
ASSESSMENT OF NUTRITIONAL STATUS OF INMATES IN OYO STATE, NIGERIA

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ABSTRACT

Prison is an ancient instrument where diverse people who had run foul of the law, some of them possibly innocent lives. Food plays a major role in the life of prisoners, poorly designed meal, inadequate portion sizes, lack of variety and poorly cooked food can contribute to serious health conditions. Representative samples of one hundred and eighty seven (187) inmates were selected from Oyo state prison randomly. A pre-tested structured questionnaire was used to obtain information on demographic characteristics, lifestyle, health status, sanitary information, nutritional knowledge and frequency of food consumption. Data were analyzed using SPSS version 15.0. The result of the demographic characteristics of the respondents showed that majority of the respondents were within the age range 19-59 years, most of them were married and had nuclear family. The result of the lifestyle and health status of the respondents revealed that majority of the respondents (95%) were cigarette smokers, the result of their health status showed that most of the respondents (80%) had malaria as their regular illness and got sick at least once in a month. Anthropometric measurements (height, weight, arm, waist and hip) of the respondents were measured to determine the body mass index (BMI), waist-hip ratio (WHR) and mid upper arm circumference (MUAC) which were used to determine their nutritional status. The result of the nutritional status showed that most of the respondents (59%) had normal weight, 4% were underweight, and 29% overweight while 7% obese. Information on the food intake obtained from 24 hours dietary recall techniques showed that the energy intake were higher than WHO, 2000 recommended intake while protein intake was low. The nutritional status of the respondents can be improved if proper nutritional status counseling and care can be given. The prisons were not as worse as people view it.

Keynotes: Prison, Anthropometric, Information, Overweight, Nutritional

INTRODUCTION

Prison is an ancient institution where diverse people who had run o foul of the law, some of them possibly innocent lives (Harrison et al; 2006). Modern prison is not just a mechanism for inflicting punishment on the offender, but also a centre of rehabilitation as well (Harrison et al; 2006). A prison or penitentiary is administered by the state and issued to house convicted criminals for periods of much longer duration (Awofeso, 2004). In prisons, the amenities are much more expensive as some prisoners may be serving their lives behind bars (Awofeso, 2004). Modern prisons have exercise areas, common areas for eating and socializing in lower security areas, church facilities and educational facilities which include classrooms, libraries and laboratory to work and study (Awofeso, 2004). There seems to be little doubt that pathologically aggressive behavior is linked to poor nutrient and also has an important correlations with other risk factors such as social behaviors, low education,

attainment and substance misuse (Harrison et al; 2006). However in a situation where food and meals are restricted due to the nature of the provision in prison, home for older people or hospitals, requirements for nutritional adequacy assure greater importance (John et al; 1996). Presence or absence of some nutrients or excess of some nutrients in their diet may have effect on their anti-social behaviors or nutritional status since their movement and food is being restricted (Harrison et al; 2006)

Provision of a diet that is healthy and nutritionally balanced and acceptable to the consumers is a factor which must be considered in any food service operation (John et al; 2006). Nigeria has 227 prisons out of which 4 out of 5 were built before 1950, many are in need of renovation, the infrastructure is old and decrepit, there is overcrowding, poor sanitation, lack of decent meals, medicines and denial of contact with families and friends which are reported damaging to the physical and mental well being of inmates. Buildings in use as workshop are inadequate and sanitary facilities are broken down (Olatunji, 2010). It is in the light of the highlighted problems that we attempted to assess the nutritional knowledge, status and lifestyle of prisoners in Oyo state.

MATERIALS AND METHODS

Study Design

A descriptive study was carried out in Agodi and Lagbondoko prisons, Oyo state, Nigeria.

Preliminary Preparation

Prior to the commencement of the study, ethical approval was sought and obtained from the prison station and prisoners. Three data collector were trained in the estimation of portion sizes against reweighed portions. Training consisted of two- third day sections during which instructions and practice was given, first, in freely estimating the weights of various single food items served in variety of ways. This was followed by further and more specific training in the estimation of single food and beverage items compared with a standard portion size of known weight. Also, training was given in the estimation of various weight of food served as a complete meals. A structured pretested questionnaire was used to obtain information from one hundred and eighty seven respondents. The questionnaire form was adapted from FANTA (2006). Using interview method, subjects were asked to recall what meals and drink they had taken for the previous 24-hours (Caterson 1998).. This information included details of amount of food consumed, which was estimated in household measures, estimated amounts, and other portion sizes of snacks consumed. The 24 hours dietary recall was carried out 3 times on two week days and one weekend day.

Selection of Prisons, Prison Wing and Prisoners

A total number of 2 prisons were indentified in Oyo state, to reflect and provide a representative sample of current prison population. In order to have proper representative of each prison, each prison was requested to indentify an initial sample of approximately 100 prisoners. Selection of prison wing and prisoners were based on the willingness of the

prisoners to participate. Once prisoners were identified and indicated their willingness to take part, they were given a preliminary questionnaire.

ANTHROPOMETRIC MEASUREMENTS

The anthropometric data obtained was used to determine the Body Mass index (BMI)

Weight Measurement:

The subjects’ weight was measured using bathroom weighing scale. The scale was placed on a flat surface and the subject was made to stand uprightly on it barefooted. The readings were done in duplicates to the nearest 0.1kg and the average weight was constantly checked for accuracy (Caterson 1998).

Height Measurement

The subjects heights were measured using the hospital heightometer, following the method described by Caterson, 1998..

WAIST/HIP RATIO

Waist Circumference

Subjects were made to stand erect with the abdomen relaxed; at the sides and at the feet together. The tape was placed around the subjects in a horizontal plane; at the level of the natural waist (narrowest point) with the tape making contact on the skin. The measurement was taken to the nearest 0.1cm with minimum clothing (Caterson 1998).

HIP CIRCUMFERENCE

Subjects were made to stand erect with their arm at the side and feet together. The measurer was in the front of the subjects with an assistant for proper positioning of the tape. The measurement was taken to the nearest 0.1cm (Caterson 1998).

Waist Hip Ratio of the subject will be expressed as the $\frac{\text{Waist (cm)}}{\text{Hip (cm)}}$

This was taken as an indicator of the pattern of subcutaneous adipose tissue distribution among the subjects.

WAIST HIP RATIO

The Waist – Hip Ratio of the subject based on their sex and age was classified as

Male	Female	health risk based on WHR
<0.95	0.80	Low risk (Normal)
0.96 – 1	0.81 – 0.85	Moderate risk (overweight)
>1.0	>0.85	High risk (obese)

Source: Caterson (1998)

RESULTS

Table 1 shows that the socio demographic characteristics of the inmates. Higher percentages of the inmates (94%) were within the range of 18-49 years. More than half of the subject practiced Christianity as a religion, 41% were Islamic worshippers. Most of the respondents were educated (55%), 29% had tertiary education, 9% had primary education while 8%

were illiterate who could neither read nor write. Of the total respondents 39% were single, 48% were married while 13% were divorced. Table 2 shows the day time program of the respondents. 18% of the inmates were apprentice learning tailoring, 20% learning carpentry, 28% combined carpentry and tailoring together while 34% did not partake in any training, 77% of the training program were facilitated by non governmental organization. Table 3 shows the health status and lifestyle of the respondents. Most of the respondents were smokers, out of which 80% smoked occasionally, 6% smoked twice a week, 14% smoked once in a week. Most of the respondents (76%) did not use drug. Majority had malaria infection frequently (80%). Table 4 shows the nutritional status of the respondents. The result of the Body mass index of the subjects shows that 59% had normal weight, 29% were overweight, 6% had obesity grade I, 1% had obesity grade II while 4% were underweight. The result of the waist to Hip ratio shows that 64% had normal adipose fat, 35% were obese. The mid upper arm circumference indicates that 85% had normal fat muscle. Table 5 shows the result of nutrient intake of the respondents. The mean energy 441 kcal was above the recommended allowance while the mean Protein intake (36 ± 75 g/day) was below the recommended allowance.

Table: 1 Socio Demographic Characteristics of the Respondents

Parameters	Frequency	Percentage
Age		
18-49	77	94
50-69	10	6
Religion		
Christianity	105	56
Islam	76	41
Traditional worshippers	6	3
Education		
None	14	8
Primary	16	9
Secondary	103	55
Tertiary	54	29
Marital status		
Single	72	39
Married	90	48
Divorced	25	13
Type of family		
Nuclear	79	42
Extended	40	21
Polygamous	68	37

Table: 2 Day Time Programme and Activities of the Respondents

Parameters	Frequency	
Percentage		
Training		
Tailoring	34	18
Carpentry	58	20
Carpentry and Tailoring	25	13
None	65	34
Facilitators		
Non governmental organization	144	77
Government	43	22

Table : 3 Health Status and Lifestyle of The Respondents

Parameter	Frequency	Percentage (%)
Smoking		
Cigarettes smokers	181	95
Non smokers	6	5
Frequency of smoking		
Once in a week	26	14
Twice in a week	11	6
Occasionally	150	80
Use of Drugs		
Yes	44	24
No	143	76
Types of Drug		
Pain reliever	43	23
Cough syrup	1	1
Who prescribed the drug?		
Doctor		
Self decision	4	2
Colleagues	3	2
Alcohol Consumption		
Yes	14	8
No	72	39
Illness		
Yes	175	94
No	12	6
Nature of illness		
Malaria	140	80
Cough	3	2
Body Pains	28	15
Hypertension	4	3

Table: 4 Anthropometric Indices of the Respondents

BMI	NUTRITIONAL STATUS	FREQUENCIES	PERCENTAGES
< 16.00	SEVERE UNDERWEIGHT	-	
16.00- 18.49	UNDERWEIGHT	8	4
18.50- 24.99	NORMAL WEIGHT	111	59
25.0-29.99	OVERWEIGHT	55	29
30.00-39.00	OBESITY GRADE I	11	6
>40	OBESITY GRADE II	2	1
WAIS TO HIP CIRCUMFERENCE			
	NORMALWEIGHT (<0.95)	120	64
	OVERWEIGHT (0.96-1)	65	35
	HIGH RISK (>1.0)	2	1
MID UPPER ARM CIRCUMFERENCE (MUAC)			
	MUAC (< 25.3)	28	15
	MUAC (> 25.3)	159	85

Table:5 Mean Nutrient Intake of the Respondents

Nutrient	RDA	Mean intake
Energy (Kcal)	2550	4415
Protein (g)	68	36
Fat (g)	NA	41

DISCUSSION

Inmates are people who were held in an institution such as prison or jail; they have no control over their environment as a result of their incarceration. The studies revealed that majority of the prisoners were young adults who fell under active working group. This finding is similar to the study of John et al; 2006 who observed the same among inmates in their study. This will have negative effect on the economic development of the state as some of the active working age group adults were incarcerated. The study indicated that majority of the subjects were educated, their level of education greatly assisted us in getting information from the inmates. Majority of the prisoners were married before they were sentenced to prison. There are various training program in the prison yards set up by the non governmental organization and government to aid the prisoners in acquiring skill to be able to sustain themselves and family after their freedom. Some of the prisoners were learning tailoring, carpentry work and others combined training of carpentry with tailoring. The health status and lifestyle of the respondents show that most of the prisoners still smoke in the prison. This finding is in conformity with the outcome of the research work of John et al; 2008 who observes similar finding among inmates.

In our study, it was observed that majority of the prisoners had at least one illness. Out of which malaria fever was predominant among them. This confirms the research work carried out by Butter and milner, 2003 that indicated 78% of the inmates studied had least one disease. This observation could also be as a result of overcrowding observed in the prison yards.

The study revealed that most of the prisoner had normal body weight, 29% were overweight, and this finding could be as a result of lack of participation in any day time program. This finding is in agreement with the outcome of lines, (2008) who observed that almost half of his respondents were obese and overweight. Also waist to hip ratio shows that 35% of the inmates were overweight. This could be as a result of the lifestyle and feeding habits of the inmates before incarceration. Food plays a major role in the life of prisoners, poorly designed meal, inadequate portion sizes, lack of variety and poorly cooked food can contribute to serious health conditions. The macro nutrient intake of the respondents revealed that their energy intake was higher than the recommended allowance while the protein intake of the subjects was low. This observation could be as a result of higher intake of energy given food and low intake of protein rich foods.

CONCLUSION AND RECOMMENDATION

The food intake of the prisoners contained higher percentage of carbohydrates; also the protein intake was below the recommended allowance. The nutritional status of the inmates was not the best as regard the proportions of overweight, obese and underweight inmates'. There is need for nutrition intervention by governments and non governmental organization to salvage the situation.

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