

STUDENTS' PERCEPTION ON HYGIENIC CONDITIONS WITHIN THE COOKING ENVIRONMENT OF SELECTED SECOND CYCLE INSTITUTIONS IN THE BOLGATANGA MUNICIPALITY

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Abstract

Catering services are critically important in providing an ideal environment for good nutrition and dietary habit to students. The provision of safe food for children of school-going age is of great concern to governments. This is also needed by other stakeholders as it improves health, growth and development in developing countries. Foodborne diseases (FBD), an outcome of poor hygiene practices are reported internationally in schools. These tend to defeat the aims of quality food provision. The objective of the study was to investigate students' perception of food services in second cycle institutions. The study employed a mixed method research approach. The researchers adopted the case study design in carrying out the study since it was explored through one or more cases with a bonded system. Field observation, In-depth interviews and questionnaire were the appropriate instruments used in collecting primary data from the field since the research design is a mixed method. Quantitative data was coded for easy categorization and entry. Quantitative data were processed using the Statistical Package for Social Scientist (SPSS) software. Results were presented by the use of tables, pie-charts and graphs. Half of the respondents were female (50.7%) whilst the rest were male (49.3%). The study revealed that the appearance of the cooks in all the schools was inappropriate. They were cooking without wearing the right attire, hair not covered, and cloth wrapped around their waist which is not allowed for professional cook to do. Also, about 70% of them were wearing open sandals while almost all the pantry men were very dirty with unkept hair and beard.

Keywords: Food safety, Kitchen hygiene, Cooks, Institutional catering, Students

INTRODUCTION

Food is a fundamental need that is both a major source of and a vital contributor to physical well-being. According to Rozin, Lowery, Imada, and Haidt [1], obtaining, preparing, and eating food are essential for maintaining life. Given how vital food is, it is crucial that it be prepared in a spotless environment and with all of the necessary nutrients. However, foodborne illnesses are frequent and enduring issues that significantly increase morbidity and mortality [2] [3]. One of the most pervasive issues in the modern world has been identified as food-borne infections [3]. According to Unnevehr [4], food contamination is a significant and expanding issue for public health and the

economy in many nations. Traditional food processing techniques, inefficient holding temperatures, and unhygienic food handlers are only a few of the causes of food contamination in poorer nations.

Food safety is significantly more crucial in educational settings because it directly affects students' intellectual success. According to Dawso Van Druff [5], preventing food-borne illnesses is a top priority in educational settings since outbreaks can have negative effects on students' social, intellectual, economical, and legal standing. He contends that student absences have an impact on their academic performance and that food-borne epidemics may force the closure of schools. Students are a vulnerable group who can get a foodborne illness by consuming tainted food or drink. Therefore, food handlers, or those directly involved in the preparation and processing of foods, are crucial in lowering the risk of food safety [6]. Since food safety has an impact on both public health and society, it is one of the most urgent health and safety challenges facing the majority of developing nations. Everyone is susceptible to contracting a food-borne illness, but those at higher risk include the elderly, young children, pregnant women, transplant recipients, and the immunocompromised because their immune systems are either not fully developed or are weak due to a condition, according to Afele [7].

The fundamental element of our existence, food, occasionally poses a threat to our health. Health problems result from food contaminated with bacteria, mold, viruses, parasites, and chemical toxins [8]. In mass feeding systems, improper cooling (46%), a delay of one or more days between preparation and consumption (21%), infected workers (20%), improper application of heating techniques (16%), inadequate cooking and heating (16%), use of contaminated ingredients (11%), cross-contamination (7%), use of subpar ingredients (5%), and use of leftover dishes (4%), are the most frequent causes of food poisoning. To prevent foodborne illness in catering establishments, three things need to be taken into consideration. According to Sezgin and Zkaya [9], these criteria include food hygiene, staff hygiene, kitchen and tool hygiene, and so on. While the rules for maintaining personal hygiene should be followed when buying, storing, cooking, serving, and serving food, the rules for maintaining personal hygiene for staff members also apply to their hands and any other body parts that might come into touch with food [10].

The institutional catering establishments are aware that quality and health go hand in hand. Food-borne infections, including fatal ones, can result from improper food preparation, processing, and sanitation, as well as from violating rules about personal cleanliness. As a result of the harm to an organization's reputation, this may also cause financial losses. Therefore, food should have a high level of hygienic quality. Basic prerequisites for attaining this include abiding by hygiene rules, identifying areas that provide a hygiene risk, and taking the appropriate safety measures.

In various studies [11] [3] on knowledge of food safety and practices, street food safety has gotten the majority of the attention. In Samapundo, Climat, Xhaferi, and Devlieghere's [12] study on food vendors and safety procedures, for instance, they discovered through questionnaires that the majority of the food sellers were uneducated and as a result had

limited awareness of food safety procedures. There has not been much research on the students' perception on hygienic conditions of the kitchen environment in second cycle institutions in Ghana, despite the fact that the value of school feeding in terms of health and nutrition is well recognized. This study therefore sought to assess students' perception on hygienic conditions of cooking environment in selected second cycle institutions in the Bolgatanga Municipality.

METHODOLOGY

Research Design

The researchers adopted the case study design in carrying out the study since it was explored through one or more cases with a bonded system. A case study is described as a research approach that belongs to both the positivist (quantitative) and the interpretative (qualitative), but is commonly associated with qualitative designs because it uses methods such as participant observations, interviews and unstructured questionnaire, which are within the domain of qualitative research [13]

Study Area

The Upper East Region is one of the 16 regions in Ghana. With the Administrative capital as Bolgatanga, the Bolgatanga Municipality was established in 2004 by Legislative Instrument (LI) 1997 and is located in the centre of the Upper East Region, approximately, between latitudes 10°30' and 10°50' north and longitudes 0°30' and 1°00' west, it is also the regional capital(Source). The Municipality shares boundaries with Bongo District to the north, to the east with the Nabdam District, to the south with the Talensi District and to the west with Kassena Nankana Municipality. The population of the Municipality according to the 2010 population and housing census stands at 131,550 with 62,783 males and 68,767 females. With Senior High Education, the region can boast of five Senior High Schools namely; Bolgatanga Senior High School, Zuarungu Senior High School, Zamse Senior High Technical School, Bolgatanga Girls Senior High School and Bolgatanga Technical Institute. After the conversion of regions Zuarungu senior high school is now in the Bolgatanga East District.

Population of the Study

The research population is the aggregate or the totality of all objects, subjects of members of a group conforming to a set of specifications [14]. The set of specifications, which [15] described as criteria, should provide 'information-rich-cases' for the study. Therefore, the target population of this research study included all students and kitchen staff in Bolgatanga Senior High School, Bolgatanga Technical Institute and Zuarungu Senior High School.

Sample and Sampling Procedure

Sampling is the method of choosing a division of a population for a study [16]. The justification is to draw inference based on the study of the samples about the parameters

of population from which the samples are taken [17]. It refers to a set of observations derived by a defined method from a population. In this study, the strata in the target population are homogenous and the findings of the study are important. If the objectives of the study are to be achieved, it must be followed with stratified simple random sampling techniques.

The study employed Yamane's formulae, $n = N / (1 + Ne^2)$, to determine the sample size [18]

Where: n = Sample size

N = Target Population (241). This was the number of students available in School

e = error of 5% point

Therefore, the sample size (n) is calculated below:

$$\begin{aligned} n &= \frac{241}{\{1 + 241(0.052)\}} \\ n &= \frac{241}{\{1 + 241(0.0025)\}} \\ n &= \frac{241}{1.603} \\ n &= 150 \text{ respondents} \end{aligned}$$

Participants were selected with their consent just to make sure that they were participating willingly and also relaxed before answering the questions. Participants who wanted to be interviewed privately in their homes were given the opportunity. Students who also wished to seek for their guidance consent were allowed to do so. The investigators used Confidence level of 95 % (1.96).

Pre Testing Schools

The researchers selected two other second cycle institutions (Zamse Secondary Technical Senior High School and Bolgatanga Girls Senior School in the municipality as part of the study in order to understand the situation better and that whether the problem persists in other schools within the municipality. Results obtained from this study were used as a baseline for redesigning the questionnaire.

Data Collection Instrument

Field observation, In-depth interviews and questionnaire were the appropriate instruments used in collecting primary data from the field since the research design is a mixed method. Field observation is a very good data collection technique; it is usually used to complement interviews. In-depth interviews clarify the data collected. It captures facial expressions, gestures, body language and non-verbal indications that come with

oral narrations that participants provide [19]. The questionnaire was in two parts (bio-data of respondents and the second part sought information about the hygiene conditions within the environment where the meals are prepared in second cycle institution in the Bolgatanga Municipality, to determine the nutritional value of meals served in second cycle institution in the Bolgatanga Municipality.

Validity and Reliability

The data collection instruments were pre-tested at a nearby Senior High School (Zamse Secondary Technical) in the Bolgatanga Municipality. The pre-testing was carried out there because the school is located in the Upper East Region. Moreover, the school kitchen provides the same food services as in the three schools selected for the study. This exercise was intended to help validate the instrument in terms of its ability to carry out the needed assignment and to understand the possible challenges that may be encountered during the actual data collection exercise so that they can be addressed before the actual work at the study area. Fifty (50) questionnaires were administered to fifty (50) students in all the three schools and fifteen (15) questionnaires to the kitchen staff in the three schools. The researcher was given the opportunity by the kitchen department to observe the kitchen environment and some activities within the kitchen. Some challenges were encountered during the pre-testing: wrong wording and unclear questions were some of the issues faced and these challenges were addressed before being used at the field (Bolgatanga Senior High, Zuarungu Senior High and Bolgatanga Technical Institute). All covid 19 protocols were properly observed. On the Reliability of this study, the research instrument was achieved by conducting a reliability test by adapting Cronbach alpha. The value of the Cronbach alpha determines the degree to which a study's research instrument is reliable [20]. Specifically, a reliability test with Cronbach alpha (α) of (0.7) or more is classified as acceptable. Based on the reliability test, α of 0.80 was obtained using all the 29 question items. This indicated that the research instrument was very reliable for the purpose it was used for.

Data Collection Procedure

The entire field data collection exercise took three (3) weeks; that is one week in each school. The researcher employed the concurrent procedure of data collection; this was because of the mixed method design that was employed. As the quantitative aspect of the data collection procedure was going on (questionnaire session) the qualitative aspect (interview and observation session) was going on as well, because of the concurrent nature of the data collection procedure, the researcher trained two (2) research assistants who helped in the data collection.

The researchers carried out the observation of the kitchen and the kitchen environments in the three selected schools in person as the observation was going; on one of the two trained research assistants was also having an interview section with the kitchen staff while the other research assistant also administered the questionnaires to the students. In all, one hundred and fifty (150) questionnaires were administered in the three selected schools, the questionnaires were properly responded to by the students after they were

taken through as to how to answer them. The researcher was able to get the students to respond to the questionnaire during their free time that is immediately after their lunch.

Also, in Bolgatanga Senior High school, five (5) kitchen staff out of twenty (20) were conveniently selected for the interview. In Zuarungu Senior High School, five (5) out of fifteen (15) kitchen staff were interviewed while in Bolgatanga Technical Institute, five (5) out of seventeen (7) kitchen staff were also interviewed. In all, fifteen (15) kitchen staff were successfully interviewed. The researchers were able to observe the kitchen environment of all the three (3) schools using the observation guide. The key items on the guide were properly followed during the observation process and the data was collated on the sheet. The success rate of responses to the interview questionnaire for both the students and kitchen staff was 100% with a few minor challenges which the researchers addressed easily without them rendering any adverse effects on the outcome of the exercise.

Data Analysis Procedure

Data collected from the study were edited and screened for completeness and consistency. Quantitative data was coded for easy categorization and entry. Quantitative data were processed using the Statistical Package for Social Scientist (SPSS) software. Results were presented by the use of tables, pie-charts and graphs. In addition, qualitative data analysis method was employed, to analyze the thematic areas of the interviewed responses from the kitchen staff. This enabled the researchers to do a content analysis, of an interview in order to identify the main themes that emerged from the responses given by the kitchen staff. The main themes were identified through careful reading of the descriptive responses given by respondents to each question in order to understand the meaning they communicated. The themes were coded, into manageable categories (words or themes with similar meanings or connotations) of a variety of themes focusing on and coding for specific word patterns that were indicative of the research question.

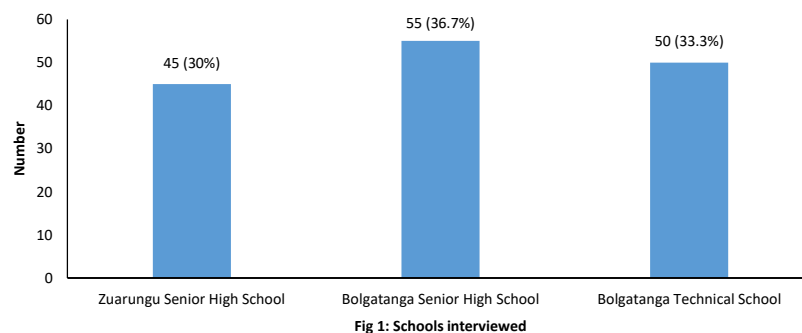
Ethical Considerations

An introductory letter from the University of Education guaranteed the researchers the permission to carry out the research in the various schools. The letter was received by the various Headmasters of the three selected schools before the data collection took place. The study was conducted in accordance with the Guidelines of the General Research Ethics Board of the University. The researchers sought the consent of the participants through the use of a consent form. Participants were asked to append their signatures on the form showing proof of consent. Different days were given by the heads for the researcher to carry out the data collection exercise after the students, some teachers and the kitchen staff were informed about the exercise.

RESULTS AND DISCUSSION

Demographic Characteristics

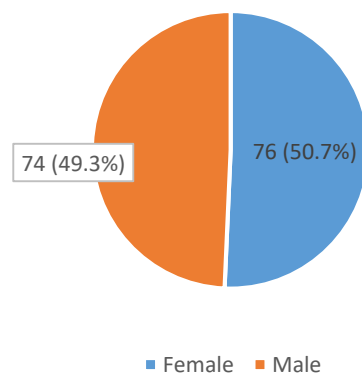
The demographic characteristics of the study are presented in figure 1. Results from figure 1 show that majority of the respondents were from Bolgatanga Senior High School. They accounted for 55 (36.7%) of the total number of respondents. This was followed by Bolgatanga Technical School. They made up 50 (33.3%) of the respondents. Zuarungu Senior High School was the least and accounted for 30% of the total number of respondents. Figure 1 presents the information given.



Gender of respondents

Half of the respondents from all schools were female. They constituted about 50.7% of the respondents. Males accounted for 49.3% of the population. More than 50% of the respondents were also in their third year (65.3%). About 29.3% were in their second year while 5.3% were in their first year. A low sample size was deliberately assigned to first year students in order to cater for students who can give more accurate information. Half of the respondents (58.7%) were between the ages of 18 to 20 years. About 29.3% were between the ages of 14 to 17 years. Only 12% of the respondents were 21 years and above.

Figure 2: Gender of respondents



Hygienic conditions of kitchen environment of second cycle Institution in the Bolgatanga Municipality

The students also agreed (3.05+0.36) that they were made to fetch water from the kitchen for cooks to prepare food. This act according to the students makes them late for class. The study also agreed (3.14+1.36) that students sometimes wash the cans and other utensils at the pantry during lessons or break. Results from the study also agreed (3.06+1.32) that students are made to carry food from the pantry to the dining tables during lessons or break. Also, delays from pantry workers can lead to food contamination. This is because when food is left in the aluminum pans awaiting service, there could be possible growth of pathogenic bacteria [21]. Thus abusing temperature and time of prepared meals could lead to the growth of toxins. Hill [22] concluded that serving foods at the right temperature and time helps to reduce food borne illnesses.

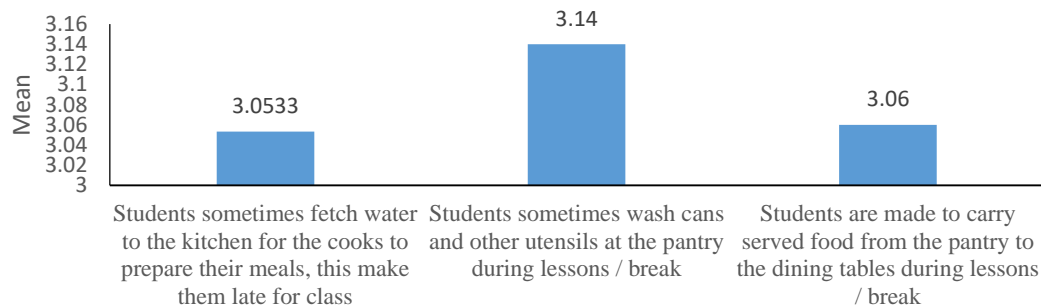


Fig 3: Student practices in Kitchen

Observation of the kitchen and the kitchen environment by students

The researchers were able to observe the kitchen, the environment and the outfit of the cooks at the time of the researchers visit. A guide was designed to help the researcher to observe key issues that concern the study. The researchers after the observation of the three selected schools came out with the following findings;

The state of the surroundings where meals are prepared in the selected schools was one of the key factors. Upon the researcher's arrival, it was realized that the surroundings of the kitchens were well kept and dust bins were positioned at a distance where rubbish is kept. In all the schools, none of the situated dustbin was over flowing with rubbish. Also, it was observed that there are tap system in the premises of the kitchens in the schools which supply them with potable water daily. This therefore affirmed that the response which was given by the cooks during the interview to the effect that various schools do have tap systems. The researchers observed the drainage system of the kitchens where wastewater passes out from the pantry. It was realized that all the three selected schools have poor drainage systems that need urgent attention. There was a pungent smell emanating from chocked open gutters with flies and other flying insects hovering around. The gutters were not big enough which caused them to over flow. This put the back of the kitchens in a state of disarray, a situation which can lead to a cholera outbreak and cause

a disaster considering the population of students in these schools. This observation confirms the finding of Ebert et al., [23] who recommended that, kitchen surfaces should be designed in a way that will not allow dirt accumulation, but is capable of preventing foreign substances from infecting foods, disallow dense liquids or mold and also prevent pests from entering the environment. Drainages should be easy to clean and prevent pests such as rodents from entering the waste liquid from re-entering kitchen environment. After, observing the surroundings the researcher was allowed into the kitchen and the pantry to observe the situation of the kitchen. The researcher realized that the design of the kitchens in the three schools were all similar with no ventilation. The inside was not spacious enough for cooks to move around freely. In all the schools visited, the pans were left half open. In that state, any strong wind may pollute the food.

The floors where cans, utensils and other things are washed were wet and dirty with flies hovering in the pantry. In two of the schools, the water in which the cans were washed was dirty while the pantry men used the same water in washing the cans throughout. Again, it was realized that the appearance of the cooks in all the schools was inappropriate, there were cooking without wearing the apron, hair not covered and cloths wrapped around their waists which is not allowed for professional cooks to do. Also about 70% of them were wearing open sandals. Almost all the pantry men were very dirty with unkempt hair and beard. The meal that was served on the day the researcher visited Bolgatanga Secondary Schools, was gari and beans. When the meal was served the researcher observed that the gari in the various cans was exposed and one could see live weevils in the gari. This observation by the researcher confirmed what the students stated in the questionnaire as regards the need to change their meals. This observation confirms the report by the Centers for Disease Control and Prevention (CDC) Surveillance (1993- 1997), which identifies five categories of factors that risk food contamination. To them, food borne illnesses can result from food from unsafe sources, inadequate cooking, improper holding temperatures, contaminated equipment or poor personal hygiene.

CONCLUSION

The study revealed that the cooks usually employ measures to prevent cross contamination of ready to eat food in the kitchen. This is applicable not only for ready to eat food but also food substances from the stores where the food is kept through to the kitchen. We observed the necessary protocols to prevent cross contamination. The study revealed that all the three selected schools have poor drainage system in their kitchens and need urgent attention. It further revealed that there was a pungent smell emanating from chocked open gutters with flies and other flying insect hovering. Furthermore, the study revealed that the appearance of the cooks in all the schools was inappropriate. They were cooking without wearing the right attire, hair not covered, and cloth wrapped around their waist which is not allowed for professional cook to do. Also about 70% of them were wearing open sandals while almost all the pantry men were very dirty with unkempt hair and beard.

RECOMMENDATIONS

The various schools should restructure the dining timetable in other to reduce the time in between meals. There should be effective supervision by matrons and the various heads of these schools to make sure that the kitchen staff observe proper personal hygiene and that they are up to the task by providing contamination free meals for the students.

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