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Nutritional Knowledge of School Feeding Handlers and its Effect on Pupils Nutritional Status.

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Abstract – Poverty eradication, health, education, food security, and nutrition continue to be essential priorities and targets for sustainable development. Schools can make a sizeable, long-lasting impact on these determinants through various entry points and opportunities and one such entry point is the (regular) provision of nutritious meals through school-based programmes. The study was cross-sectional, approval was obtained from the school authorities before the commencement of the study, and also pupils' parents' consent was sought. Fifty school feeding handlers which include the caterers, teachers in charge, and monitoring team from the ministry of two hundred children aged 5-9 years, were selected from 20 local governments in the senatorial districts using simple and stratified random sampling techniques from public primary schools in the town. First-hand data was collected by the researcher through the use of self-administered questionnaires. The data collected was analyzed for simple percentage, and chi-square using statistical packages for social sciences (SPSS) version 20. The sociodemographic data showed that the majority of respondents (Food handlers) fall between age 31-35 years (40%) and 90% had secondary school education. The study also revealed the frequency of nutritional knowledge, 90% update their knowledge very often, 90% of the respondent's preparing food from their kitchen. The BMI for the age of the pupils revealed that none of the pupils meet the standard. Strategic planning, optimized dietary quality, and further enhancement of nutritional knowledge in food preparation and cooking will help food handlers for effective service delivery.

Keywords: Food Handler, BMI, Nutritional status, Nutritional knowledge

1. Introduction

Good nutrition is key to normal growth, development, and effective learning by school children (Tanaka and Miyoshi, 2012) Good nutrition knowledge is very important in achieving healthy living (Dickson Spillmann and Siegrist,
2011). When preparing a balanced meal even in purchasing food items adequate nutrition knowledge is needed (Kaliamoorthi, 2013). Nutrition knowledge is equally/extremely useful in an intervention programme, this provides a baseline in addressing the nutrition needs of different age groups in the population. However, poor nutrition knowledge and inadequate food safety affect food handling practices, and delivery (McGill et al, 2015). World Health Oganization (WHO), stated that human actions are the major leading cause of food contamination during food preparation in food service establishments as a result of non-adherence to good hygiene practices (WHO, 2013, Afolaranmi et al, 20015)

Prevent or reduce the incidence of contamination in food or foodborne diseases it should be "from farm to fork" food chains in schools (Asiegbu et al, 2016). The food chain/handler extends from the farm, or primary production, to the final consumer ("from the farm to the plate") and includes production, processing, manufacturing, transformation, packaging, storage, transportation, distribution, and sale and/or provision of food products. At each of these stages, there is a responsibility to keep food under the same safety conditions and appropriateness until the moment of its consumption, World Food Program (WFP),2019.

In recent times, poor nutrition knowledge and general practices in handling foods are alarming (Beydoun and Wany, 2011). Therefore, an investigation is essential for proper dissemination and utilization of nutrition knowledge among food handlers for the National Home-Grown School Feeding Programme purchasing and preparing balanced meals (Kaliamoorthi, 2013). This may have an impact on reducing malnutrition among

pupils. Malnutrition leads to poor growth among primary school children and causes low school enrolment, high absenteeism, early dropout, poor classroom performance, high morbidity, and mortality among other hazards (Chutani, 2012). The observed poor nutritional state of Nigerian school children has been linked to ignorance, poverty, poor feeding practices, and poor quality of foods available to them (Akeredolu et al 2011). school feeding is used as a medium in reducing malnutrition prevalence among school aged children particularly, especially those from poor homes. Malnutrition is a global problem but persists and bitten hard especially in developing nations (Troesch, et al 2011). However, the nutritional status of school-aged children impacts their health, cognition, and subsequently their educational achievement (Best et al, 2011).

2.0 Materials and Methods

2.1 *The study area*

The study population consisted of food handlers in various primary public schools in Osun State, South-West Nigeria with a population of 1686 public primary schools out of which 85% were enrolled in school feeding programme.

2.2 *Research design*

A cross-sectional survey was carried out in which questionnaires were used to obtain data from respondents. A total of 173 school children aged between 5 years and 9 years were selected using simple and stratified random sampling techniques from 24 public primary schools across the state and fifty (50) school feeding handlers.

2.3 Data collection

The interviews were conducted on a one-on-one basis and the well-structured questionnaires were filled by the respondents themselves but assistance was rendered by the principal researcher on those respondents with a low level of literacy. Questions were constructed with simple grammar that can be easily understood by a layman but in the relation to the aims and objective of the study. The questionnaire contained the following: Socio-demographic data, Anthropometric data of the respondents, Nutritional knowledge, and education.

2.4 Statistical analysis

The data collected on information contained in all the parameters were statistically analyzed to calculate for frequency, simple percentage, and chi-square using SPSS soft wear version 23.

2.5 Ethical clearance

Permissions to conduct this research were obtained from the head of schools, all the teachers involved, the respondents (pupils), and the participants (Food handlers) before the commencement of the study. Informed consent was given to each participant, and all that participated voluntarily signed a consent form participated in the study.

3.0 Results

Table 1 Socio-demographic Indices of the food handlers

GENDER	FREQUENCY	PERCENTAGE %
MALE	0	0.0
FEMALE	50	100.0
AGE	FREQUENCY	PERCENTAGE %
Bellow 18 years	0	0.0
18-25	5	10.0
31-35	20	40.0
36-40	15	30.0
41 AND ABOVE	10	20.0

HIGHEST EDUCATION LEVEL	FREQUENCY	PERCENTAGE %
Primary	5	10.0
Secondary	45	90.0
Tertiary	0	0.0
RELIGION	FREQUENCY	PERCENTAGE %
Christian	5	10.0
Islam	45	90.0
Traditional	0	0.0
Non	0	0.0
INCOME Naira/month		
Less than10000	30	60.0
11000-20000	10	20.0
21000-30000	8	16.0
Above 30000	2	4.0
Total	50	100.0

Source: Survey 2021

Table 2 Response of Feeding Handlers on Nutritional Education

VARIABLES	YES (%)	NO (%)	TOTAL
REQUIREMENT USED IN THE SELECTION OF SCHOOL FEEDING HANDLERS			
Application through certificate	50 (100)	0	50
Writing interview	80 (10)	10(20)	50
Oral interview	50 (100)	0(0)	50
Experience in coking learning through formal education	5 (10)	45 (90)	50
Cooking Experience gathered over the years from the parents at home	50(100)	0(0)	50
Year of experience on cooking/catering 1. <1 year 2. 1-3 years 3. 4-5 years 4. >6 years	 3 (6) 32 (64) 10 (20) 5 (20)		
Experience of catering for large people before now.	10 (20)	40(80)	50
Nutritional training is given after selection to prepare you	50 (100)	0 (0)	50

for the job			
Training and retraining on the job	0 (0)	50 (0)	50

Source: Survey 2021

Table 3 Nutritional knowledge of the respondents

knowledge	Frequency	Percent
Experience acquired on the methods of food prepation		
1. Home	30	60
2. School	5	10
3. Seminar	0	0
4. Friends	15	30
Education on food Hygiene		
1. Home	25	50
2. School	5	
3. Seminar	10 0	
4. Media	0	
	20	40
Knowledge of nutrients content of food.		
Yes	5	10
No	45	90
Information on food/water borne diseases.		
1. Home	20	40
2. School	5	
3. Semina	10 0	
4. Media	0	
	25	50
Supervisor from education & Schools		
Yes	50	100
No	0	0
Supervisors on both ends with knowledge of nutrition		
Yes	3	6
No	47	94

Source: Survey 2021

Table 4 Anthropometric Indices of the Respondents - Pupils

Age	Gender	Height (m) Mean ± SD	Weight (Kg) Mean ± SD	BMI/Age (Kg/m^2) Mean ± SD	BMI/Age (WHO Reference, 2007) Mean (BMI/Age)
5	M (n = 16)	1.19 ± 0.07	17.25 ± 2.82	12.10 ± 1.71	15.3
	F (n = 30)	1.22 ± 0.11	15.90 ± 2.06	11.03 ± 1.11	15.2-15.3
6	M (n = 31)	1.29 ± 0.07	19.45± 2.57	11.59 ± 1.23	15.3-15.5
	F (n = 21)	1.29 ± 0.06	18.81± 2.91	11.33 ± 1.32	15.3-15.4
7	M (n = 38)	1.36 ± 0.05	21.34 ± 2.98	11.58 ± 1.26	15.5-15.7
	F (n = 21)	1.37 ± 0.05	21.19 ± 3.68	11.34 ± 1.60	15.4-15.7
8	M (n = 5)	1.31 ± 4.58	23.40 ± 1.95	12.15 ± 1.45	15.7-16.0
	F (n = 6)	1.50 ± 0.05	26.67 ± 5.75	11.87 ± 2.78	15.7-16.1
9	F (n = 5)	1.45 ± 0.04	30.00 ± 4.24	13.94 ± 4.19	16.1-16.6

Source: https://www.who.int/tools/growth-reference-data-for-5to19-years/indicators/bmi-for-age

4. Discussion of findings

The respondents participated in this study all were females (100%) studies also found that majority of food handlers in their studies were female (kadi et al, 2012, Frederick, 2016), whose majority of them were between the age of 31-36 years older (40%) which is an agreement with some studies (Frederick et al, 2016), the study revealed that higher number of the respondent had at least attended high school (90%) with low income (60%) %) the previous study also confirms high percentage of age group involved in handling food practices are between the age of 20 – 50 years with the low educational background which affected income respondents received (Nee & Sani, 2011) this may that they were not fully engaged with any work (unemployed) (Stats SA, 2013).

Nutrition education: A minority of the respondents (80%) had hard writing interviews and all did oral interviews this indicated that the certificate was not rely on the criteria for employment. The majority of the food handlers (90%) have not attended or received any form of training related to food or nutrition but only a few of them (5%), this study is in line with (Fabel et al, 2013, Kadi 2016). The study confirmed that the experience most of them had in catering is what they have acquired from home either from the parents or elderly. The few (5%) that acquired the knowledge through formal education have been on the job for years (20%) performed better during data collection.

The study revealed that the food handlers received training inform of the seminar on nutrition, food preparation, food safety which include personal and environmental hygiene, etc after they engaged with the job since then till the time of this report respondents indicated that there was no in-service training or retraining, those who have little knowledge it was through media. Studies confirmed the importance of training on the job which significantly improves the safe food handling practices and attitudes of food handlers compared to those that are untrained (McGill et al., 2015), and food handlers who have never attended any training related to food safety have been found unskilled and poor food safety knowledge (Sani & Siow, 2014, Gould et al., 2013; Shinbaum et al., 2016).

The results of the study in table 4 revealed that none of the students used for this study at different age groups meet reference standard BMI for age. This indicated that their nutrient intake has been compromised. According to Dogging & Wafaie, 2020 school feeding programs is designed to provide nutrients dense food that will improve academic performance and promote a healthy lifestyle for the pupils

The objectives of the identified school feeding programs include addressing short-term hunger, reducing nutrient deficiency, improving attendance and school performance, encouraging healthy eating habits.

Nutrition during the school years is crucial for the physical, mental, and psychosocial development of children and adolescents aged 6 to 19 years. It is estimated that, across the developing world, 66 million school-age children go to school every day hungry, with 23 million hungry children in Africa (Bundy et al, 2018,). Attending classes hungry severely impacts children's and adolescents' abilities to learn, thrive, and realize their full potentials (Plaut et al, 2017).

Many studies are in agreement with an anthropometric parameter used to measure the nutritional status of the respondent's results of this study, Watkins et al, 2015, reviewed the impacts of school feeding on the nutritional status of primary school-age children they reported small and significant effects on weight gain and small and nonsignificant effects on height gain among school-age children.

Srivastava et al, (2012 stated that Pupils in lower primary, usually between the ages of 6 to 9 years, were more prone to being underweight, a study in India showed that underweight and stunting was high among children in the age groups of 5-6 years while stunting was high in children between the ages of 6-8 years.

Faith et al, (2017) findings also consistent with the findings from the study, which found no statistically significant difference in nutritional status indicators (underweight, stunting, thinness, and overweight) between pupils attending schools with and without school feeding although differences were observed between the two groups in the prevalence of the various indicators. The widespread poor quality of school meals served (Sidaner et al, 2017, Shin 2014, Harding et al, 2012) could be a possible cause of minimal contribution of school meals to the growth of beneficiaries.

Conclusion

The study could conclude that there is a significant difference between the mean and standard deviation of nutritional status of pupils and reference standard this could be deduced that pupils are not meeting nutrients requirements to fulfill the aims and objectives of school feeding. School feeding programmes, enrolment of children in schools where adequate meals will be served may make marginal contributions towards improving their nutritional status.

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