The impact of a nutrition and health programme on the socio-economic status and food access of households in Suba District, Kenya

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ABSTRACT

Objective: Poor nutrition and ill health affect the productivity, livelihoods and food access of a household. This study investigated the impact of a nutrition and health programme on the socioeconomic status and food access of households in Suba district, Kenya.

Methodology and results: Action research design was utilized that involved comparison of the baseline and impact evaluation results after a three-year intervention period. A sample size of 291 randomly selected households from a community whose main economic activity is fishing was used. Data collection instruments included a structured questionnaire, focus group discussion guide and an observation checklist. Data was analyzed using SPSS computer package version 16. A P-value of <0.05 was considered significant. Over a three-year period, household size increased from 4.8 to 5.5. Education levels improved insignificantly ($P>0.05$) while income levels improved with monthly maternal income improving from a minimum of Ksh. 100 to 300 (1.5 to 4.0 US dollars). About 89.6 and 3.4% of households obtained food from own produce and purchase combined with assistance, respectively. About 51.2, 3 and 64% reported to consider their households food secure when there was clear moonlight as the fishermen in their households were assured of a good fish catch, at the end of the month when households had some cash income, and if they harvested between 2 to 5 bags of maize (each 90kg), per season, respectively. More than a third (32.6%) of the respondents were involved in small business while 50.9 and 16.5% were involved in actual fishing and farming, respectively. Only 6.2% of the respondents had access to credit facilities. After 3 years, food consumption patterns did not change significantly from the baseline. Sanitation and morbidity patterns did not improve significantly at the households albeit with nutrition and health education, with 27.5 and 30.9% not having latrines and refuse disposal bins/pits, respectively. The households bathed, washed and drew drinking water from the same point in Lake Victoria.

Conclusion and potential application of findings: Nutrition and health programmes have potential to improve the socioeconomic status and household food access depending on content coverage of the programmes.

Key words: Socio economic status, nutrition and health, food access, coping strategies, morbidity patterns

INTRODUCTION

Poverty, hunger, malnutrition and ill health are outcomes of poor socioeconomic status, low education levels, unemployment and underemployment, low income levels, inadequate food, high food prices, lack of sanitation and health facilities, lack of clean water, landlessness, and the effects of climate change on food production (SCN, 2004; GoK, 2005).

The United Nations Development Programme defines poverty as not only the lack of income but also the inability of individuals and households to meet basic and social needs; the feeling of powerlessness to break out of the cycle of poverty, and insecurity of persons and property. Over the past 30 years, poverty has been on the rise in Africa. In Kenya, the economy has continued to perform below its potential, with low economic and employment growth and a decline in productivity. Consequently, per capita income declined from US$ 271 in 1990 to US$ 239 in 2002 (IMF, 2005). The number of unemployed people currently stands at over 14.6% of the labour force, with the youth accounting for 45% of the total. The majority of the unemployed, though educated, do not have the necessary skills required by the job market. In addition, the number of the working poor is large, comprising primarily of subsistence farmers, female-headed households and slum dwellers (IMF, 2005).

The weak economic growth in Kenya has been accompanied by deterioration in the fiscal position and growing domestic debt. As a result of reduction in tax rates, government revenue fell from 29% of GDP in 1999/2001 to 22% in 2002/03 (IMF, 2005). This reduction in tax rates was in line with government policy of creating an enabling environment for business. The recent inflation trend could have adverse effects on export and output growth. This translates to more than half of the country's population being poor, and 7.5 million of the poor live in extreme poverty. About 80% of the populations including three out of four poor people live in rural zones (GoK, 2005; IMF, 2005).

In developing countries, Kenya included, malnutrition, ill health and the multifaceted effects of malaria, HIV and AIDS and tuberculosis (TB) have worsened household poverty levels, thereby imposing an increasing social and economic burden. It is for these reasons that programmes that have a likelihood of improving the socioeconomic status of a population are encouraged (Bowman & Russell, 2001; KDHS, 2003).

Household food and nutritional insecurity in Kenya has been on a steady increase over the last decade. About 47.0% of Kenyans do not have secure access to food to satisfy their daily nutritional requirements (GoK, 2005; Gillespie & Kadiyala, 2005). Malnutrition and ill health, especially in communities with high HIV and AIDS prevalence and other chronic infections such as TB and malaria, has also reduced the ability of many households to produce, buy or otherwise obtain food (Gillespie, 2003;GOK/MOH, 2006). Besides HIV and AIDS, hunger and malnutrition are rampant amongst the poor in nearly all parts of the world (USAID, 2005; GoK/MoH, 2006).

Statistics show that about 963 million out of 6.7 billion people across the world are hungry (FAO, 2008). Every day, almost 16,000 children die from hunger-related causes, that is one child dies every five seconds (Black *et al.*, 2003). In essence, hunger is the most extreme form of poverty, where individuals or families cannot afford to meet their most basic need for food. Hunger manifests itself in many ways such as starvation leading to chronic undernourishment and vitamin or mineral deficiencies, which result in stunted growth. In 2005, about 1.4 billion people lived below the international poverty line, earning less than $1.25 per day (World Bank, 2008). Consequently about 947 million people consume less than the minimum amount of calories essential for health and growth (World Bank, 2005). In 2006, about 9.7 million children died before they reached their fifth birthday, and almost all of these deaths occurred in developing countries, four out of five of them in sub-Saharan Africa and South Asia, the two regions that also suffer from the highest rates of hunger and malnutrition (UNICEF, 2008).

Reports by the Kenyan Government, Ministry of Health (GOK/MOH), (2006) indicate that about 47% of Kenyans lack adequate food to meet their nutritional requirements. About 31% of children under 5 years are stunted and 20% are underweight (Ohiokpehai *et al.*, 2008; Were *et al.*, 2008). The rates are higher in rural areas than in urban areas.

In September 2000, 189 countries, Kenya included, adopted the Millennium Declaration, whose main objective was to define a common vision of development by 2015. With the endorsement of the Millennium Declaration, countries set themselves a limited number of achievable goals, known as the Millennium Development Goals to be reached by the year 2015. Of the eight goals, halving extreme poverty and hunger and reversing the spread of HIV and AIDS were the key focus of this present study.

The main objective of this study was to investigate the impact of a nutrition and health programme on the socioeconomic status and food access of households in Suba District, in western Kenya. At the beginning of the programme in 2006, the vital statistics were as follows total fertility rate at 5.9 per woman, mean age at first birth-18.9, mean age at first marriage – males 24.6 years, females 19 years and crude death rate – 23.9 per 1000. Percentage of population under 18.0 years was 53.6%, meaning that more than half of the populations were dependants and 46.0% of the population aged 15 to 49 years. The expected HIV cases were 41% of the population in reproductive age group shown in Table 1 (GoK/MOH, 2006; Ohiokpehai *et al.* 2007; Ohiokpehai & Kimiywe 2007).

METHODOLOGY

Study area: Suba district is located on the southwestern part of Kenya along Lake Victoria in Nyanza Province. The nutrition and health programme started in May 2006 and covered Mbita, Lambwe, Ong'ayo and Central Divisions. Lambwe Division consisted more of farming households while the rest three consisted of households whose main occupation was fishing and subsistence farming. The programme was implemented by the Tropical Soil Biology and Fertility (TSBF-CIAT), with its offices based at Mbita, in Suba District.

Research design and activities: The study utilized the action research design where results at baseline (at inception of the project) were compared to those after the project terminated. Also included in the study were at least 8 organized women groups who were trained during the programme. The programme activities included training in nutrition and health, basic business skills, hygiene and sanitation, food production, processing and utilization. Training comprised of theory and practical demonstrations on aspects learnt. The trainings were during the morning hours. Follow-ups were also done in the second year of the project. Those who received the training were expected to train others in their households, neighborhood and the community. Participants were also given take home literature such as pamphlets, hand outs, recipes among others for their own use and for distribution in the communities.

The participants also used the same literature to train others

Data collection: Before the inception of the programme a baseline survey was carried out (Ohiokpehai *et al.*, 2007; Ohiokpehai & Kimiywe, 2007). At the end of the programme another survey was conducted and results compared to those from baseline to determine the impact of the study (Ohiokpehai & Mbithe, 2009). At the end of the programme, a total of 291 households were randomly selected to form the study sample (Ohiokpehai & Mbithe, 2009). Data collection instruments included a structured questionnaire, focus group discussion guide and an observation check list. The questionnaire collected data on household demographic and socio economic characteristics, food production, food access, nutrition knowledge, food consumption, sanitation and morbidity patterns. Focus group discussions were used to elicit responses from organised groups that were trained. The observation checklist focused on food availability in markets, food prices, hygiene and sanitation.

Data collection instruments were pre-tested in Mbita division in households with similar characteristics with the study houses but were excluded from the main study. This enabled the researchers to make vital adjustment and refine the instruments to enhance validity and reliability. The instruments were validated and revised by a panel of experts drawn from Kenyatta

University, TSBF-CIAT, and research assistants drawn from the study area in early May 2009. The Test Re-test method was used to test the consistency of the instruments in producing reliable results (Orodho, 2004).

Research permits to conduct impact evaluation were obtained at the inception of the programme. About 10 enumerators with a minimum of Kenya Certificate of Secondary Education were trained in early May 2009 and data collection followed thereafter. Data entry, analysis and report writing was done in June 2009. Informed consent was obtained

from the respondents before administration of the research instruments.

Responses on nutrition knowledge were assessed using the Likert scale of performance (Duda et al., 1995) and the average scores were calculated. This scale was also used to assess responses on attitude. Data coding, entry, cleaning and analysis was done using Statistical packages for Social Scientist (SPSS for windows) version 16 (SPSS Inc. 2002) and Microsoft excel computer packages. Data was analysed using descriptive and inferential statistics. Significance was determined at a P value of <0.05.

RESULTS AND DISCUSSION
Demographic characteristics of household members
At the end of the programme the total household population in the 291 sampled households was 1599 drawn from Central, Lambwe, Ong'ayo and Mbita Divisions. The average household size was 5.5, slightly higher than 4.8 reported at baseline and higher than the national figure of 4.1 (KDHS, 2003; Ohiokpehai et al., 2007; Ohiokpehai & Kimiywe 2007). The study population included 47.2% males and 52.8% females. Of the total population 16.1% were children under five years, 31.7% were aged 6-15 years with most of them still going to school, 22.4% were aged 16-25 years and 12.7% aged 26-35 years. About 7.5% and 9.6% of the population were aged 36 to 45 years and above 45 years, respectively. About half of the population (51.9%) was under five or children still in school. About 12.2% were single while 32.1, 0.6 and 4.3% were married, separated and divorced, respectively. Table 1 shows the distribution of household members by sex, age group and marital status and compares results at the start and at the end of the programme. Generally, results obtained at the start of the project did not differ significantly (P>0.05) at the end of the project. There were however more single people (10.7%) at the end of the project than reported when it began (4.4%) in the age group 16 to 25 years while at the same time the rate of widowhood went up from 1.2 to 4.3% in the study population (Ohiokpehai et al., 2007; Ohiokpehai & Kimiywe, 2007). Population characteristics such as sex, age groups and marital status are not expected to change significantly within a three-year period. However the rate of widowhood rose possibly because at the start of the programme many people (41%) were infected with the HIV virus, a figure also reported by Waga (2005) in a paper on HIV/AIDS and food and nutrition security in Kenya.

Majority of household members were children of the household head. Only 14.4% of those living in households were reported as spouses to the household heads. This percentage is not significantly different from that reported at the start of the project at 16.4%. About a third (33.4% and 35.3%) of the study population were Protestants and Seventh-Day Adventists, respectively. Catholics formed 22.6%, Muslims 0.7% and 8% others (traditionalists and no religion/atheists). These figures are not different to those reported at the start of the project with 37.3% Protestants, 29.8% Seventh Day Adventists, 22.7% Catholics and 1.6% Muslims and 8.6% others, respectively (Ohiokpehai et al., 2007; Ohiokpehai & Kimiywe 2007). These findings are also not different from those of other studies carried out in the district.

Education levels
About three quarters of the household members (76.1%) were reported not to have post primary education. At the start of the programme, 64.1% was reported not to have had post primary education. Although this difference was substantial (12%) the difference was not significant. The figure of those proceeding to secondary school and to college had however improved from 14.1 and 1.9%, respectively at the start of the project to 20.5 and 2.6%, respectively, at the end of the programme. These differences were however not significant (P>0.05). This trend is not very different from the national figures which show that more than half of the population (59.6%) have had only primary education with only 13.5% proceeding to secondary school and 4% proceeding to colleges and universities, respectively (KDHS, 2003). The trend where more males than females proceed to secondary school has been reported for a long time in most parts

of the country (KDHS, 2003), possibly due to cultural   attitudes.
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Table 1: Distribution of household members in Suba district of Kenya by sex, age group and marital status at start of intervention programme (2006) and at the end (2009).

Age Group	Start of project N=1168 End of project	Sex %		Marital status N=1168 %					Total
		Male	Female	Single	Married	Separated	Widowed	*N/A	
*Under 5 years	Start of project	9.6	16.9	-	-	-	-	18.1	18.1
	End of project	7.5	8.6	-	-	-	-	16.1	16.1
6-15	Start of project	16.5	18.6	-	0.1	-	0.2	34.9	35.1
	End of project	14.4	17.3	-	-	-	-	31.7	31.7
16-25	Start of project	6.1	7.2	4.4	5.5	-	0.3	3.2	13.3
	End of project	10.6	11.8	10.7	7.9	0.3	0.2	3.38	22.4
26-35	Start of project	8.0	11.6	0.5	16.1	0.4	2.6	-	19.6
	End of project	6.8	5.9	1.2	10.8	0.2	0.6	0.1	12.8
36-45	Start of project	4.2	3.6	-	6.3	0.1	1.3	-	7.6
	End of project	2.9	4.6	0.3	6.3	0.1	0.8	-	7.5
46 and above	Start of project	3.9	2.5	-	4.5	-	1.9	-	6.3
	End of project	5.0	4.6	0	7.1	-	2.5	-	9.6
Total	Start of project	48.1	51.9	7.3	32.4	0.5	1.2	53.7	100
	End of project	47.2	52.8	12.1	32.1	0.6	4.3	50.9	100

*Not Applicable - Under fives and/or children/students still in school

Occupation levels and income distribution

At the end of the programme, more than a third (32.6%) were involved in small business while 50.9 and 16.5% were involved in fishing and crop farming, respectively. Only a small percentage of the population (3.7%) was permanently employed (mostly as teachers). About 67% reported temporary employment in casual labour characterized by irregular and little income. Similar findings were also reported by Waga (2005) in a study on HIV/AIDS and food and nutrition security in Suba district, Kenya. Close to a third (29.9%), mostly from Lambwe division, reported being actively engaged in farming. Only small percentages (0.9% and 5.7%) reported to be herders and jua Kali artisans (Ohiokpehai et al., 2007; Ohiokpehai & Mbithe, 2009). At the start of the project only a small percentage (2 and 12%) were involved in permanent employment and small businesses, respectively, with the bulk of the population being involved in temporary employment (Ohiokpehai & Kimiywe, 2007).

The total monthly income ranged from Ksh. 100 to 80,000 with modal income of between 3000-5000 Kenya Shillings (40 – 67 US Dollars). With a household size of 5.5, this monthly income is inadequate. Most of the households reported irregular and unpredictable incomes. Fishermen reported that fish harvesting is not always guaranteed while farmers, mostly from Lambwe Division, reported irregular harvest especially because agriculture practiced in the region is rain fed, whose patterns have been affected by climate change such as reduced rainfall, increased temperatures, among other constraints. This was confirmed by observations reported (GoK, 2009) in an assessment report of 2008/'09 short rains conducted by the Kenya Food Security Steering Group.

These findings on income, however, show a slight improvement from those reported at the start of the project which showed that incomes ranged from a minimum of Ksh. 70 and maximum of Ksh. 56,000 with a modal income of Ksh. 3000 and a mean of Ksh.4724. Results clearly show improvement in occupation levels and in income distributions. Generally, with a household size of 5.5, monthly income reported was also estimated to be inadequate for food related budgets and other household expenditures. This could have also contributed to the reported low levels of education with few people proceeding to secondary education where fees required are high. In addition, most households reported that their income was

irregular and unpredictable. This is typical of rural poor households in the district.

Maternal education, occupation and income levels
Maternal education is an important aspect as mothers and women are responsible for food related decisions in most households. It is even of greater importance if mothers have nutrition knowledge, positive nutrition attitude and can read and write. Maternal education also reflects the quality of childcare practices such as breastfeeding, complementary feeding and generally the nutritional and health status of a household. An educated mother is also likely to be occupied and have income of her own either through employment or business and therefore is likely to spend more household income on food related items.

At the start of the project figures for maternal education stood at 67.4% with primary education, and 18.9 and 1.2% having secondary and college education, respectively. No mother was reported to have university education. At the end of the project, the figures were 56% with primary education, 26.5 and 4.5% with secondary and college education, respectively (Ohiokpehai *et al.*, 2007). At least one mother out of the 291 sampled had university education. Although the results at the end of the project are slightly better and encouraging than at the start, the differences were not significant (P>0.05); (Ohiokpehai & Mbithe 2009). It should also be noted that the changes noted in education levels could have been due to natural shifts and not necessarily as an impact of the intervention. However improvement in education levels could have had positive effect on the total impact of the nutrition and health health programme. About 57.1% of mothers and women reported to be involved in temporary employment, 2.1% in permanent employment while 20.2% were involved in business. About 37.8% of the women reported to be farmers, 12.7% involved in fishing while 3.1% were teachers. The minimum monthly income reported by the mothers and women was Ksh. 300, with a modal income of Ksh. 3000 and a high of Ksh. 80,000. These current findings show significant improvement in maternal socio-economic status compared to those reported at the start of the project which showed a minimum maternal monthly of Ksh. 70 and a high of Ksh. 13,000 with a modal income of Ksh. 1,000. It is possible that the effects of this project contributed to improvement of the household and maternal socioeconomic status. Mothers and women who were trained during the programme reported to have gained basic business skills, which resulted to more women being involved in small businesses, which could have in turn improved their income and purchasing power, general nutrition and health, soybeans production, processing and utilization (Ohiokpehai & Mbithe, 2009).

Food production
Nearly all the respondents (93.1%) reported to own land on which they farmed and kept livestock. The 6.9% that reported to have no land lived in the urban centres. The land sizes were however small with a mean of 2 acres total and a mean of 1.6 acres under food crop cultivation. About 22.7% of the respondents owned less than one acre of land while 37% owned between one to 2.5 acres. Only less than 10% had land of more than 10 acres with only 3 people out of 291 having more than 25 acres. Most of the farmers were in Lambwe division. Majority of respondents (88.7%) reported to grow maize with an annual mean yield of seven-90 kg sacks, 38.1% millet and sorghum, 26.8% beans, 39.2% kales, 76% African leafy vegetables (cow pea leaves, spider plant, jute and night shade), 9.6% cassava, 36% sweet potatoes, 2.9% fruit trees and 0.9% onions. It should be noted that most households practiced inter-cropping and therefore it was difficult to ascertain the land acreage taken by each of the crops (Ohiokpehai & Mbithe, 2009)

The results on land ownership did not change much with those reported at the start of the project which recorded mean land acreage of 1.8 acres and 1.2 acres under food crop cultivation (Ohiokpehai & Kimiywe, 2007). At the start of the project, 91.7% of the households reported to grow some little maize with an annual mean production of 450kg (five-90 kg sacks). This annual production appeared not to change significantly at the end of project. Although food production has been adversely influenced by climate change, he produce realized in the study area had increased by at least 2 bags per acre.

Livestock ownership is also considered as an aspect of food production as the livestock or their products could be consumed or sold and the proceeds used to purchase food. Infact, most proteins of high biological value are obtained from livestock and their products. Results at the end of the project on livestock production did not vary significantly from those at baseline. About 78.4% of respondents reported to own livestock compared to 75.2% at the start of the project. At the end of the project, 49.8%, 10.3%, 56%, 58.1% and 3.8% had cows, sheep, goats, poultry and donkeys, respectively, compared to 36.2%, 10.2%,

42.9%, 65.4% and 0.8% respondents who reported to have cows, sheep, goat, poultry and donkeys, respectively, at the start of the programme. Most of those who owned cows (38%) had between 2 and 5 cows and only 0.9% of them had over 20 cows. Most of the households also had between 2-4 goats, while only 8.4% had over 20 chickens. Only 1.2% had home fishponds compared to zero households at baseline. The programme training focused on women, but in most African communities decisions on land use are in most cases made by men. To have greater impact, in the next phase of the programme, an equal number of women to and men will be trained.

Food access and coping strategies

At the end of the programme, 89.6% of the households reported to obtain food from own produce and purchase. At the time of data collection, main foods such as maize, beans, millet, sorghum, groundnuts had not matured and were still in the farms. Even those who consume fish reported to purchase from the fishermen. About 3.4% reported to have received food assistance and donations. An observation of the presence of food in households showed that at least half of the households (57.7%) had some little food in the house. The food included maize, beans, millet, sorghum and cassava flour for porridge and small fish (omena). Vegetables included African leafy vegetables. The amounts were however small, just enough for a day or two.

About half (51.2%) of respondents whose main source of income was fishing reported they considered their households having adequate food when there was clear moonlight as the fishermen in their households were assured of a good fish catch. About 3% reported that they consider their households food secure at the end of the month when households had some cash income while more than half (64%) reported that they considered themselves food secure if they harvested between 2 to five-90kg bags of maize which was not easy given the effect of climate change, especially reduction in rainfall.

About 16.2% of the respondents were less than a kilometer away from the main food market while 74.5% were between one and five kilometers away. This indicates that majority of the respondents took some time to look for food from the food markets. About 84.2% reported to walk to the main food markets, about 10.4% rode on motorbikes while the rest 5.4% used motor vehicles. At the time of the study, about half of

the respondents reported that the main food in the market (maize) was obtained from outside the district.

At the start of the programme, food prices were lower than at the end of the project mainly because of the global change in food and fuel prices. Parameters of food access discussed in this study are not different from those reported in poor resource settings where most households have no or little food in the households and where the bulk of the food consumed in the household is bought. Furthermore, such households report having received food assistance and donations sometimes from government. With the increasing food prices and climate change that negatively affects food production household food and nutrition insecurity continues to worsen. This indicates that the impact of the programme may not have been felt significantly. Results on coping strategies at the end of the project were not significantly different from those at baseline. Responses from respondents on coping strategies are shown in Table 2.

Table 2: Coping strategies in times of food shortage.

Coping strategy	Project phase	
	Start	End
Purchase	84.6*	67
Assistance/donations	5.5	12.7
Food for work	6.7	5.5
Sell off household assets	3.2	10.3

*figures are %.

Only less than ten percent (6.2%) reported to have access to credit facilities. They obtained loans from the Kenya Women Finance Trust, World Vision, Equity Bank, Fishing Cooperatives, National Agriculture and Livestock Extension Programme (NALEP) and International Fund for Agricultural Development (IFAD).

Food consumption, nutrition and health education

Results from a 24-hour recall where respondents are asked to list the foods consumed in the last 24 hours prior to data collection, ingredients used and how they prepared the food gave a picture of the foods available, meal patterns and the food preparation methods. About 76.3% of the respondents reported to have had breakfast, 37.3% a mid morning snack, 89% lunch, 21% afternoon snack and 90.7% dinner. These findings are not different from those reported at the start of the programme (Ohiokpehai & Mbithe, 2009). This

indicates that food consumption patterns may not have changed significantly within the three years. It is well documented that although nutrition and health interventions are likely to improve nutrition and health knowledge acquisition, it takes long time for people to translate that knowledge into tangible practice so as to change and adopt new positive dietary attitudes and behaviour (Margaret & Mamdouh, 1994). Therefore significant changes in dietary patterns may not be realised in the 3-year period. Table 3 shows food consumption pattern within 24 hours prior to data collection.

Table 3: Distribution of respondents by main meals consumed 24 hours to data collection.

Breakfast %		Lunch %		Supper %	
Black tea	11	Small fish (omena)	21.3	Small fish (omena)	26.7
Tea with milk	76.1	Large fish	20.3	Large fish	56.2
Soya beverage	22.4	Kales	18.6	Kales	33.2
Mixed flour porridges	35.1	African leafy vegetables	16.2	African leafy vegetables	27.6
Mandazi (fat cake)	1.9	Pulses and githeri	11.2	Githeri (maize and beans)	12.7
Bread	9.2	Ugali (stiff porridge)	76.7	Ugali (stiff porridge)	85.6
Left over dinner	34.8	Chapati	2.9	Chapati	0.3
Cassava	3.1	Rice	3.4	Rice	0.3
Ripe bananas	2.1	Soya products	1.8	Soya tea	9.3
Ground nuts	1.9	Porridge	4.8	Porridge	0.9
Sweet potatoes	6.2	Sweet potatoes	1.9	Sweet potatoes and cassava	2.3

The foods consumed by children below two years consisted mainly of mixed flour porridges (76.9%), milk and soups from fish. At the start of the programme 78% of children were reported to consume mixed flour porridges (Ohiokpehai et al., 2007). Those above two years were reported to consume meals from the family pot. Most breakfast items were boiled while mandazi (fat cake) and bread was bought. The main staple cereal was boiled while fish was reported to be either fried or stewed. Vegetables were reported to be fried.

In a 7-day food frequency foods such as maize in the form of stiff porridge (*Ugali*), kales, African leafy vegetables, small fish (*omena*), and fresh milk recorded a high daily consumption than other foods with 69.4%, 43%, 40.5%, 35.1% and 34.7% of respondents reporting to have consumed these foods daily, respectively. Foods such as peas, carrots, mushroom, spinach, pork, tripe and sausages and fruits such as water melon, pears and passion were reported to have been consumed by less than 20% of the respondents in a 7-day period. Weekly consumption of

African leafy vegetables such as cowpea leaves, night shade, spider plant and jute improved by 3% from 91.7% when the programme started to 94.7% at the end of the project.

Out of the total 291 respondents, only 83 (28.5%) reported to have received training from the programme. This indicates that not all of those trained were included in the 291 sampled. The 83 who received training from the programme reported to have trained others in their neighborhood. However the numbers who they trained was not verified. It should also be noted that since the 291 respondents were randomly selected the programme trained many others who were not included in the impact study sample. As earlier indicated, most of those trained were women targeted through women groups. Nearly all the respondents reported to have had better acquisition of nutrition than health knowledge. This was demonstrated by the ability to recap what was covered in the training especially in nutrition and basic business skills.

Sanitation, hygiene and morbidity patterns

Sanitation and hygienic status had not improved significantly (P>0.05) as some 18% did not have access to clean water while the majority reported to use untreated lake water for drinking and cooking. About 27.5% of households did not have latrines /toilets and about 30.9% of households did not have refuse disposal pits. The programme did not have a significant impact on sanitation, environmental hygiene and morbidity patterns. This could have been influenced by cultural practices among other factors.

Malaria, coughs, stomachaches, diarrhea, upper respiratory infections, skin infections and headaches were reported as the most recurrent illnesses. About 61% of respondents reported that members of their households had fallen ill 14 days to the study. About 27.1%, 4.1%, 5.2%, 9.5%, 5.2%, 3.1%, 3.1% and 2.2% of household members had suffered from malaria, stomach ache, headaches, coughs and upper respiratory infections, diarrhea, skin infections, typhoid and vomiting respectively 14 days to the study. Five children (1.7%) were reported to have suffered from measles (Table 4).

Table 4: Distribution of illnesses among household members in Suba district, Kenya, in May 2009 .

Illness	Who suffered %					Total
	Self	Spouse	Son	Daughter	Others	
Malaria	5.4	6.1	7.5	6.8	1.3	27.1
Stomach ache	1.3	1.3	1.4	0.1	-	4.1
Head ache	3.1	0.3	0.7	0.7	0.4	5.2
Coughs	2.1	1.7	2.7	1.9	1.1	9.5
Diarrhea	2.1	1.7	1	0.3	0.1	5.2
Skin infections	-	-	1.7	1.1	0.3	3.1
Typhoid fever	1.3	0.9	0.5	0.4	-	3.1
Vomiting	0.3	-	0.9	0.9	0.1	2.2
Measles	-	-	1.0	0.7	-	1.7

About half of the population (44.7%) had been sick for between one to seven days while 16.5% had suffered for more than a week. About 47.1% reported to have sought treatment from the hospital, 12% home treatment/self medication, while 2.1% sought treatment from herbalists. Figures for morbidity patterns had not changed significantly during the period of the intervention programme. Measles in children reported at baseline was also reported at the end of the project but the figures were small. It can be argued therefore

that the programme did not have a significant impact on sanitation, environmental hygiene and morbidity patterns. This could have been influenced by other factors such as cultural practices some of which take time to change (Margaret & Mamdouh, 1994). It is documented that disease prevalence is influenced by many factors including environment, causative agent, person, time and place. Health seeking behavior had however improved with more people seeking hospital treatment than those reported at baseline.

CONCLUSION

Poverty, poor socio economic status, food insecurity and ill health in the Lake Victoria basin has existed for decades due to several factors, some of which are discussed in this paper. It was therefore important for the programme to explore ways of addressing poverty, malnutrition and ill health. Such ways include alternative sources of income, nutrition and health

education and combating disease occurrence. While the programme significantly addressed aspects of income, food and nutrition security, it did not succeed in addressing health issues since sanitation did not improve and disease prevalence did not change from what was reported at the start of the programme. It is therefore recommended that more health education be

provided to the community to break the disease cycle. Also, to increase income sources, interventions must

be encouraged to support marketing and income generation activities.

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