

Knowledge and Perceptions of Rural Communities on Wild Food Resources Consumption in Tanzania

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ABSTRACT The study used three villages in Western Usambara, Tanzania, as case studies to investigate the knowledge and perceptions of rural communities on consumption of wild-food resources. It was found that, in spite of the increasing loss of African indigenous knowledge among farming communities, there was still a strong connection between cultural identity and cuisine. Local wild-food resources contributed the taste, texture, and odour of traditional cuisine. There were also vital connections between gender and age. Women and adults knew more about wild-food resources because of their practical involvement in related practices. Women had a greater knowledge than men in wild-food gathering, preparation, and uses. Among the recommendations are: transplantation of the rare wild-food species; communities working with development agencies to develop conservation and educational programmes; documentation of the local knowledge from the community perspective.

INTRODUCTION

Karl-Heinz (2004) states that, in spite of changing lifestyles in both rural and urban areas of Africa, the consumption of wild-food resources remains an important aspect of people's livelihoods. The availability and use of these resources, that is plants, animals, insects, fish, etc. obtained through hunting, gathering, and foraging, is influenced by differences in natural and cultural environmental conditions. Certain types of wild foods are commonly eaten, while other types used characterize a specific biome of a certain area of indigenous cultural traditions.

Rosoanaivo (2002) indicates that in most African countries which are experiencing socio-economic transformation, such as Tanzania, the level of local community knowledge and perceptions of wild foods is influenced by a variety of factors. These include culture, socio-economic status, level of education, age, and gender. However, owing to increasing poverty, especially food insecurity, in both rural and urban areas of Africa, there is a growing interest among researchers, development agencies, and policy-makers in searching for sustainable solutions to these developmental issues. Researchers are exploring the factors which influence local knowledge, and the perceptions of local communities on the use of wild-food resources. This is based on the observation that cultural factors sometimes take precedence over other considerations, such as availability, or abundance of

species (Sheikh 2001). Moreover, the process of selecting and acquiring certain wild-food resources also demonstrates the way in which various cultural communities view themselves, each other, and their environment. The exploitation of these natural resources for livelihood brings local communities into an intensive interaction with their natural environment. In the process of harvesting these wild-food resources, social relations and perceptions on the environment and the resources are created (Mathews 2000).

Experience of various African countries, especially in the rural areas, indicates that the use of these wild-food resources often takes place in the household. The assumption, therefore, is that women control the consumption patterns and habits of the households. This is because, in most African households, women are responsible for household food consumption. However, the non- and semi-domesticated wild foods enter the households either through the female head of the household, her husband, male and female relatives, friends, neighbours, and children. Moreover, within a local community, the knowledge and patterns of wild-food use could be influenced by factors such as gender, social class, and personal life experiences. Therefore, these factors must be taken into consideration in the analysis of household and community use of wild-food resources in Africa (Swanson 1995; Wilson 1998).

The objective of the study was to investigate the knowledge and perceptions of rural

communities in Tanzania on consumption of wild-food resources, with special reference to three villages in Western Usambara, Tanga region, in north-east Tanzania. These villages were Mbuzii, Vuga, and Soni. The researchers originate from the area and know the culture, including the local language of the study communities. This made for easier communication and access to cultural information on the research problem.

However, besides the researchers being conversant with the culture of the study area, another reason for its selection was that Western Usambara provided an excellent setting for studying variations in knowledge and perceptions of locals on consumption of wild-food resources. The Usambara Mountains are among the most important centres of biodiversity in East Africa. At national level, they are important as water-catchment areas and as a source of non-timber forest products. Their international significance is owing to the existence of abundant genetic resources of food and medicinal plants, timber trees, and other plants of economic value. As with the rest of Africa, in spite of the richness of its biodiversity, the area is characterized by poverty. Most of the inhabitants are subsistence farmers who rely heavily on the forests around them for timber, medicinal plants, wild-food resources, clearing for agriculture, and fuel-wood (Vainio-Mattila 1999).

A previous study by Muya (2007) shows a wide use of wild-food resources in the local diets of the people, which demonstrates that the Wasambaa have a great deal of indigenous knowledge of their local environment, including wild plants, insects, and animal resources. They are also knowledgeable about predicting climatic patterns, cropping practices, green manuring, and energy extraction. The rich flora and fauna existing in the area provide a vast array of edible and useful plants and animals that are gathered for a wide variety of purposes, including food, building materials, crafts, medicinal use, and for religious purposes. These indigenous African practices and the knowledge that they represent, have been acquired over many generations and are deeply ingrained in the local culture of the people (Partap 2001).

METHODOLOGY

Taking into consideration the community-based nature of indigenous knowledge-systems

(IKS) and the research problem, the study followed a participatory and case-study approaches. According to Reason and Bradbury (2001) the main purpose of participatory techniques is to enable researchers, development practitioners, government officials, and community members, including their knowledge-holders to work together. The focus in this approach is on promoting a change of mindset and relationships between those who conduct research and those who are research subjects. The crucial shift is from doing research on people to doing research with people. In this study, community knowledge-holders and IKS practitioners (both men and women) involved in the harvesting and use of wild and semi-domesticated food resources, were actively involved in the whole research process, from research design, including the selection of the study cases, to the interpretation of the research findings. Their views and participation were sought at all stages of the research process. Moreover, in order to ensure their maximum participation, the study was conducted in the local language, Kisambaa.

Polanyi (1962) emphasizes the importance of language as a tool of communication including research. It serves as a vehicle of knowing (following the expression of language as a 'vehicle of thought'), and carries meanings which we ascribe to the words. Language allows for articulating knowledge and for integrating various dimensions of knowledge coherently. Conrad (2002) describes a case-study research strategy in the following words:

Rather than using large samples and following a rigid protocol to examine a limited number of variables, case study methods involve an in-depth, examination of a single instance or event. They provide a systematic way of looking at events, collecting data, analyzing information and reporting the results. As a result the researcher may gain a sharpened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research.

The three study communities of Mbuzii, Vuga, and Soni, in Western Usambara, formed the units of analysis. In consultation with the community leaders and knowledge-holders, a purposive sample of 80 respondent community members (50 women and 30 men) participated in the study.

Participation of women in the sample was important because, according to the community leaders, women were considered the main knowledge-holders in matters of harvesting, marketing, and consumption of wild-food resources, especially wild, leafy vegetables. Berelson (2000) defines a purposive sample as:

A non-representative subset of some larger population, and is constructed to serve a very specific need or purpose. A researcher may have a specific group in mind, such as traditional healers. It may not be possible to specify the population. They would not all be known, and access will be difficult. The researcher will attempt to zero in on the target group, interviewing whoever is available.

A combination of data-collection methods were used in order to cross-reference the various sources of information, and in obtaining a comprehensive understanding of the research problem. It also allowed the researchers to interact with the community knowledge-holders on different platforms. Qualitative research methods, such as key informant interviews, focus-group discussions, and participant observations, formed the core of the data-collection methods; while a questionnaire was administered to the research sample in an effort to collect supportive quantitative data.

Key informants such community leaders, farmers (both men and women), hunters, fishermen, market women, and so on, were interviewed at all levels of the research project, as a means of gaining in-depth, qualitative information on the research problem. The key informants were interviewed in order to obtain information on the general profile of the study communities, the local environment, occupations of the residents, problems of concern within each community, and the use of local wildlife food resources. In addition, in consultation with the community leaders, three households in each village were selected from various income groups, based on the community perspective: indigent, middle-class, and affluent. Semi-structured interviews were conducted with the heads of these households inquiring about wild-food utilization. The information included gathering practices, knowledge of wild-food patterns, the ways in which wild foods were used, specific wild-food management practices, such as transplanting and propagation techniques.

Focus-group discussions were also conducted with randomly-selected groups of 6-10 community members. A focus group discussion is a semi-structured interview in which the discussant knows in advance the topic to be covered. The people included were known to have been involved in specific experiences related to the research problem, that is use of wild-food resources (Reason and Bradbury 2001). The local environment surrounding the study communities was also surveyed, in order to record the sites of forests, croplands, and water resources.

Qualitative data in the form of audiotaped interviews were transcribed and translated from the local language, Kisambaa, into English. Interview and observation notes were typed, and a content analysis conducted. Burns (2007) defines content analysis as a systematic analysis of the content, rather than the structure of a communication, such as a written work, speech, or film, including the study of thematic and symbolic elements which determine the objective or meaning of the communication. Quantitative data in the form of questionnaires were checked and coded. Data was analysed using SPSS/PC+ (Babbie 2004).

RESULTS AND DISCUSSION

The Indigenous Community Diet Patterns and Habits of the Study Communities

The three study villages, namely, Mbuzii, Vuga, and Soni, in the Western Usambaras, were fairly typical of the area, in which farming, hunting, and gathering of wild foods was still practised. The predominant diet of the local people consisted of a starchy staple food made from maize or cassava flour, and a side-dish of stew. The starchy staple food was usually served as a form of stiff porridge "ugali", when made of maize, or "bada" when made of cassava and/or cooking bananas. The stew made from a wide variety of local wild and semi-domesticated plants, insects, and animals, was usually prepared separately. These food resources were found and collected in the surrounding areas, such as roadsides, fields, irrigation canals, and swamps, depending on the season. Many of the households also grew a variety of domesticated food plants and fruits in their residential compounds. They raised livestock such as cows, ducks, and chickens. Taking into consideration the changing

socio-economic conditions, wild foods were increasingly considered an important course, rather than as a supplement to the local diet; hence such food was eaten daily, in combination with the staple foods. They were also a source of valuable nutrients, adding diversity to a potentially monotonous diet.

The study observed that lifestyles in the study communities were changing rapidly, as the villagers were being affected by foreign influences. There was an increase in development projects, and a rising monetization of the economy which had begun to influence the community lifestyles in a variety of ways. Local resources, which were predominantly converted to home use, were being used as income generators. At the same time, as observed by other researchers (Babier 2002), the abundance of the indigenous natural resources was declining, owing to the national economy, including forestry and other environmental programmes which did not emphasize the importance of preserving local species. The local economy emphasized cash-cropping, wage-earning and out-migration of the youth.

The study found that in the study communities, wild-food resources were recognized and perceived as useful within the context of the environmental and social reality of the local people. Community knowledge accumulated over generations on local food plant and animal species, especially on those species that were commonly consumed, reflected the way community members interacted and learnt from their local environment. The study revealed that the most important families of leafy plants consumed in the study area were Acanthaceae, Amaranthaceae and Asteraceae. The most favoured and used species indicated by both respondent women and children (girls) were, in the Kisambaa language, according to preference ranking *Mbwembwe* (*Bidens pilosa* L.), *Ngereza* (*Galinsoga parviflora* Cav.), and *Bwache* (*Amaranthus spinosus*). These were easy to find, abundant, and palatable. The taste of *Mchicha* (*Amaranthus hybridus* L.) was highly appreciated and hence commonly used. Another leafy vegetable was *Mchungu* (*Launaea cornuta*). The wild animal species commonly consumed in the study area included two types of small antelope and two types of rodent (*Thryonomys* spp.). Children, especially boys, were actively involved in hunting these rodents and other small game. The

other types of small game hunted included *digi digi* or *paa* (*Rhynchotragus* spp.), *funo* (a species of duiker, *Cephalophus* spp.) and *kuhe* (*Cricetomys gambianus*).

A diversity of habitats was utilized, including crop-fields, forests, ponds, streams, swamps, and other water reservoirs in harvesting wild-food resources. Wild foods were used as condiments; they often contributed to the distinctive flavour of the local diets. Wild foods entered the household in a variety of ways, including family farming activities; procurement through gathering, fishing, and hunting by household members; gifts from relatives and neighbours; exchanges with other individuals in the village or nearby villages; or purchased on local and neighbouring markets. As a result, many individuals contributed to the household's food consumption of these wild-food resources, namely, men, women, and children. All had some involvement beyond consumption, in the procurement of wild-food resources.

Shared Traditions, Beliefs and Perceptions on Wild-Food Resource Use

The study found that over 90% of the study participants reported eating or using wild-food resources at the time of the study or having done so in the past. They liked to eat wild foods often, preferring them to cultivated foods. Only 5% of the participants reported that they did not like wild foods; 2% of them felt that they liked wild foods as much as cultivated food. The participants believed that wild foods were necessary, constituting important food items for everyday life. An analysis of the in-depth interviews and focus group discussions revealed that males (67%) and females (69%) did not differ much in their attitude towards the use of these wild-food resources. They both preferred to eat wild foods rather than cultivated food.

A number of reasons were given for the preference for wild foods over cultivated food. The most common reasons were related to food qualities: taste; ease of obtaining, and safety, as well as economics. The issue of taste was quite important for a number of reasons: wild foods were considered more delicious than cultivated food. The respondents indicated that wild foods were fresher, and tasted more natural and sweeter than cultivated foods, particularly those sold on the markets. This was partially attributed to the in-

herent qualities of wild foods, as well as to the fact that they could be gathered and consumed directly afterwards. The respondents also indicated that wild foods were better because they grew naturally, had greater nutrient value, especially vitamins and protein, and less fat. The study found that these specific nutrition-related characteristics, which some of the respondents ascribed to wild foods, were derived from information obtained from various public-health and nutrition-education programmes (National Bureau of Statistics 2008).

Moreover, the preference for wild foods was attributed to ease and safety. It was indicated that wild foods were easy to obtain - people did not have to spend much time or energy cultivating them. They grew naturally, needing no cultivation. Some of the respondents considered wild foods safer than cultivated foods, assuming that only cultivated foods were vulnerable to contamination by chemical fertilizers or insecticides. Wild foods were regarded as clean, coming from a natural environment.

The other reasons given for the preference of wild foods were economic in nature: wild food were considered better than cultivated foods, in that people did not have to pay money for them. People were able to save money by eating locally available wild foods. The participants felt that most of the community members being poor, they relied on wild-food resources, because they could not afford to spend much money on other types of food. However, they also expressed that they did not look down upon people who relied on wild foods. The majority of the participants (over 80% of both men and women) acknowledged that even rich people in the study communities consumed wild foods as a way of saving money by utilizing food resources that were locally available. Consequently, wild foods were not stigmatized as "food of poverty."

On the issue of procurement patterns, the study found that these were affected by time factors. Gathering was usually conducted in conjunction with other activities, such as gardening, agricultural-wage labour or tending cattle, rather than as a sole activity. This depended on both the seasonal availability of the food, and the seasonal workload of the community members. For instance, during the rainy season, two factors affected the length of time spent on gathering wild-food resources. First, owing to the abundance of such food, less gathering time

was required for gathering. Secondly, during this period, people were actively engaged in farming activities, therefore they tended to gather wild foods which were close at hand. Similarly, for those households moving into cash-oriented farming, the opportunity of gathering wild food was limited. Thus, the study revealed that, during the rainy season, 55% of the respondent women spent an hour or less gathering wild food resources. On the other hand, in the cold season, when there were fewer farming activities, 68% of the respondent women indicated that they spent one to two hours gathering wild foods. More time was also spent gathering wild foods during the dry season as a result of scarcity.

The study discovered that the selection of wild foods was not only influenced by time constraints and preference, but also by attitudes towards the identity of individuals who were known to consume the wild foods. Personal identity and food consumption were linked. The respondents expressed a variety of opinions on individuals who consumed wild foods. These associations both consciously and unconsciously affected the selection and use of the wild foods within the community context. It was indicated that there was a belief that wild foods were essential for the indigent. Respondents indicated that the poorer community members depended on wild foods for survival, hence had more experience in obtaining them, and were very knowledgeable about how and where to obtain them.

The respondents also expressed the view that the indigent members of the community exchanged wild foods for other food items such as maize, bananas, rice, and so on. They stated that they did not look down on people who gathered wild foods. In fact, they admired them, considering them hard-working in promoting the survival of their respective households. Varying views were expressed on the consumption of wild foods by the affluent households in the study communities. Some respondents argued that rich households consumed more wild foods than poor ones because they had money to buy them when they were not easy to obtain, or when they were too busy to gather them themselves. Others stated that wealthy households consumed more wild foods than the indigent, because, unlike the poor who had to engage in wage-labour for survival, wealthy individuals had time to obtain non-domesticated foods.

During focus discussions and in-depth interviews the study was interested in establishing the way in which urban people viewed the use of wild foods. The respondents were of the view that urban people liked non-domesticated foods, and were often eager to purchase them as ingredients for specific dishes, or as snacks. They had the opinion that wild foods had a higher market value; they sold better than domesticated foods, thus brought them better earnings than domesticated food. However, 3% of male and 4% of the female participants expressed a different opinion from the general view by stating that people in the urban areas of Tanzania had a poor attitude to the consumption of wild foods. They tended to look down upon rural people who ate wild foods or thought that wild foods, especially insects and some wild animals were not clean, and were disgusting. The following section presents and discusses the respondent community members' variation of knowledge of the local wild-food resources.

Community Knowledge about Indigenous Wild-Food Resources

The study wished to elicit whether there were any variations in the community knowledge of wild-food resources. The study found that, although the majority of the respondents (63% men and 72% women) expressed preference for wild foods continuing to harvest wild-food resources, there were variations in knowledge about them. An odds ratio which interprets differences between two population proportions or possibilities was employed in estimating how frequently one population identified a wild food correctly compared with another (Identification test). The knowledge test was conducted so as to measure recognition, culinary knowledge, consumption, procurement, other uses, as well as the transplanting and horticultural techniques. The study first compared men and women, then compared adults and children, in terms of their ability to identify items in the wild-food test. In the analysis, the wild-food items were grouped into categories (plants, fish, and insects). The odds-ratio analysis showed that, women were more likely than men to be able to identify plants (1.38 times), insects (1.38 times) and fish (1.07 times).

Among children, girls were more likely than boys to identify wild plant species correctly (1.17

times), and insects correctly (1.80 times). However, girls recognized fish and wild game animals less often (0.60 times). When the children and the adults were compared on their ability to identify the wild items, the odds ratio showed that adults were 1.31 times more likely than children to identify plants and 2.35 times more likely than children to correctly identify insects. However, the adults were less likely to identify fish correctly (odds ratio = 0.78). A total of 20 plants were used in the "attitude and knowledge" test. In general, women and girls were better able to identify wild food than their male counterparts, especially wild-food plants, being responsible for collecting them for household needs. Girls were 1.07 times more likely to identify wild foods than boys, and adult women were 1.34 times more likely than men to correctly identify all categories of the wild-food resources.

Conte (2004) and Timothy (1999) state that retention and loss of knowledge of local non-domesticated resources is an issue of importance to researchers who are concerned with maintaining biological and cultural diversity, and ethno-biological knowledge; and those interested in understanding the way in which culture is expressed and rendered meaningful. An examination of research data showed that gender and age were factors related to differences within the communities in terms of knowledge of local wild-food resources. The finding is similar to past studies conducted in the area which showed that, when individuals from different rural communities in Western Usambara were compared, researchers also found that in almost all age groups women scored slightly higher than men on a test of wild-food plant knowledge.

In their sample of males and females (10 to over 80 years of age), researchers found that there was a general tendency for scores to increase with respondents' age until about 70 years, when scores of men showed a sharp decline. They further found, in marked contrast to scores of rural populations, schoolchildren, all of whom were younger than 30 years old, scored low.

The study argues that the observed variations in knowledge of wild food resources, both within and between communities and groups of individuals were to be expected, men and women utilizing and defining the environment differently. The division of labour that occurs in agricultural communities leads to differentiation in

work patterns, contact with natural resource areas and the procurement of the resources themselves. Moreover, the fact that children could have less familiarity or local knowledge of wild food resources than elders was also not surprising. They had had less time to accumulate information, and fewer life experiences. They were often not as involved as adults in resource production, harvesting and utilization.

Additionally, as adults are pulled into wage earning activities outside the village, opportunities for communication of information of indigenous knowledge between the adults and the children also decreased. However, the variations in knowledge about the wild food resources should not be accepted lightly. The loss of indigenous African knowledge among many subsistence-oriented African communities on the continent has been widely noted. For example, Modise (2008) observed that knowledge of wild food plants among younger people in South Africa was seen to be very poor. Similarly, the older community members in the study expressed this concern about the loss of knowledge among the younger generations. They complained about their children and grandchildren not being interested in learning about the procurement and preparation of wild foods for household needs.

CONCLUSION

The findings revealed the significance of wild food resources in the dietary practices of the study areas in Tanzania. Local wild-food resources still contributed to the taste, texture and odour of traditional cuisine of the people. The loss of indigenous practices and knowledge was owing to new patterns of living, including introduction of cash economy, western values and education. Adults were pulled into the cash economy including wage-labour outside the rural communities, and hence had limited time to impart their knowledge to the younger generations. The youth were increasingly attracted to the trappings of the urban areas and western culture, hence were less interested in African indigenous knowledge-systems. The study also showed a vital connection between gender and age. Women and adults knew more about wild-food resources thanks to their practical involvement and experience of these indigenous practices. Women demonstrated a greater knowledge of wild

foods than did men in terms of recognition, gathering-knowledge, preparation and consumption knowledge, and uses of wild-food resources.

The respondents (both men and women) indicated awareness of and concern about the potential loss of the indigenous knowledge on wild-food resources. They expressed a desire to preserve this knowledge as well as the wild-food resources for the future generations, some species of the wild foods already being rare.

RECOMMENDATIONS

The study recommends the following: transplanting of rare species; decreasing the amount of wild food gathered for sale; working with government and non-governmental officials in developing conservation programmes; willingness to comply with laws and regulations that would protect indigenous species and habitats; and seeking to develop educational programmes directly targeted at children in schools and local community; documentation of indigenous knowledge from the perspective of the community knowledge of these resources including their utilization, policymakers, and development agencies, should devise ways to integrate the indigenous knowledge into the formal education system, incorporating it into relevant developmental projects; researchers and educators should work with community knowledge-holders in developing educational resource material such as illustrated pamphlets or monographs on local wild-food resources for schools and public libraries.

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