Assessing the advantages of cultivation and consumption of traditional vegetables for Public Health in South Africa

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Abstract

Recent international policy resolutions have recognised the importance of indigenous knowledge and the potential of traditional vegetables in promoting nutrition and health. However, traditional vegetables are still underutilised and perceived as invasive weeds. The paper is based on the argument that there is an increase in nutritional deficiencies, especially among children in rural areas of South Africa due to the decline of traditional vegetables consumption. Using cases from UThungulu and eThekwini district municipalities in KwaZulu-Natal province, South Africa, the paper demonstrates the advantages of cultivating and consuming traditional vegetables for improved health and nutrition. It also elaborates on the indigenous farming systems used and perception towards traditional vegetables among the different cultural groups in the study districts.

KEYWORDS: Rural Communities, Food Security, Cultural Groups, Wild Vegetables, Nutrition

Introduction

Although their consumption, traditional Vegetables is usually less significant among African pastoral communities, they are an important part of the traditional diets of agricultural communities. Traditional vegetables are defined as the roots, leaves, stems, flowers and fruits of plants consumed by urbanized or rural communities through custom, habit or tradition (Shackleton et al., 2009). South Africa is rich bio- and cultural diversity. Many people, especially in the rural and marginalized communities still use a wide variety of plants for their livelihood. These plants, often referred to as traditional vegetables, account for 10% of the world's higher plants, (Van Wyk et al., 2000). However, the introduction of exotic vegetables has caused under-utilization of these traditional vegetables. There has been a great decline in the availability of traditional vegetables which has also been caused by an excessive cultivation of

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field crops, change of habitat, as well as chemical eradication of wild vegetables. There is increased level of ignorance among the youth on the availability and presence of these nutritionally rich food plants. The decrease in the use of traditional vegetables by several rural communities has caused a greater incidence of poor diets and nutritional deficiency diseases and disorders (Kwapata et al., 1995).

Traditional vegetables are vital for improved food security predominantly during natural disasters and famine. They grow in the wild and are readily available in the field and do not require any formal cultivation. Few inputs are required for their cultivation and they tend to grow and survive where exotic vegetables cannot be grown. They are also well suited for cultivation in areas with low, unreliable rainfall, steep topography and poor soils hence; they are viewed as key in food security. The traditional vegetables are in other instances, the only cash resource disposal of women for the well-being of their families and the improved utilization and consumption of traditional vegetables will be the only way for urban and rural poor, lactating mother and children to have an improved income, nutritional and health status (Kwapata and Maliro, 1995).

As a result of their marginalization most of the indigenous knowledge systems associated with traditional vegetables is not documented. It is, therefore, crucial for scientific investigation and documentation before the information is irreversibly lost to future generations. It is on the basis of this consideration that the paper will present the advantages of cultivating and consuming traditional vegetables for improved health and nutrition.

Methods

The paper is based on the examination of secondary sources of cases of cultivation and consumption of traditional vegetables in Kwazulu-Natal province, South Africa. As a method of data collection used in this paper, the process of examination of secondary sources involved accessing information that is already gathered from past research papers, journal publications, books and archival materials relevant to the issues under discussion. The researcher used this method due to a number of factors: easy access of the sources online with limited costs compared to conducting primary research.. The available diverse secondary sources from the study districts helped the researcher to clarify the research questions. The secondary sources also assisted to realize that most of the required information relevant to the

discussions was already available. The findings are presented and discussed below in several themes including two illustrative case studies.

Findings and discussion

Traditional vegetables and food security in South Africa

The different cultural groups in South Africa have a tradition of collecting edible plants from the wild for consumption (Parsons, 1993). There is also a common practice of nurturing and cultivation of a variety of traditional vegetables in home gardens. This is predominant in semi-arid areas of the former homelands. Jansen van Rensburg et al., (2007) state that the most common African vegetables found in South Africa are Black Jack (*Bidens pilosa L.* and *B. bipinnata L.*), Amaranth (*Amaranthus* spp.), Jute or Jew's Mallow (*Chorchorus olitorius* and *C. tridens*), Nightshade (*Solanum nigrum complex*), Cowpeas (*Vigna inguiculata L.*) and Spider flower (*Cleome gynandra L.*). There are many other hardy exotic vegetables which are also comprised under the rubric of traditional African vegetables. South Africa also has those vegetables which are bitter melons (*Citrullus lanatus* sp.), pumpkins (*Curcubita maxima*, *Curcubita pepo*) and sweet potatoes (*Ipomoea batata*). There has also been availability of Okra (*Abelmoschus esculentus*) which is increasingly being integrated into the rural diets of South Africa, mostly in areas where there is availability of more water (Laker, 2007). Classically, the plant parts which are consumed are the young leaves and they are prepared as a relish and they regularly complement the staple maize porridge. According to Jansen van Rensberg et al., (2007) the other parts of the plants such as fruit, roots, seeds, and tubers are also added so as to enhance the nutritional and flavour content of the relish.

The inclusion of these plants into the diet has been indicated by the nutritionists that they increase nutrient absorption and availability as well as dietary diversity. This contributes to the lessening of under-nutrition and malnutrition (Maunder and Meake, 2007). In South Africa, using the different proxies such as hunger experiences, measures of income, anthropometric measure of under-nutrition, the food security estimates propose that between 41% and 51.6% of households are food insecure (Stats, 2007; Labadarios et al., 2008). Labadarios et al. (2008) further explains that there is an increasing risk for one out of three households. Since in South

Africa there is an increasing level of food insecurity, there is a great need for the collaboration of nutritionists and agriculturalists so as to build and improve crop production traditions and consumption of traditional vegetables. Maunder, et al., (2007) argue that since there is widespread traditional vegetable consumption by the vulnerable groups (women, children and the elderly), the collaboration will help in improving the diet nutritional content for the poor in rural households as well as their food security status. They have also warned that the inadequate yields from some TV plant varieties will cause a decrease in the consumption patterns which will result in the decrease in the improvement potential for some areas.

It is reported by ecologists that quantities and diversity of traditional vegetables, mainly the ones found in the wild are declining due to the poor natural resource management, increasing population densities and subsequent erosion. As a result, people access and consume low quantities of traditional vegetables, especially in areas where these conditions prevail, (Hunter et al., 2007). These observations have therefore resulted in calls for better and improved assistance to indigenous rural communities with regard to natural resource management, a greater focus on the local cultivation of these plants, and development of improved varieties and production methods (Hunter et al., 2007). Despite the available evidence and arguments, the public sector agricultural extension service in South Africa has not taken cognizance of the importance of African vegetables to household food security and health.

Perceptions of traditional vegetables in African communities

In a study done by Taruvinga, et al. (2015) investigating the consumers' perceptions and consumption dynamics of the African indigenous vegetables in the Eastern Cape, South Africa, the results revealed that the majority of the respondents (84%) believe that these vegetables contain some nutritional value which is critical for their balanced diet. The results also revealed that 81% of the respondents believe that these vegetables have health benefits which have helped them to deal with numerous diseases. Faber et al., (2010) also supports these findings remarking that the traditional vegetables are capable of acting as digestive cleansing agent, boosting the human immune system as well as prolonging life span. The results also revealed that 74% of the households believed that traditional vegetables have a pleasant taste and 58% of household believed that traditional vegetables are easy to prepare and they are mostly favourite dish in rural daily meals. With reference to the influence of culture on consumption 51% of households stated

that their consumption of these vegetables is mostly driven by culture. Taruvinga, et al. (2015) also indicated that the findings were contradicting the literature suggestions with regards to traditional vegetables being labelled as 'poor people's food' and being inexpensive. The results revealed that only 10% of the respondents believed that traditional vegetables have a 'poor people's food' label and are considered to be inexpensive. Taruvinga and Nengovhela (2015) further explain that the findings suggested that positive perceptions are shared by rural communities with reference to the consumption of these vegetables and they act as an important food source for them which is worth protecting and passed on to the next generation.

Nutritional contributions of traditional vegetables

According to Steinmetz and Potter (1996) there has been a wide promotion of an increase in fruit and vegetable consumption because of their health benefits of micronutrients and the availability of phyto-chemicals which are associated with prevention of chronic diseases as well as health maintenance. The increased consumption of fruit and vegetables can also help in alleviation of chronic diseases and micronutrient deficiencies. There are factors which affect the nutritional contribution of vegetables and these include per capita consumption, nutrient and phytochemical content as well as nutrient bioavailability.

Shackelton et al.,(2009) state that the traditional leafy and fruity vegetables were recognized long ago as significant components in African diets. Conventionally, the traditional vegetables seemed to serve as food only, as an essential constituent in meals in addition to starch and protein, as an essential supplier of minerals and vitamins, as well as taste improvers. Nevertheless traditional vegetables manifold various uses in medicine as well as in cosmetics. For example, in Kenya, the cooking of the traditional leafy vegetables is only significant amongst the agricultural communities and hunter-gatherers while among the pastoral communities, an essential use of plants parts is in soups and milk for flavour and good health. In South Africa, the diversity in culture, gender and ethnicity mostly affect the traditional vegetable choice and their uses (Vorster et al., 2007).

The management of crops, cooking methods, processing, bioavailability, crop variety and bioavailability are the factors which affect the nutrient values of vegetables. The management of crops practices such as water management, amounts and different types of fertilizers, season

choice have a great influence on the nutrient content. Since the traditional vegetables are usually harvested in the wild or are commonly grown in home gardens, there is a great potential for the improvement of nutrient content of traditional vegetables through better management practices. There can also be minimization of nutrient losses by better post-harvest handling and adjustment of existing food practices such as improved drying process, reduced time of thermal treatment, washing vegetables before chopping them, adding vegetables to boiling water instead of cold water for cooking (Shackeleton et al., 2009).

Medicinal uses of traditional vegetables

In a study conducted by Taleni et al., (2012) to investigate the people's perceptions on indigenous leafy vegetables, a case study of Mantusini location, South Africa, the respondents indicated that traditional vegetables are not only desired for nutrition but for their assumed medicinal properties. For example, the light green or yellow flesh of the *Citrullus lanatus* (ijodo) is boiled together with corn. This will form a light snack which is called umxhanxa, and it is not only used for its flavor and nutritional value, but also as a purgative. The *Citrullus lanatus* leaves are cooked and consumed as relish and they are also used on domestic animal for the treatment of sores. Taleni et al., (2012) also indicate that in 2001, when the antiretroviral (ARV) medication was unavailable, "the African Potato gave hope to those fearing an HIV-infection in the absence of biomedical treatment". The respondents indicated that they use some of traditional vegetables as medicines for the prevention and treatment of several illnesses. For example *Mormodica foetida* (intsungu), 37% of households used it as medicine for managing high blood pressure but in other countries such as Gabon, Malawi and Ghana, the plant leaves are cooked and consumed as relish.

Challenges in the use of traditional vegetables

Vorster, et al. (2005) indicate that the traditional vegetables are becoming scarce and their utilization is majorly declining. The decrease in the consumption of these vegetables might be caused by modernization, as the younger people desire more fatty tastes associated with fast food and snacks. The traditional vegetables are also generally labelled as invasive weeds and old fashioned, hence they are regarded as low status food which is only consumed by the poor, thus many children or youth do not eat them. Most people in different households do not want to eat

traditional vegetables, they insist on eating meat, leaving traditional vegetables for older people or children and this relegates traditional vegetables to a low status food in the household. Another possible reason of the decline in the consumption of these vegetables could be that people are not familiar with their taste, thus they claim that they taste bad, this is due to the blandness of their preparation and the use of limited ingredients when they are prepared. The changing taste preferences and people's perceptions also attribute to the decline of traditional vegetables. The process of collecting traditional vegetables in the garden or field has also attributed to the decline of the utilization of traditional vegetables and most households prefer the ones which they buy. People also prefer commercial vegetables since they are available in the market in all seasons, while traditional vegetables have seasonal availability, most of them are not available in dry winter season.

The following section provides examples of case from KwaZulu-Natal province on the advantages of cultivation and consumption of Traditional vegetables for public health care.

Case studies of KwaZulu-Natal Province

Case study 1: A study conducted by Sithole et al., (2011) on the role of traditional leafy vegetables (TLV) in household food security in rural KwaZulu-Natal. Province showed that, there was a community garden society and its members produced a seasonal chart indicating the traditional leafy vegetables cultivated and the times when they are available. The chart showed that these vegetables were mostly available during the summer season and vegetables such as amaranth, pumpkin leaves, spider flower and black jack were mostly common in the area. The households surveyed disagreed that TLV are "a poor people food" and that they are "toxic". The community garden members and rural household surveyed view TLVs as highly nutritious and an important source of food. The local clinic initiated awareness campaigns for promoting the benefits of TLVs. The campaigns included conducting community meeting aimed at promoting TLVs. The clinic members of staff also had informal talks with the attendees of the clinic and a clinic garden with TLVs was also established as demonstration plot to remove the stigma associated with TLVs. It was indicated that social networks and interpersonal communication channels of family are stronger than the mass media in influencing behavior and attitude change in relation to TLVs thus indicating the role of indigenous knowledge. The positive attitude and

behavior of the households on TLVs was also influenced by awareness campaigns of the local clinic.

Case study 2: In a study performed by Modi et al., (2006) that investigated the potential role for wild vegetables in household food security in KwaZulu-Natal, the results showed that the wild leafy vegetables were more abundant than other food crops. However, the availability of wild leafy vegetables seem to decrease earlier (May) than that of other food crops, and they also become more scarce by midwinter (June, July) until spring (August), when their growth resumes. Generally the wild leafy vegetables were more available, they also occurred in greater variety in the cropping field than in the veld. There was also relative prolonged availability of traditional crops such as taro and it may be associated with long harvestable stage of taro. The farmers from the study area indicated that exotic leafy vegetables were not available and they were also aware that leafy vegetables were major source of micronutrients for the community members of the area. The study results revealed that leafy vegetables could contribute significantly to the dietary requirements of rural households. It was indicated that a square metre of wild vegetables cultivated land could offer adequate nutrients for a household and the contribution of wild vegetables to household nutrient requirements could be enhanced by increasing the total area used for collection, and by selecting the more nutritious species. The majority of the respondents indicated that the wild vegetables are more nutritious than the exotic vegetables that they consumed such as cabbage and swiss chard. It was also showed in the nutritional evaluation the wild vegetables identified in this study are more nutritious than the popular exotic vegetables (cabbage and swiss chard). It also showed that wild vegetables such as, amaranthus, black jack, and water navel are more valuable sources of vitamins A,E and C, zinc and iron. It was indicated in the study that education plays a major role in improving the knowledge of wild vegetables especially among households and subsistence farmers.

Conclusion

Traditional vegetables could play a major role in achieving food security especially in rural area where there are lower incomes and larger families. They could provide households with alternative sources of micronutrients, high antioxidant activity therefore health and nutrition of the household will be improved. From the studies reviewed in this paper, it is evident that the consumption of traditional vegetables is declining in most countries, including South Africa,

KwaZulu-Natal. It is recommended that awareness campaigns are needed to help in recreating awareness, improving knowledge and utilization of traditional vegetables. The awareness campaigns can also help in promoting other uses of traditional vegetables such as the ones that have medicinal properties therefore health will also be promoted. It was evident that one of the possible reason for the decline in the consumption of traditional vegetables could be the blandness of their preparation and the use of limited ingredients. This suggests that there should be variety in the preparation of traditional vegetables. The different recipes used by other cultural groups should be made available to the women of indigenous communities, therefore access to a variety of cooking methods would cause an increase in inclusion of these vegetables in the diets thus the general utilization of traditional vegetables can be increased. There is also a great need in exploring other alternative preservation techniques so as to increase availability of traditional vegetables. It is recommended that research efforts and future scientific investigations include a nutritional assessment of the community's food intake for researchers and policy makers to recommend and design appropriate intervention strategies. Government and non-governmental organizations also need to make concerted efforts in handling issues related to the use and conservation of traditional vegetables for improved health. Practical interventions in health and nutrition are needed.

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