Perceived Factors Affecting Consumption of Indigenous Foods in Selected Hotels in Nakuru County, Kenya

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Abstract

The main objective of this study was to investigate the perceived factors affecting consumption of Kenyan indigenous foods in Nakuru County. The study was carried using descriptive survey design. The sample size was 140. Purposive sampling was used to select the hotels while stratified random sampling was used to select respondents. Questionnaires were used to collect primary data, while secondary data was obtained from journals, books and hotel records. Descriptive and inferential statistics were used to analyze data. From the results it was established that the frequency of eating Kenya indigenous food varied between the different age brackets ($X^2 = 22.037$, df=4, P=0.000). It was also noted that there exists a positive relationship between consumption of indigenous food and sensory characteristics of the food.

Key Words: Consumption, Hospitality, Indigenous Foods, Nakuru, Kenyan

Introduction

Kenyan indigenous foods are many and varied. These foods have always had a special place in many African cultures, as they are an integral part of the cultural artefacts. The indigenous foods are culturally known, are rich in micronutrients and can significantly enhance the bioavailability of micronutrients in staple foods when consumed together. These foods also have the added advantage of being quite acceptable to and in all local communities. However, increasing urbanization has had consequences for the dietary patterns and lifestyles of individuals. The adverse dietary changes include shifts in the structure of the diet towards a higher energy density diet with a greater role for fat and added sugars. These dietary changes are compounded by lifestyle changes that reflect reduced physical activity at work and during leisure time. At the same time, poor countries continue to face food shortages and nutrient inadequacies (Maundu, 1994). Changes in diets, patterns of work and leisure-often referred to as the "nutrition transition"-are already contributing to the casual factors underlying non communicable diseases even in the poorest countries. Moreover, the pace of these changes seems to be accelerating, especially in the low-income and middle-income countries.

Consumption of indigenous foods is the most sustainable way of reducing and controlling micronutrient deficiency in resource poor communities because the diversity of indigenous foods

permits year round production and availability and provides a diet rich in micronutrients. In order to increase the sale of traditional foods, the commercial catering has included traditional food in their menu at fair prices (Mbagaya *et al*., 2000). Promoting healthy diets and lifestyles to reduce the global burden of non communicable diseases requires a multispectral approach involving the various relevant sectors in the society. Moreover, food strategies must not merely be directed at ensuring food security for all, but must also achieve the consumption of adequate quantities of safe and quality foods that together make up a healthy diet.

Many indigenous foods are rich in micronutrients and can significantly enhance the bioavailability of micronutrients in staple foods when consumed together. Their consumption in simplified diets is confined to rural areas where small scale farmers grow them. However the limited consumption leaves communities more vulnerable to food shortages and nutrient deficiency disease where increased dietary diversity and consumption of indigenous food crops offers a tremendous tool for addressing the problem of food security. Many people in Kenya are undernourished especially children being weaned and pregnant and lactating mothers have nutrient deficiency diseases such as night blindness, scurvy and rickets which are common in rural areas and slums. To counter these nutritional problems, it is important that most commonly consumed foods should be diverse and nutritious (Mathenge *et al*., 2004). In view of the increasing food insecurity levels and diet related chronic diseases due to inadequate access to quality food, concerted efforts should be made to document the consumption of indigenous food in order to provide consumers with the potential benefits. The introduction of more traditional foods in urban areas in the form of vegetables, legumes, root and tuber crops and fruits will reduce the heavy dependence on cheap carbohydrates sources which are likely to have positive impact on people especially poor urban dwellers. The objective of this study was to establish the effect of sensory characteristics and personal characteristics on consumption of indigenous foods in Kenya.

Indigenous Foods in Kenya

A majority of Kenyan communities are known for cultivating several types of indigenous food crops. The commonly grown crops include:

Indigenous legume food crops: Legumes are plants that fall in the family Fabaceae. They possess the following characteristics; retention of seed of the pod, larger seeds, and thin seed loafs, stiffer stems and reduced toxins. Legumes contain high levels of protein, micronutrients and function relate to energy density glycemic control, oxidative stress and immune stimulation. Examples include Cowpeas, Indian Beans, Pigeon peas (Maundu et al., 1999, Duke, 1983).

Indigenous cereals: Crops such as finger millet and sorghum have been local staples for many communities in Kenya. These indigenous cereals are now under siege from exotic crops such as maize, rice, wheat and barley (Single and Axtell, 1973, Hulse *et al*., 1980). Finger millet is the main food crop for many people especially in dry areas. The seeds can be cooked whole, ground and used as floor (Facciola *et al*., 1990). It is also used in porridge making. The grain is rich in protein, fat and minerals than rice, maize or sorghum (Duke *et al.,* 1983). Finger millet when consumed has high levels of calcium, phosphorus and vitamin B complex. Finger millet is considered as wholesome food especially for diabetics (Duke *et al.,* 1983).

Indigenous Root and Tuber: Root crops can adapt to disease environment partially as a result of their agronomic characteristics. Roots crops are often thought of as starchy staple that provide low – cost energy. The focus herein is on four major root and tuber crops namely; Cassava (*Manihot esculenta*), sweet potato (*Ipomea batatas*), yams (*Dioscorea spp*) and arrow root (*Maranta spp*).

Root and tuber crops are second only in importance to cereals as a global source of carbohydrates. They also provide some minerals and essential vitamins.

Indigenous Vegetables: African leafy vegetables present one of the richest sources of biodiversity in African food systems and a potential rich source of beta-carotene (Chweya *et al*., 1999). Vegetables diet make modest contribution to improving Vitamin A status which results in significant increases in serum levels of lutein, antioxidants, xanthophyll which offers protective benefits in relation to ocular disease as well as cardiovascular disease and cancer. They are increasingly recognized as of importance to health. About 200 indigenous plant species are used as leafy vegetables in Kenya and they have several advantages and values that include high micronutrient content, medicinal properties and contribute to food and nutrition security and income generation (Schippers *et al*., 2002; Mnzaka *et al*., 1997). African leafy vegetables contain high levels of vitamin A, vitamin C, Iron, Calcium and protein and are a valuable source of nutrition in rural areas where they contribute substantially to protein, mineral and vitamin intake (Abakutsa *et al.,* 2003).

Indigenous Fruits: Most of Africa's native fruits are wild, rarely cultivated or maintained or improved and play a crucial role in Africa's diet. Most of the fruits are useful sources of nutrients particularly vitamin C and often better carotene pro-vitamin A. Fruits provide minerals, which are of special value to children who need these elements to build teeth, blood, muscle, bone and brain. Examples of indigenous fruits include Carissa, marula, guava and kei apple, which contain more vitamin C than the average orange. Tamarind pulp is good source of both vitamins and minerals. The nutrition floor from baobab fruits provides a simple way to add protein, carbohydrates, vitamins and minerals to other foods, even in remote areas (NAS, 2008).

Sensory characteristics of indigenous foods

This refers to those characteristics of food which can be identified by use of our senses such as appearance, smell, feel, taste and sound of food (Sethi, 2008). The part that odours play in food acceptability is clear from the fact that very often odours put people off a food even without them tasting. Favourable tang/odour generally results from subtle combinations which are delicate and not strong, a fact important to those involved in food production activities. After the tang is accepted the next sensory test of quality is the taste, that is, the reaction of the taste buds to the food, determining whether it is sweet, sour, salty or bitter. Acceptability of the food therefore depends on how well they harmonize to make the net sensation pleasurable (Sethi, 2008).

Several compounds present in foods are responsible for flavour and aroma. These substances are very sensitive to oxidation and high temperatures, and tend to interact with each other. It is for this reason that flavours change with time and temperature. With very few exceptions, flavours generally deteriorate with handling, processing and storage, and therefore no food tastes as good as fresh food. Flavour acceptance or rejection, however is also influenced by people's cultural, regional and religious backgrounds. For instance, a person from western, far eastern or Muslim countries would relish the delicate flavour of beef, as against an Indian who would consider the tang unacceptable simply because the two have different eating habits and experiences with food. These differences have given rise to specialty menus such as Chinese, continental, vegetarian, South Indian and so on, to suit the tastes and values of different people and account for regional and cultural preferences. Large food service establishments offer choices from all these types of menus, while smaller ones cater to single specialties inviting those who would relish particular flavours (Sethi, 2008). Flavour relates to the combined sensation of odour or aroma, taste and the feel of food in the mouth (Sethi, 2008).

Texture of a food can be determined by both perception and mouth-feel. It varies from food to food and in the same food too when different methods of cooking are used. For example, a baked pudding will have a firmer texture than the same pudding if steamed. Texture also depends on the structural composition of food and can be described as rough, smooth, grainy, coarse, fine, crisp, viscous, spongy and heavy. For accurate descriptions sometimes analogues are used to describe texture. For instance, a custard may be described as creamy indicating that it is as smooth flowing and viscous as cream, and not because it has cream in it. Also, cereal preparations like rice of semolina puddings cooked beyond the gelling point may be described as gluey. People accept or reject foods which do not agree with their own mental images regarding shape, size, viscosity or sheen. For instance, rice which is overcooked and therefore sticky instead of grainy will not be accepted if customers have a choice (Sethi, 2008).

Foods get their colour in many different ways i.e. from natural plant and animal pigments, from the effect of heat on sugar in foods, chemical reactions between sugars and proteins, the oxidation of chemical compounds present in foods and synthetic colorants. Pigments in foods attract people because of the many different colours they provide in their natural, cooked or processed forms especially through plant and animal foods. Fruits and vegetables contain different kinds of pigments which when combined diligently impart the aesthetic qualities to foods. Basically, foods tend to change their colours with the degree of handling, exposure to air, sunlight and different temperatures used in the process of cooking. Colour is also associated with the degree of ripeness, flavour, taste, concentration of food and the degree of doneness when cooked, all of which determine acceptability (Sethi, 2008).

Methodology

This research was conducted in Nakuru County, Kenya. The study used descriptive survey design. The target population was 350 respondents consisting of managers and customers of selected hospitality establishments. The sample size for the study was 140 respondents. Purposive sampling was used to select the hotels whereas stratified random sampling was used to select the respondents. Primary data was collected from the field using questionnaires whereas secondary data was found from both published and unpublished materials such as books, journals, workshop proceedings and internet. Data obtained was coded and analyzed through descriptive and inferential statistics by the help of statistical packages for Social Sciences (SPSS) Software and Microsoft excel.

Results

Demographic Characteristics

The study established that the 51% of the respondents who took part in the study were female whereas 49% were male. Nine per cent of the respondents were aged between 11-20 years, 68% aged between 21-30 years and 14% were aged between 31-40 years. With respect to the marital status, the unmarried accounted for 63% and those married represented 28% of the respondents involved in the study. The highest level of education attained among the respondents was secondary (34%), college graduates (54%) while the university graduates represented only 12% of the study respondents. The rest of the demographic data is as shown in Table 1

Table 1: Demographic Characteristics

CHARACTERISTICS	CATEGORY	PERCENTAGE (%)
Gender	Male	49%
	Female	51%
Age	11-20	9%
	21-30	68%
	31-40	14%
	41-50	6%
	>50	3%
Marital status	Single	63%
	Married	38%
	Divorced	9%
Education	Secondary	34%
	College	54%
	University	12%
Residence	Urban environment	72%
	Rural environment	17%
	Peri-urban	11%

Sensory characteristics of indigenous foods

From the finding (see figure 1) 83% of the respondents agreed that taste influence consumption of indigenous foods while 17% disagreed. Sixty nine per cent of the respondents were of the opinion that the smell of the food influences its consumption while 31% were of the contrary opinion. With regard to other sensory characteristics, 63% of the respondents indicated that their consumption of indigenous foods is influenced by flavour, odour and aroma. Forty nine per cent agreed that colour influences consumption of indigenous food while 51% disagreed. On the other hand 46% are influenced by ttexture while 54% felt otherwise. From the results it is evident that most of the consumers of indigenous foods were positively influenced by the sensory characteristics of foods. Sensory characteristics of food can be identified by use of senses such as appearance, smell, feel and sound of food and from the study results majority of the respondents were influenced by taste, smell, aroma, flavour and odour/tang. This implies that indigenous foods are tasty, flavourful and have favourable tang.

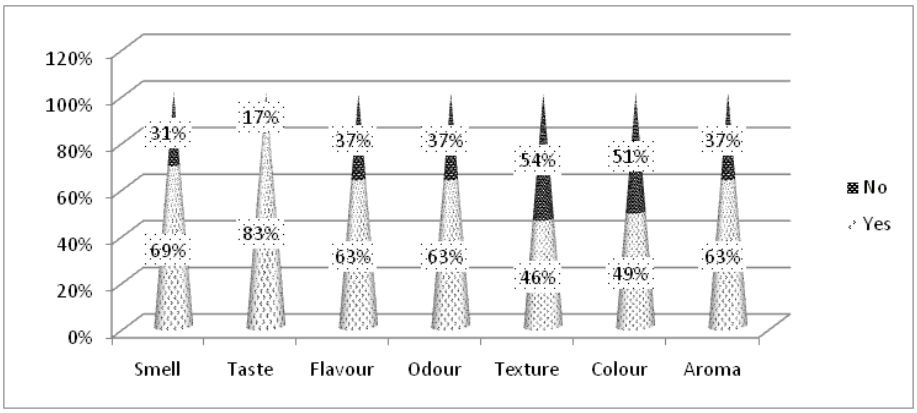

Figure 1: The sensory characteristics and their influence on the consumption of indigenous foods

Personal factors

The individual factors that affect consumption of indigenous foods included perceptions on nutritional value, health consciousness and medicinal value of the foods because of the lifestyle changes and emergence of diseases like cancer, diabetes, high blood pressure among others. From the findings, 57% agreed that they consume indigenous foods because of the nutrition value while 43% disagreed. Forty three per cent agreed that they are influenced by medicinal value of the food while 57% disagreed (Figure 2).

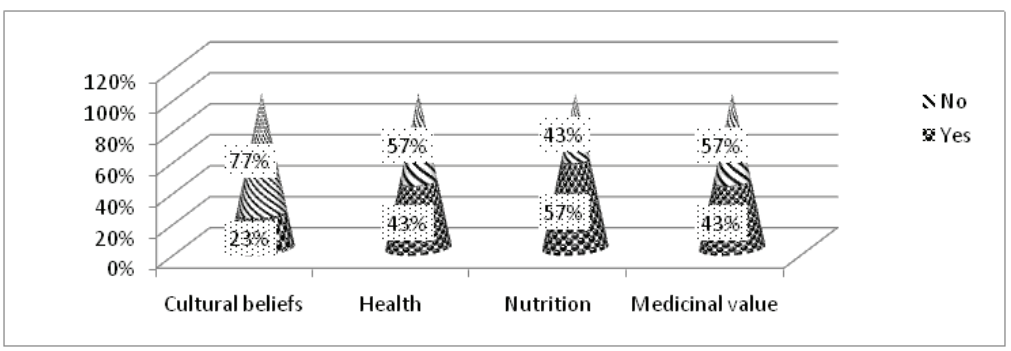

Figure 2: Personal factors that affect consumption of indigenous foods

Consumption of indigenous foods

Various factors concerning the consumption of indigenous foods were put forward and the respondents were required to state their level of consumption of indigenous foods. From the findings 100% of the respondents agreed that they buy indigenous foods. The findings on the frequency of consumption showed that 77% of the respondents often consumed indigenous foods

while 23% rarely consumed indigenous foods. Local people seemed to know the importance and contribution of indigenous foods in their daily diet. In contrast to the information that only rural people consume indigenous foods, urban people are also endowed with a deep knowledge concerning the use of indigenous foods. The consumption of indigenous foods seems more common and widespread in food insecure areas where a wide range of species are consumed. The results are shown in figure 3.

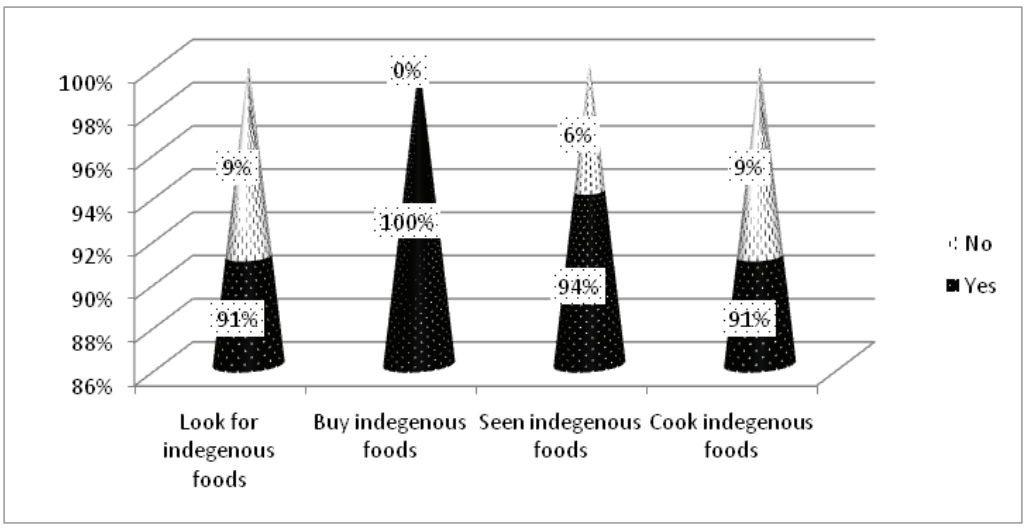

Figure 3: Frequency of consumption of indigenous foods

Hypothesis Testing

The study hypothesized that sensory characteristics do not significantly affect consumption of indigenous foods in Nakuru County. Simple regression analysis was used for testing hypothesis about the relationship between a dependent variable (Y) and one independent variable (X) and for prediction. The model adopted for this study was thus given as

$\gamma = \alpha + \beta X + \mu$

γ – Consumption of indigenous food
X - Sensory characteristics of food
- Slope parameter
α – Constant term
μ – Error term

In this study, the dependent variable was consumption of indigenous food while the independent variable was the sensory characteristics of the indigenous food which was made up of several sub-independent variables namely; - smell, taste, flavour, tang/odour, texture, colour and aroma of indigenous food. The responses of the sub-independent variables were averaged to devise the main independent variable referred to as sensory characteristics of indigenous food. A regression of Y against X was done and the results are summarized in tables 2 and 3.

From the model, it can be noted that there exists a positive relationship between consumption of indigenous food and sensory characteristics of the food, based on the positive coefficient that relates the two variables.

Table 2: Regression results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95% Confidence Interval for B		Correlations				
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	X1	.554	.070	.615	7.955	.000	.416	.692	.635	.626	.610	.982	1.018

a Dependent Variable: Y

b Linear Regression through the Origin

The coefficient $\beta^{x}_{1} = 0.554$ is the sample parameter estimate of the population parameter β_1. It shows that when sensory characteristics of indigenous food changes by a unit percentages general acceptability of the indigenous food changes by 55.4%. It follows then that a unit increase in the sensory characteristics of indigenous food will improve consumption of the food by 55.4% and vice versa. A unit increase in sensory characteristics of indigenous food would encompass all the sub-variable that make it up including smell, taste, colour, texture, flavour and aroma of the indigenous food.

In order to test the stated hypothesis, statistical significance of the parameter estimates was established and thus enabling the researcher to establish the significance of the variable in the model. The 95% confidence interval for the estimation of β ranged between 0.416 and 0.692 for the lower and upper bound respectively. The standard error of the estimate stood at 0.070. This is a small value which implies more reliable prediction of $\hat{\beta}_1$. It is the estimate of how much the regression coefficient will vary between samples of the same size taken from the same population and use them to calculate the regression equation.

The sample estimate $\hat{\beta}_1 = 0.554$ was found to be statistically significant at 1% level with 139 degrees of freedom and. Clearly, sensory characteristics of indigenous food are a significant determinant of consumption of various indigenous foods. Since the two variables relate positively, then to improve the consumption of indigenous food, the sensory characteristics of the indigenous food has to be improved. In essence, all the sub-variables making up sensory characteristics of food have to be improved including colour, texture smell, taste and aroma. With this result, we fail to reject the hypothesis that sensory characteristics of indigenous food significantly affect the consumption of indigenous food.

In this research, R^2 was found to be 0.425, which implies the investigated factors explain 42.5% of the variations in the consumption of indigenous foods. The rest of the variations (57.5%) can be attributed to other factors not investigated in the current study. The Durbin-Watson statistic detects the presence of autocorrelation thus in this case the value of 1.286 falls within acceptable limits as it is more than 1. The model summary in table 3 provides further information.

Table 3: Model Summary

Model	R	R Square(a)	Adjusted R Square	Std. Error of the Estimate	R square change	F change	Sig. F change	df1	df2
1	.652(b)	.425	.407	.22783	.425	24.100	1	139	.000

a. For regression through the origin (the no-intercept model), R Square measures the proportion of the variability in the dependent variable about the origin explained by regression. This cannot be compared to R Square for models which include an intercept.

b. Predictors: X1
c. Dependent Variable: Y
d. Linear Regression through the Origin

Conclusion and Recommendations

From the study it was established that urban people frequently consume indigenous foods. The people know the importance and contribution of indigenous foods in their daily diet. In contrast to the information that only rural people consume indigenous foods, urban people are also endowed with a deep knowledge concerning the use of indigenous foods. The consumption of indigenous foods seems more common and widespread in food insecure areas where a wide range of species are consumed. The study also established that hotels have included indigenous foods in their menu and people are consuming them as they are aware of their nutritional value thus it is evident that indigenous foods should never be viewed with a negative attitude. It is recommended that there is need for promotion of cultivation of indigenous foods and its consumption.

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