



# Evaluating the nature of food served in selected prisons in Kenya

Dr. Jacqueline C. Korir  
School of Tourism, Hospitality and Events Management  
Moi University – Town Campus  
Eldoret-Kenya  
Email: [jtepheny71@gmail.com](mailto:jtepheny71@gmail.com)

## Abstract

Catering in Kenyan prisons is an issue of great concern to the government and the entire society as it results in an increase in bad health and hardening of the behaviour of prisoners. The purpose of the study was to evaluate the nature of food served in Kenyan prisons. Purposive sampling and simple random sampling were used to select five prisons in Kenya and the research respondents respectively. The prisons selected were Eldoret men, Ngeria, Eldoret women, Kamiti Maximum and Langata Maximum women prisons. The sampling frame comprised of a population of 5,830 prisoners. A sample size of 387 prisoners was used in the study. Data collection instruments included structured questionnaires, participant observation schedules and conversations. Descriptive statistics was used to analyze the data. The findings indicated that the prescribed menus were not served and that the nature of food was undesirable and lacked any flavouring ingredients. The conclusion was that the quality of food served was poor hence, the need to overhaul and revamp the Prisons catering services. In addition, the Kenya Prisons Service Department need to urgently set up a catering department to professionally monitor the management of catering services in all prisons.

**Keywords:** Food, Nature of Food, Prisons, Kenya Prison Act Cap 90, *Ugali*.

## Introduction

Prisons globally work on a very limited budget (Davis, *et al.* 2004). The diet for inmates is based upon fixed weekly quantities of specific named food commodities with a small weekly cash allowance per head for fresh meat. There is also a further separate weekly cash allowance per head for the local purchase of dietary extras of which a proportion must be spent on fresh fruit. The catering services within the prisons is the responsibility of the prison governor with delegated responsibility being given to a catering officer. However, much of the actual cooking and service is being done by the inmates themselves. Chabari and Kibosia, (2007) noted that there is need to address food and catering services as it has an impact on the quality of prisoner's health in Kenya. Furthermore, poor nutrition is a major factor leading directly to poor health and causes many diseases among the Kenyan prisoners. Accordingly, it should be noted that the nature of food eaten may not be bad *per se*; rather the environment under which it is prepared, the facilities used to prepare it and the manner in which it is prepared make the food less nutritious and hazardous to health. Additionally, Beckford and Gilliat (1998) stated that prison food can be repetitive despite a variation in menus on offer. This occurs in part because of poor preparation resulting in meals in which soggy vegetables and overcooked meat, for example, are indistinguishable from one meal to the next. Some institutions attempt to overcome the problems associated with the provision of food by making cooking facilities available to inmates.

The Prisons Act Cap 90 of the Laws of Kenya connote the mode and sequence of events at the prisons and particularly the administration of food to prisoners, administration of the penal diet of prison officers and the scale of diets for all prisoners respectively. The Prisons Act Cap 90 is the reference point in this study since it is the creator of the specific food menu items and frequency of



consumption for the prisoners. Specifically, sections 49, 51 and 118 of the Prisons Act Cap 90 set out the administration of food to prisoners, administration of the penal diet by prison officers and the scale of diet for all prisoners respectively. The Prisons Act Cap 90 also outlines the specific food menu items and frequency of consumption for prisoners.

### **Research Objective**

This research sought to evaluate the nature of food served to prisoners in Kenyan prisons and was based on the Hypothesis **Ho1**: Actual food served to prisoners differs from menu items contained in the Prisons Act Cap 90.

### **Prison experiences pertaining to food**

Phinney (2004) stated that in Iraq, prison food is rotten crawling with bugs, traces of rats and dirt. He claims that detainees at the Abu Ghraib prisoners near Baghdad were regularly given this kind of food to eat by a private contractor in late 2003 and early 2004. Rancid meats and spoiled food result in diarrhea and food poisoning. However, foul as the food was, there never was enough when the food did arrive; it was however often late and frequently contaminated.

According to Amnesty International (2005) cell-bound prisoners in Equatorial Guinea do not get sufficient food. Provision of food by the authorities was reduced from a cup of rice daily in December 2004 to one or two bread rolls a day, and since the end of February 2005 provision of any prison food has been sporadic, with prisoners reportedly going for up to six days at a time without any food.

Amnesty International (2005) reported that prisoners and detainees are dependent on food handed to prison guards by families. This means that foreign nationals and dozens of Equatorial Guinean political detainees arrested on the mainland particularly risk starvation because they do not have families in the country to support them. Stephen Bowen notes: 'Such near starvation, lack of medical attention and appalling prison conditions are nothing short of a slow, lingering death sentence for these prisoners.' The authorities must provide food and medicine and grant access to international monitors (Amnesty International, 2005).

### **Prison menus**

Trenton Prison meals served are similar to those consumed by many average American families (Bosworth, 2004). In addition, according to Donovan (1982), prison food is as good and nutritious as those that many American families eat on a daily basis. According to Donovan (1982), for inmates in the state's correctional facilities, a typical breakfast menu consists of cereal, toast, jam, jelly, doughnuts, coffee and fruit. Lunch may be spaghetti with meatballs, salad with dressing, bread or rolls, brownies and milk. And the dinner menu may show meat loaf with mushroom gravy, Spanish rice, buttered collard greens, bread and butter, jelly and milk. A typical menu from Long Lartin prison, a high security dispersal prison in Worcestershire, Britain which Flynn, .et al (1998) described as satisfactory consists of breakfast (boiled egg, toast, marmalade, or cereals, toast, or porridge, lunch (macaroni cheese or quiche or sausage rolls with potato/rice and bread) and tea (vegetable stir fry or roast pork and gravy, or braised liver and onions or French bread pizza).

Wyke (2007) noted that the harvested fruit (including grapes, peaches, cherries, strawberries and figs) and vegetables (including tomatoes, courgettes and aubergines) are incorporated into the prison menus. The prisoners even get 250ml of wine per day in a plastic bottle. With all this fresh organic produce prisoners often eat better than most citizens.



Glenna (2008) pointed out that in Uganda, prisoners eat *posho*, a maize-based starch food, bean soup, and unboiled water. The bean soup is only the liquid cooked with beans, not the beans themselves. Kyomya M. a medical superintendent of the main hospital at Luzira Prison situated in Murchison Bay, is of the opinion that the food was enough for energy but grossly inadequate for vitamins and minerals. In India, lunch and dinner typically include piping hot rice, two vegetables and a spicy lentil dish called *sambar* and buttermilk. A dessert is added on festival days and national holidays like Independence Day, and also once a week.

### **Sensory characteristics of food**

According to Sethi, (2008) sensory characteristics of food can be identified by use of senses such as appearance, smell, feel and even the sound of food. It is common that if food does not look good when served, it will be rejected even if it tastes good. Thus the appearance of food is important in acceptability which is largely contributed to ,by the colour and texture of foods selected and their presentation to consumers.

Sethi (2008) argues that food gets its colour in many different ways including from natural plant and animal pigments; from the effect of heat, chemical reactions, oxidation and synthetic colourants. Colours in foods attract people because of the many different colours they provide in their natural, cooked or processed forms. Fruits and vegetables contain different kinds of pigments which when combined diligently impart the aesthetic qualities of foods. Sethi, (2008) continues to note that depending on the composition of food, heat can affect its colour, flavour, texture and acceptability e.g. when a slice of bread is toasted, it turns brown. Once the appearance of food is good i.e. the eyes are satisfied with the quality of food, the sensory organs of the nose and mouth take over. According to Sethi (2008), flavour relates to the combined sensation of smell, aroma, taste and the feel of the food in the mouth.

Flavour acceptance or rejection, however, is 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 smell unacceptable simply because the two have different eating habits and experiences with food. The age-old proverb "*one mans food is another mans poison*" is so apt when dealing with food acceptance. These differences have given rise to specialty menus such as Chinese, continental, vegetarian and so on to suit the tastes and values of different people and account for regional and cultural preferences.

According to Sethi (2008), smell plays in food acceptability is clear from the fact that very often odour put people off a food even without their tasting it. Sethi (2008) states that odours can be described as pungent, minty, putrid, and so on. Pleasant odours generally result from subtle combinations which are delicate and not strong. Mouth feel is the next component of flavour. Depending on how the food feels in the mouth, it may be rejected if it contains too many chilies or spices which irritate the membranes of the mouth. If the food is too hot in terms of temperature, it causes blisters or pain. Again, the most favourite foods can be rejected if they are too slippery, sticky or hard to bite into. After the odour is accepted, the next sensory characteristics needed for acceptability is taste, that is, the reaction of the taste buds to the food, determining whether it is sweet, sour, salty or bitter. Acceptability of food therefore depends on how well they harmonize to make the net sensation pleasurable.

Sethi (2008) alludes that the texture of food can be determined both by perception and also mouth feel. It varies from food to food and in the same food too, when different methods of cooking are used. Texture also depends on structural composition of food which can be described as rough, smooth, grainy, coarse, fine, crisp, viscous, spongy and heavy. People accept or reject foods which do not agree with their own mental images regarding shape, size, viscosity or sheen. For



example, rice which is overcooked and therefore sticky instead of grainy will not be accepted if customers have a choice.

### **Special meals in prison**

Bosworth (2004), noted that in most American systems, prisoners with medical conditions, such as diabetes, HIV/AIDs, pregnancy or heart problems, request special meals. Similarly, vegans, who eat no animal byproducts, are increasingly becoming recognized as a legitimate group with special dietary needs.

Marquart and Roebuck (1987), noted that religious prisoners form another group who require and are usually entitled to special meals. While some prisons provide different meals for each faith group, others, like the US Federal Bureau of Prisons, offer one uniform option known as Common Fare that tries to satisfy the dietary requirements of all religions. In this system, the meat is kosher, pork and its derivatives are never used, and vegetarian options are meant always to be available. Marquart and Roebuck (1987), continued to state that in order to avoid contamination with non-kosher or Halal food, Common Fare meals are usually served with disposable plates and cutlery. Certain other religious-based food requirements are usually honored throughout the year. Muslims may eat breakfast before dawn and eat dinner after sunset during Ramadan.

All Jewish prisoners, who submit a request in writing to the Chaplain, are entitled to kosher food for Passover. Christians are offered a meatless meal on the mainline menu during Ash Wednesday and on all Fridays of Lent. Johnson (2008) states that at the medical facility of Luzira Prison, Uganda's biggest penitentiary situated in a Kampala suburb, the sick inmates eat lunch comprising a bowl of *posho*, a flour and water based staple, and a bowl of the broth of bean soup without beans. They receive extra rations – soya, greens grown in the yard behind the facility, and tomatoes and onions from the central prison system.

### **Kenya Prisons Act Cap 90**

Prisons Act is an Act of Parliament to consolidate and amend the law relating to prisons. It is a set of promulgated rules that mate out on the food menu, ordinary diet, scale diet and penal diet. The Act is paramount as it is the source of the various case studies enumerated in this study.

### **Kenyan prison food menu (first schedule)**

The Laws of Kenya, Prisons Act Cap 90, under the “first schedule” outlines the food diet for prisoners and children respectively. It states that the Ministry of Home Affairs may make rules providing for the provision of a suitable diet and dietary scales, including punishment diet for prisoners and prescribing the conditions under which such diet and scale may be varied. Details of the prisoner's diet are show in Table 1 which follows.



**Table 1: Prisoners Diet (Monday to Sunday), 2008.**

Diet	On each 4 days a week	On each 3 days a week
<b><u>a) Carbohydrates/Vegetables Protein</u></b>	<b><u>Grams</u></b>	<b><u>Grams</u></b>
Maize or other cereals	570	570
Beans	225	-
Soya flour	20	-
Green grams ( <i>Ndengu</i> )	-	230
<b><u>b) Animal Protein</u></b>		
Fresh Meat	-	200
Dried skimmed milk	-	500 ml
Sugar	20	20
Salt	15	15
<b><u>c) Fats</u></b>		
Fortified vegetable oil or Fortified vegetable ghee	16	16
<b><u>d) Fresh vegetables and fruit</u></b>		
Green leafy vegetables	120	-
Carrots	-	90
Irish potatoes or sweet potatoes	30	115
Spring onions	30	30
Capsicum	30	30
Tomatoes	-	30

### Diet scale

Sections 49 and 118 of the Prisons Act contain issues related to the administration of the diet scale or 'rations'.

Contents of section 49:

- (1) subject to the provisions of section 35 of the Act, every prisoner shall be entitled to a sufficient quantity of plain, wholesome Food in accordance with scale "A" in the First Schedule to these Rules; Provided that regard shall be made to the mode and standard of life of a prisoner before he was admitted into prison and if the officer in charge after consultation with the medical officer is satisfied that a prisoner is not accustomed to the type of diet laid down in Scale "A" be given a diet in accordance with Scale B, Scale "C" or Scale "D" in such Schedule.
- (2) A copy of the diet scales shall be displayed in some conspicuous part of the prison.
- (3) The diet of a prisoner who persistently wastes his food may be reduced by the officer in charge after obtaining the written advice of the medical officer.
- (4) A prisoner ordered penal diet shall have substituted for his ordinary diet the penal diet set out in the First Schedule to these Rules unless the medical officer otherwise recommends.

Contents of section 118 states that "Persons performing work in a Government institution under an order made under section 68 of the Act shall receive a diet which shall be on the Scale A.2 in the First Schedule to these Rules."

### Methodology

The study employed a descriptive survey research design. The main target units for analysis of the study were prisoners in five selected prisons in Kenya namely Eldoret Men, Ngeria, Eldoret Women, Kamiti Maximum and Langata Maximum Women Prisons. The population of the study was prisoners under the Kenya Prisons Service. There are 91 Prisons in Kenya with a total number of approximately 44,977 prisoners. The target population comprised of 5,830 prisoners. The sample size for this study was 387 prisoners. The sample size was statistically obtained by

calculating the sample size from the five prisons purposively selected while adjusting to round off decimals to one person. Purposive sampling technique was employed in which the researcher chose five prisons out of a total of 91 prisons for the study. Additionally, because of security reasons and the dangerous nature of the respondents, Prison Warders randomly selected 387 prisoners from the five selected prisons for the study. Structured questionnaires, observation schedules and conversations were used to collect primary data. Descriptive methods included frequency distribution tables and percentages, pie charts, bar charts and plates. Independent samples t-test was used to test the variation between the menu items stipulated in the Prisons Act Cap 90 and the actual menu items served to prisoners.

## Nature of food

With respect to the nature of food in table 2, respondents indicated their views on the sensory characteristics of food, nutritive value of food and the purpose to which they attach prison food. The researcher has presented detailed descriptive results on three indicators; the nutritive value of food, the purpose of food and the sensory characteristics of food.

**Table 2: Nature of food in prisons**

<b>Views on Aesthetic and Nutritive Value of food</b>											
	<b>Name of Variable</b>	<b>V. Bad</b>		<b>Bad</b>		<b>Avg</b>		<b>Good</b>		<b>V. Good</b>	
		Fq	%	Fq	%	Fq	%	Fq	%	Fq	%
a	General view on type of food in prisons	154	39.8	136	35.1	78	20.2	14	3.6	5	1.3
b	Taste of food	141	36.4	182	47.0	40	10.3	18	4.7	6	1.6
c	Oduor of food	115	29.7	172	44.4	68	17.6	24	6.2	8	2.1
d	Texture of food	124	32.0	172	44.4	58	15.0	25	6.5	8	2.1
e	Colour of food	97	25.1	180	46.5	68	17.6	34	8.8	8	2.1
f	Appearance of food	165	42.6	175	45.2	28	7.2	13	3.4	6	1.6
g	Nutritive value of food	144	37.2	175	45.2	42	10.9	20	5.2	6	1.6
h	<b>Average</b>	<b>134</b>	<b>34.7</b>	<b>170</b>	<b>44</b>	<b>55</b>	<b>14.1</b>	<b>21</b>	<b>5.5</b>	<b>7</b>	<b>1.7</b>
<b>Purpose of food in prison</b>											
	<b>Name of Variable</b>	<b>Always</b>		<b>V. Often</b>		<b>Often</b>		<b>Rarely</b>		<b>Never</b>	
		Fq	%	Fq	%	Fq	%	Fq	%	Fq	%
i	Food reduced as punishment	110	28.4	35	9.0	61	15.8	68	17.6	113	29.2
j	Food increased for sexual	165	42.6	57	14.7	18	4.7	22	5.7	125	32.3
k	Food used as inducement	69	17.8	40	10.3	43	11.1	65	16.8	170	43.9
l	Food for sustenance	323	83.5	14	3.6	16	4.1	7	1.8	27	7.0
m	Food denied as punishment	20	5.2	17	4.4	30	7.8	66	17.1	254	65.6
n	<b>Average</b>	<b>137</b>	<b>35.5</b>	<b>33</b>	<b>8.4</b>	<b>34</b>	<b>8.7</b>	<b>46</b>	<b>11.8</b>	<b>138</b>	<b>35.6</b>

From table 2 above, 78.7% which accounts for the majority of the prisoners felt that the nature of food in prisons, the aesthetic and nutritive value of food was *bad* to *very bad*. 14.1% felt that it was *average* while a minority of 7.2% felt that it was either *good* or *very good*. Purpose of food in prison revealed that 83.5% of prisoners felt that food was just for sustenance. Observations made by the researcher on the nature of food served in prisons revealed that in all the prisons sampled, *ugali* was served on a daily basis as in plate (c). In one of the prisons, *ugali* was served with salty water as vegetables while in most of the prisons *ugali* was served with no vegetables or very little vegetables with a lot of watery soup that looked like dirty water as shown in plate (a). Beans were served with *ugali* in all the prisons with water (plate 1, b & d).

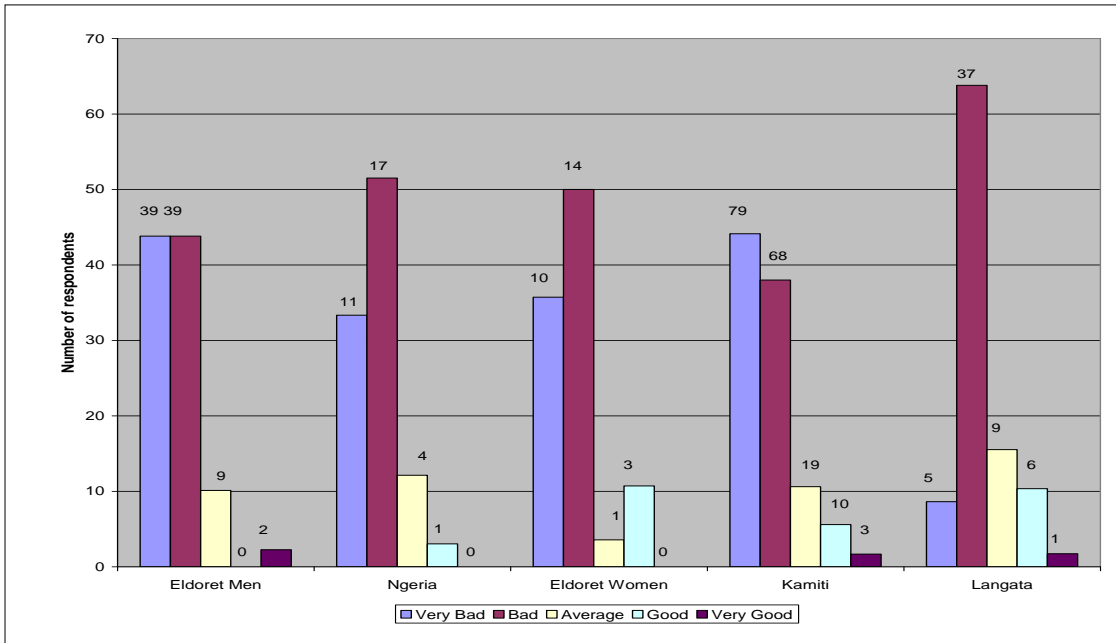


Plate 1: Watery vegetable and beans in prisons

In Langata prison, '*githeri*' was served twice a week. In Ngeria, Eldoret women and Langata prisons, rice was served at least once a week. In the researcher's opinion, Eldoret men and Kamiti Maximum prisons served a very monotonous menu of *ugali* for lunch and supper on a daily basis. In all the prisons sampled, porridge was served for breakfast daily while meat was served at least three times a week. Prisoners who were lucky got at least two pieces of meat otherwise majority were served with meatless bones. Only Langata women prison served a semi-varied menu.

### Nutritive value of food

It was found out that, of the 387 respondents, 37.2% of the prisoners sampled perceived that the nutritive value of the food served to them was *very bad*, 45.2% felt the food served to them was *bad*, 10.9% thought the food was *average*, 5.2% felt it was *good* and only 1.6% said the nutritive value of food served to them was *very good* as shown on table 2(g). This makes it clear that most prisoners perceived the nutritive value of food served to them to be *bad* to *very bad* with a percentage totaling to 82.4% which means the nutritive value of food was poor.



**Figure 1: Prisoners' views on nutritive value of food in prisons**

Additionally, within the respective selected prisons, the percentages for *very bad* nutritive value were 43.8%, 33.3%, 35.7%, 44.1% and 8.6% respectively. Kamiti Maximum prison had the highest percentage of those who perceived nutritive value to be *very bad* as shown in figure 1. The percentages for *'bad'* were 43.8%, 51.5%, 50%, 38% and 63.8% respectively for the prisons as mentioned above. Langata women prison had the highest percentage of those who perceived the nutritive value of food served to be *bad*. The respective percentages of *average, good and very good* within the respective prisons can be obtained directly from figure 1.

Noteworthy was the fact that a very small percentage of those interviewed felt the nutritive value of the food served was *good* or *very good* with some prisons like Eldoret men, Ngeria and Eldoret women reporting zero percentages in the categories, *good and very good*. With these results, the general feeling of most prisoners was that the nutritive value of food was *bad to very bad* hence, it can thus be generalized that indeed the nutritive value of food was poor.

Observations made by the researcher on the nutritive value of food indicated that it was poor and in effect seemed to be inadequate. The vegetables served were not adequate to provide all the necessary vitamins and there was no other source of vitamins in the food provided. Furthermore, the vegetables were boiled for long which resulted in loss of the necessary nutrients. The only source of vegetable protein was from beans while the few pieces of meat given to some prisoners were not adequate to provide animal protein. The weight of the meat served was 50g per piece which meant that each prisoner 'got' 100gms per week which was inadequate. Vegetable oil was provided in all meals whereby, in Ngeria, Eldoret women and Langata prisons, the oil was cooked in the food but in Kamiti Maximum and Eldoret men's prisons, oil was served separately from food such that, a prisoner was served *ugali* then the 'vegetable' followed by a spoonful of oil as shown on plate 2 (a & b). Carbohydrates served seem to be the only nutrient adequately provided to prisoners.





Plate 2: Oil served in Kamiti Maximum Prison

### The purpose of food in prison

Food in prison was served for different purposes some which were genuine while others could raise eyebrows in the public eye. Some of the purposes of food in prison included food for sustenance, food reduced for punishment, no food as punishment, food increased for inducement such as soliciting information and food increased for sexual favours. Food increased for sexual favours was particularly interesting and drew the eye of the researcher to report on it. Findings indicated that 42.6% of the total number of prisoners interviewed were of the view that food was *always* increased for sexual favours. A further 14.7% of the prisoners felt that food was *very often* increased for sexual favours. These two categories combined gave a cumulative percentage of 57.3% of the prisoners who strongly felt that food was increased for sexual favours.

Further, 4.7% of the prisoners felt that food was *often* increased for sexual favours while 5.7% felt that food was *rarely* increased for sexual favours. Within the respective prisons, the percentages of those who felt food was *always* increased for sexual favours were 68.5%, 0%, 3.6%, 56.4% and 3.4% respectively. Eldoret men recorded the highest percentage of 68.5% followed closely by Kamiti Maximum with a percentage of 56.4%. Ngeria Farm prison recorded the smallest number of those who felt that food was *always* increased for sexual favours with a percentage of zero (0%). The percentage of those who felt that food was *never* increased for sexual favours were 4.5%, 75.8% and 85.7%, 16.2% and 74.1% respectively as enlisted on table 3. The conclusion drawn was that the behaviour of increasing food for sexual favours was rampant in Eldoret men and Kamiti Maximum prisons. The behaviour was less rampant in Eldoret women, Ngeria and Langata prisons.

**Table 3: Food increased for sexual favours in prisons**

Prisons Name	Food Increased for Sexual Favours										TOTAL
	Always		Very Often		Often		Rarely		Never		
	Fq	%	Fq	%	Fq	%	Fq	%	Fq	%	
Eldoret Men	61	68.5	19	21.35	2	2.2	3	3.3708	4	4.5	89
Ngeria	0	0.0	1	3.03	2	6.1	5	15.2	25	76	33
Eldoret Women	1	3.6	0	0	0	0.0	3	10.7	24	86	28
Kamiti	101	56.4	31	17.32	9	5.0	9	5.0	29	16.2	179
Langata	2	3.4	6	10.34	5	8.6	2	3.4	43	74.1	58
<b>Total</b>	165		57		18		22		125		387
<b>Percentage</b>	42.6		14.7		4.7		5.7		32.3		

A further conclusion can be made that the behaviour of increasing food for sexual favours was more observed in male prisons than female prisons where 53.8% of male prisoners felt that food was *always* increased for sexual favours while an additional 16.9% of male prisoners felt that food was *very often* increased for sexual favours giving a cumulative percentage of 70% of those who had the strong feeling that food was increased for sexual favours. Only 3.5% of the female prisoners thought that food was *always* increased for sexual favours and a further 7.0% thought it was *very often* increased for sexual favours which gave a cumulative percentage of 10.5% of the women who strongly felt that food was increased to gain sexual favours from inmates.

**Table 4: Gender, prison and food for sex cross tabulation in prisons**

Gender	Prisons Name	Always	Very Often	Often	Rarely	Never	Total
<b>Male</b>	Eldoret Men	61	19	2	3	4	89
	Ngeria	0	1	2	5	25	33
	Kamiti	101	31	9	9	29	179
	<b>Total</b>	162	51	13	17	58	301
	<b>%age</b>	53.8	16.9	4.3	5.6	19.3	
<b>Female</b>	Eldoret Women	1	0	0	3	24	28
	Langata	2	6	5	2	43	58
	<b>Total</b>	3	6	5	5	67	86
	<b>Percentage</b>	3.5	7.0	5.8	5.8	77.9	

Observations made by the researcher reveal that the purpose of food increased for different reasons evidenced by the fact that when the researcher visited the kitchens in most prisons, small amounts of food were being cooked separately in '*mururus*' which in essence implied that there was some food kept aside for 'special' prisoners. That food was only comparable to food served in a hotel and greatly contrasted the food served to prisoners. Furthermore, conversations held with prisoners indicated that food was used by cooks for sexual favours either by increasing food as reward for sexual favours or decreasing food for a prisoner by a cook in order to force and entice the prisoner into being a sexual partner.

### Sensory characteristics of food

Sensory characteristics of food encompassed aspects such as taste, odour, texture, colour and appearance of food. The rankings of these aspects were averaged to give a general picture of the sensory characteristics of food in prisons as perceived by the prisoners themselves with reference to all the five prisons. It was established that 26.1% of all the respondents felt that the sensory characteristics of food was *very bad* while 56.6% interviewed felt that the sensory characteristics of food in prison was *bad*. These categories, *very bad and bad* had a total percentage of 82.7%. This was a clear indication that indeed the aesthetic value was generally *bad* and thus the aspects of taste, odour, texture, colour and appearance of food were perceived to be *bad to very bad* by majority of the respondents. 12.4% of respondents felt that the sensory characteristics of food was *average*, 3.6% felt it was *good* and only 1.3% felt that the sensory characteristics of food was *very good*. The researcher took note of the fact that most of the respondents who felt that the sensory characteristics of food was *good* or *very good* worked as cooks in prison.

Within the individual respective prisons, the largest percentage of those who viewed the aesthetic value as *very bad* were from Eldoret men prison with a percentage of 32.6% followed by Kamiti Maximum Prison with a percentage of 31.3%. At least 50% in all the five prisons sampled felt that the sensory characteristics of food were *bad*. Very few prisoners felt that the sensory characteristics of food were either *good* or *very good* with some prisons polling zero percentages in these two categories.

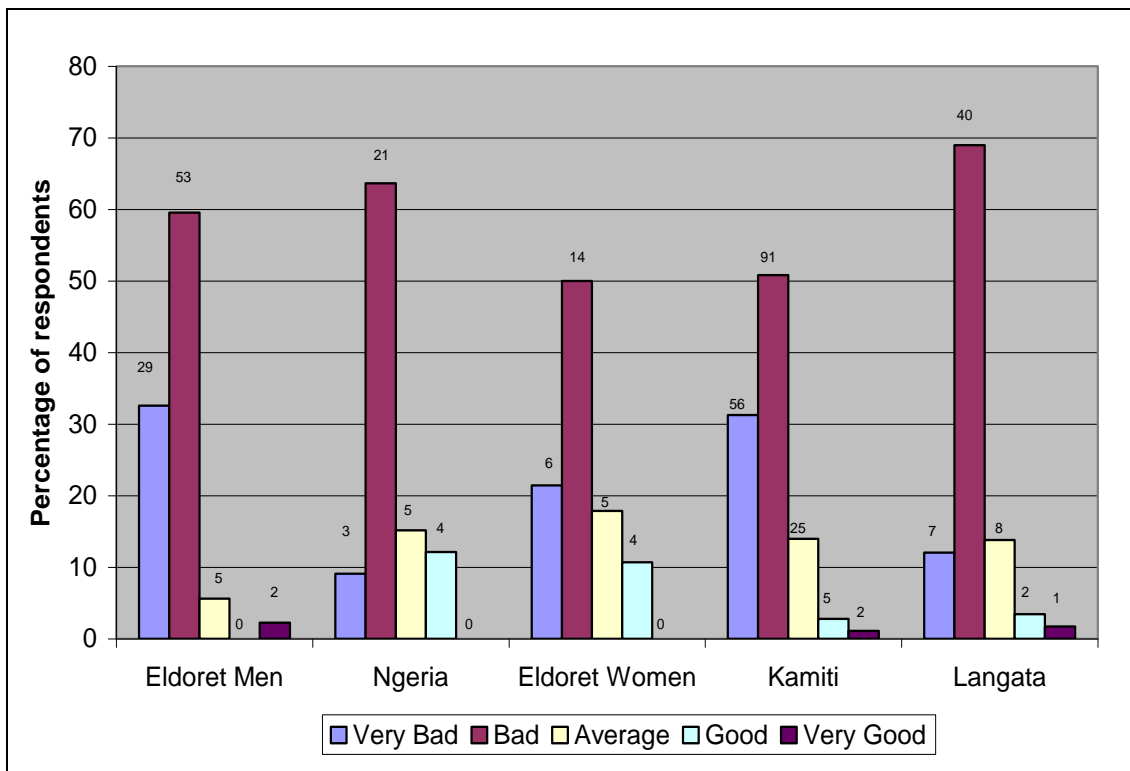


Figure 2: Sensory characteristics of food in prisons

Observations by the researcher revealed that the sensory characteristics of food in terms of appearance, colour, odour, taste and texture were poor. The colour of *ugali* looked pale as in plate 3 (a - f). The taste of *ugali* in most of the prisons was bitter, sour and fermented whereas the texture varied from prison to prison. The appearance of *ugali* in Eldoret Men's prison (plate 3 a&b). The texture of *ugali* in Eldoret Men's Prison was too soft just like porridge left to harden and was lumpy and uncooked, such that it could be scooped from one container and poured to another (plate 3c). On the other hand, Kamiti Maximum was on the extreme with hard texture and the

appearance of *ugali* had yellow patches suggesting low quality of ingredients as shown on plate 3d. The texture of *ugali* in Langata prison was poor (plate 3e & f). The aesthetic value of *ugali* in Ngeria and Eldoret women prisons was good.



**Plate 3: Texture, colour and appearance of ugali in prisons**

The appearance of vegetables was very unappetizing in all the prisons. In Eldoret Men's prison the appearance of bean soup was very unappetizing looking like dirty brown water (plate 4a). In Ngeria Farm Prison, the vegetables were cut into big pieces, overcooked to the point that the colour changed and presented with too much water (plate 4 b&c). In Eldoret women's prison, vegetables were also over cooked and again presented with too much water which made it extremely

unappetizing (plate 4d). In Kamiti Maximum and Langata Women Prisons, the vegetables were cooked and served whole such that the appearance was very unappetizing. The colour of vegetables in Kamiti looked raw (plate 4e) while that of beans looked very unappetizing as in plate 4f. Vegetables in Langata Prison were overcooked and appeared very unappetizing (plate 4 g&h).

(a)



(b)



(c)



(d)



(e)



(f)



(g)



(h)



Plate 4: Texture, colour and appearance of vegetables in prisons

Table 5: Frequency of food items consumed by prisoners in prisons

Name of food item	Frequency	Response	%age	Name of food item	Frequency	Response	%age
Maize Eating (Ugali & Porridge)	Always	380	98.2	Salt usage	Always	340	87.9
	Very Often	4	1.0		Very Often	18	4.7
	Often	2	0.5		Often	15	3.9
	Rarely	0	0.0		Rarely	2	0.5
	Never	1	0.3		Never	12	3.1
Beans eating	Always	369	95.3	Vegetable oil usage	Always	227	58.7
	Very Often	6	1.6		Very Often	39	10.1
	Often	3	0.8		Often	41	10.6
	Rarely	1	0.3		Rarely	48	12.4
	Never	8	2.1		Never	32	8.3
Soya flour eating	Always	2	0.5	Green vegetables eating	Always	225	58.1
	Very Often	0	0.0		Very Often	28	7.2
	Often	3	0.8		Often	57	14.7
	Rarely	9	2.3		Rarely	45	11.6
	Never	373	96.4		Never	32	8.3
Green grams (ndengu eating)	Always	1	0.3	Carrots usage	Always	1	0.3
	Very Often	0	0.0		Very Often	0	0.0
	Often	0	0.0		Often	2	0.5
	Rarely	1	0.3		Rarely	3	0.8
	Never	385	99.5		Never	381	98.4
Meat Eating	Always	0	0.0	Potatoes eating	Always	15	3.9
	Very Often	10	2.6		Very Often	8	2.1
	Often	299	77.3		Often	55	14.2
	Rarely	60	15.5		Rarely	177	45.7
	Never	18	4.7		Never	132	34.1
Milk drinking	Always	1	0.3	Sweet potatoes eating	Always	1	0.3
	Very Often	2	0.5		Very Often	1	0.3
	Often	12	3.1		Often	0	0.0
	Rarely	10	2.6		Rarely	7	1.8
	Never	362	93.5		Never	378	97.7
Sugar Usage	Always	90	23.3	Tomatoes, Onions & Capsicum	Always	0	0.0
	Very Often	18	4.7		Very Often	0	0.0
	Often	39	10.1		Often	0	0.0
	Rarely	92	23.8		Rarely	0	0.0
	Never	148	38.2		Never	387	100.0



### Hypothesis testing using independent sample t-test

According to Koutsoyiannis (1993), the t-test is appropriate if the variance of the parent population is unknown and the sample size is small such that ( $n < 30$ ). Secondly, t-test could be applied provided that the parent population is normal. For the application of t-statistic normality is crucial.

Since the population met the above criteria, a two-tailed t-test was computed to test whether the actual food served in prison differed significantly from that stipulated in the Laws of Kenya, Prisons Act Cap 90 of the Kenyan constitution. The assumptions made in the t-test computations are that:

- a. The population is normal
- b. Sample size is less than 30 ( $n < 30$ )
- c. Variance ( $\sigma^2$ ) is unknown
- d. The sample observations are random and in testing the equality of two means it was assumed that the population variances are the same

An independent samples t-test was computed to determine if there existed any significant differences between actual food served in prisons and the diet contained in the Prisons Act, Cap 90. The foods used to carry out this test included maize meal, beans, soya flour, *Ndengu* (green grams), meat, milk, sugar, salt, vegetable oil (ghee), green vegetables, carrots, potatoes, sweet potatoes, spring onions, capsicum and tomatoes. The frequency with which these foods were actually eaten in prison were ranked on a scale of one to five (1-5) 1 – *Never eaten in prison*, 2 – *Rarely eaten in prison*, 3 – *Often eaten in prison*, 4 – *Very often eaten in prison*, 5 – *Always eaten in prison*. The averages of each 387 respondents for each food eaten was generated and compared with the food schedule in the Prisons Act Cap 90. The foods in the prison’s act were ranked in the same manner.

The hypothesis that  $H_o: \mu_1 \neq \mu_0$  against  $H_1: \mu_1 = \mu_0$  were tested at 1% level of significance and the following results generated as shown on table 6.

**Table 6: Independent samples t-test results comparing actual diet and Prisons Act diet**

	95% Confidence Interval of the Difference		t	df	Sig (2 tailed)
	Lower	Upper			
Actual diet in prison - Diet stipulated in Prison Act Cap 90	-2.27830	-0.72170	-4.108	15	0.001

The t statistic,  $t = |-4.108|$  was found to be statistically significant at 1% level with 15 degrees of freedom since it was in excess of the tabular value of t,  $t_{0.01}(15) = 2.602$ . The null hypothesis that the meals actually served in prison was different from that stipulated in the prisons’ Act Cap 90 is accepted ( $H_o: \mu_1 \neq \mu_0$ ) and the alternative hypothesis ( $H_1: \mu_1 = \mu_0$ ) is thus rejected. This result indicates that the frequency of meals actually served in prison significantly differs from the frequency of meals stipulated in the Prisons Act Cap 90. This in turn implied that the law regarding catering in prisons was not being implemented to the letter. Prisoners were not being served the meals at the stated frequencies in the prisons act and thus measures have to be put in place to ensure that they get the meals at the legislated frequencies. The fact that the frequency of food in prison differed from the frequency in the act could itself be indicative of the poor nutritive value of food indicated by a number of prisoners interviewed for this study.



**Table 7. Tabulated frequency of food on a 5 point Likert scale in prisons**

DIET	CAP 90	ACTUAL SERVED
Maize	5	5
Beans	4	5
Soya	4	1
Green Grams	3	1
Meat	3	3
Milk	3	1
Sugar	5	3
Salt	5	5
Vegetable Oil	5	4
Green Vegetables	4	4
Carrots	3	1
Irish Potatoes	5	2
Spring onions	5	1
Capsicum	5	1
Tomatoes	3	1

## Discussion

Nutritive value of food was found to be poor with 82.4% of prisoners viewing it as *bad* to *very bad*. Observations by the researcher further supported the prisoner's position. This can have effect on prisoner's health and hence, hamper efforts of successful reforms. According to Bosworth (2004), healthy prisoners, it was believed, would be productive workers and ultimately, reformed citizens. Hence good nutritive value could positively reinforce the behaviour of prisoners. McLellan referred to research which showed that giving young people healthier food could lead to improved behaviour. In addition, most prisoners ate a great deal of fat, sugar and sodium before imprisonment, and also very little fruit and vegetables hence it is possible that encouraging prisoners to eat nutritious food might be a contribution not only to healthier living but also to less destructive behaviour. Research carried out by the National Audit Office (1997), on 231 prisoners at Aylesbury Young Offenders Institution showed a statistically significant link between supplementing prisoners' diets with vitamins, minerals and fatty acids and fewer recorded incidents of anti-social behaviour. The research highlighted that anti-social behaviour decreased with good nutrition indicating the importance of providing prisoners with meals containing the recommended levels of nutrients.

The sensory characteristics of food in terms of colour, taste, odour, appearance and texture were all poor. Out of 387 prisoners, 320 prisoners which accounts for 82.6% percent of the respondents rated the sensory characteristics of food as *bad* to *very bad*. Observations by the researcher found that the colour of food was pale, the taste was bitter, the appearance was very unappetizing and the texture very bad. According to Sydow and Rolfe (1980), aesthetic value especially flavour is very important for food choice and food consumption, making it also important from the nutritional point of view: a nutritious food with bad aesthetic properties will never or rarely be consumed and even if it is consumed, digestion will be negatively affected. Food was found to be used for sexual favours especially by cooks in the male prisons. 57.3% of the respondents interviewed revealed that food was *always* or *very often* used for sexual purposes.

## Conclusions

The nature of food served to prisoners in Kenyan prisons is clearly of a poor quality. This conclusion has been drawn by the fact that the nutritive value of food was below the expected





levels and does not contain all the required nutrients. For example, porridge was served without sugar, salty water was served as vegetables, vegetable oil was served separately from the vegetables, pieces of meat served was too little to give adequate protein and the required vitamins in the food seemed to lack. Furthermore, the sensory characteristics of food in terms of colour, taste, appearance, odour and texture of food were poor. The taste of *ugali* was bitter and the appearance had a pale look. The texture of *ugali* in some prisons was either too soft or too dry. In another prison, they cooked *ugali* a day or two before consumption making it taste stale and too hard to serve and worse still, too cold to eat. The vegetables served were mashed and looked like porridge and in other prisons they were poorly cut and presented. The purpose of food in prison impacts on social behaviours and generally perpetrates behaviour such as homosexuality, corruption and bribery. It was found that in most of the male prisons, food was used for sexual favours and also for trade. Prisoners who made mistakes were punished by receiving the penal diet of half ration as stipulated in the Prisons Act. It is thus critical that greater consideration be given to the food supplied to prisoners, who while they are incarcerated nonetheless are entitled to basic human rights.

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