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Effect of level of education on hygiene practices of food handlers in Ghana



Patricia Foriwaa Ababio and Doreen Dedo Adi report on the results of a questionnaire that analysed effect of education on hygiene practices of food handlers in Kumasi Metropolis of Ghana.

Introduction

The food industry like other sectors has moved to meet the increasing demand of a growing population notwithstanding that there is the need for more educated people in the industry with basic skills including reading and communication, and food hygiene training through to technological know-how and awareness, to meet the increasing demand for safer and quality products by consumers. Education which is equipping individuals with knowledge and skills to be acceptable and functional members of

their society is key to success in every industry and the food sector is no exception as it enhances the efficiency of skill formation process (1, 2).

Ababio and Adi (3) and Mensah et al. (4) have reported on the low level of education of food handlers in Ghana. Most food handlers in the country have only basic level education and do not obtain on job training to improve on their knowledge. How does this affect the practices of food handlers, and can this affect the safety of the food we eat? Food safety management practices reflect food safety awareness (5) which is attained through education and training. According to Addo et al (6), it is generally perceived by consumers that the highly educated food handlers are in hotels and hence have good hygiene practices. Heckman (2) reported that trainability of low-skilled workers is limited and Verhaest et al. (7) opine that additional years of education enhance the probability on all types of skill acquisition. Do the higher educated food handlers have better knowledge of food hygiene? Is their behaviour towards food hygiene better than those without or with lower levels of education? Are they much more aware of foodborne diseases, do they have more control of food safety practices than the uneducated and basic school leavers?

The recommended ways by which food is to be purchased, stored, handled, processed and sold are collectively put under the Codex General Principles of Food Hygiene (8). Food handlers' knowledge, attitude and behaviour towards food handling could be considered as poor or good, based on their practices. Studies have shown that most food handlers practices are not based on technological awareness and hence even though the knowledge is present, practices are contrary (3, 9).. Is this applicable to both educated and less educated groups of food handlers? It is against the Food and Drugs Act in Ghana to produce food for sale without the requisite technological awareness to produce wholesome food and also to produce food under unsanitary conditions (10).

Good hygiene practices are affected by both external and internal factors. Externally, there should be existing food laws with available enforcement agencies who ensure strict adherence, registration and certification with available training and awareness creation. Internally, management commitment and available capital to develop the premises to standard is also important. Education and training availability as internal factors also affect the way food is prepared and sold to the public. We seek to investigate the effect of level of education on the hygiene practices and awareness of food handlers and will also use the availability of food handlers' health certification as a means of measuring availability of surveillance and further investigate its effect on hygiene practices of food handlers

Methodology

Study area

Kumasi is the second largest city in Ghana with the highest populated (33.3% of the population in 18 districts) region in Ghana (11), and a high level of private informal jobs (80.4%). The district has 46.5% of the population with no education or only basic level education (12) and has sales and production as the major occupation with low professional and technical jobs. For effective and relevant results, 5 major communities in Kumasi with a high population of food vendors and restaurants due to the socioeconomic activities in these areas were purposively sampled. The areas selected were Kwame Nkrumah University of Science and Technology 15.4%, Baba Yara Stadium and its surroundings 19.8%, Adum in Kumasi and surroundings 20.8%, Komfo Anokye Teaching Hospital and surrounding areas 20.8% and University of Education Winneba, Kumasi campus and surroundings 23.2%. A total of 500 respondents were randomly sampled from all the 5 communities

Statistical instruments and tools for analysis

Characteristics	Category of food service					Total	Chi-square
	Restaurant	Fast food	Canteen	Chop bar	Food vendor		
Gender							
Male	7.1	55.4	6.3	16.7	9.7	16.8	95.185 (0.001)
Female	92.9	44.6	93.7	88.3	90.3	83.2	
Age groups							
Under 20	0.0	0.0	0.0	0.0	4.7	2.7	84.028 (0.001)
20-29	21.4	63.0	18.3	16.7	31.8	32.5	
30-39	35.7	30.1	31.7	31.5	31.8	31.7	
40-49	35.7	5.5	36.7	29.6	26.3	25.4	
50-59	7.1	1.4	13.3	20.4	5.5	7.6	
60 and above	0.0	0.0	0.0	1.9	0.0	0.2	
Educational status							
Uneducated	3.6	6.8	31.7	20.4	34.4	26.6	238.6 (0.001)
Basic	3.6	31.1	36.5	53.7	53.3	45.0	
Secondary	46.4	59.5	27.0	25.9	11.5	24.3	
Tertiary	46.4	2.7	4.8	0.0	0.7	4.1	

Table 1. Demographic of respondents.

Forty four structured questions were prepared in a form of questionnaire for respondents to answer with options given for further responses if desired. Statistical Package for the Social Sciences (SPSS) version 16 was used to determine simple percentages and frequencies of responses and the correlation of indicators for further discussion. Chi square was used to show the association of level education on good hygiene practice indicators. The relationship between education and surveillance availability and their effect on hygiene practices of food handlers was assessed.

From Table 1 the male population of the respondents was only 16.8% of the total indicating food service as women dominated vocation in the country (13). Age wise most of the respondents were below 50 years with the age range of 20-29 being the highest of which 63% were operating in Fast food outlets. Members above 60 years were only 0.2% of the population. This is common as most people are on a pension at this age. Educationally, the highest population were basic to no formal education making a total of 71.6%. Thus, people with no education and basic level education are the highest group in terms of population and contribute to lower and middle level manpower in the country (12). This is quiet alarming with most of them working in chop bars or as food vendors. None of the operators with tertiary education worked in chop bars. This make chop bars an area dominated by people with lower levels of education. At this stage there is less skill and little is demanded in terms of employment requirements. Most cooking and food preparation skills are learnt from friends and or owner of bar and not from formal education. A higher percentage of the secondary school and tertiary graduates worked in restaurants. This confirms Addo's report (6) on the general perception that most workers in hotels and/or restaurants are of higher formal education and could operate hygienically unlike street vendors who are perceived to be illiterate or semi-illiterate. Canteens, chop bars and food vending seem to be the areas mostly operated by the uneducated among the food handlers.

Effect of educational level on food diseases awareness

Respondents awareness of foodborne diseases				
Educational level of respondents	Yes	No	Total	Chi square
Tertiary	95.0	5.0	100.0	52.168 (0.001)
Secondary	94.2	5.8	100.0	
Basic	94.5	5.5	100.0	
Uneducated	73.0	27.0	100.0	

Table 2. Educational level of food handlers and their foodborne disease awareness

Level of education seems to significantly affect food handlers' awareness of foodborne diseases. From Table 2, 95% of the tertiary level educated respondents were aware of foodborne diseases. There is a decreasing number of level of awareness as the education level also decreases. Twenty seven percent of the uneducated were not aware of foodborne diseases. This confirms the work of Eghan et al. (14), Heckman (2) and Verhaert (7) who reported that lack of training restricts the ability to assess risks in business. Tomlins et al. (13) also reported that most people in Ghana do not associate food with diseases. This shows how lack of education reduces awareness but the higher one gets educated the better the awareness. Almost the same percentage of both secondary and basic level educated respondents were aware of foodborne diseases. This shows some level of food hygiene awareness in our secondary and basic educational system. The percentage of uneducated that also responded in the affirmative for awareness could be influenced by the media (radio and television)

Education and choice of kitchen

Concrete or cement blocks used in building a kitchen was mostly used by food handlers with tertiary education. Only 5% of this population used unauthorised premises (15) for food preparation. The effect of education on choice of kitchen was significant at the 95% confidence level.

Higher percentage of the uneducated food handlers (72.4%) and basic level educated respondents (71.0%) used wooden structures and open air as kitchen or food preparation areas. This confirms the variation in food hygiene standards among food handlers in the country (13).

Educational level of respondents	Cooking area of respondents					Total	Chi square
	Open air	Wooden structure	Metal structure	Concrete	Not applicable		
Tertiary	5.0	5.0	10.0	80.0	0	100.0	74.479(0.001)
Secondary	19.3	24.4	24.4	30.3	1.7	100.0	
Basic	33.9	37.1	8.6	18.6	1.8	100.0	
Uneducated	36.2	36.2	5.4	21.5	0.8	100.0	

Table 3. Effect of education on food handlers choice of kitchen

Effect of education on the use and maintenance of prerequisite measures in the kitchen (pest control)

Pest control in kitchens in Ghana is mostly not contracted to other service providers due to lack of available service providers (3). From Table 4, the percentage of respondents having pest control systems in place decreases with decreasing level of education. Thus, the educational level of food handlers significantly affects the knowledge of insects and pest and their economic effect on the food

industry. Whilst control could be contracted to service providers or done by trained staff in food service environments, most of the uneducated (60%) had no system at all to control pest in their kitchens. The numbers without pest control systems among the respondents with basic education was also higher (47.9%), as compared to 41.2% for secondary school leavers.

Availability of pest and insects control by respondents						
Educational level of respondents					Total	Chi square
	Yes	No				
Tertiary	75.0	25.0			100.0	15.448(0.017)
Secondary	58.8	41.2			100.0	
Basic	52.0	47.9			100.0	
Uneducated	40.0	60.0			100.0	

Table 4. Effect of education on food handlers' kitchen management (pest control)

Burch and Sawyer (5) also reported that the sanitary condition of food area is related to the food safety knowledge of management. From Table 2, if food safety awareness (knowledge) is significantly affected by education level then this confirms Table 4 where education also significantly affects kitchen good hygiene practices, specifically pest control.

Raw material sourcing should be done from certified suppliers who have quality assurance who operate according to the specification of the customer (16). These products are bought with the ultimate aim of producing safe and acceptable products economically. From Table 5, tertiary level respondents mostly considered a combination of both quality and price before buying raw materials. Price as a singular factor was not used by all the tertiary level respondents. Although all groups reported on considering both price and quality before buying their percentages decreased per group as education level also decreases. The group with no response could be mobile vendors who bought already prepared food for sale without doing the preliminary sourcing and preparation, an example is 'iced kenkey' sellers.

Effect of education on personal hygiene practices (behaviour) of food handlers

What respondents look for when buying						
Educational level of respondents					Total	Chi square
	Price	Quality	Price and quality	No response		
Tertiary	0	35.0	65.0	0	100.0	20.215(0.017)
Secondary	3.4	35.3	57.1	4.2	100.0	
Basic	7.2	35.7	48.9	8.1	100.0	
Uneducated	15.4	34.6	45.4	4.6	100.0	

Table 5. Effect of education on purchasing habits

The hygiene practices of individuals (Table 6) are affected by the education level of respondents. The use of protective clothing (aprons, hand gloves and hairnets) during food preparation and service is recommended to help reduce contaminants in food. Aprons as a single wear were used by a higher percentage of respondents across all levels although the percentages decreased with decreasing level

of education. With no protective clothing usage during food service, there was an increase in numbers as the educational level also decreased.

Educational level of respondents	Usage of protective clothing during food service							Chi Square	
	Hair net only	Apron only	Hand gloves only	Hair nets and None apron	Apron and hand gloves	Apron, hand gloves and hair net	Total		
Tertiary	5.9	47.1	0.0	5.9	23.5	0.0	17.6	100.0	52.490 (0.001)
Secondary	20.5	33.0	0.0	15.2	28.6	0.9	1.8	100.0	
Basic	21.5	32.0	0.5	20.2	24.6	0.5	1.0	100.0	
Uneducated	28.6	26.8	0.9	20.5	23.2	0.0	0.0	100.0	

Table 6. Effect of education on food handlers' usage of protective clothing

Jewellery is mostly restricted in food preparation and service areas due to the risk of physical and microbiological contamination. Surprisingly a higher percentage of respondents with tertiary education (65.0%) reported wearing jewellery during food service as shown in Table 7. This group was second to the uneducated group who also wore jewellery during food service and the basic and secondary levels were third and fourth culprits in this malpractice. The effect of education on the food handlers' behaviour (jewellery usage) during food service is not significant at the 95% level of confidence.

Educational level of respondents	Wearing of jewellery during food service			Chi Square
	Yes	No	Total	
Tertiary	65.0	35.0	100.0	12.570 (0.05)
Secondary	50.4	49.6	100.0	
Basic	57.0	43.0	100.0	
Uneducated	69.3	30.8	100	

Table 7. Effect of education on food handlers' behaviour during food service

These results call for education of the general public on the safety effects of physical contaminants in food. Tondoh (17) in his work on food handlers' hygiene practices in South Africa reported that 12% of his respondents wore jewellery when at work, thus confirming the existence of lack of awareness of the need for no jewellery in food areas or, in other circumstances, the permission of only a stud or wedding ring or religious bracelet without any risk of pieces falling off into food (18).

Effect of education on health certification availability

The effect of education on the availability of food certification for respondents was not significant at the 95% confidence level. From Table 8, a higher percentage of all groups had a food handlers' certificate. This certificate is given in Ghana after an individual has done a test in a nationally acceptable medical laboratory to confirm a food handlers' fitness to work. Some food handlers who did not have the certificate confirmed that theirs had expired and they had not renewed it. Thus, certification could be said to have no effect on the hygiene practices of the individual. It could however be said that there is availability of surveillance in the country as all levels of food handlers on the educational ladder had

certificates. From the discussions so far, the level of education and higher level of education both affect the hygiene practices of food handlers. If the association between level of education and food certification is not significant then it can be inferred that there is no relationship between Food handlers' health certificates and their hygiene practices currently in Ghana.

Conclusion

Level of education affects the hygiene practices of food handlers. Some of the measurable variables did not follow this pattern. The sourcing of raw materials, the wearing of jewellery during work and food handlers' certification were not significantly affected by education of food handlers. Generally the higher the education level of respondents the better the food handlers' position to take appropriate action towards preparation and service of safe food. More awareness creation is needed across all levels of education on physical contaminants from jewellery and other food hazards, prerequisite measures including approved suppliers and the need to renew health certificates. The Metropolitan Assembly could include basic hygiene training for all food handlers who report for fitness confirmation and certification to improve on the awareness level of the food handler's in the country.

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References

1. Rosen, S. (1976). A theory of life earnings. *Journal of Political Economy*, **84 (4, pt 4)**, S45-67.
2. Heckman, J. (1999). Doing it right: job training and education. *Public Interest*, **135**, 86-107.
3. Ababio, P. F. and Adi, D. D. (2012). Evaluating food safety practices among food handlers in the Kumasi Metropolis. *Internet Journal of Food Safety*, **14**, 35-43.
4. Mensah, P., Yeboah-Manu, D., Owusu-Darko, K., Ablordey, A., Nkurmah, F. K. and Kamiya, H. (1999). The role of street food vendors in the transmission of enteric pathogens. *Ghana Medical Journal*, **33**, 9-29.
5. Burch, N. L. and Sawyer, C. A. (1991). Food handling in convenience stores. *Journal of Environmental Health*. **54 (3)**, 23–27.
6. Addo, K. K., Mensah, G. I., Bonsu, C. and Ayeh, M. L. (2007). Food and its preparation in hotels in Accra, Ghana. A concern for Food Safety. *AJFAND*, **7 (5)**.
7. Verhaest, D. and Omeij, E. (2009). The relationship between formal education and skill acquisition in young worker first job. Hub research paper.
8. FAO/WHO. (2009). Codex Alimentarius - Food Hygiene. Basic text 4th Edition. WHO/FAO. Ababio, P. F. (2011). Evaluating food safety training impact on food handlers in the food service industry in Ghana. *Food Science and Technology*, **25 (4)**, 43-44.

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