African Journal of Sciences and Traditional Medicine

ISSN: 3434-6031

Index: Harvard, Boston, Sydney University, Dimensions, Lens, ResearchGet Scilit, Semantic, Google Scholar, Base, etc

https://doi.org/10.58578/AJSTM.v2i1.5026

Determination of the Association between Background Characteristics of Slaughterhouse Workers and Their Personal Hygiene Knowledge on Meat Handling At Tamale In The Northern Region of Ghana

Solomon Ossom Asare[1], Ogwa Oluwafunmike Abiodun[2], Emmanuel Olofu Omanchi[3], Genevieve Akpah Yeboah[4], Laweh Addo Maxwell[5]

[1]Assinman Nursing and Midwifery Training College, Public Health Department, Assin Foso, Ghana; [2]VillageReach, Ghana; [3]Médecins Sans Frontières, Water and Sanitation Mobile International Staff, Operational Center Paris, France; [4]Fomena Nursing and Midwifery Training College, Ghana; [5]Kintampo College of Health, Ghana

asaresolomon.as@gmail.com

Article Info:

Submitted:	Revised:	Accepted:	Published:
Jan 20, 2025	Feb 6, 2025	Feb 18, 2025	Feb 23, 2025

Abstract

According to the Food and Agriculture Organization (FAO) of the United Nations, meat products, either in fresh or frozen conditions, very rapidly become highly susceptible to microbial contamination as soon as they are exposed. It is exactly this situation that makes the hygiene of meat processing very relevant, this makes it reasonable that the determination of the association between background characteristics of slaughterhouse workers and their hygiene knowledge on meat handling is paramount. This current study, therefore, assessed butchers' characteristic knowledge and perception of good hygiene as storage practices through a cattle slaughterhouse case analysis. Content validation was utilized to authenticate the questionnaire items, which were administered face-to-face to the respondents (i.e., the butchers). The questionnaire included questions. The results showed that the slaughterhouse workers were male (Freq. = 100%, n = 50), acquired formal education with Low Personal Hygiene Knowledge at about 61%, no formal education at 16 %

AJSTM Journal is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License

While those with High Personal Hygiene Knowledge those with formal education 16% and no formal education 7% at n = 41), and were strongly ($p < 0.0001$) familiar with good hygiene knowledge practices. The educated butchers provided good examples that demonstrated knowledge and perception aspects of good hygiene within the age of 20-30 years. When compared to those at the age of 31 years to 40 years. Very conscious of their knowledge and perception of good hygiene characterization herein have to strive for continuous improvement in their slaughterhouse activities to assure beef quality and consumer safety.

Keywords: Determination, Association, Background, Characteristics, Slaughterhouse, Workers, Hygiene, Knowledge, Meat

INTRODUCTION

Globally, the demand for beef is continually on the rise, providing a highly desirable eating experience, even in developing countries [1]. In Africa, livestock production remains a very important aspect of the Agro-ecological landscape [2]. Cattle are among the most important livestock species reared via traditional pastoral farming systems, particularly within the northern part of West Africa [3]. The cost of beef is less expensive in the Northern part compared to the southern part of Ghana. Despite this, beef meat remains the major animal protein consumption resource [4] across households, communities, states, and the entire country. For the meat industry to thrive, there has to be a strategy that integrates the livestock value chain, consumers, and producers. Although Ghana's livestock industry appears not to be rapidly growing relative to the population that relies on it for beef, the number of grazing livestock as of 2010 was 108.6 million [5]. Notwithstanding meat processing is largely dependent on livestock production [6,7], the beef market value creates employment and generates income for butchers. Equally, slaughtering and dressing cattle comes at a reasonable cost [4]. According to the Food and Agriculture Organization (FAO) of the United Nations, meat products, either in fresh or frozen conditions, very rapidly become highly susceptible to microbial contamination as soon as they are exposed. It is exactly this situation that makes the hygiene of meat processing very relevant [8]. In addition, butchers at slaughterhouses in Nigeria, probably owing to their contact with a sizeable number of slaughtered cattle, could be exposed to zoonotic diseases [9], which makes the need for optimum hygiene and storage practices.

In Ghana, the Food Safety and Applied Nutrition guides the inspection as well as the production at medium food enterprises and prescribes the minimum Good Hygiene Practices (GHPs) pertinent during manufacturing, processing, and packaging, which are very applicable to cattle beef products. The fundamental aim is to assure both (meat) product safety and consumer protection. Further, beef production necessitates that technical skills, as well as equipment, be adequate and meet the regulated quality control standards [10]

As largely designed by government bodies, good practices are known to involve quality assurance activities, which have to adhere to the control of food production and its associated processes [11]. Good practices form the crux of food quality and consumer protection, as well as within the agro-food industry. In addition to actualizing the desired successes for food quality and consumer protection, the functioning of good practices ought to cut across all the production processes of agro-food products [12] and certainly to all the relevant facets of the meat industry.

To provide a chance to improve meat safety performance in SMEs that is important to consumers in terms of food supply [13]. In Ghana, several studies have been conducted on the meat safety knowledge, attitudes, and practices of meat handlers, but none have specifically focused on assessing the association between background characteristics of slaughterhouse workers and their personal hygiene knowledge [14]. In any case of the transcend side of animal and zoonotic disease domination, meat safety, and public health, the slaughterhouse supplies an important source of information for livestock health. Registration of reasons for damnation in those nations with enough meat snooping is based on epidemiological disease control and association between background characteristics of slaughterhouse workers and their personal hygiene knowledge [15]. In this study, we concentrated on meat safety practices including sanitation, hygiene, and handling of the key chain actors that provide meat to consumers through the understanding of the association between background characteristics of slaughterhouse workers and their personal hygiene knowledge For this purpose, we designed a questionnaire to assess the association between background characteristics of slaughterhouse workers and their hygiene knowledge on meat handling Ghana practices in slaughterhouses and abattoirs because these places are highly susceptible to contaminations that can cause severe foodborne diseases [15].

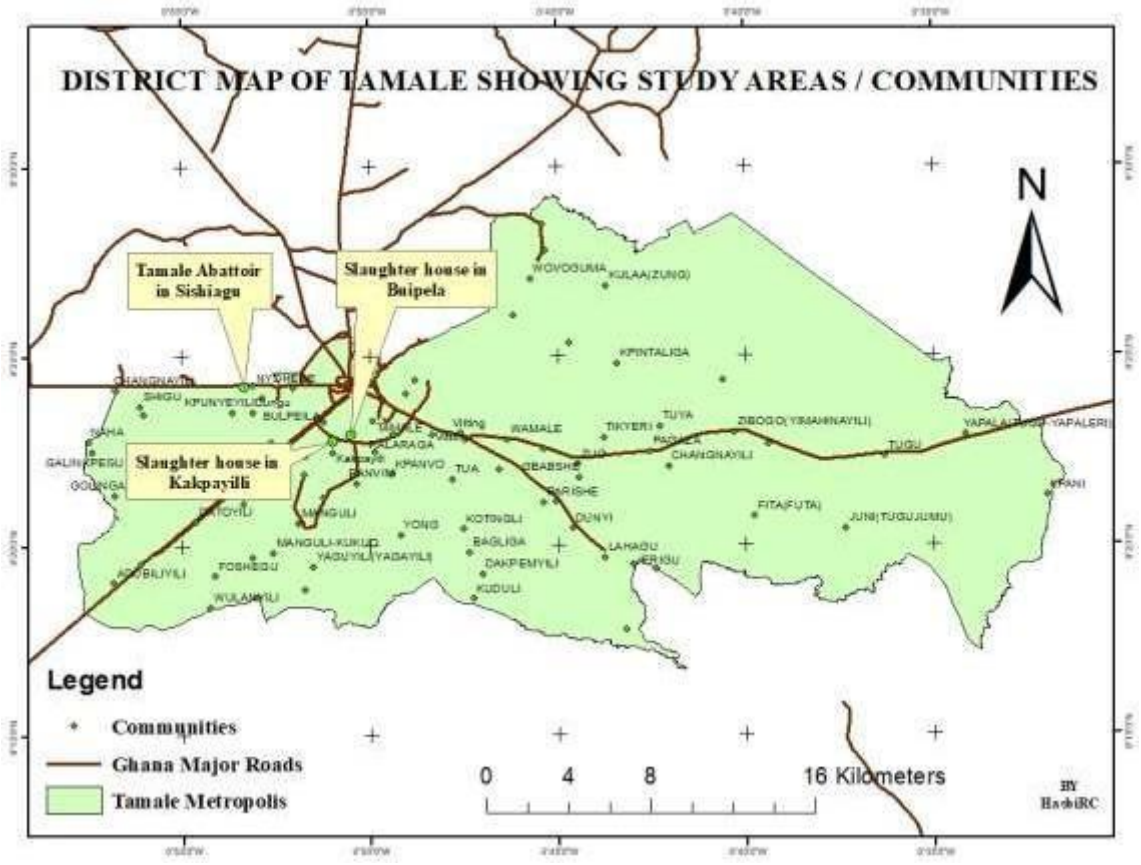
However, Adequate knowledge about hygienic procedures in meat handling processes at the abattoir workers is very crucial in ensuring the quality and wholesomeness of the carcasses produced as well as public safety. Good knowledge of the recommended hygienic procedures in meat handling and processing will most likely be put into practice and consequently achieve both meat quality and safety standards.

Thus, this study aims to Determine the association between the background characteristics of slaughterhouse workers and their hygiene knowledge of meat handling in Ghana.

MATERIALS AND METHODS

The Geography of The Study Area

The Tamale Metropolitan Assembly is one of the 18 districts in the Northern Region. The Metropolis can be found in the central part of the Northern Region and is bordered by Sagnarigu to the North, Mion District Assembly to the East, Tolon to the West, Central Gonja to the South West, and East Gonja to the South.



Sample Size Determination

The sample size was calculated with the assumption that the population proportion of Knowledge, Attitudes, and Practices was 50%, with a 10% margin of error at a 95% confidence level. The sample size was estimated using the following formula;

$$= \frac{t^2 x p\ (1-p)}{m^2}$$

Conceptual Framework of the Study

The conceptual framework of the study was developed by the researcher himself. It was developed based on the understanding that the quality and safety of meat produced by slaughterhouse butchers depend on their knowledge, attitude, and practices which are also influenced by the background characteristics of the butchers, the operational challenges they face in their work and the kind of regulations and enforcement mechanisms authorities put in place to regulate the work of the slaughterhouse butchers.

The background characteristics of operators such as their age, working experience, marital status, and level of education may have a direct bearing on their level of knowledge on the job. Their background information is most likely to affect the way they approach their job attitudinally as well as practices-wise. Much so, slaughterhouse operators with higher educational attainments may well be in a position to have a high level of knowledge in the butchery industry and stand a good chance of demonstrating a much desirable hygiene attitude towards work and consequently practice hygienic meat handling and processing compared to those with low or no educational standing.

A slaughterhouse man's background directly affects the way he works and hence his practices. The dos and don'ts at the work site may greatly be engineered by what he believes in and has been associated with over time. The work routines that are often affected by the personnel's background play a significant role in determining how the slaughterman practices his trade at the slaughterhouse.

Table 1: Association between background characteristics of slaughterhouse workers and their hygiene knowledge in meat handling

Background Characteristic	Personal Hygiene Knowledge on Meat Handling		
Sex of Respondents	Low Personal Hygiene Knowledge N (%)	High Personal Hygiene Knowledge N (%)	**x^2(p-value)**
Male	75 (76.5)	23 (23.5) (0.580)	.306
Female	1 (100.0)	0 (0.0)	
Level of education of respondents			
Formal Education	61 (79.2)	16 (20.8) (0.334)	.932
No formal education	16 (69.6)	7 (30.4)	
Age of respondents			
Fewer 20yrs	17 (81.0)	4 (19.0) (0.807)	1.017
20yrs-30yrs	30 (73.2)	11 (26.8)	
31yrs-40yrs	22 (81.5)	5 (18.5)	
41yrs+	8 (72.7)	3 (27.3)	
Number of years in business 1yr-5yrs	6 (18.8)	26 (81.3)	0.563
6yrs-10yrs	9 (26.5)	25 (73.5)	(0.755)
11yrs +	8 (23.5)	26 (76.5)	

Source: Field survey, 2019

DISCUSSION

Theoretically, a greater level of knowledge in the meat handling hygiene process, the right or desirable attitude towards meat handling personal hygiene coupled with recommended meat handling hygiene practices are crucial to avoid meat contamination (Haileselassie, 2013; Kariuki, et al., 2013). It is therefore important to understand the factors that determine the meat handling personal hygiene knowledge of the slaughterhouse workers to inform decision-making to help authorities improve knowledge of the butchers to help improve their meat handling hygiene attitude and practice to improve meat quality.

The findings in the current study suggest that slaughterhouses with no operational challenges of non-availability of separate areas for the skinning/dehairing process of the carcass were the only strong predictor of personal hygiene knowledge of the slaughterhouse workers. This may be an indication that the working environment for these operators plays a significant role in how much they know to keep themselves and their products safe. A factor that could adversely affect both meat quality and public health safety. This means that slaughterhouses with separate areas for the skinning/dehairing process of the carcass and for a better environmental outlook should be targeted by consumers when buying their meat as butchers there are likely to have high meat handling personal hygiene knowledge which can influence their practices positively to avoid contamination and foodborne diseases as such diseases are the results of improper personal hygiene in handling foodstuffs (Bryan, 1988; Shapiro et al., 1999).

Association between background characteristics of the slaughterhouse workers and their hygiene knowledge on meat handling using the bivariate analysis to examine the association between background characteristics of the slaughterhouse workers and their levels of knowledge on meat handling using a chi-square test of independence. The results returned from the chi-square test with a p-value of 0.05 or less were considered statistically significant associations. The results showed that slaughterhouse workers with no formal education had better hygiene knowledge on meat handling compared to their counterparts who had formal education even though the association was not statistically significant with a p-value of 0.334. The result further showed a negative association between the years of working experience in the slaughterhouse butchers and their level of hygiene knowledge in meat handling as butchers with low years of working experience of between 1- 5 years were more likely to have a high level of personal hygiene knowledge on meat handling than those with higher years of working experience of 6 – 10 years and 11+ years. However, this relationship was also not statistically significant with p=0.755. See Table 1 for details.

The proportion of slaughterhouse workers with high meat handling personal hygiene knowledge was less than a quarter (about 23%), and those with high knowledge of meat handling cross-contamination was also less than one-third (30%). The percentage of the slaughterhouse men who were found to have a high level of desirable meat handling attitude was about only 28% of the respondents while those with a high level of recommended meat handling practice were just a quarter (25%) of the respondents. Quite a

A good proportion, more than half (61.1%) of the slaughterhouse men believed that there is a need for regulatory registration for their trade.

CONCLUSION

With regards to the level of recommended meat handling hygiene practices of the slaughterhouse workers, it was found that the workers who had non-availability of drains for liquid waste management in the slaughterhouse as an operational challenge were more likely to have a high level of recommended meat handling hygiene practices compared to those who did not have that operational challenge. Non-availability of waste bins for solid waste collection as an operational challenge was also found to be significantly associated with a high level of recommended meat handling hygiene practices of the slaughterhouse men.

REFERENCES

1. Smith, S.B.; Gotoh, T.; Greenwood, P.L. Current situation and prospects of global beef production: Overview of special issue. Asian-Australas. J. Anim. Sci. 2018, 31, 927–932. [CrossRef] [PubMed]
2. Tano, K.; Kamuanga, M.; Faminow, M.D.; Swallow, B. Using conjoint analysis to estimate farmer's preferences for cattle traits in West Africa. Ecol. Econ. 2003, 45, 393–407. [CrossRef]
3. . Tewe, O.O. Sustainability and Development: Paradigms from Nigeria's Livestock Industry; An Inaugural Lecture delivered at the University of Ibadan, Nigeria; Ibadan University Press: Ibadan, Nigeria, 1997; p. 45. ISBN 978-121-3159.
4. Lawal-Adebowale, O.A. Dynamics of ruminant livestock management in the context of the Nigerian agricultural system. In Livestock Production; Javed, K., Ed.; Intech Open Limited: London, UK, 2012. [CrossRef]
5. Ogbeide, O.A. Meat Industry Development in Nigeria: Implications of the Consumer's Perception. Mayfair J. Agribus. Manag. 2015, 1, 59–75.Tambi, E.N.; Maina, O.W. Patterns of change in beef production and consumption in Africa. Rev. Sci. Tech. (Int. Off. Epizoot.) 2003, 22, 965–976. [CrossRef] [PubMed]
6. Tambi, E.N.; Maina, O.W.; Bessin, R. Animal and Animal Products Trade in Africa: New Development Perspectives in International Trade for Africa. J. Int. Food Agribusiness Mark. 2003, 14, 49–67. [CrossRef]
7. Aniebo, A.O.; Njike, M.C.; Okoli, I.C. Notes on abattoir operations at Afor Ajala Mbaise, Imo State, Nigeria. Anim. Prod. Res. Adv. 2008, 4, 222–226. [CrossRef]
8. Nwankwo, I.O.; Onunkwo, J.I.; Ogugua, A.J.; Ezugwu, R.N. Gross pathological conditions in eviscerated organs of cattle in Nsukka Slaughter Slab, Enugu State: The economic and public health implications. Niger. J. Anim. Prod. 2019, 46, 40–45.

9. Food Guidelines, National Agency for Food & Drug Administration & Control (NAFDAC). Available online: www.nafdac.gov.ng/food/food-guidelines/ (accessed on 13 June 2020).
10. Ababio, P.F.; Taylor, K.D.A.; Swainson, M.; Daramola, B.A. Effect of good hygiene practices intervention on food safety in senior secondary schools in Ghana. Food Control 2016, 6, 18–24.
11. Raspor, P.; Jevšnik, M. Good nutritional practice from producer to consumer. Crit. Rev. Food Sci. Nutr. 2008, 48, 276–292.
12. Varzakas, T.; Tzia, C. Handbook of Food Processing, Food Safety, Quality, and Manufacturing Processes; CRC Press: Boca Raton, FL, USA, 2016; p. 676. ISBN 978-1-4987-2178-3.
13. Ogbeide, O.A. Meat Industry Development in Nigeria: Implications of the Consumer's Perception. Mayfair J. Agribus. Manag.2015, 1, 59–75.
14. Good Storage Practices. Available online: https://minpharmum.files.wordpress.com/2011/09/gsp.pdf (accessed on 17 May 2025).
15. Selmat, J.; Iqbal, S.Z. (Eds.) Food Safety: Basic Concepts, Recent Issues and Future Challenges; Springer International Publishing: Cham, Switzerland, 2016; p. 164. ISBN 978-3-319-39253-0.
16. Haileselassie, M., Taddele, H., Adhana, K., & Kalayou, S. (2013). Food safety knowledge and practices of abattoir and butchery shops and the microbial profile of meat in Mekelle City, Ethiopia. Asian Pacific journal of tropical biomedicine, 3(5), 407-412.
17. Kariuki, E. N., Waithera, N. Z., & Wanzala, P. (2017). Bacteriological contamination of street foods among street food vendors in githurai and kizomba markets-Nairobi county, Kenya. Int J Innov Res Adv Stud, 4, 337-346.
18. Bryan, F. L. (2000). Food safety information and advice in developing countries. FOOD SCIENCE AND TECHNOLOGY-NEW YORK-MARCEL DEKKER-, 395-414.
19. Shapiro, A., & Mercier, C. (1994). Safe food manufacturing. Science of the total environment, 143(1), 75-92.