Respiratory illnesses
- Maternal and newborn health care
- HIV/AIDS
- Malaria prevention (bed net usage)
- Child anthropometric (weight, sex, age)

KAP questionnaire was used to collect information from all the eligible and randomly selected women with children 0 – 11 months. Questions covered the following topics:

- Background characteristics (age, sex and educational level)
- Household water sources
- Latrine coverage and waste disposal
- Diarrhea and hand washing practices
- Water pollution and contamination.

Data on environmental impact indicators were collected using an observation checklist. The consultants visited sampled water facilities to observe the standing water and the community initiated conservation activities, hygiene and sanitation around the water facilities.

3.2 KPC/KAP Sample Size Design

The sample size for the final KPC/KAP survey covered the population of women of reproductive age with children 0 – 23 months in Homa Bay, Suba, Tana River and Mbeere Districts. A representative probability random sample of 380 (parallel sampling) households with children aged 0 – 23 months were selected for the KPC survey, while 285 households with children aged 0 – 11 months were selected for KAP survey based on the Lot Quality Assurance Sampling (LQAS¹) technique. The LQAS methodology recommends a sample size of 19 children per each supervision area (a group of the smallest program management units – villages). This sample size has been found to be precise enough and cost effective in reporting program-wide coverage levels. KPC sample size was constructed based on parallel sampling technique to allow for separate estimates of key program impact indicators, by increasing the denominator for calculating coverage level.

3.3 Selection of Supervision Areas, Sampling Frame & Selection of Sample

Child Survival, Water and Sanitation Project Coordinators in the three program areas developed lists of villages by sub-location and locations, following the administrative boundaries. For each village, an estimated population size of children 0–23 months was established. Villages were clustered together based on their proximity and their respective total population for the under 24 months. A cluster of villages referred as supervision areas, were assigned numbers. In each of the program area, the child survival, water and sanitation project catchment areas were divided into five almost equal supervision areas.

A sampling frame of children 0 – 23 months household heads was developed for each supervision area. A sampling interval for each supervision area was worked out based on the total cumulative population and the desired sample size, in this case 19. A random number, less than or equal to the sampling interval, was then picked from the Random Number Table. The picked random number identified the starting point in the sampling frame, and subsequent households picked by merely adding the sampling interval to the random number until all the required households were selected.

The probability proportional to population size technique was used, so as to yield self-weighting samples within supervision areas. 19 and 38² randomly selected samples of eligible households were then drawn from each village within a supervision area for KAP and KPC Surveys respectively.

3.4 Training of Supervisors and Interviewers

Supervisors and enumerators were recruited within the program areas. The majority of supervisors were from government line ministries (Ministry of Health and Water Resources), with previous experience in conducting and/or supervising data collection for community health surveys. Majority of enumerators were from school leavers,

¹ Joseph J. Valadez, et..al 2001. 'A trainers Guide for Baseline Surveys and Regular Monitoring : *Using LQAS for Assessing Field Programs in Community Health in Developing Countries*'

² Parallel Sampling technique in order to draw minimum acceptable size of denominator for precise measurement of specific indicators.

with ability to communicate in the local language and had previous experience in community surveys.

Core team members made up of CRS/Kenya and partners staff, together with survey supervisors received a three days training. The following topics were covered:

- Purpose of KPC/KAP survey
- Lots Quality Assurance Sampling methodology
- Household selection and parallel sampling techniques
- Roles of the core team, supervisors and enumerators
- Proper and improper interviewing techniques
- Taking anthropometric weight measurement using Salter Scales
- Review of KPC/KAP questionnaires, paying attention to different types of questions with key instructions like skip patterns, multiple options and reading options to mothers etc.
- Data quality control procedures in the field including questionnaire auditing
- Mock practice on anthropometric measurements, household selection, questionnaire administration, proper interviewing techniques, questionnaire auditing

The core team members and supervisors then trained the survey enumerators in each of the three program areas. The following topics were covered:

- Purpose of KPC/KAP survey
- Household selection and parallel sampling
- Taking anthropometric weight measurement using Salter Scales
- Roles of the core team, supervisors and enumerators in the survey
- Review of KPC/KAP questionnaires, paying attention to different types of questions with key instructions like skip patterns, multiple options and reading options to mothers etc.
- Proper and improper interviewing techniques with role plays
- Mock practice on interviewing techniques using translated questionnaires, anthropometric weight measurements etc

During training, the core team members and supervisors paid special attention to the household selection, parallel sampling, LQAS methodology, anthropometric measurements, understanding survey questionnaires, data quality control in the field including supervision and proper interviewing techniques. Enumerators on the other hand, focused more on the anthropometric measurements, review and proper understanding of survey questionnaires, proper interviewing techniques and mock practice.

During the last day of the enumerators' training, the whole survey team visited households in the non-program intervention areas for practical interviews, anthropometric measurements and pre-testing of the survey questionnaires. This was particularly critical for building confidence among the enumerators.

3.5 Field Work

In each program area, interviewing teams carried out data collection for the two surveys concurrently. Each team consisted of one supervisor, two or three enumerators and one driver. On the first day of the survey, each supervisor observed

at least one interview from start to the end including weighing, to ensure quality. Core team members coordinated and supervised fieldwork activities, with particular attention to the household selection, parallel sampling and anthropometric weight measurement. Data collection took place over a period of between four and six days. This was from September 9 to September 16, 2004. In the field, the team of supervisors and enumerators worked with local guides and/or village leaders to locate the randomly selected households, using the name of the household head and that of the child.

Supervisors were given the pre determined sampling frame for their areas, worked out sampling intervals and master random numbers, with possible option random numbers for replacing household. Household selection, parallel sampling and subsequent replacement were the key responsibilities of the supervisors. A three-tiered questionnaire auditing system was employed with supervisors taking the first level, then members of the core team and finally the consultant and CRS staff. Questionnaires detected with an error(s), were returned to the lower level and errors fixed before passing the questionnaires to the data entry clerk.

3.6 Procedures of Collecting Anthropometric Data

Each sampled child was weighed and weight recorded to nearest tenth. For most part, children were weighed without any clothing, but in cases where mothers were not comfortable with complete removal of clothes, enumerators first adjusted the scale to zero with both the weighing pants and child's clothing attached to the scale.

3.7 Data Processing and Analysis

The processing of the survey results began on the second day after commencing data collection. The completed audited questionnaires were entered into an EPI6 database by data entry clerks specially trained for this task. Upon completion of data entry, the consultant conducted 30% data verification for each of the three program areas' data sets. Descriptive statistics were then generated in EPI6, with cross tabulations on selected variables done in the EPI2000 for windows.

4. TECHNICAL RESULTS APPROACH AND DISCUSSIONS

4.1 Water and Sanitation: Demographic and Socio-Economic Characteristics

Table 1 presents background characteristics of surveyed women of reproductive age (14 – 49 years) in Mbeere, Tana River and Suba Districts:

Table 1: Distribution of demographic characteristics of survey respondents

	Makima	Suba	Tana River
Mothers' age			
Minimum	18yrs	14yrs	16yrs
Median	25yrs	23yrs	25yrs
Maximum	46	44yrs	45yrs
Mothers' Education level			
None	3.2%	1.1%	69.1%
Primary level	85.3%	89.5%	28.9%
Secondary level	11.6%	9.5%	2.1%
College & above	None	None	None
Family Size			
Mean	6	6	6
Minimum	3	2	3
Median	6	6	6
Maximum	14	13	11
Child age			
Minimum	1.0 month	0.0 months	0.0 months
Mean	6.5 months	6.1 months	6.0 months
Median	7.0 months	7.0 months	5.7 months

Other than educational attainment, especially with respect to Tana River, the other characteristics were similar among the surveyed respondents. Since education is widely documented to have positive influence on hand washing behavior, including other sanitary and hygiene practices, interpretation on adopting of these practices would consider education levels.

4.1.2 IR1.1: Increased access to potable water supply and sanitation

4.1.2.1 Household Water & Sanitation

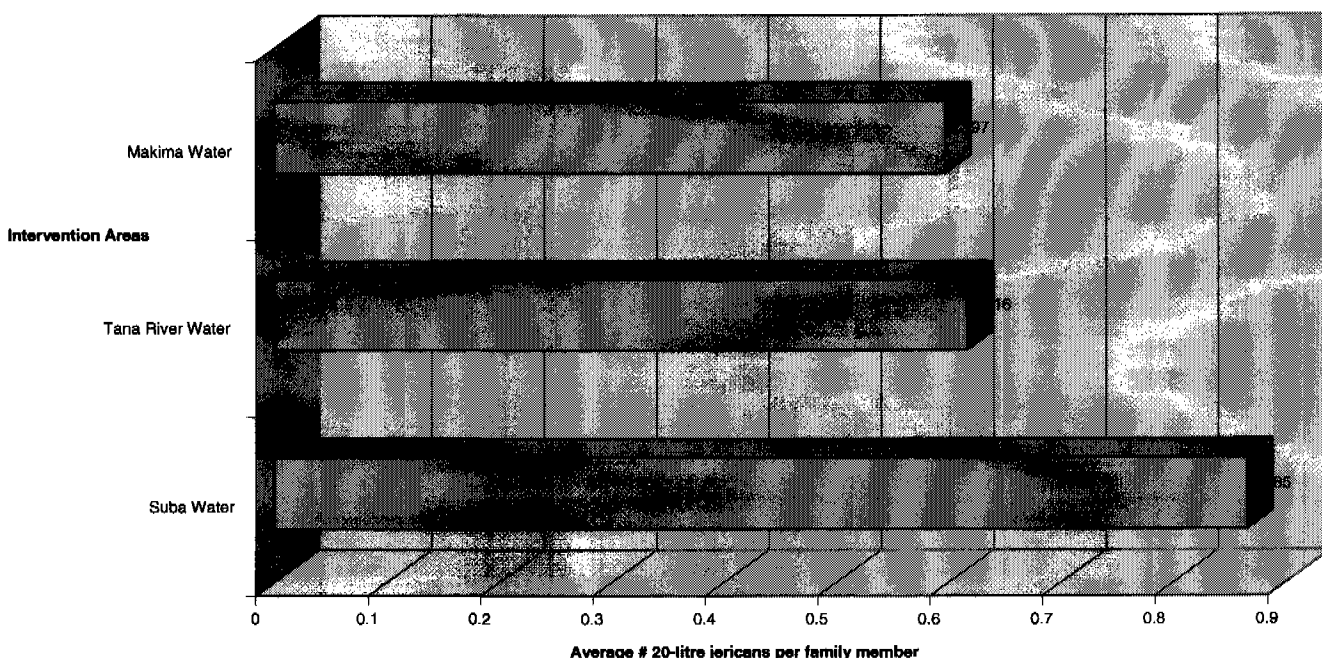
Activities under this intermediate result were implemented in Tana River, Suba and Mbeere Districts. These are Arid and Semi-Arid Lands (ASAL) areas where water remains an important resource. In addition to human consumption and domestic use, the livelihood of Tana River pastoralists and agro-pastoralists are dependent on its availability. The survey investigated the types of water sources used year-round, management of water sources and access to adequate sanitation.

Access, utilization and opportunity cost of time spent in water collection

Distance to the primary source of drinking water is an important indicator of access, utilization and the opportunity cost of time spent in water collection. Fetching water is the domain of women and the amount of time spent on water collection may have profound impact on other child caring practices such as child feeding, care during illness and, meal preparation.

The mean number of 20-litre of water per family member in the three project areas, was approximately 0.693(14 liters of water per family per day). The proportion of households accessing water within two kilometers (30 minutes) was 76.8%, 71.1% and 44.2% for Suba, Tana River and Makima projects respectively. Figure 1 below shows the existence of a linear relationship between the amount of water used per person per day and the perceived proximity to household's primary drinking water source. From the graph, the mean number of liters of water per family member per day for Suba, Tana River and Makima was 17, 12 and 12 liters of water respectively.³

Figure 1: Mean 20-litre of water per family member



Year-round Access to Safe Water

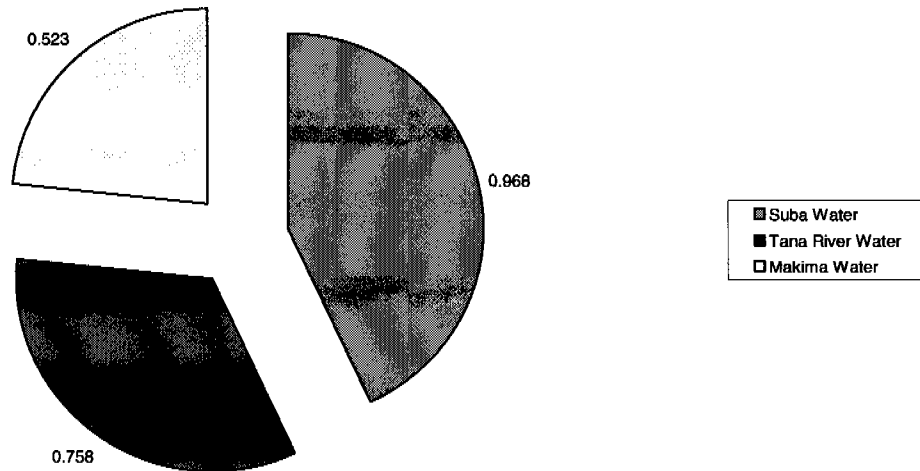
The type of water source is used as a proxy for water quality where water quality data is not available. The data collection method did not use biological and/or chemical test data for the household water sources. Results indicate that the overall percentage of households with year-round access to safe water⁴ was 74.6% (214 households out of

³ Results could not be compared with baseline findings, since analysis at baseline did not proceed to this level.

⁴ Safe water is defined as water collected from protected springs, improved dams, protected wells, boreholes, piped water. The number of households who reported these water sources as their main water sources throughout the year, divided by the sample size.

287). The chart displays the proportion of households in the three project areas with year-round access to safe water⁵:

Figure 2: Proportion of Households with year-round access to safe water by project area



Seasonality of Access by Water Source

The analysis further explored the proportion of households reporting year-round access to water irrespective of source. Table 2 presents the findings:

Table 2: Comparative Year-round Access to water by Source

Suba Watsan

Four mostly used Water Technologies:

Hand pump	42.1% (40 out of 95)
Boreholes	29.5% (28 out of 95)
Piped water	16.8% (16 out of 95)
Wind Pump	7.3% (7 out of 95)

Tana River Watsan

Four mostly used water technologies:

Hand pump	51.6% (49 out of 95)
Rivers	26.2% (16 out of 95)
Improved Dams	17.9% (17 out of 95)
Dams	9.8% (6 out of 95)

Makima Watsan

Four mostly used water technologies:

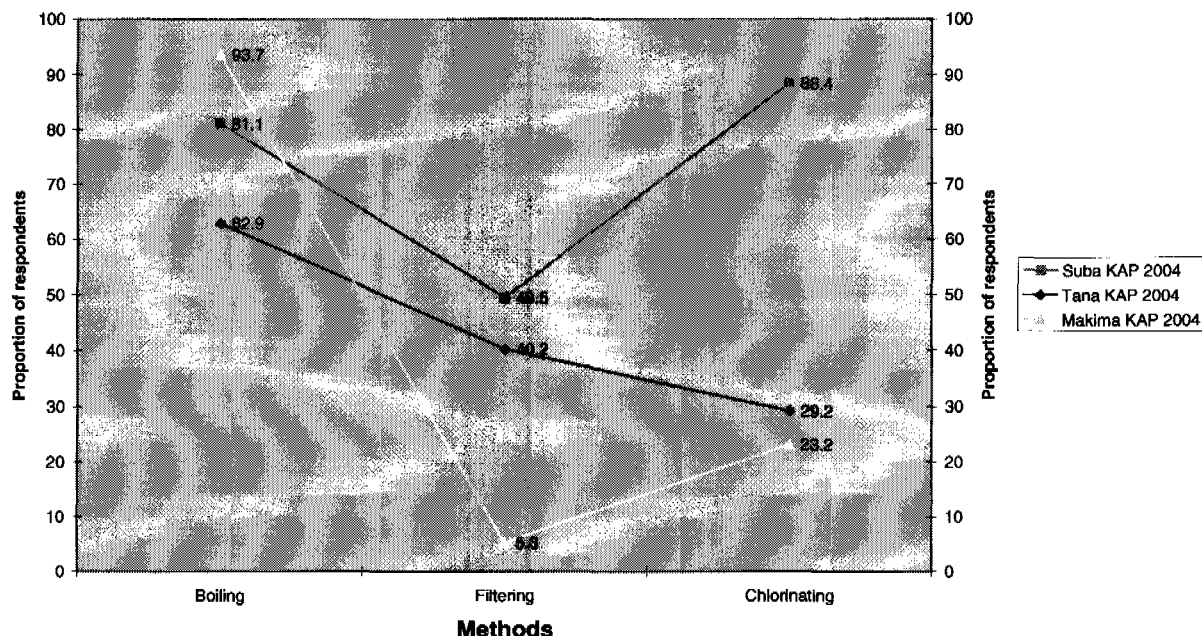
Boreholes	49.5% (47 out of 95)
Dams	25.6% (21 out of 95)
Unprotected spring	8.5% (7 out of 95)
Improved Dams	3.2% (3 out of 95)

⁵ This result could not be compared with baseline status, since baseline analysis didn't proceed to this level.

Suba water and sanitation has a higher proportion of targeted households reporting year-round access to safe water. More households in Suba reported use of water from sources classified as safe, these were hand pumps, boreholes, wind pumps and piped water.

Methods of making contaminated water safe before drinking:

Figure 3: Methods of making contaminated water safe before use



Survey results indicate that boiling is the most frequently cited method for making water safe before drinking. Use of chlorination was highest in Suba District, while filtration was lowest in Makima. 96.7%⁶ and 89.3%⁷ of surveyed households reported boiling method at baseline for Makima and Suba respectively, while in Tana River the use of herbs and Alum were reported at 40% and 60% respectively⁸. It is therefore important to note that at this high level, it requires much more effort to make any noticeable change, due to high knowledge saturation among target population.

Causes of Water Sources Pollution

The survey sought to assess the level of knowledge among the respondents on what causes pollution and/ or contamination of water sources. The remedial actions that could be taken to prevent the pollution and/or contamination of water sources were also assessed.

Figure 4 displays the proportion of respondents stating the sources and the remedial actions to reduce water pollution. The most reported causes of water pollution and/or contamination were dirt, human/animal contact with water, and disposal of human wastes in or near water sources. Table 3 shows fencing around water sources as the highest rated remedial action in all the three program areas, while protection of springs was rated high in Suba District. This was expected, as the program in Tana

⁶ Makima KAP Survey, September 2002

⁷ Suba KAP Survey Gwasi Division, November 2001

⁸ Tana River KAP Survey, March 2002

River and Makima did not have springs as an option. Use of latrines was rated very low in both Suba and Tana River. This finding correlates very well with the findings on latrine coverage in the three areas. Makima has the highest coverage compared to the other areas.

Table 3: Causes of Water Pollution/Contamination and ways of preventing pollution/contamination:

<i>Causes of pollution/Contamination:</i>	<i>Suba%</i>	<i>Tana River%</i>	<i>Makima%</i>
<i>Dirt</i>	28.4	45.4	54.7
<i>Human/animal contact with water</i>	44.2	57.7	49.5
<i>Seepage through soil</i>	13.7	8.2	12.6
<i>Disposal of Human wastes in/near water</i>	21.1	18.6	44.2
<i>Use of unsafe abstraction methods</i>	35.8	19.6	2.1
<i>Ways of preventing pollution</i>	<i>Suba%</i>	<i>Tana River%</i>	<i>Makima%</i>
<i>Fencing water sources</i>	45.3	46.4	43.2
<i>Providing covers for wells</i>	18.9	16.5	4.2
<i>Protection of springs</i>	25.3	1	0
<i>Regular cleaning of water sources</i>	14.7	4.1	15.8
<i>Use of safe abstraction methods</i>	20	17.5	9.5
<i>Use of latrines</i>	3.2	9.3	21.1

Hand washing behavior

Appropriate hand washing behavior by caretakers is defined by the appropriate times for hand washing, and use of appropriate hand washing techniques. The most critical appropriate times for hand washing include after defecation, after cleaning babies' bottoms, before feeding children and before food preparation⁹. Appropriate hand washing techniques include uses of water, soap, ash or other detergents. This indicator was measured in the same way as the baseline to maintain consistence and as recommended.

The overall target population with proper hand washing behavior using the baseline¹⁰ method was 63.8%. The proportion of mothers who reported practice of either of the recommended critical times was however 82.4%. Using the current recommended method of measuring this behavior¹¹, the proportion of mothers with appropriate hand washing behavior was reported at 8.8% (6/68) for Suba Water. None of the surveyed

⁹ Mary Arimond and Marie T. Ruel, Generating Indicators of Appropriate feeding of children 6 through 23 months from the KPC 2000+, November 2003 (FANTA Publication)

¹⁰ Method used at baseline was that any respondent who reported hand washing after visiting latrine was coded "1" as an accepted practice. Coverage for Suba Water was therefore taken as the baseline for this indicator.

¹¹ Measurement method: percent of mothers who report washing their hands with soap/ash for **all of the following: before food preparation; before infant and child feeding; after defecation and after attending to a child who has defecated** (Mary Arimond et..al, November 2003 FANTA)

mothers in Tana River and Makima practiced appropriate hand washing. The set target for this indicator was 69%

If the analysis is not restricted to the availability and use of water/soap/ash/leaky tins while washing hands, 13.7%, 7.2% and 1.1% of mothers in Suba, Tana River and Makima respectively reported washing their hands at the critical times. Washing hands at any one time without necessarily using soap/ash/leaky tins was found to be 55.7% for Tana River, with Suba and Makima reporting 95.8%. Figure 4: shows distribution of hand washing practices by project areas.

Figure 4: Hand washing Practices at different critical times

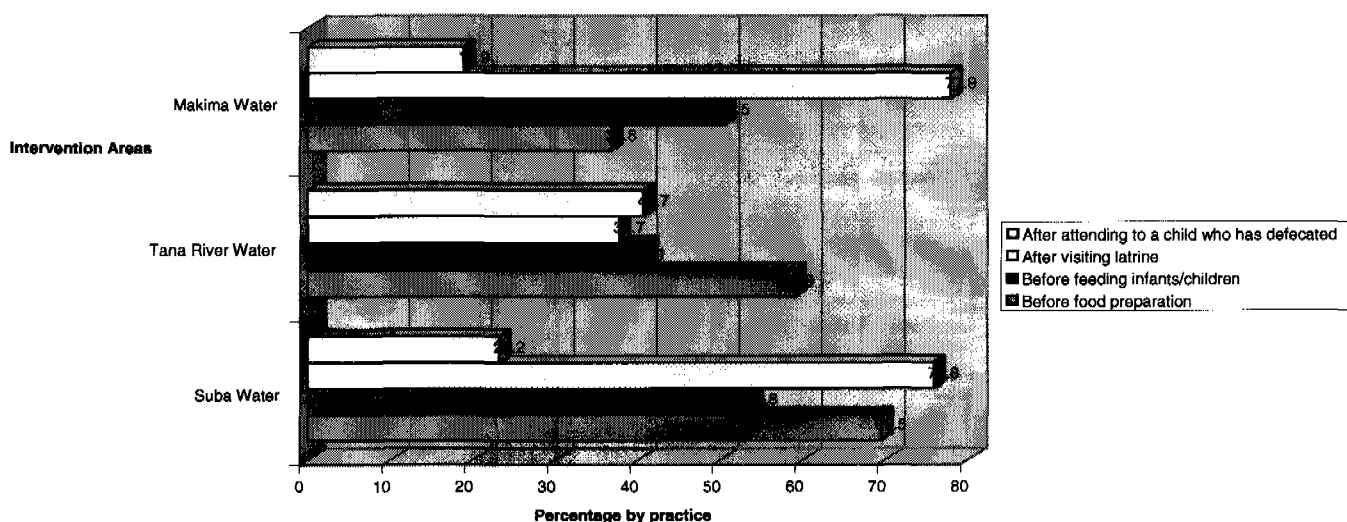


Figure 4 shows that washing hands after visiting latrines had higher frequency in Makima and Suba Project areas, pointing to the high latrine coverage levels in the two areas, as compared to Tana River. At baseline¹², 58.8%, 16% and 47% of households reported hand washing after visiting latrines, for Suba, Makima and Tana River projects respectively.

The availability of appropriate hand washing techniques (tap/container with water, soap, ash or other cleansing detergent or leaky tins) was high in Suba than the other areas. The reported figures were 94.3% (66/70), 41.4% (29/70) and 4.3% (3/70) respectively for Suba Water, Makima and for Tana River. This shows that promotion of hand washing is still required in Makima and Tana River program areas.

Adequate Household Sanitation¹³

Safe disposal of faeces refers to the disposed in a way that significantly reduces the risk of contaminating the household environment. Safe or sanitary disposal of faeces, according to Eckhard¹⁴, is either defecating or throwing faeces in a latrine or toilet.

¹² Caution should be taken when interpreting these results, since different methods were used in calculating this point estimates.

¹³ Access to sanitation that is convenient for all household members (including women and children), affordable and that eliminates contact with human excreta and other wastewater within the home and the wider neighborhood.

¹⁴ Hygiene behavior indicator for hh-c-imci-2nd draft by Eckhard Kleinau-EHP, June 15, 2001

The survey defined a sanitary latrine or toilet as simple pit latrine or ventilated improved latrine, with an appropriate superstructure and an enclosure that bars viewing into the latrine. Safe faeces disposal is only feasible when a household has access to a latrine or toilet. This then implies that households without access to such a facility cannot dispose their faeces safely.

The overall proportion of households within the project catchment areas with adequate sanitation¹⁵ was 48.4% (CI: 42.6% - 54.2%). There was an increase of 14.4% from the baseline figure. The final survey findings for individual project areas were Suba – 50.8%, Makima –68.4% and Tana River – 27.5%. The reported latrine coverage for Suba was 36.2%, Makima was 65%¹⁶ and Tana River was 18% at baseline¹⁷. In measuring this indicator inconsistency in defining a sanitary facility during the baseline and final survey were observed. This made it difficult to compare baseline and final results. However, based on this comparison, the latrines coverage has increased by 14.4%. CRS/K and its partners should investigate causes for this low increase and develop strategies to improve intake in latrine construction and use.

Disposal of children's wastes

Survey results for Tana River and Makima indicate that over 94% of mothers collect and throw stools and/or wastes of babies and young children in the pit latrines. Only 5% of households reported collecting and throwing faeces in pit latrines at baseline for Tana River, while Makima reported 68.1%. In Suba Water, proportion of households who collect and throw stools and/or wastes into pit latrines was 63%, while those who bury was 34%. Burying was the predominant practice at baseline (63.6%) and only 36.4% reported collecting and throwing in pit latrines.

Diarrhea prevalence¹⁸

Overall diarrhea prevalence in the three project areas was 41% and, was equally distributed in the three project areas, with point estimates of 42.3%, 43.2% and 40.0% for Tana River, Mbeere and Suba Districts respectively. The baseline estimate was 33%. The program had proposed to reduce the prevalence among the infants to 18%. Based on the increased safe water coverage and latrine uses, it would have been expected that diarrhea prevalence would reduce. Knowing that diarrhea prevalence is seasonal, the fact that baseline surveys for the three project areas were done at different times, this could be the confounding factor to this finding, hence the need for further qualitative investigation, to isolate the real confounding factors.

¹⁵ Access to adequate sanitation: In calculating the percentage, the numerator is the number of households with a sanitary facility for disposal of human waste which is being used by all family members(children's wastes collected and thrown in the toilet), divided by the total sample size surveyed.

¹⁶ Interpretation of this baseline coverage should be done with caution, since at baseline, there was a problem with the definition of a pit latrine, leading over reporting in coverage.

¹⁷ Baseline KAP Survey Reports cited earlier.

¹⁸ Measurement method: percentage of children age 0 – 11 months who had diarrhea (three or more loose or watery stools in a 24-hour period) in the preceding two weeks.

Methods of keeping latrines foul smell free & garbage disposal practices

Table 4: Reducing Foul Smell in Latrines:

	Suba Water		Tana River Water		Makima Water	
	%	N=33	%	N=17	%	N=46
Use of vent pipe	12.1	4	35.3	6	12.8	6
Covering Squat hole	15.2	5	29.4	5	23.4	11
Pouring Ash	15.2	5	5.9	1	70.2	33
Keeping it clean	63.6	21	35.3	6	37.0	17
Garbage Disposal:	Suba Water		Tana River Water		Makima Water	
	%	N=87	%	N=86	%	N=76
Throwing in refuse pit	60.9	53	26.7	23	7.9	6
Burying	0.0	0	4.7	4	0.0	0
Burning	31.0	27	64.0	55	60.5	46
Throw anywhere	8.0	7	4.7	4	31.6	24

Keeping pit latrines clean was found to be the dominant knowledge among the surveyed respondents in all the areas, with use of ash reported very high among the respondents in Makima. Use of vent pipes was highest in Tana River, and equally distributed in Suba and Makima. On garbage disposal, method such as use of refuse pits and burning were the predominant practices in all the areas. Makima had a surprisingly high proportion of mothers reporting throwing of garbage anywhere.

4.1.3 Environmental Impact Assessment

An observation checklist was used in assessing the percent of water points without standing water and the percent of earth dams with vegetation cover and silt trap in targeted area. Out of the four pans visited and assessed in Makima, none had vegetation cover and silt traps, but there were adequate soil conservation measures.

Two earth dams and three hand pumps were visited in Tana River. Of the visited earth dams, one Bilbil Shule, had some vegetation cover, but weathered out due to harsh climatic conditions at the time of the survey. All wells with hand pumps had no stagnant water. They all had good drainage leading to bananas plantation or vegetation.

A total of thirteen water facilities were visited in Suba District. Out of the eleven facilities (shallow wells – 2, boreholes with hand pumps – 5, boreholes with wind pumps – 2, and gravity schemes – 2), 91% (10 out of 11) had no stagnant water; one earth dam had vegetation cover, while the other had a silt trap. There were no observed adverse environmental conditions.

4.2 Maternal & Child Health: Demographic and Socio-Economic Characteristics

The age of the surveyed mothers ranged from 16 to 46 years, with a median age of 25 years old in Tana River District. For Homa Bay this was 15 to 45, with a median of 25 years. The mean age for the children 0 – 23 months was 11.7 and 10.7 months for Tana River and Homa Bay respectively.

The distribution of educational attainment was similar for the two program areas as was at baseline, with approximately 86.4% and 12% having received primary and secondary level education in Homa Bay and approximately 36% and 2% having received primary and secondary level of education in Tana River. Approximately 61.4% (116 out of 189) mothers had no formal education in Tana River. Other indicators of socioeconomic status, including engagement in various income generating activities, were relatively similar across households in the two areas, suggesting limited wealth difference among households in the targeted areas.

4.2.1 IR1.2: Improved nutritional status of children under 36 months

4.2.1.1 Growth Monitoring & Anthropometry

Malnutrition increases risk of morbidity and mortality of children and has been shown to impair mental development. Changes in body dimensions reflect the overall health and welfare of individuals and populations. Anthropometry is widely used because it is inexpensive and non-invasive measure of the general nutritional status of an individual or population. In addition, anthropometry is used to assess and predict performance of health and survival of individuals and reflect the economic and social well being of populations. The four building blocks or *measures* used to undertake anthropometric assessments are age, sex, height or length and weight. When two of these variables are used together they are called an *index*. Three indices are commonly used in assessing the nutritional status of children: *weight-for-age*, *height-for-age*, and *weight-for-height*. IHAP's impact nutritional indicator is based on weight-for-age and this was assessed during the survey.

Low weight-for-age index identifies the condition of being ***underweight***, for a specific age. The advantages of this index are that it may reflect both past (chronic) and/or present (acute) under-nutrition, with inability to distinguish between the two. Underweight, based on weight-for-age, is a composite measure of stunting (deficits in height-for-age) and wasting (deficits in weight-for-height), and is recommended as the indicator to assess changes in the magnitude of malnutrition over time. Children who fall more than two standard deviations below the reference median are regarded as undernourished, while those who fall more than three standard deviations below the reference median are considered severely undernourished.

The assessment of nutritional impact was based on a comparison of data collected in 2000 and those of 2004. The results are presented for different age groups 6 – 11 months, 12 – 17 months, 18 – 23 months and overall 0 – 23 months. This is how results were presented at baseline, in order to give an indication of how the different age groups responded.

The prevalence of underweight¹⁹ (weight-for-age below -2SD) in the two program areas was 19.3%, slightly below the national underweight average (20% KDHS 2003)²⁰. The prevalence of underweight in Homa Bay District (16.8%) was lower than the national average (20% KDHS, 2003). The overall baseline underweight prevalence for Homa Bay was reported as 23.0% in August/September, 2000. The results therefore show that the prevalence of underweight in the district has significantly improved from baseline to final (23% to 16.8%).

Figure 5a: Prevalence of low weight-for-age indicator in Homa Bay District by sex and age:

Figure 5a: Distribution of Child Underweight Prevalence in Homa Bay District by Age Groups

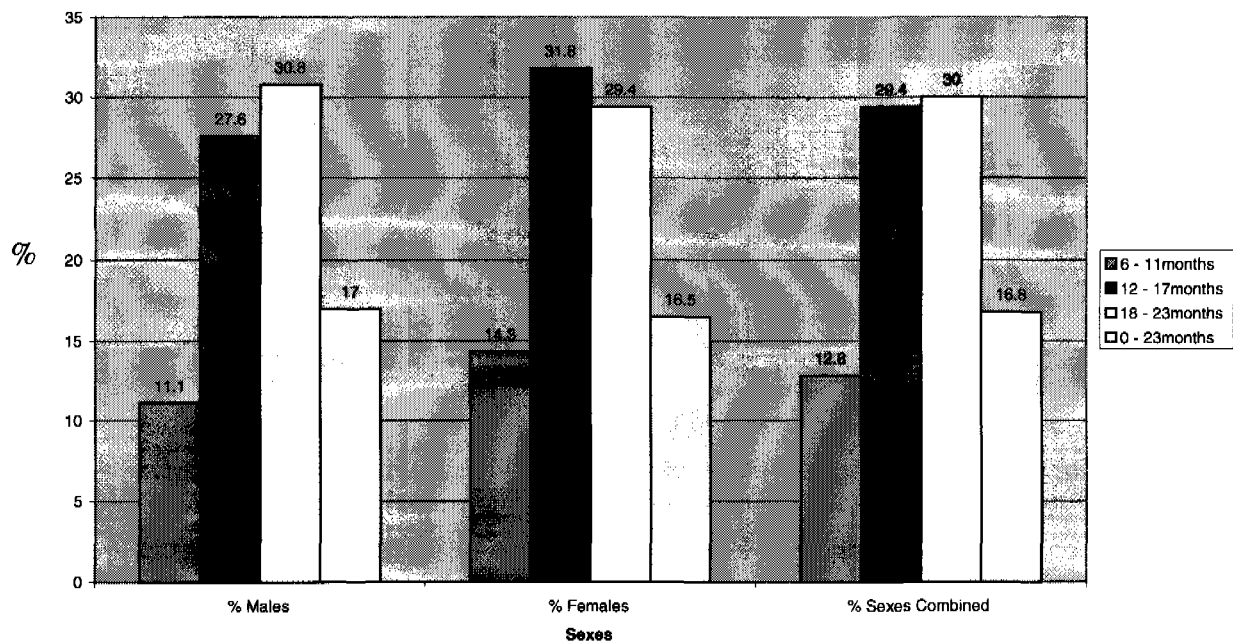


Figure 5a shows that underweight prevalence is higher among children 12 – 17 months and 18 – 23 months children in the program area, with insignificant differences observed among the males and females in the two age cohorts.

The overall prevalence of underweight in Tana River (21.9%) was higher than the national average (20% KDHS 2003) but significantly below the prevalence for coast province (25.4% KDHDS 2003).

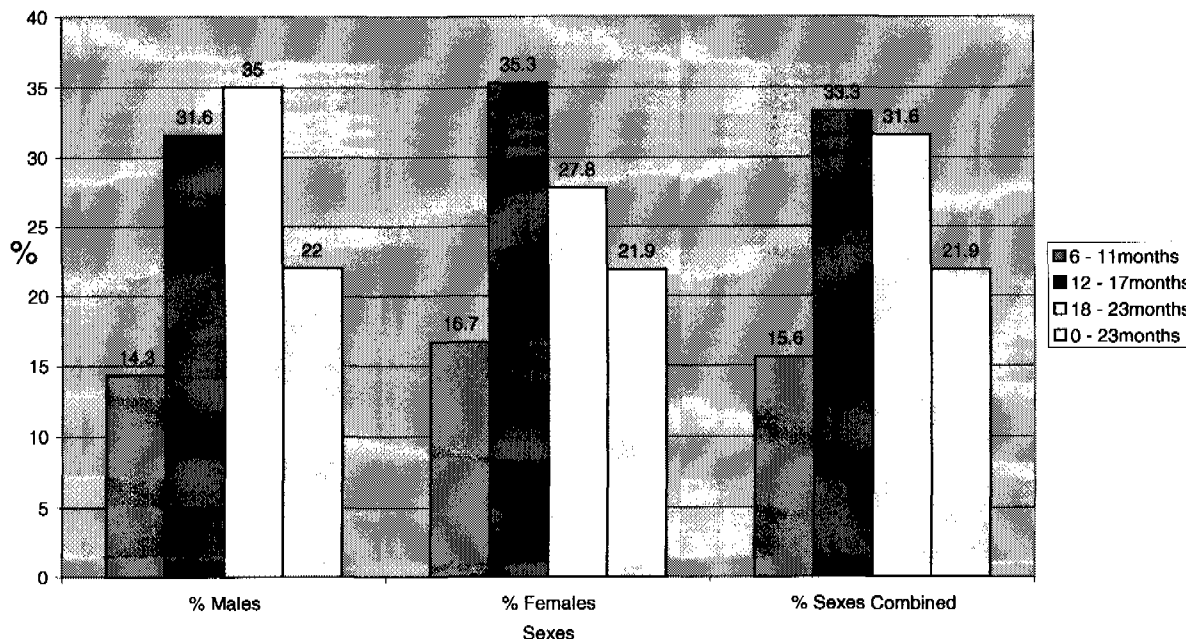
As in Homa Bay, the Tana River bar graph shows that the prevalence of underweight is greatest among the 12 – 17 months and 18 – 23 months, with males having higher prevalence in 18 – 23 months age cohort, while prevalence among the females dropping from the 12 – 17 months to the 18 – 23 months.

¹⁹ Measurement method: percentage of children 0 – 23 months suffering from moderate or severe underweight (below minus two standard deviations from median weight-for-age of the reference population)

²⁰ Kenya Demographic and Health Survey, 2003.

Figure 5b: Prevalence of low weight-for-age indicator in Tana River District by sex and age:

Figure 5b: Percentage of Underweight Children Tana River District by Age and Sex



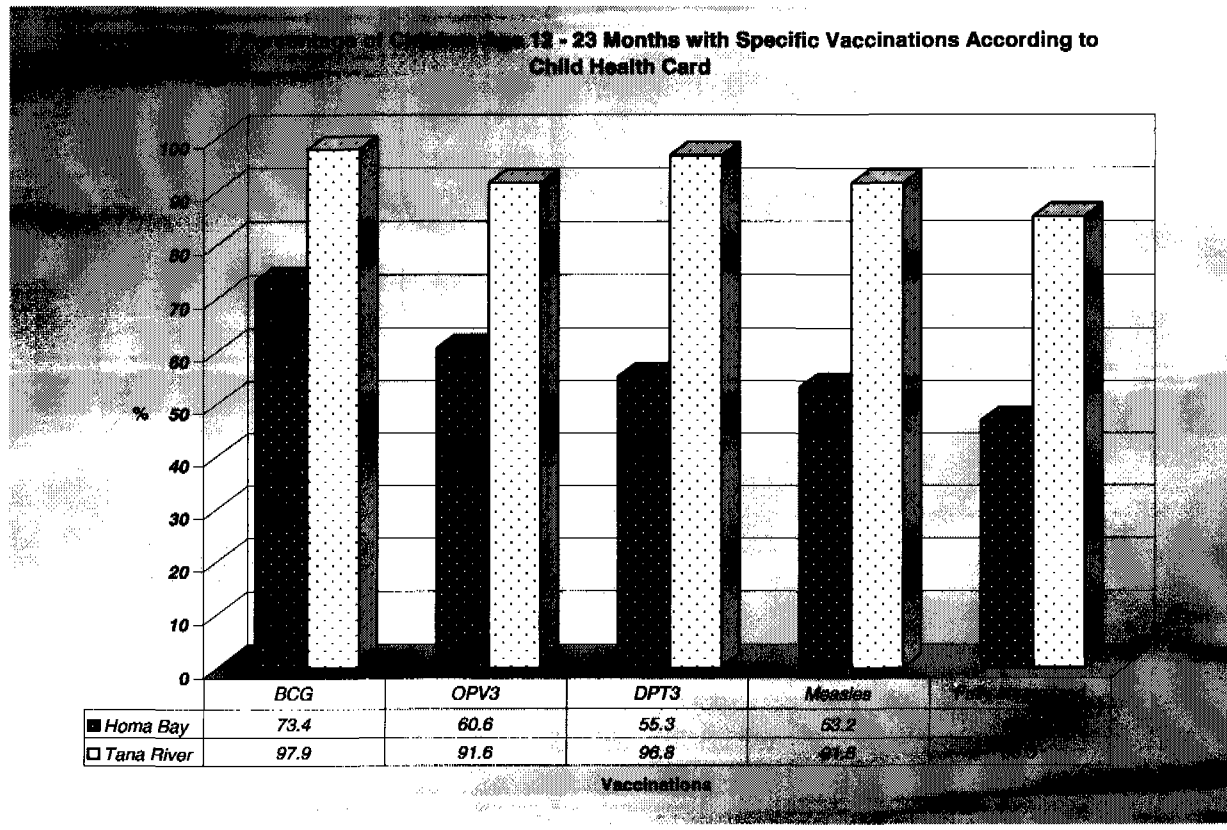
Growth Monitoring Compliance:

Reviewing the entries on the child health cards assessed the proportion of children participating in the routine growth monitoring sessions. Growth monitoring compliance was determined by establishing if the child had been weighed consistently in the past four months prior to the survey. 38% and 96% of children older than four months in Homa Bay and Tana River were consistently participating in the growth monitoring sessions.

4.2.1.2 Child Immunization

Child immunization rates provide an important indicator of the degree to which a population continues to be vulnerable and adversely affected by preventable childhood diseases. According to the World Health Organization, a child is considered fully immunized if he or she has received a BCG vaccination against tuberculosis; three doses of DPT vaccine to prevent diphtheria, pertussis, and tetanus; three doses of polio vaccine; and one dose of measles vaccine. These vaccines should be received during the first year of life. For purposes of having an acceptable denominator for calculating immunization coverage, the final KPC survey collected information among children 12 – 23 months. The dates of each vaccination was extracted from the child health card and recorded on the survey questionnaire.

The results show that the overall program coverage level on the percentage of children 12 – 23 months fully immunized was 66.1%. This is remarkably higher than the national immunization coverage level (57% KDHS, 2003), but fell short of the program’s set target of 71%. The two program areas showed wide variations in terms of coverage level, with Tana River achieving much higher. Figure 6 below, compares the immunization coverage in the two program areas.



A comparison of the baseline and final immunization coverage level by vaccine type demonstrates a remarkable upward improvement in the two program areas, as presented in Table 5.

Table 5 - Immunizations: Comparison of Rates by Project Areas

Vaccines	Homa Bay Child Survival Project		Tana River Child Survival Project	
	Baseline	Final	Baseline	Final
BCG	60.3%	73.4%	91.3%	97.9%
OPV3	45.5%	60.6%	88.1%	91.6%
DPT3	48.8%	55.3%	89.7%	96.8%
Measles	30.6%	53.2%	77.0%	91.6%
Fully Immunized	28.1%	46.8%	73.0%	85.3%

The figure shows low immunization coverage for Homa Bay as compared with Tana River. This is however greater improvement in the two program areas with significantly higher increases for Homa Bay than in Tana River. This is much more evident in the increase in BCG, measles vaccines and full immunization coverage.

We suggest that CRS/K explores and documents the best practices used in the promotion of immunization services in the target population. The research should also look into the cost-benefit and the sustainability of those best practices by the community and the local Ministry of Health facilities.

4.2.2 IR1.3: Improved maternal health care for women aged 15 – 49 years

4.2.2.1 Maternal & Newborn Health Care

Recognition of the general health benefits of maternal health services, women and their families need sufficient in-depth knowledge about maternal health care in order to make appropriate decisions about their health during and after pregnancy. This includes awareness of when and how often they should seek health care, services that should be received during prenatal visits, and signs of maternal health problems and obstetric emergencies. The survey therefore sought to establish the impact of the program's maternal and newborn health care interventions. This included women of reproductive age knowledge of safe motherhood practices.

Frequency of Antenatal Visits

Current Safe Motherhood guidelines for sub-Saharan Africa recommend that a pregnant woman receives care from a trained health worker at least four times during her pregnancy and that the first prenatal visit occur by the end of the fourth month of pregnancy²¹. Table 6 presents a comparison on the number of ANC visits at baseline and final surveys:

Table 6: Comparison of frequency of Antenatal visits at baseline and end line

Number of ANC visits	Homa Bay		Tana River	
	Baseline	Final	Baseline	Final
One visit	52.3%	31%	7.8%	20.0%
Two visits		24%	18.6%	46.7%
Three or more visits	46.7%	43.1%	72.5%	32.0%
None		1.7%	1%	1.2%

Frequency of antenatal visits is quite critical for the early detection and management of complications arising from pregnancy. It is therefore important for CRS and its partners to explore reasons for low utilization of ANC services during pregnancy.

Maternal Health Card Retention

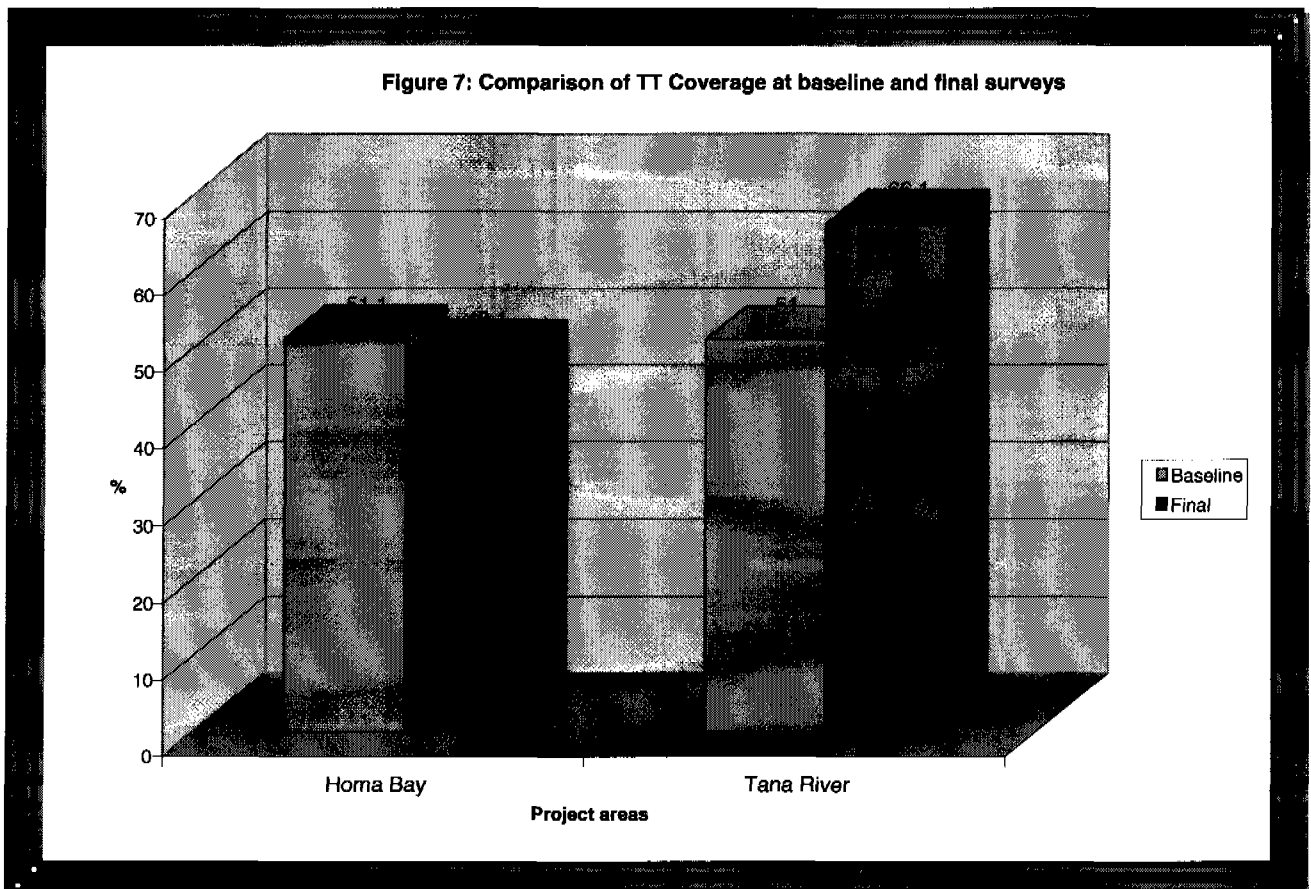
A comparative analysis between baseline and final surveys indicates that maternal health card retention has significantly improved over the last four years among the surveyed mothers in Homa Bay as compared to Tana River. A third of the surveyed mothers had their cards as compared to 15.1% and 34% for Homa Bay and Tana River respectively at baseline.

²¹ See <http://www.jhuccp.org/africa/tools/info/safe.shtml>

Tetanus Toxoid Immunization

Tetanus toxoid injections are given during pregnancy for the prevention of neonatal tetanus. Tetanus is one of the principal causes of death among infants in many developing countries. Pregnant women should receive at least two doses of tetanus toxoid to be fully immunized. Women, who were fully immunized during previous pregnancy, only require one dose during her current pregnancy to achieve full protection²². Five doses are considered adequate to provide lifetime protection. In order to assess the TT coverage, interviewers reviewed maternal health cards and recorded the number of TT vaccinations on the survey tool. Figure 9 shows a comparison of TT coverage for Tana River and Homa Bay at baseline and final surveys. Based on the health card observation, the overall program TT coverage was 58.0% against a target of 74%. This represents the proportion of women who received at least two or more TT injections as observed in the card. This would show that there has been no significant improvement in the proportion of women receiving two or more TT injections during pregnancy in Homa Bay, while Tana River registered significant improvement.

TT coverage measured through mothers' recall was 68% and 78.7% in Homa Bay and Tana River respectively. This in essence, represents a higher coverage than the set target.



²² Kenya Demographic and Health Survey, 2003.

Knowledge of Danger Signs during Pregnancy

Pregnant women and their families should be aware of “danger signs” that require immediate medical attention. Danger signs during pregnancy include: vaginal bleeding, fever, continuous vomiting, dizziness/fainting severe waist pains, uneven heart beat, swollen feet, swollen hands, swollen face, yellow eyes and itching all over the body, severe headache, blurred vision, and fits or convulsion. In assessing the awareness of these danger signs, the survey asked women to cite the main danger signs during pregnancy that would indicate the need to seek medical attention. In overall, 72% (274 out of 380) surveyed mothers, against the set target of 100%, could cite at least two danger signs during pregnancy that indicate the need to seek medical attention from health professionals. In overall, the two programs areas managed to increase the knowledge level of mothers on the danger signs as compared to the baseline level as shown in figure 8 below:

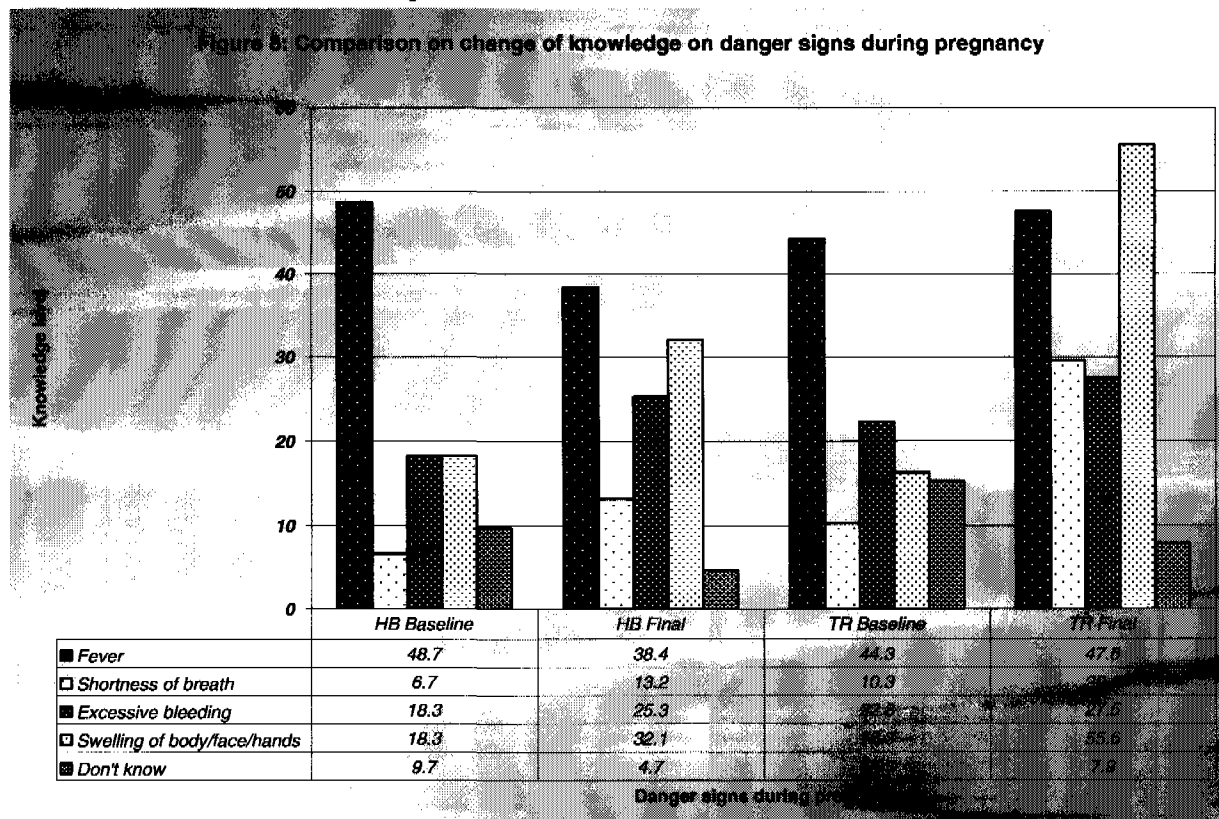


Figure 8 shows that fever, excessive bleeding and shortness of breath are the most rated danger signs. It also emerges that the two program areas managed to reduce the proportion of mothers who did not know the danger signs by half. Despite the resulting achievements, CRS/K and its partners still need to review the Information, Education and Communication materials and strategies, which were used in delivering health education.

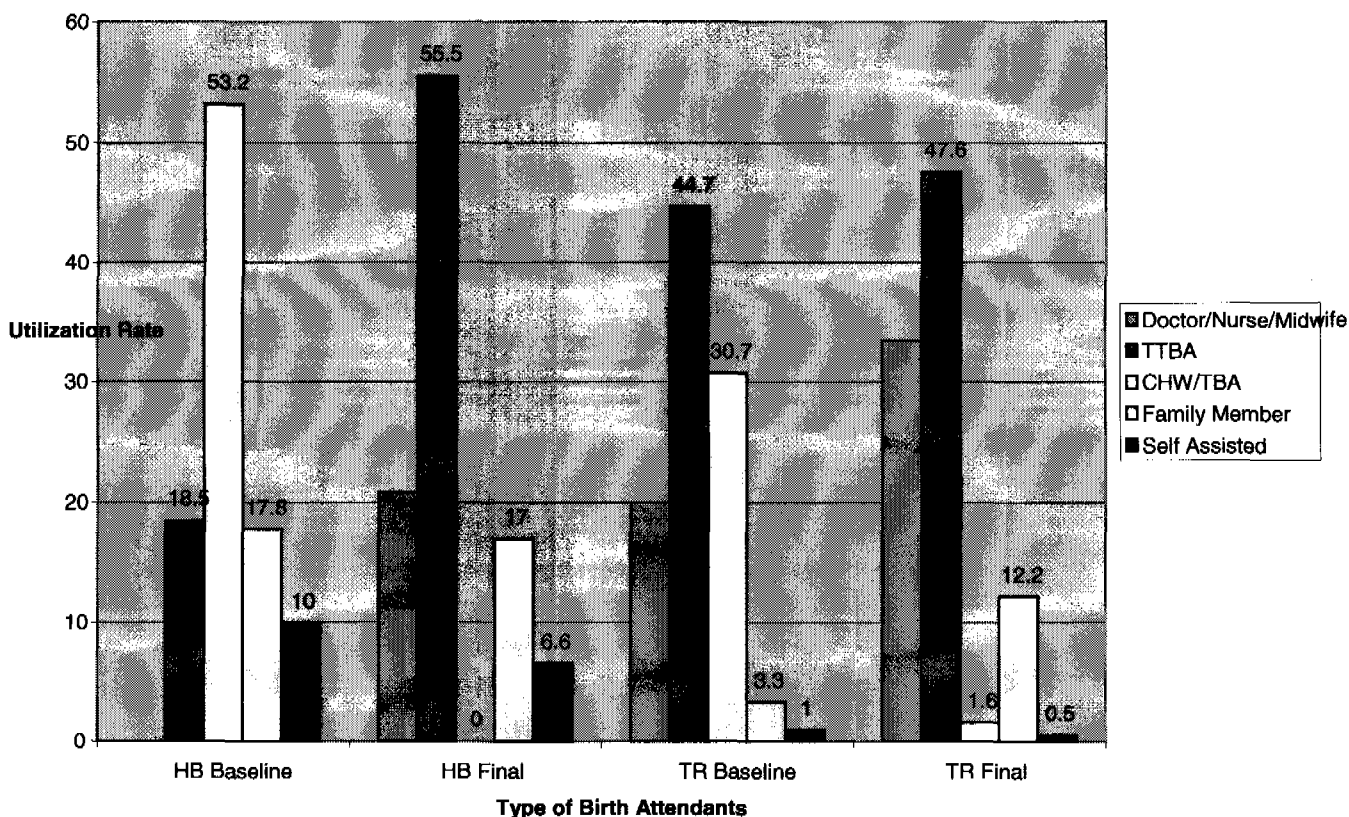
Assistance at delivery:

The type of assistance a woman receives during birth has important health consequences for both the mother and the child²³. The birth attendant provides an indication of the preparedness of communities to appropriately deal with complications during birth. Information on the birth attendant during the last birth was collected

²³ Kenya Demographic and Health Survey, 2003

during the household survey. The proportion of the surveyed mothers who used either health professionals or Trained Traditional Birth Attendants (TTBA) in Homa Bay and Tana River was 72.8% (CI: 65.9% - 79.0%) and 85.7% (CI: 79.9% - 90.4%) respectively. In overall, 51.5% (191 out of 371) surveyed mothers used TTBA at delivery, compared to the projected target of 59% at the end of Life of Activity. The attendant during the most recent birth among women with children under two years is presented below by project area at baseline and final surveys. Figure 9 demonstrates the increased use of health professionals and trained traditional birth attendants, with a corresponding decline in the use of non-recommended sources.

Figure 9: Comparison of Birth Attendant by Area



Knowledge of danger signs during or immediately after delivery

Many complications and maternal deaths occur due to sudden and unexpected complications that arise during or immediately following the delivery. It is therefore recommended that a woman have check-up with a trained health worker within one week after giving birth. The survey asked respondents to cite danger signs after delivery indicating the need to seek medical attention. The danger signs include vaginal bleeding, stomach pain, vaginal discharge, vomiting, dizziness, and uneven heart beat and genital sores. A comparison of the results of this survey to the baseline survey indicates the following:

Table 7: Comparison on knowledge levels on danger signs after delivery

Danger signs after delivery	Homa Bay		Tana River	
	Baseline	Final	Baseline	Final
Excessive bleeding	34.3%	21.6	34.3%	36.2
Excessive vaginal discharge	65.3%	75.3	52.0%	67.0
Discharge	6.3%	7.9	25.0%	23.5

As earlier suggested, there is need to explore further how the health education sessions were planned and conducted during the ANC visits. It is important to note that the proportion of mothers who made more than two to three ANC visits was low. It is therefore not surprising that their knowledge on the danger signs during pregnancy and after delivery has remained low. This is an area that might require special focus during the final evaluation.

The survey further sought to assess knowledge of mothers on the number of TT injections a pregnant woman needs in order to protect the newborn infant from tetanus. Survey results indicate that 72% and 82% of mothers in Homa Bay and Tana River Districts reported that a pregnant woman would need two or more TT injections. Baseline figures were 69% and 65% in Homa Bay and Tana River districts respectively. This shows a significant improvement in TT knowledge levels.

4.2.2.2 Breastfeeding/Child Feeding Practices

Breastfeeding practices and introduction of supplemental foods are important determinants of the nutritional status of children, under 24 months. With improved nutritional status, the risk of mortality among children under five years is reduced and their psychomotor development enhanced. Breast milk is uncontaminated and contains all the nutrients needed by children in the first six months of life.

Early Initiation of breastfeeding

Early initiation of breastfeeding increases chances of successful and length of breastfeeding.²⁴ The survey results are presented in the table 8 below:

Time Interval	Homa Bay		Tana River	
	Baseline	Final	Baseline	Final
<1 hr	32.4%	46.6%	51.7%	65.5%
1 – 8 hrs	30.1%	33.3%	16.0%	14.6%
>8 hrs	36.8%	16.9%	31.7%	10.8%
Don't Know	0.7%	3.2%	0.7%	8.6%

The current recommended practice is that mothers should put their babies on breast within the first hour after birth. In overall, 56% of surveyed mothers reported putting their newborns on breast within one hour after delivery; while up to 72% of respondents reported putting their newborns on breast with the first eight hours after

²⁴ Kenya Demographic and Health Survey, 2003.

delivery. The two program areas made considerable improvements from baseline results on this practice.

Exclusive breastfeeding up to six months²⁵

Exclusive breastfeeding in the early months of life is correlated strongly with increased infant survival and lowered risk of illness, particularly from diarrhea diseases.

Table 9: Changes in exclusive breastfeeding practices among mothers of infants <=6 months old between 2000 and 2004.

<i>Homa Bay Child Survival</i>				<i>Tana River Child Survival</i>			
<i>KPC 2000%</i>	<i>N=85</i>	<i>KPC 2004%</i>	<i>N=66</i>	<i>KPC 2000%</i>	<i>N=71</i>	<i>KPC2004%</i>	<i>N=55</i>
<i>4.7%</i>	<i>n= 4</i>	<i>25.8%</i>	<i>n= 17</i>	<i>23.4%</i>	<i>n= 17</i>	<i>63.6%</i>	<i>n= 35</i>

Over the course of program implementation, there had been an impressive improvement in the practice of exclusive breastfeeding, far above the national coverage level. The recorded high coverage for exclusive breastfeeding practice warrants a follow-up qualitative assessment to determine and document the interventions that contributed to that high coverage levels.

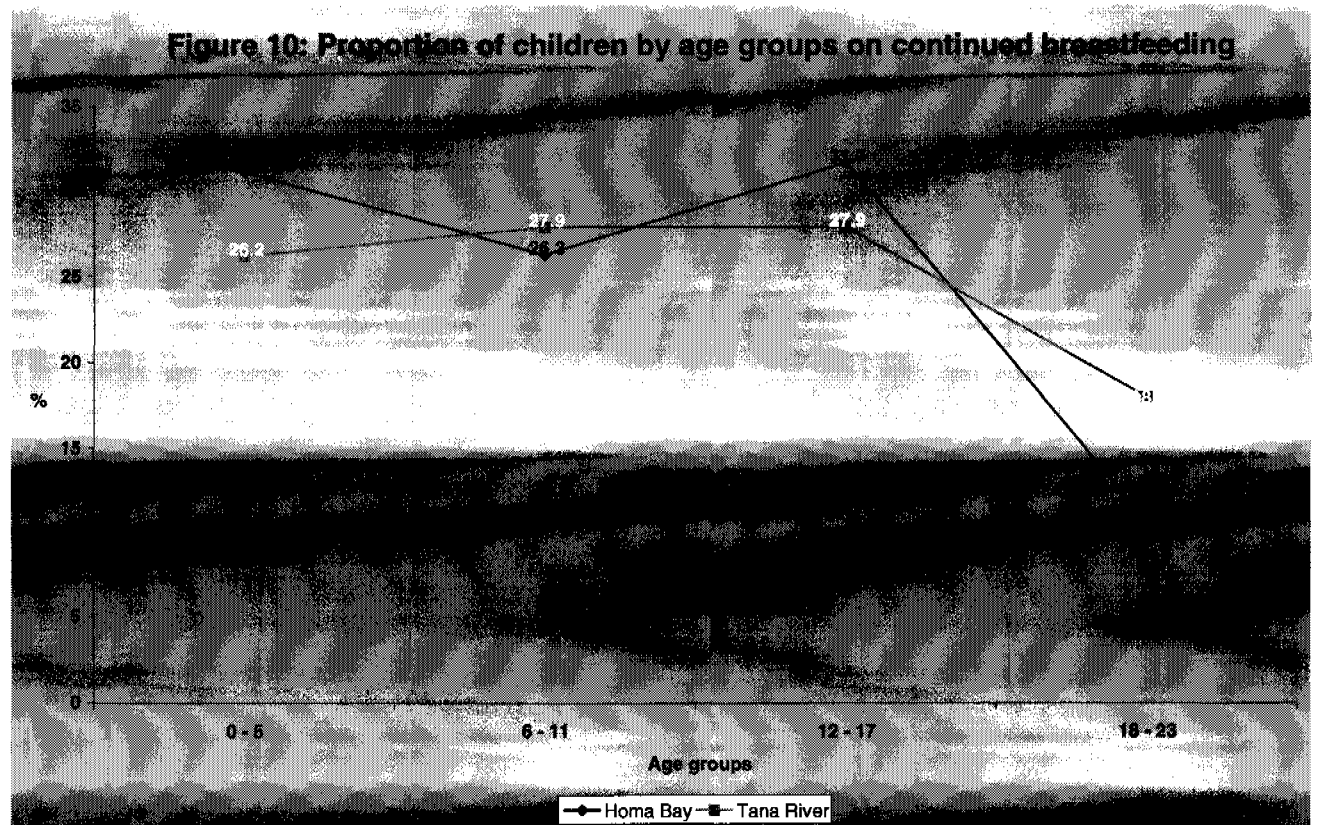
Continued breastfeeding Practices

Food and Nutrition Technical Assistance Project (FANTA) has recommended a set of indicators that provide a complete picture of breastfeeding patterns, including the point at which breastfeeding starts declining. The suggested alternatives include continued breastfeeding 6 – 11 months, continued breastfeeding 12 – 17 months and continued breastfeeding 18 – 23 months²⁶. Continued breastfeeding, that is breast milk plus the introduction of weaning foods after six months, and the gradual transition to adult foods. The continued breastfeeding rate in the two program areas is presented in figure 10 below. The proportion of children on continued breastfeeding was based on mothers' recall²⁷:

²⁵ Measurement method: percent of infants <=6 months old who were fed only breast milk in the last 24 hours prior to the survey.

²⁶ Mary Arimond and Marie T. Ruel, Generating Indicators of Appropriate Feeding of Children 6 through 23 months from the KPC 2000+, November 2003. (FANTA Publication)

²⁷ Baseline data were not disaggregated by age group, hence the difficulty in comparing the baseline and final status. In overall, this is low



Complementary feeding and continued breastfeeding

As concerns the weaning practices among women of children under two years, 60% and 85% of mothers in Homa Bay and Tana River reported starting weaning at six months respectively. The mothers' knowledge level of when to start weaning is relatively high, but the practice has remained low in the two program areas. CRS/K and its partners should research on why mothers introduce complementary feeding before six months, despite the high knowledge on the right child feeding practices.

The respondents' knowledge on what a woman should do during the first six months of baby's life to keep on breastfeeding has not significantly changed from baseline in the two program areas, except for frequency of suckling and exclusive breastfeeding.

Table 10: Actions to support continued breastfeeding during & after the first six months

	Homa Bay		Tana River	
	Baseline	Final	Baseline	Final
Breastfeed immediately	1.0%	6.8%	3.7%	18.0%
Care of breasts	3.3%	8.9%	8.0%	6.9%
Frequent suckling	8.0%	17.9%	14.3%	39.7%
Exclusive Breastfeeding	4.7%	11.1%	12.3%	12.2%
No bottle feeding	2.0%	0.0%	1.7%	6.9%
Relactation	1.3%	5.3%	1.3%	2.1%

The data in table 10 provides evidence on the overall increase in the proportion of children <=6 reportedly being exclusively breastfed. While the change in Homa Bay is

reasonable, that of Tana River remained the same. More information is needed to support the observed increase in the exclusive breastfeeding.

Different types of liquids and foods eaten previous day or night

Figure 11: Liquids & Foods eaten previous day or at night

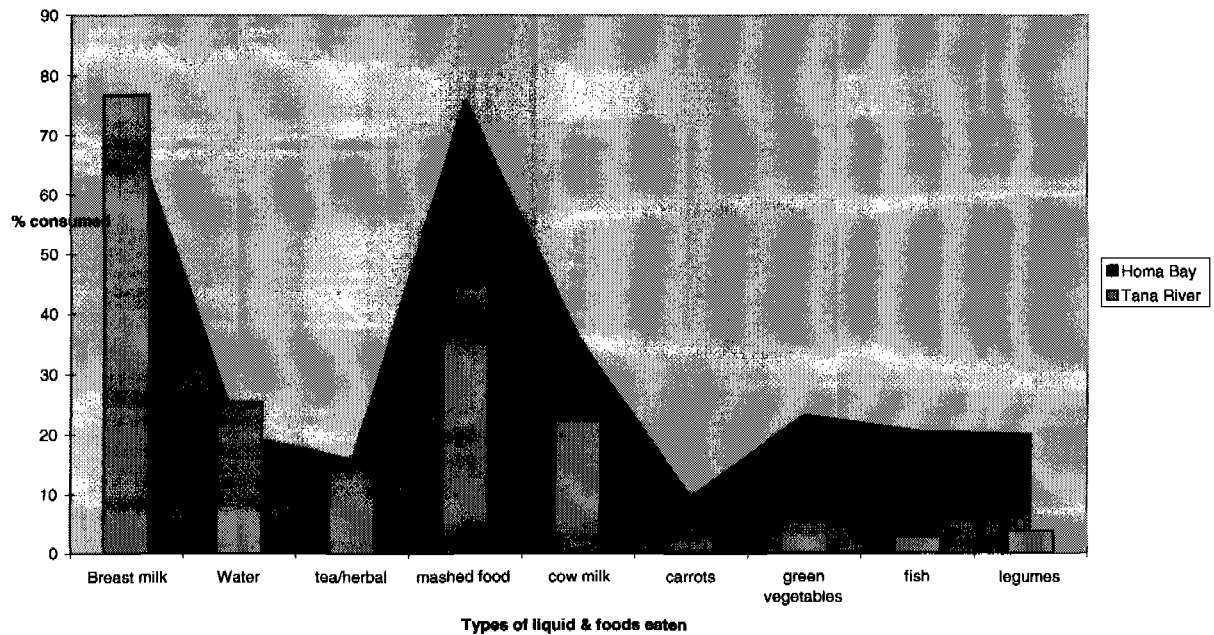


Figure 11 shows the different types of liquids and foods consumed by children the previous day or night. In addition to breast milk, mashed food, cows’ milk and plain water were the most consumed foods and liquids. Vitamin A rich foods like dark green leafy vegetables; yellow/orange vegetables and fish were less consumed by children 6-23 months age cohort.

Children in the two program areas start complementary foods with liquids, mainly plain water, and tea/herbal liquids and cows and/or goats milk. Most of the times, these liquids are introduced between the ages of 4 and 6 months. The proportion of mothers reporting the consumption of foods rich in fat/oils was below 2%. , The proportion of mothers reporting vitamin-A rich foods such as dairy, animal liver or eggs, other than dark green leafy vegetables – with a low bioavailability for carotenoids was very low.

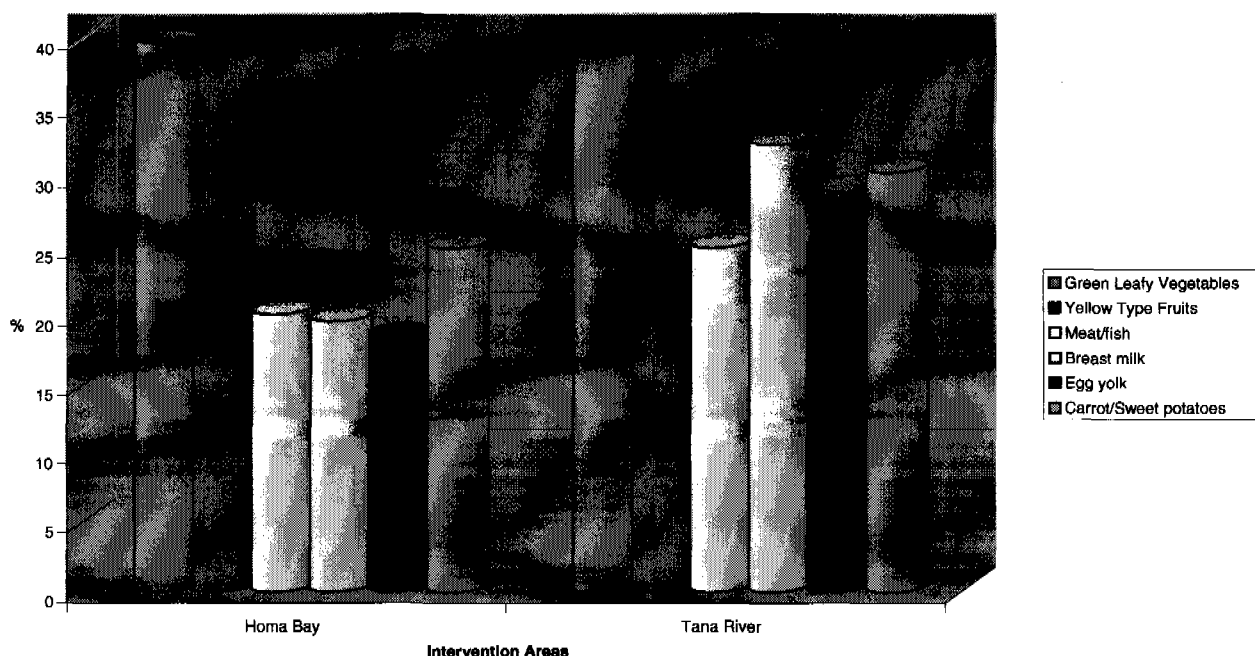
In overall, the local diet of children in the two program areas continues to be low in vitamin A. Vitamin A supplementation²⁸ in Homa Bay and Tana River were found to be 26.1% (26.5% KDHS, 2003) and 36.1% (33.2% KDHS, 2003) respectively.

The survey further assessed respondents’ knowledge on the type of foods and/or liquids that are rich in Vitamin A. As figure 19 confirms, the low level of knowledge among mothers on the type of vitamin A rich foods, has substantially remained the same in the two program areas. This has significantly contributed to the low

²⁸ The percentage of children aged 6 – 23 months who received Vitamin A supplementation in the six months prior to the survey, measured by recording the dates from the child health cards.

consumption of the same by the surveyed children. Ensuring that children between 6 and 23 months receive enough Vitamin A may be the single most effective child survival intervention, in addition to reducing maternal deaths, if adequate dosages are taken.²⁹ Due to vitamin A's immense contribution in strengthening the immune system for both adults and children, CRS/K should consider strengthening this component in future programming.

Figure 12: Knowledge on Vitamin A rich Foods



4.2.2.3 Integrated Management of Childhood Illnesses

Diarrhea Diseases

Diarrhea messages stress the importance of giving extra fluids and continued feeding during diarrhea episode and providing extra foods when the child is recovering from diarrhea.³⁰ Diarrhea incidence two weeks prior to the survey was reported high in overall and equally distributed between the two program areas. The percentage of children under two years having diarrhea³¹ was 43.7% overall, with point estimates of 45.8% (87/190) and 41.5%(78/188) for Homa Bay and Tana River respectively. The baseline estimates were 32.3% and 45.3% for Homa Bay and Tana River respectively.

Appropriate dietary management of diarrhea is an important factor in recovery and recuperation following a diarrhea episode. A child with diarrhea requires, at minimum, the same amount of food and fluids they normally receive. Ideally, additional foods/fluids are given in order to accommodate increased energy expenditure

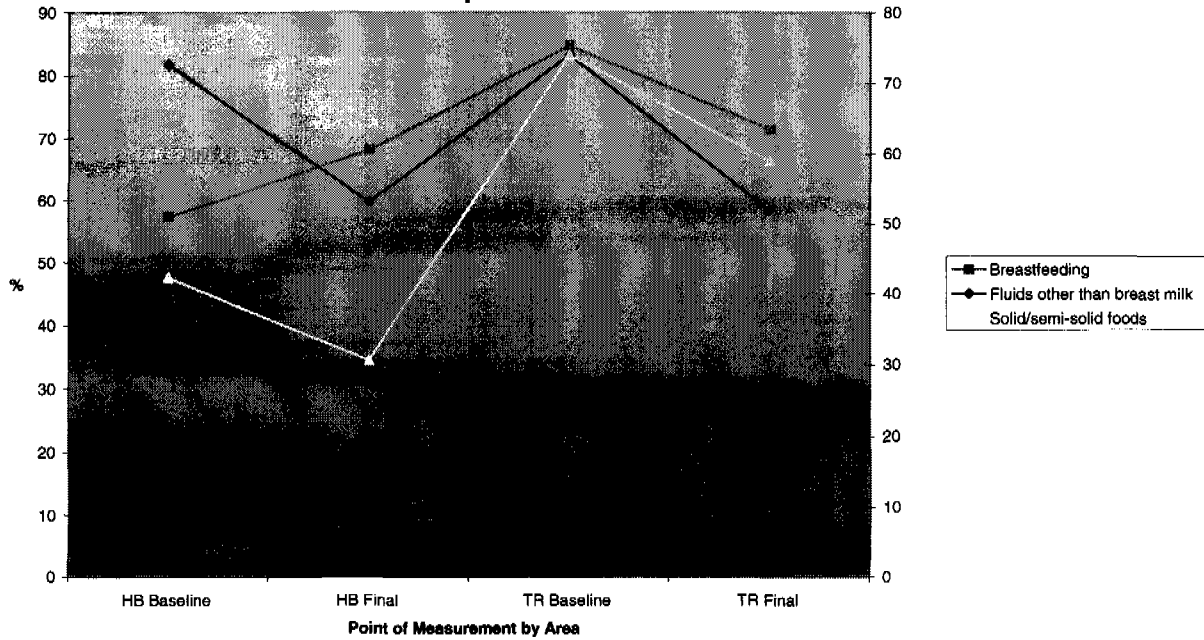
²⁹ Kenya Demographic and Health Survey, 2003.

³⁰ Facts for Life: UNICEF/WHO

³¹ Measured by computing the percentage of children 0 – 23 months who had diarrhea (three or more loose or watery stools in a 24-hour period in the preceding two weeks).

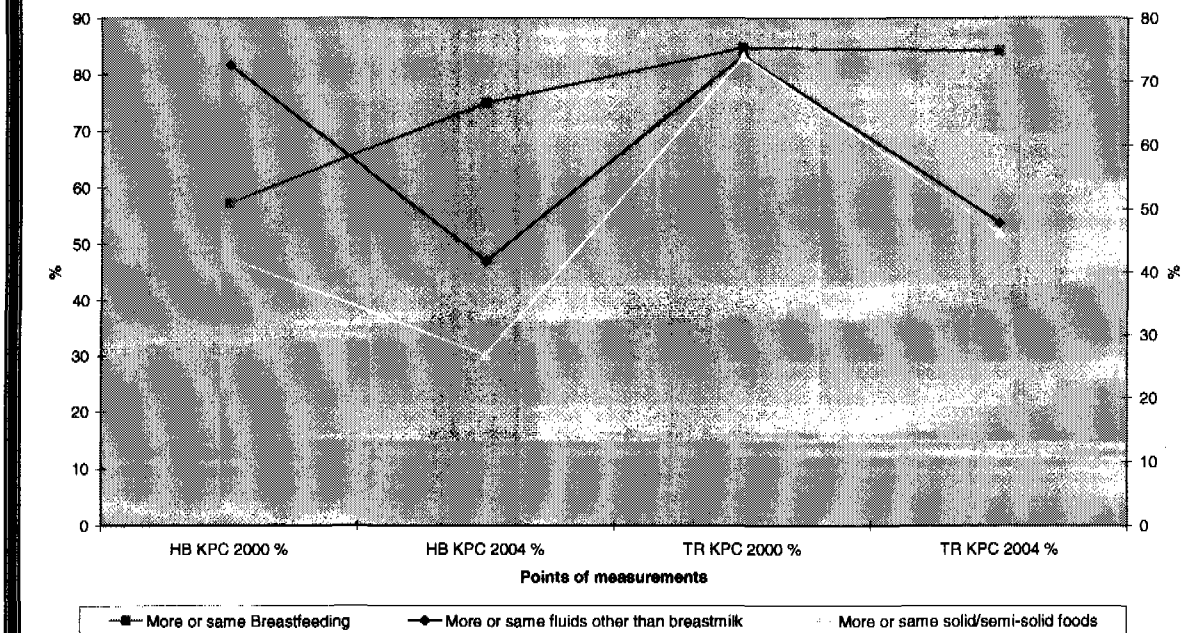
associated with sickness and recovery. Children who are not fed adequately during diarrhea episodes recover more slowly and relapse more easily.

Figure 13: Comparison of Dietary Management During Diarrhea Episode



As a whole, the population in the two program areas exhibited good dietary management of diarrhea for infants (0 – 11 months), with 79.6.3% of the households (against the set target of 93%), giving the same or more than usual breast milk during diarrhea episode. In all instances, there was a marked drop in both the amount of solid and semi-solid foods and other fluids other than breast milk given to infants during diarrhea episode, compared to baseline as shown in figure 14 below:

Figure 14: Dietary Management of Infants with diarrhoea



The serious food shortage facing the parts of the program areas, has significantly contributed to the reduction, hence changing feeding patterns observed in the households, as compared to baseline. This probably is an area that CRS and its partners could explore further, so as to rule out other confounding factors.

Diarrhea period of recovery can also be supported through appropriate home management and/or treatment. The types of treatment given to children who have had diarrhea in the last two weeks are shown in the figure 14.

Figure 15: Diarrhea Management/Treatment

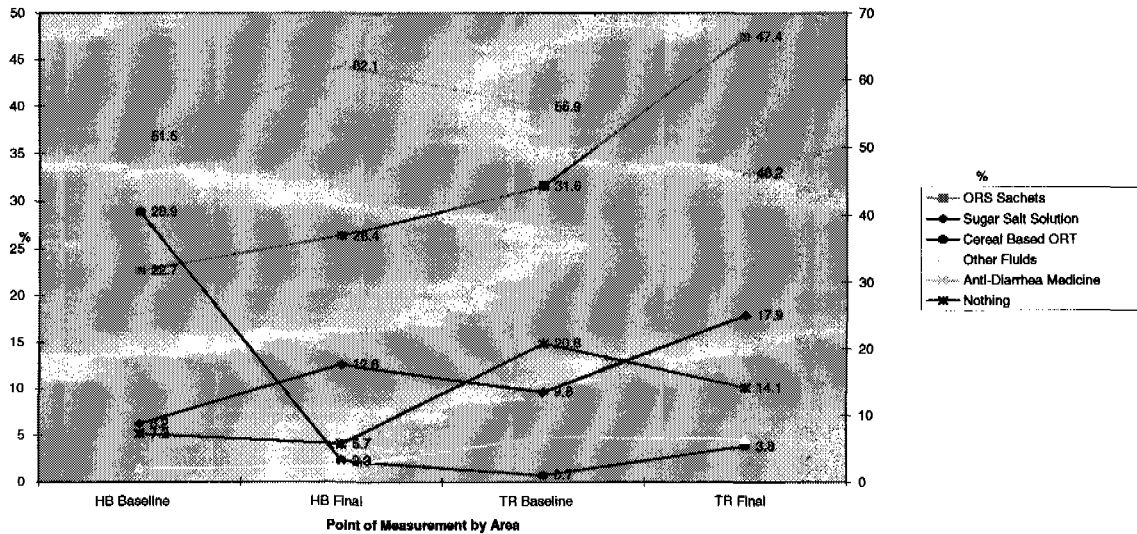
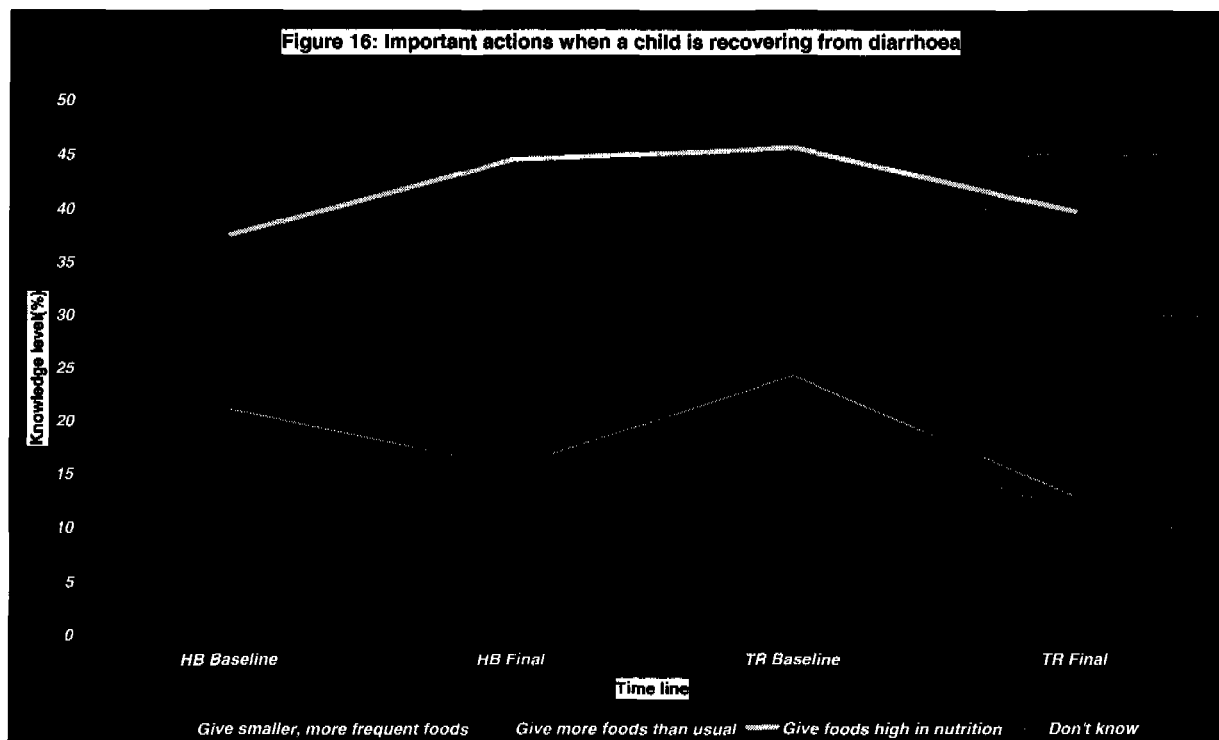


Figure 15 shows that use of ORS, Sugar Salt Solutions and other fluids in managing diarrhea at home maintained positive gradients, with ORS being the most used regiment in the treatment of diarrhea with reference to baseline data. A considerable high number of households used anti-diarrhea antibiotics in treating diarrhea, but the use of cereal based ORT remarkably declined, especially for Homa Bay. The percentage of households using no treatment for diarrhea was unacceptably high in Tana River.

61% and 74% of surveyed mothers, in Homa Bay and Tana River respectively, sought advice and/or treatment for children with diarrhea two weeks prior to the survey. The most consulted health service providers in Homa Bay were dispensaries (25.9%), private clinics (16.7%) and community health workers (27.8%). In Tana River, the most consulted health services were dispensaries (56.9%), community health workers and traditional healers (20.7%). 3.4% of mothers utilized the other service.

Figure 16, displays the different knowledge levels on important actions a mother should take when a child is recovering from diarrhea.



Tana River made significant achievement in increased knowledge of mothers on giving smaller, more frequent foods and/or liquids during recovery from diarrhea episode. These are knowledge indicators, on what mothers should practice. The differences observed between baseline and final surveys, point to weak health education strategies used in the two program areas. There is need to assess through qualitative research the methods and timing of health education sessions in the targeted areas.

Respiratory Illnesses

Acute respiratory infections (ARI) are a leading cause of death for infants and young children in Kenya. Medical records show that pneumonia is among the top three causes of hospital admissions and among the top five causes of infant and under-five mortality in Kenya³². According to Facts for Life, a parent of child with cough should get the child to a clinic or to a trained health worker quickly if the child is breathing much more rapidly than normal, if the lower part of the child's chest goes in as the child breathes instead of expanding outwards (chest in-drawing) and if the child is unable to drink anything.

The survey sought to assess the knowledge of mothers on what signs of illness that would indicate that a child needs treatment. High fever (Homa Bay 86% and Tana River 72.0%) was the most cited sign of illness. Inability to eat or drink, looking unwell or not playing normally, being lethargic or difficult to wake up and presenting with fast or difficult breathing were rated between twenty seven and fifty three percents.

³² Kenya Demographic and Health Survey, 2003.

The prevalence³³ of cough and or difficult breathing two weeks prior to the survey among the under 24 months was 49% and 40% in Homa Bay and Tana River respectively. 61.3% (57/93) and 56% (42/75) out of the children who had a cough experienced rapid and/or difficult breathing in Homa Bay and Tana River respectively. The two project areas had similar point prevalence estimate of 51% for cough and/or difficult breathing at baseline.

With respect to health seeking behavior, 80.7% (46/57) and 73.8% (31/42) of children who experienced difficult breathing two weeks prior to the survey were taken for treatment in Homa Bay and Tana River project areas respectively. In Homa Bay, mothers sought medical attention from general hospital 54.3% (25/46), dispensary 28.3% (13/46), private clinics 19.6% (9/46), and pharmacy/Bamako/chemist 10.9% (5/46). In Tana River, mothers sought medical attention from general hospital 22.6% (7/31), dispensary 74.2% (23/31), traditional healers 32.3% (10/31) and pharmacy/Bamako/chemist 16.1% (5/31). General hospital and dispensaries were the most utilized in Homa Bay, while in Tana River dispensaries and traditional healers were the most utilized health services.

Knowledge of mothers on signs and/or symptoms of respiratory infections that would cause them seek health services for their children are displayed in table 11:

Table 11: Signs and/or symptoms that determine health seeking pattern

ARI Danger Signs:	Homa Bay	Tana River
	Results Final	Results Final
Fast or difficult breathing	74.1% (140/189)	67.2% (127/189)
Chest in-drawing	14.8% (28/189)	14.3% (27/189)
Loss of appetite	12.2% (23/189)	20.1% (38/189)
Fever	43.9% (83/189)	43.9% (83/189)
Cough	80.4% (152/189)	50.5% (95/188)

Fast or difficult breathing, fever and cough were the outstanding signs and/or symptoms that would make most mothers seek medical attention for their children.

4.2.2.4 HIV/AIDS

Acquired Immune Deficiency Syndrome (AIDS) is among the most public health challenge facing Kenya today. The survey included questions on mothers' knowledge on AIDS and awareness of modes of transmission of Human Immunodeficiency Virus (HIV) that causes AIDS. Knowledge about existence of AIDS was high, with 99.5% and 96.8% reported in Homa Bay and Tana River respectively. There was no difference in knowledge levels, when compared to baseline point estimates (Homa Bay – 100% and Tana River - 96%)

³³ Measured as a percentage of children 0 – 23 months ill with coughing accompanied by short, rapid breathing in the preceding two weeks to survey.

Changing patterns of Sources of Information about AIDS

Table 12: Comparison of AIDS information sources in Homa Bay and Tana River

Sources of Information	Homa Bay		Tana River	
	Baseline%	Final%	Baseline%	Final%
Radio	66.3	78.8	52.1	59.0
Newspapers	21.3	14.8	19.4	4.4
Health workers	43.7	52.4	38.9	68.3
Schools	15	21.2	2.0	6.0
Church/mosque	33.3	39.2	9.0	12.6
Friends/relatives	44.5	38.6	40.3	60.7

The primary modes of communicating information to mothers have remained fairly steady from baseline. In Homa Bay, radio, health workers, churches/mosques and friends/relatives were the key medium of communicating information, while in Tana River radio and health workers played the major role of communicating information about AIDS to mothers. Health workers in Tana River played particularly critical role in educating mothers about AIDS, while in Homa Bay radio was mostly used.

Changes in knowledge about AIDS Transmission Modes

Figure 17: Changes in Knowledge patterns on modes of HIV transmission

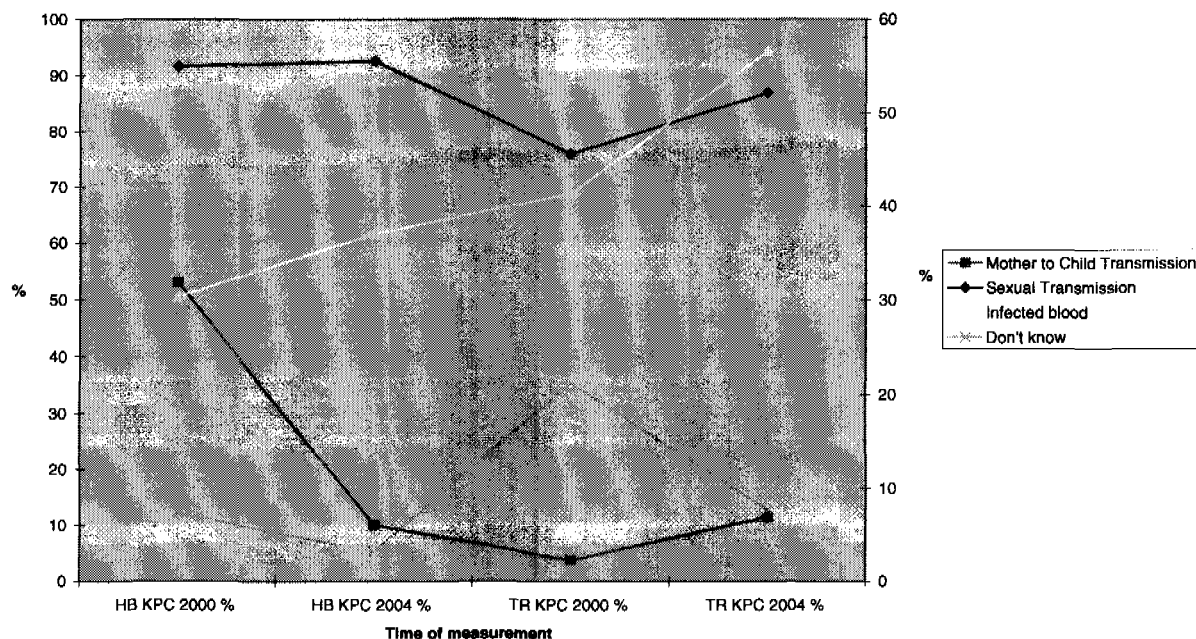


Figure 17 shows that knowledge on maternal to child transmission was very low among the surveyed mothers. It particularly dropped in Homa Bay, from 53% in 2000 to 10.1% in 2004. Despite the low coverage, Tana River improved in the proportion of mothers reporting mother to child transmission. Sexual intercourse remained the primary route of transmission in the two program areas. Knowledge on infected blood as a possible route of transmission was fairly distributed among all surveyed mothers.

4.2.2.5 Malaria Prevention³⁴

Pregnant women and their unborn children are at high risk of malaria, which increases the health risks associated with childbirth, contributing to low birth weight and maternal anaemia. One of the strongest weapons in the fight against malaria is the use of insecticide-treated mosquito nets (ITNs)³⁵.

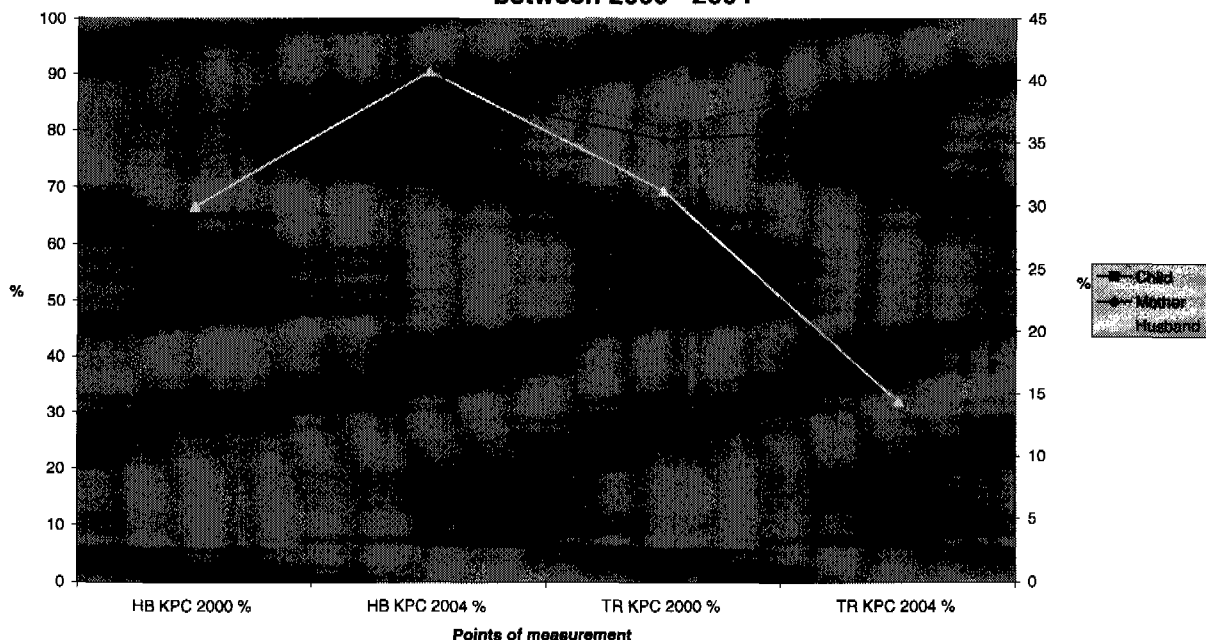
Despite the demonstrated efficacy of ITNs, most households in Africa – particularly lower-income households – do not own mosquito nets, leaving the vast majority of children under-five unprotected. Where nets are used, they are mostly of poor quality (providing an inferior barrier against malaria-carrying mosquitoes) and very few are treated with insecticide (which doubles a net's effectiveness in preventing malaria). The recommended period for re-treatment of bed nets with mosquito repellent agent is six months.

The survey collected data from households on ownership of nets, household members who slept under mosquito nets the night prior to the survey, the treatment of the nets by insecticides and the last time treatment was done.

On the availability of bed nets in the surveyed households, 62.4% (118 out of 189) and 45.8% (87 out of 190) of households in Tana River and Homa Bay respectively reported that they had bed nets. Comparison with baseline information, the coverage for Tana River remained the same (66.7%), while Homa Bay increased from baseline (29.3%).

Overall, the use of bed nets by mothers and their children under two years remained high as shown in figure 18 below.

Figure 18: Changing trends in the use of mosquito nets in surveyed households between 2000 - 2004



³⁴ *Malaria kills an African child every 30 seconds. A simple mosquito net could protect them from this deadly disease – UNICEF!*

³⁵ Keeping Malaria at Bay, PSI January 2003.

The survey further sought to establish the proportion of reported mosquito nets that had been treated with mosquito repellent. 47% (55 out of 118) and 61% (55 out of 90) of the reported mosquito bed nets had been re-treated with a mosquito repellent in Tana River and Homa Bay respectively. 54% (49 out of 90) and 28% (33 out of 118) of those re-treated mosquito nets had been treated within a period of less than 6 months in Homa Bay and Tana River.

The promotion of mosquito bed nets was not one of the key program interventions. However, the use of bed nets was found to be very high, especially among the most vulnerable group, women and children. It is suggested CRS/K document the strategies used in the promotion of insecticide-treated mosquito nets (ITNs), and share these best practices with other stakeholders and also to inform future programming.

5. PROGRAM PERFORMANCE INDICATORS

5.1 Summary Baseline, Final Indicators & Set Targets Comparison Table

Indicator	Baseline	Final	Variance	Set target
IR1.1: Increased access to portable water supply and sanitation				
% targeted population with proper hand washing behavior	54 ³⁶	63.8	+9.8	69
% targeted infants with diarrhea in the last two weeks	33	41	-8	18
% targeted households with year round access to safe water	0	74.6	+74.6	85
% targeted households with access to adequate sanitation	34	48.4	+14.4	59
% targeted infants continuously fed during diarrhea	73	79.6	+6.6	93
IR1.2: Improved nutritional status of children under 36 months				
% Eligible children being growth monitored	53	67	+14	68
% decrease in the malnourished children (M&F) under 36 months (Weight for Age) in targeted areas: Ultimate food security indicator.	28	19.3	+8.7	18
% targeted children 12 – 23 months who are fully immunized	56	66.1	+10.1	71
IR1.3: Improved maternal health care for women aged 15 – 49 years				
% targeted women attended to by TTBA at delivery	39	51.5	+12.5	59
% targeted women who know at least two danger signs of pregnancy	84	72	-12	100
%targeted infants breastfed within 8 hours of birth	69	72	+3	84
% targeted women having received TT	54	58	+4	74
Environmental impact				

³⁶ Measurement method was based on the proportion of mothers who reported washing their hands with soap after visiting latrines.

6. CONCLUSION AND RECOMMENDATIONS

The findings from this survey have confirmed and quantified the overall program achievements for the three intermediate results. Tremendous improvements have been demonstrated in all the three IRs. The improvements registered in assisted deliveries, child feeding practices, immunizations, insecticide-treated mosquito bed nets use, access to safe water and adequate sanitation, to some extent, have had an overall positive impact on the improved maternal and child health status in the program areas. All these indicators have profound effect on the trends of mortality and morbidity among the most vulnerable group, women and children³⁷. The findings from this survey were very consistent with the Kenya Demographic Health Survey, 2003 findings on the program's impact indicators.

Comparison of the baseline and final result indicate that the program failed to surpass baseline status two of its impact indicators; namely percent of targeted infants with diarrhea in the last two weeks and percent of targeted women who know at least two danger signs of pregnancy. Comparison of the final results with the set targets revealed that none of the set targets were achieved. This may be due to targets which were over ambitious. It would seem that the setting of program targets was not informed by similar achievements made elsewhere under similar environment and time frame.

In overall, the survey results show that the program made significant progress in the areas of adequate sanitation in targeted households, promotion of healthy behaviors, latrine construction and use, and hand-washing at the most critical times using water and soap/ash. Significant improvements were recorded in Suba in increasing access to safe water within a distance less than two kilometers compared to the other two program areas. Results further pointed to the differential knowledge and practice levels on hygiene practices, methods of making contaminated water safe, sources of pollution and ways of preventing pollution, in the three areas.

In general, the nutritional status of children has shown significant improvements from the previous nutritional assessment. All the areas recorded decline in the underweight prevalence, with the overall reduction falling short of the set target by one point difference. Immunization coverage also improved significantly in all the areas, with the overall coverage on fully immunized children being higher than the national coverage. Increased participation in the growth monitoring sessions was also observed, particularly the high proportion of children who were being growth monitored consistently, four months prior to the survey.

Access and utilization of antenatal health services by pregnant mothers was low, with TT coverage reported slightly above fifty percent. In overall, the program managed to increase the proportion of mothers being attended to by either health professionals and/or trained traditional birth attendants from baseline figures. Knowledge of mothers on the danger signs during pregnancy was higher compared to baseline.

³⁷ Ali Ahmid Howlader et..al: "Mothers' Health-Seeking Behavior and Infant and Child Mortality in Bangladesh". In Asia-Pacific Population Journal, Vol. 14 No. 1(1999, pp 59 – 75)

There was an impressive improvement in child feeding practices, especially on exclusive breastfeeding and continued breastfeeding with complementary feeding. The increased adoption of recommended child feeding practices had strong association with the overall reduction in underweight prevalence in the program areas.

The survey found very high diarrhea and acute respiratory infection prevalence among the under 24 months. The morbidity level was the same as reported in the baseline survey but a marked improvement on the knowledge of mothers on the danger signs that would make them seek health care for their children. High proportion of mothers sought health care from the appropriate health care providers.

Use of treated mosquito bed nets within the minimum recommended period of six months, increased significantly over the implementation period, particularly among the most vulnerable group, women and children.

Given the findings highlighted in this report, the following recommendations are proposed:

- For future programming, targets should be informed by intensive literature review and consultations on similar programs in the proposed areas. This will avoid setting either very high or very low targets particularly for the practice indicators.
- A number of significant achievements have been made on child feeding practices especially exclusive breastfeeding, child immunization, growth monitoring and use of insecticide treated mosquito bed nets. We suggest that CRS/K documents the best practices and strategies used in the implementation of these activities. The research should also look into the cost-benefit and the sustainability of these best practices by the community and the local Ministry of Health.
- Targeted qualitative assessments should be developed to look into strategies and community-based – MOH structures that contributed to the achieved results. Practical and working strategies should be documented for sharing and learning with other stakeholders, including development partners.
- The very high proportion of mothers in the entire program area not practicing the recommended appropriate hand-washing behavior at critical times using soap/ash or any other locally available detergent, highlight the need to review the hygiene promotion strategies. The review should look into the content of the messages, frequency of delivery, channels used for communication and times of conducting hygiene promotion activities.
- Conflicting results: Increased access to water sources and decreased distance to water sources but less quantity of water per family member per day. An assessment to determine factors that limited the use of recommended quantity of water per family member per day is needed. Issues of affordability and accessibility be reviewed and documented in the three program areas.
- Strategies to support communities in the construction and use of sanitary facilities should be explored and community driven strategies suggested. For purposes of future programming, there is need for CRS and its partners to review implementation approaches used by Suba Water and Sanitation Project and document them.

ANNEX

Annex 1: Schedule of Activities for KPC & KAP Surveys

Weeks	Activities	Comments
	<ul style="list-style-type: none"> - Review of program documents, focusing on the impact program indicators, development and/or adaptation of questions and design of survey questionnaire. - Developing Sampling Frames formats and communication with CRS/Kenya including partners. - Discussions with CRS/Kenya staff on Lot Quality Assurance Sampling (LQAS) Methodology and Parallel Sampling technique based on the program indicators being measured. - Discussions with CRS/Kenya staff on development of sampling frame using the lowest program management units (village). - Selection of supervision areas made up of the lowest program management units (villages) and selection of sampling units using the Probability Proportional to Size technique. - Translation of the draft survey tools by CRS/Kenya staff using the KPC 2000 Questionnaire. 	
	<ul style="list-style-type: none"> - Development of Computer Databases for data entry and analysis using EPI Info 6. - Development of Survey Teams (Survey Core Team, Supervisors & Interviewers) Training manual - Development of Supervisors and Enumerators Training Timetable 	
	<ul style="list-style-type: none"> - 3 days training of the Survey Core Teams and Supervisors in Brakenhurst, Limuru - 4 days training of Survey Interviewers in the three program areas including Questionnaire Pre-testing and final modifications based on pre-testing results. - Mass production of final KPC and KAP Survey Questionnaires, ready for data collection. 	
	<ul style="list-style-type: none"> - Field work: Data collection and field supervision 	

Weeks	Activities	Comments
	in the 3 program areas: - Data Collection, daily review meetings with core team and supervisors - Data entry by one data entry clerk in each of the 3 program areas in the field	
	- Data cleaning, Analysis and Interpretation by 1). Intervention impact indicators for overall program wide levels and 2). Program area specific impact indicator levels.	
	- Development and presentation of draft report to CRS/Kenya's M&E Unit Manager and her team for review and comments. - Receipt of comments from CRS/Kenya team - Finalize the development of Final KPC/KAP Surveys Report and submission to CRS/Kenya	
	- Dissemination of KPC and KAP Survey findings to the CRS/Kenya and partners' stakeholders in Nairobi	

Annex 2: KPC/KAP Survey Questionnaires

Annex 3: List of Survey Team

CRS/Kenya Team

Wairimu Gakuo
Kinyanjui Kaniaru
Rachael Macharia
Ruth Nguyo
Gilbert Mwamonja
Tom Oywa
Catherine Khamali

Homa Bay Water and Child Survival Team

Ken Ogada
Osano Aroko
Enock Oruko
Luke Okong'o
Paul Nyidha
Amos Nyundo

Tana River Water and Child Survival Team

Benta Osamba
Gabriel Njiru
Jane Nyaga

Tana River Ministry of Health/Water Staff

Mr. Randu
Mr. Kavithi
Mr. Kawanda
Mrs. Flora
Mrs. Amina

M&E Technical Support Services (K)

Michael Babu
Julius Gwada
Washington Omwomo (Team Leader)