



Research Article

Impacts of Nutritional Gardens on Health of Communal Households; A Case Study of Nyanga North District

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ARTICLE INFO	ABSTRACT
<p><i>Article No.:</i> 062013681 <i>DOI:</i> 10.15580/GJAS.2013.3.062013681</p> <hr/> <p><i>Submitted:</i> 20/06/2013 <i>Accepted:</i> 22/07/2013 <i>Published:</i> 29/07/2013</p> <hr/> <p>*Corresponding Author Jackqeline Mutambara E-mail: jmutambara@agric.uz.ac.zw/ jmuzenda@yahoo.co.uk Phone: 00263772482561</p>	<p>The premise of this study was to evaluate the contributions of nutritional gardening on household nutritional status. This was considered important in providing a feedback to promoters and users of nutritional gardens. This study used secondary baseline data and primary data on nutritional status before and after adoption of gardening from a sample of 40 households. A comparative study design using a t-test was then effected to compare the nutritional status before and after practicing gardening. The study revealed that there was a statistically significant difference on the nutritional status of households before and after adoption of nutritional gardens. On average, the weight-for-age for children under five years of age was higher (90%) after nutritional gardens than before 73%, prevalence of illnesses was lower (21%) after nutritional gardens than before (71%), chronically ill adults were higher (30%) before than after (27%) and malnutrition in children was lower (5%) after than before (13%). Promoters and users of nutritional gardening such as government, non governmental organizations, private sector and farmers were encouraged to promote the concept in order to improve households nutritional status.</p>
<p>Keywords: <i>Evaluate, feedback, comparative, weight, age, illness, malnutrition, chronically</i></p>	

INTRODUCTION

Agriculture is an important sector for sustaining economic growth and reducing poverty in developing countries. Agriculture accounts for about 30 percent of Sub-Saharan countries' Gross Domestic Product (GDP) and almost 75 percent of total employment (World Bank, 2007). Erratic rainfall patterns present serious challenges to food production in these areas (Fisher, 2004), and this situation is further worsened by climate change which is expected to increase rainfall variability in many African countries that are already semi-arid and arid. These concerns are substantial in Zimbabwe where the agricultural sector, the most important sector for poverty reduction and livelihood improvement, has been undermined by malnutrition and food shortages. Adequate food is a human right and good nutrition is essential to achieve the aims of the Millennium Development Goals. The continuous rise in poverty levels in Zimbabwe has negative implications for good nutrition. When people have access to an adequate food supply, they are not exposed to illness and can achieve their full potential. Collaboration among health, agriculture and education sectors is particularly important in capacity building. Without progress in addressing nutrition related issues, developmental goals will not be realized (ZimVAC, 2010).

Humanitarian assistance in Zimbabwe has proved an unsustainable means of attaining food security, health and nutrition for the poor given the short term nature of the intervention. It became clear that short-term humanitarian responses needed to be reinforced with longer-term programmes to meet the needs of the most vulnerable subsistence farmers, particularly in areas of high HIV prevalence. Increasingly, male farmers have opted to leave their families to work on commercial farms, or to engage in other activities, such as illegal gold panning or petty trading in neighbouring Mozambique and South Africa in order to support their families. Households headed by women, the elderly and children have been left to cope with little support to work the land, much of which is not arable in its present state. They lack water sources, fertilizers and different varieties of seeds as well as other agricultural extension services. In addition, many are struggling with the HIV virus either because they themselves are sick, because they are caring for the sick or because they are looking after the children of relatives who have passed away (Concern, 2009).

In an effort to overcome the challenges associated with malnutrition, the government and some non-governmental organizations have consistently promoted community nutritional gardening activities as yield-augmenting technologies (Food and Nutrition Council, 2010). The nutritional gardening projects in Nyanga began in October 2005. The main objective of the introduction of nutritional gardens was to improve nutritional value of agricultural production to vulnerable households through diet diversification, vegetable production and nutrition awareness. This is particularly pertinent to households whose nutritional

needs are high. Gardening has always been an important part of rural women's workload. Small gardens close to the home are used to grow relish crops to supplement maize, the staple food. However, lack of water, lack of seed varieties and increasing demands on women's time (partially as a result of AIDS) meant that many gardens were poorly maintained or abandoned altogether (Concern, 2009).

In Nyanga garden, sites were located close to water sources wherever possible. The rehabilitation of dams and boreholes was made possible with the help of District Development Funds (DDF), to acquire materials and pay for any technical expertise that was needed. Once reliable water sources were secured, garden groups were responsible for providing the initial heavy labor, clearing land ready for the gardens (Soroti, 2007). Concern Worldwide, the organization promoting nutrition gardens in Nyanga District targeted the poor and the sick, especially HIV patients, with the aim of improving their standards of living with more emphasis on nutrition and income generation. The organization has helped set up nutritional projects by giving startup capital, training, constant monitoring and giving loans where possible (Concern, 2009). The work of Concern Worldwide on nutritional gardens complements that of the government which has helped by construction of dams and borehole drilling as a means of encouraging agricultural production. The government has also implemented the revival of the 'Zunde Ramambo' gardening programs in some parts of Nyanga such as Mambo garden near Ruangwe growth point in an attempt to improve the nutritional status and livelihoods of households in drought prone areas.

Bonnard, (2010) noted that nutritional gardens are an important nutritional supplement and income earning activity (Bonnard, 2010). There is evidence to prove that farmers investing in nutritional gardening have an average of one additional meal per day compared with non-participating households. In addition, the food eaten by participating households is reportedly more nutritious and balanced than that of control households. Benefits accumulate over time since significant improvements become greater and greater as nutritional gardening projects progress. These benefits are illustrated in terms of yield achieved, profitability, production costs and reduction in prevalence of diet-related diseases (ICRISAT, 2007). Nutritional gardens have multiple benefits for communal households, some of the benefits are as follows (Machakaire and Hobane, 2005):

1. Optimized health, reduced risk of diet-related chronic diseases and increased enjoyment of food among community members.
2. Dietary change that complements the seasonal availability of foods produced and processed by the local food and agriculture system.
3. Improved access for all community members to an adequate, affordable and nutritious diet.

Research findings from other countries have evidence to show that nutritional gardens are beneficial to societies, the city of West Hollywood complemented its nutritional gardening program with nutrition and physical activity education. Self-reported survey results demonstrated that participants increased the number of physical activity sessions from 4.9 to 5.2 times per week (6%) and increased consumption of fruits and vegetables from 3.44 to 3.78 servings per day (10%). Addison, 2010 found that in the city of San Bernardino, the number of children in households that had improved nutritional status after participating in the community gardening program increased from 62 to 75 (20%). Families typically consume approximately 60% of their produce, with the surplus sold to generate an income of roughly \$5 per household per month (Berg, 2010).

Despite the investment by governments, and developmental agencies in nutrition related projects such as nutritional gardening in Zimbabwe, as a means to combat malnutrition and poverty, not much has been done to assess the impacts of such interventions. The objective of this paper was to evaluate the impacts of nutritional gardening on household health and nutritional status. This study was considered important in order to provide feedback to nutritional gardening initiators and all stakeholders with regards to areas and extents of successes and possible loop holes in the nutritional gardening programs.

According to World Health Report 2002, low fruit and vegetable intake is estimated to cause about

- Weight-for-age ratios for children under the age of five,
- Chronic illnesses among adults,
- Prevalence of malnutrition and
- Prevalence of diet-related illnesses.

To evaluate the impact of nutrition gardens on household nutritional status, paired sample t-tests were carried out. Before and after situations were used to make comparative evaluations of the impacts of nutritional gardens. By using the paired sample t-test, conclusions were made on whether nutritional gardens had an effect on the communal households' nutrition.

RESULTS AND DISCUSSIONS

General Socio-economic Status of households

Sex: Males constituted 27.5% of the total sample size, slightly above the quarter of the study population. Females constituted 72.5% of which 2.5% of the households were single, 67.5% married and widows constituting 30%. Since the primary criteria used to select gardening participants was based on individual vulnerability to nutrition and livelihood security, the results show that there were a greater percentage of women affected by poverty and HIV. On the other hand, women are more interested in gardening

31% of ischaemic heart disease and 11% of stroke worldwide. Overall, it is estimated that up to 2.7 million lives could potentially be saved each year if fruit and vegetable consumption were sufficiently increased. WHO Expert Consultation on diet, nutrition and the prevention of chronic diseases, recommends the intake of a minimum of 400g of fruit and vegetables per day for the prevention of chronic diseases such as heart disease, cancer, diabetes and obesity as well as for the prevention and alleviation of several micronutrient deficiencies, especially in less developed countries.

MATERIALS AND METHODS

The study was undertaken in Nyanga north district in Manicaland. Farming households who had adopted nutritional gardening practices through Concern Zimbabwe, a non governmental organization were considered in the study. Elements of the study (households) were randomly selected from the list in the Concern Zimbabwe data base consisting of 367 nutritional gardening households. A random sample of 40 households was then extracted from the study population. Secondary data on the 40 selected households was obtained from Concern Zimbabwe baseline (before intervention) data while primary data on nutritional status was collected by means of a questionnaire. Key variables used as indicators of nutritional status before and after nutritional gardening were:

practices than their counterpart hence more women were willing to take part in nutritional gardening.

Household size: The average size of the households was 5 with a minimum of 1 and maximum of 9 household members. The modal classes were 3 and 7. Single individuals were 2.5% of which 2.25% were widows. A household typically consists of individuals residing together for at least three months of the year in question. Household sizes indicate the availability of labor for the household and demand for food as the number of stomachs to be fed (Smith, 1995). The average household size of 5 indicates the demand for provisions especially the basic requirement food but it is a poor a clear guide for labor supply if details on age and capabilities of members in the household are not available.

Occupational status: Most of the occupations of the gardeners were agricultural based (68%). Only 25% of the households had non agricultural occupations and 7% had no other occupation besides gardening (Figure 1). The 68% agricultural based occupants were

constituted of those who entirely relied on nutritional gardening as a source of income generation.

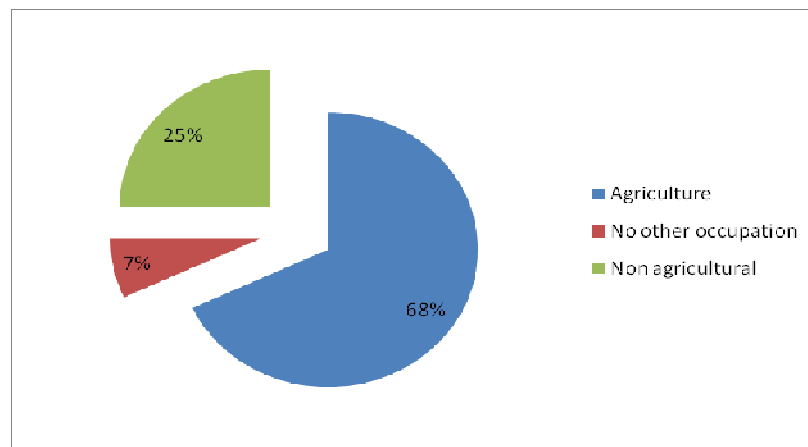


Figure 1: Occupation of Selected Households

Therefore a larger proportion of the household members entirely depended on nutritional gardening. In the communal areas, there are limited income generating activities that are non agricultural based because of lack of capital and credit to sustain non agricultural projects. Therefore, the greatest percentage of the rural dwellers depends on agriculture to earn a living. A small percentage of 7% among the interviewed households indicated that they have no occupations they can rely on for a living. May be the 7% was made up of those who consumed all the garden produce and some who found nutritional gardening not adequately sustainable.

Years of gardening experience: Most (70%) of the interviewed households started or joined nutritional gardening in 2005 as shown in the Figure 2 below. The majority of the participants (65%) joined nutritional gardening in 2005 since this is the year which Concern Zimbabwe established nutritional gardens in Nyanga district. Only 30% of the people interviewed were already into nutritional gardening before 2005 as shown in the Figure 2 below. However those who were already into nutritional gardening before 2005 had no funds and the necessary material to fully establish their home gardens. They were limited to fewer varieties of vegetables and operating at limited scales as indicated by interviewed farmers and key informants from Concern Zimbabwe.

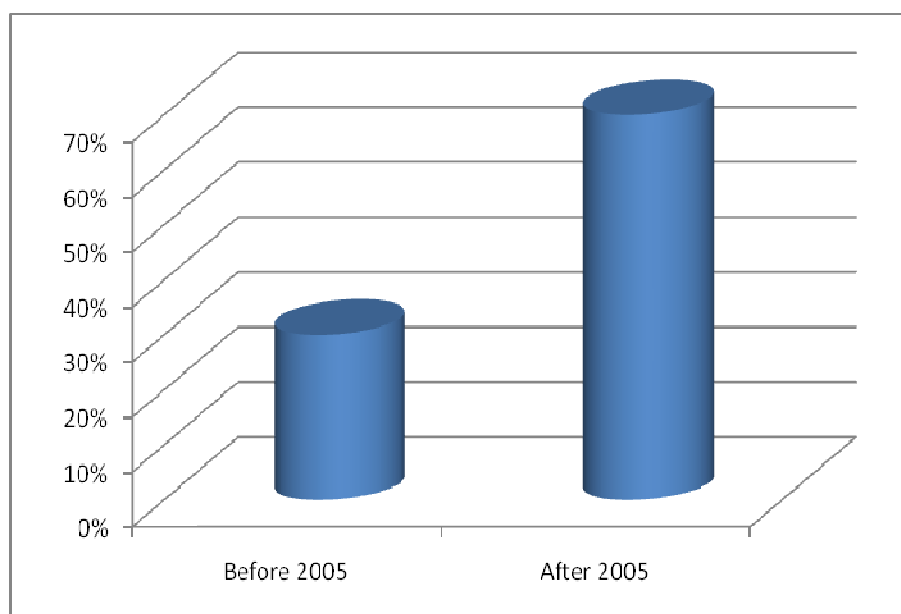


Figure 2: Periods When Households Joined Nutritional Gardening

Impact of Nutritional Gardens on household Nutritional Status

A paired samples t- test was run using SPSS and the results obtained are shown in the Table 1 below. The variables used to determine the effects of nutrition

gardens on health and nutritional status were: Weight-for-age ratio of children under five years of age, percentage prevalence of illnesses, percentage of

chronically ill adults and percentage malnutrition in children.

Table 1: Impact of Nutritional Gardens on household Nutritional Status

Variable	Average % in 2005	Average % in 2010	T	Significance
Weight-for-age for children under five years of age.	73.37	90	3.70687	0.0076***
Prevalence of illnesses	71	21	-4.161	0.004***
Chronically ill adults	30.33	27.5	3.095	0.04**
Malnutrition in children	13.3	4.5	-8.062	0.00***

** Significant at 5%, *** Significant at 1%

For the variable weight-for-age for children under five years of age, the calculated t-statistic is 3.70687 and is significant at 1%. Therefore, it was concluded that nutritional gardens significantly reduce the number of times children under the age of five are below normal weight.

The t value for prevalence of illnesses was -4.161 with a significance of 0.004. The average percentage of the prevalence of illnesses decreased by more than 50% and this outcome is in concurrence with literature. In 2009, Concern noted that in Ethiopia after introduction of nutritional gardens, illnesses were reduced up to 50%. In the survey of the gardeners interviewed, 30.33% were chronically ill before joining nutrition gardens and 27.5% were chronically ill after joining by the time the survey was carried out. The t value for chronically ill adults was 3.095 with a significance of 0.04 which means there was a significance difference between chronic illnesses among adults before and after joining gardening activities. Thus, the study concludes that illnesses were significantly reduced with the introduction of nutritional gardens.

Average percentage in the prevalence of malnutrition among children decreased by 8.8% after households joined nutrition gardens. Contrary to the literature by Addison (2009), nutritional status of children in gardening households did not reach up to 20%. However, even with the smaller change, it indicates that prevalence of malnutrition significantly decreased among children after nutritional gardens than before. This study has evidence to prove the positive influences of nutritional gardens on household nutrition. This is in line with theory where gardening is believed to improve intake of health food, promote physical and mental health through relaxation and satisfaction as well as bulding communities (Lombard, 2006 and Wakefield, 2007). According to FAO, 2010, one of the easiest ways of ensuring access to a healthy diet that contains adequate macro and micro-nutrients is to produce many different kinds of foods in the home garden. This concept was viewed especially

important in rural areas where people have limited income earning opportunities and poor access to markets as well as for the poor urban and peri urban population (FAO, 2010).

According to Machakaire and Hobane, 2005, nutritional gardens have multiple benefits for communal households, some of the benefits includes; optimized health, reduced risk of diet-related chronic diseases and increased enjoyment of food among community members; dietary change that complements the seasonal availability of foods produced and processed by the local food and agriculture system and improved access for all community members to an adequate, affordable and nutritious diet, all of which points to the positive beneficial impacts of gardening to nutrition and health.

The study therefore concludes that there were positive benefits in terms of nutritional status of households after adoption of nutritional gardens through a non governmental organization - Concern Zimbabwe. This outcome is in concurrence with theory and literature that also points to the same conclusion. It is therefore recommendable that promoters and users of nutritional gardening such as government, non governmental organizations, private sector and farmers be encouraged to promote the concept in order to improve households nutritional status.

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