

Full Length Research Paper

Food safety practices of cooked food hawkers in Tharaka Nithi County, Kenya

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Hawking of cooked foods is an important economic activity, especially for low-income earners. However, the trade raises public health concerns particularly due to the likely breaches of food safety standards. Thus, this study investigated the food safety practices of hawkers of cooked foods in Tharaka Nithi County. A cross-sectional study design was used to collect data from 151 respondents using a questionnaire. The other data collection tools included a key informant interview guide and an observation checklist. The mean age of hawkers was 40.25 ± 9.226 years, with 71.5% of them aged between 35 and 59 years. The majority of hawkers were females (77.5%), married (51.7%), had attained secondary level education (55.6%), and earned a daily profit of between Ksh. 501 and 1,000. The hawkers were largely (91.1%) not trained on food safety, did not have a food hygiene license (92.7%), did not wear outer garments (58.9%), and did not have a medical certificate (89.5%). Almost half (54.2%) of the hawkers prepared their foods at home and transported them to hawking sites using public means (52.6%). The majority (86.8%) of hawking sites were makeshift stations and 40.4% of them had reportedly been infested with rodents. Generally, the hawkers did not comply with most of the food safety standards. County government of Tharaka Nithi should therefore design and implement interventions to promote the safety of cooked foods hawked in the county.

Key words: Handling practices, hawkers, cooked, food safety, street foods, street vendors.

INTRODUCTION

A hawker is a person who sells goods by moving from place to place (Oxford Learner's Dictionary, 2021). In the perspective of food safety, hawking is contextually comprised of preparation, sale, or display for sale of foods in open environments or makeshift structures within the streets commonly referred to as street food vending. Hawking of cooked foods is a common and old worldwide

phenomenon. In fact, food hawking has been significant in the growth of local economies for several countries including Bangkok (Kusakabe, 2015), Singapore (Tarulevicz, 2018; Squarzon, 2017), Ghana (FAO, 2016), South Africa (Khuluse and Deen, 2020) and Kenya (Mongei and Naitore, 2019; Adhiambo, 2016; Odundo et al., 2018). The growth in food hawking is driven by factors

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such as low costs, high nutrition value, ability to allow for variation in consumer diets, and ease of access of the hawked foods, both in urban and rural settings (Maroko, 2016; Moussavi et al., 2016). More importantly, food hawking provides an opportunity for self-employment using relatively little capital and is hence instrumental for developing business skills especially for the economically disadvantaged segments of the community (FAO, 2016; Nicholas, 2019).

In spite of the social and economic benefits of food hawking, studies have also pointed to food safety concerns particularly due to the associated challenges in compliance with food safety standards. Hawking of cooked foods usually occurs in high traffic streets such as bus terminals, industrial areas, construction sites, and roadsides. Sometimes, hawkers of cooked foods move from street to street, house to house, or even follow moving vehicles during heavy road traffics selling their foods (Hussein, 2014). The hawking practices and environments in which cooked foods are hawked pose inherent challenges in compliance with food safety standards. The problem is further confounded by inadequate regulation from the government. In most countries, including Kenya, there is no clear legal framework on food hawking (Imathiu, 2017). The principal food safety law in Kenya, the food drugs and chemical substances Act (Cap 254), only prohibits selling food under unsanitary conditions and does not explicitly regulate nor illegitimate food hawking (Republic of Kenya, 2012). Consequently, food hawking presents increased chances of food contamination and thus a major public health concern. This study, therefore, investigated the food safety concerns of hawked foods, particularly in regard to hawkers' food handling practices and the environmental conditions of the hawking stations. There was barely any documented information regarding hawkers' food handling practices and environmental conditions of cooked foods' hawking stations in Tharaka Nithi County thus the study provided important information to guide targeted policies and interventions by actors in food safety working in Tharaka Nithi County.

MATERIALS AND METHODS

Study site

This study was carried out at Chuka town in Tharaka Nithi County. Tharaka Nithi is one of the forty-seven counties in Kenya which is composed of six sub-counties and three major urban centers, namely, Chuka, Chogoria, and Marimanti. Chuka is the largest town in Tharaka Nithi County (TNC) and hosts the majority of cooked food hawkers. It is also the most developed urban center, with the majority of social amenities and a physical development plan (TNC, 2018).

Study design

The study deployed a mixed-methods cross-sectional study design. Data were collected between January and April 2021.

Study population and inclusion criteria

The study was conducted on hawkers of cooked foods at Chuka town. In order to be considered for participation, a hawker ought to be displaying for sale a cooked food item during the time of data collection. However, those aged below 18 years were not enlisted for participation.

Sample size determination and data collection

The study carried out a census targeting the 164 cooked food hawkers at Chuka town. A route map was developed covering all the streets and, in a manner, to facilitate easy and full coverage of all cooked food hawkers in Chuka town. Research assistants followed the identified route maps and collected data from all 151 eligible cooked food hawkers available during the time of data collection. Further, the study carried out interviews with 12 key informants, 9 from the county department of public health and sanitation, and 3 from the county department of finance and revenue collection. All the key informants were interviewed from their respective offices.

Data collection tools

Data was collected using a questionnaire, an observation checklist, and a key informant interview schedule. The questionnaire was used to collect data on hawkers' socio-demographic characteristics, food handling practices, and some environmental conditions whereas the observation checklist was used to guide in gathering information on characteristics of the environment in which cooked foods were hawked and also some hawkers' food-handling hygiene practices. The key informant interview schedule was used to guide discussions with principal stakeholders in food safety. In particular, the study interviewed selected county government officials from the department of health services and sanitation and the department of finance and revenue collection. All the data collection tools were scrutinized by a team of professionals for readability, clarity, and comprehensiveness in regard to answering the research questions. Further, the tools were pre-tested at Chogoria town which has a population comparable to Chuka town in key sociodemographic characteristics. The structural facilities, management structures, and climatic conditions of Chogoria town are also largely comparable to Chuka town.

Data management and analysis

Quantitative data was coded, entered into Microsoft Excel (Ms. Excel version 2016), and validated through double-checking. The analysis was primarily carried out using Statistical Package for the Social Sciences (IBM SPSS Statistics 24) and the results were described in form of mean, range, frequencies, and percentages. Qualitative data were analyzed using the thematic network analysis technique and interpretations were made based on the source of the data and the emerging themes and sub-themes.

Ethical considerations

The ethical merits of the study were reviewed and approved by Chuka University Institutional Ethics Review Committee (reference number CUIERC/NACOSTI/078). Further, the study was licensed by Kenya National Commission for Science, Technology, and Innovation (NACOSTI) through license number 798300. Participation in the study was solely by informed consent and the participants were informed about their right to refuse to consent or

Table 1. Socio-demographic characteristics of cooked food hawkers in Tharaka Nithi County.

Variable (n = 151)	Frequency (n)	Proportion (%)
Demographic characteristics		
Sex		
Male	34	22.5
Female	117	77.5
Age (years)		
18 - 24	7	4.6
25 - 34	36	23.9
35 - 59	108	71.5
Marital status		
Single, never married	50	33.1
Currently married	78	51.7
Separated, divorced, or widowed	23	15.2
Socioeconomic characteristics		
Level of education		
Primary	48	31.8
Secondary	84	55.6
Tertiary	19	12.6
Profit earned from hawking cooked foods (Ksh.)		
0 - 500	70	46.4
501 - 1,000	81	53.6
Age of business (in years)		
> 1	9	6
1 - ≥ 3	41	27.1
3 - 7	101	66.9

to withdraw from the study at any point without prior notice or even the need to explain their action.

RESULTS AND DISCUSSION

Socio-demographic characteristics of hawkers of cooked foods in Tharaka Nithi County

The mean age of the hawkers was 40.25 ± 9.226 years, with the majority 108 (71.5%) aged between 35 and 59 years (Table 1). The findings are comparable to studies by Marutha and Chelule (2020), and Karondo and Tumaini (2021) who recorded a mean age of 39 and 38 years amongst food hawkers at Polokwane central business district in South Africa and Ilala Municipality in Tanzania, respectively. A majority (77.5%) of cooked food hawkers were females (Table 1). Studies by Salamandane et al. (2021) and Odundo et al. (2018) also recorded similar findings where females were found to comprise 77 and 60% of cooked food hawkers, respectively. The predominance of females in hawking cooked foods could be as a result of the Kenyan

perspectives on gender whereby women are mostly associated with preparing foods in their respective households. The study further reveals that a majority (57.8%) of the female hawkers were either never married, or had separated from their partners. Thus, the relatively high financial obligations by the single females could also be among the factors responsible for their predominance in the business of hawking cooked foods in Tharaka Nithi County.

Almost half (51.7%) of the hawkers were married (Table 1). This proportion was within the range reported in studies carried out in Nairobi County in Kenya (Adhiambo, 2016) and Maseru city in Lesotho (Gadaga et al., 2014) where 57 and 52% of street food hawkers, respectively, were married. Just like Maroko (2016) observed in a study carried out in Nairobi County of Kenya, the dominance of married persons in food hawking in Tharaka Nithi County may well be driven by the associated relatively high number of family dependents. The majority (55.6%) of cooked food hawkers had attained secondary-level education (Table 1). These findings are consistent with a study carried out in the Philippines where a majority of 50% of respondents

Table 2. Food handling practices of cooked food hawkers in Tharaka Nithi County.

Variable (n = 151)	Frequency (n)	Proportion (%)
Trained on food safety		
Yes	15	9.9
No	136	90.1
Possess a medical certificate		
Yes	16	10.6
No	135	89.4
Possess a food hygiene license		
Yes	11	7.3
No	140	92.7
Possess a trade permit		
Yes	124	82.1
No	27	17.9
Wearing an outer garment (apron)		
Yes	62	41.1
No	89	58.9
Washes hands before handling ready to eat food		
Yes	22	14.6
No	129	85.4
A different person to handle money		
Yes	0	0
No	151	100

hawking food at Tarlac State University reportedly had attained secondary-level education (Alamo-Tonelada et al., 2018). Prabakaran et al. (2017) reported a high of 62% of food hawkers with secondary-level education. Studies by Kaptso (2021), Adhiambo (2016), and Nkosi and Tabit (2021), also documented persons with secondary-level education being the majority amongst food hawkers. In Kenya, secondary education is basically a mid-level training where learners are equipped with general knowledge in preparation for specialization in their preferred careers. Literature indicates that food hawking is a simple task that requires minimal technical skills (Moussavi et al., 2016; FAO, 2016), and this could be the reason why the majority of food hawkers comprised persons with secondary-level education. Moreover, persons with only secondary education have limited employment opportunities especially for areas that require high technical competencies.

On average, cooked food hawkers made a profit of Ksh. 541 per day. The profit earned is way above the minimum daily wage of Ksh. 367 advised for general works by the Government of Kenya (Republic of Kenya, 2018). Accordingly, the study corroborates the popular belief that food hawking is a profitable venture among small-scale businesses, and this could be among the reasons why hawking of cooked foods has blossomed in Tharaka Nithi County.

Food handling practices of hawkers of cooked foods in Tharaka Nithi County

A majority of 91.1% of hawkers of cooked foods in Tharaka Nithi County did not have any training on food safety (Table 2). These findings compare closely with studies carried out at Kiambu County in Kenya (Johnson et al., 2020), and Plateau State in Nigeria (Emmanuel et al., 2015) where 93 and 81.5% of food hawkers, respectively, did not have any formal training on food safety. At Dhaka University campus in Bangladesh, all (100%) food hawkers did not have any training on food safety (Farhana, 2020). In Kenya, food hawking is not directly regulated, and therefore no provisions for the training of food hawkers (Republic of Kenya, 2012). A key informant from the county department of health services and sanitation confided to this study that food hawking was discouraged in Tharaka Nithi County because of the inherent difficulties in observing food safety standards. Public Health Officers (PHOs) play a critical role in the on-job training of food handlers and therefore their perceived illegitimacy on food hawking perhaps explains why a majority of cooked food hawkers in Tharaka Nithi County were not trained on food safety. Knowledge is a very critical path for improved uptake of any desired health practice. Consequently, lack of training on food safety by the majority of cooked food hawkers compounds

the likelihood of contamination of cooked foods hawked in Tharaka Nithi County.

A majority of 92.7% of hawkers of cooked foods had not been issued with a food hygiene license (Table 2). A key informant from the public health section confided that cooked food hawkers at Chuka town and Tharaka Nithi County at large were not issued with a food hygiene license because the sites at which the foods were prepared and displayed for sale could not meet the minimum public health standards. Interestingly, a majority (82.1%) of the same hawkers of cooked foods had been issued with a trade permit by the county department of finance and revenue collection (Table 2). This finding compares strongly with a study carried out in Zimbabwe where 98.3% of food hawkers operated without a health license (Njaya, 2014). In Cameroon, a high of 60% of food hawkers had also not been licensed (Kaptso, 2021). Generally, a food hygiene license in Kenya is issued by the department of public health only to businesses that have complied with the basic food safety standards while a trade permit is issued by the department of finance and revenue collection as a means of raising revenue by the counties and government at large. A food hygiene license is a basic requirement for any person selling food to the public and without which a business cannot be issued with any other trade permits (Republic of Kenya, 2012). Thus, the findings of this study point to an outright discord between two government departments in regard to the licensing of hawkers of cooked foods in Tharaka Nithi County. In fact, a key informant from the section of public health confided that their efforts to discourage hawking of cooked foods in Tharaka Nithi County were somewhat frustrated by the virtue that cooked food hawkers were issued with trade permits by the county department of finance and revenue collection which by and large legitimized the business.

In this study, 58.9% of hawkers of cooked foods did not wear outer garments when handling food (Table 2). Similarly, studies by Adhiambo (2016), Mlay (2018), Were et al. (2020), and Hossen et al. (2021) observed that a majority of 55, 61, 75, and 90%, respectively, of food hawkers did not wear outer garments while handling food. Outer garments are a form of personal protective clothing that prevents cross-contamination of ready-to-eat food from contaminants lodged on the ordinary clothes of food handlers. Consequently, the findings of this study point to increased chances of contamination of cooked foods from the hawkers' ordinary clothing.

This study observed that a majority of 89.5% of hawkers of cooked foods did not have a medical certificate (Table 2). According to a key informant from the county department of public health and sanitation, hawking of cooked foods is not allowed as per the food, drugs and chemical substances Act (cap 254 LOK) and therefore food hawkers could not qualify for medical certificates. Similarly, a study conducted in Southern Sierra Leone found that a high of 85.1% of hawkers of

cooked foods did not have a health certificate (Lamin-Boima, 2017). Similar observations were also documented by Were et al. (2020) and Adhiambo (2016). The situation was even worse in Kayole location of Nairobi County where 96.4% of food hawkers did not possess a medical certificate (Maroko, 2016). In Kenya, like other countries, food safety and quality standards prohibit persons suffering from infectious diseases from handling ready-to-eat foods meant for public consumption. Indeed, existing literature indicates that food hawkers are potential carriers of pathogenic microorganisms such as *Salmonella*, *Shigella*, among others (Moloi et al., 2021). A medical certificate is an affirmation that a person has been examined and found medically fit to prepare or sell ready-to-eat foods to the public. The findings of this study thus implicate hawkers of cooked foods in breach of food safety and quality standards which subjects cooked foods hawked at Chuka town to increased chances of microbial contamination. As a matter of fact, key informants observed that hawking of cooked foods in Tharaka Nithi County was carried out in total disregard of public health standards and thus predisposed consumers to food-borne diseases.

In the current study, a paltry 14.6% of hawkers of cooked foods washed their hands before handling ready-to-eat foods (Table 2). Similarly, a study by Nkosi and Tabit (2021) observed that a minority of 43% of food hawkers at Zululand District in South Africa washed their hands before handling ready-to-eat foods. Washing hands is a universally recommended and tested cheap, efficient, and cost-effective way of preventing diseases. As such, failure to wash hands by the majority of hawkers of cooked foods predisposes the foods to increased odds of contamination, especially by microbial contaminants. Worse also, all (100%) the cooked food hawkers in Tharaka Nithi County did not have a separate person to handle money from customers (Table 2). Similarly, studies by Bereda et al. (2016) and Eliku (2016) observed that all (100%) food hawkers handled money while at the same time serving food to customers. Existing literature implicates the handling of money in microbial contamination of foods (Amankwahkuffour et al., 2015). Consequently, cooked foods hawked in Tharaka Nithi County are at an increased risk of cross-contamination from contaminated money.

Environmental conditions of the hawking sites for cooked foods in Tharaka Nithi County

More than half (54.3%) of the hawkers prepared their foods at home, while the rest prepared their foods at the hawking sites (35.7%) or licensed food premises (10%) (Table 3). These findings are consistent with studies by Kaptso (2021) and (Lamin-Boima, 2017). The sanitary conditions of foods prepared at homes cannot be assured (Kaptso, 2021) while hawking sites are basically

Table 3. Environmental conditions of the hawking sites for cooked foods in Tharaka Nithi County.

Variable	Frequency (n)	Proportion (%)
Food preparation site (n = 151)		
Home	82	54.3
Hawking site	54	35.7
Licensed food premise	15	10
Means of food transportation (n = 97)		
Public vehicle/motorcycle	51	52.6
Private/Walking (in a bucket or trolley)	46	47.4
Source of raw materials (n = 151)		
Formal business/home farm	126	83.4
Informal business (black market)	25	16.6
Storage of garbage (n = 151)		
In a municipal receptacle/standard dust bin	96	63.6
In a carton/sack/indiscriminate dumping	55	36.4
Source of cooking utensils (n = 151)		
Informal sector (jua kali)	61	40.4
Formal sector	90	59.6
Presence of vectors or other pests of public health importance at the hawking site (n = 151)		
Yes	90	59.6
No	61	40.4
Mode of hawking of cooked foods (n = 151)		
Move from street to street	20	13.2
In a stationary point	131	86.8
Hawking site exposed to open environment (n = 151)		
Yes	151	100
No	0	0
Ready-to-eat food covered (n = 151)		
Yes	131	86.8
No	20	13.2

makeshift stations exposed to contaminations from the open environment and mostly lacking essential food safety facilities (Kariuki et al., 2018; Ceyhun and Şanlıer, 2016). Indeed, the food, drugs, and chemical substances act require that all foods meant for public consumption should be prepared from licensed food premises in order to minimize the chances of contamination (Republic of Kenya, 2012). Cooked foods hawked in Tharaka Nithi County were therefore at an increased risk of contamination since the majority (90%) were prepared at either homes or unlicensed hawking sites.

Utensils used to cook foods hawked in Tharaka Nithi County were sourced from either the informal sector (40.4%) or the formal sector (59.6%) (Table 3). These findings are consistent with observations by

Khairuzzaman et al. (2014) that utensils used for preparing foods vended at the streets are sourced from both the informal and formal sectors. Unfortunately, utensils from the informal sector, popularly known as the “jua kali sector”, are usually fabricated from old metallic materials which are prone to leaching of heavy metals (Khairuzzaman et al., 2014). Consequently, foods cooked with utensils sourced from the “jua kali” sector are subject to contamination with heavy metals. Some (16.6%) of hawkers of cooked foods relied on low-quality raw materials from the informal sector as well (Table 3). Bhutan Agriculture and Food Regulatory Authority (2014) pinpointed the use of substandard raw materials as a critical concern in the informal food sector. Studies have shown that food ingredients from the informal sector

mostly contain chemicals and other toxins in quantities above the recommended limits (Rane, 2011). In view of this, cooked foods hawked in Tharaka Nithi County are at risk of contamination with heavy metals and other toxins from the raw materials sourced from the informal sector. Once cooked, a majority (52.6%) of the foods were transported to hawking sites using a public vehicle or a public motorcycle (Table 3). Food transportation is an important “critical point” at which food contamination can occur (Alimi, 2016). Indeed, the hygiene standards of public vehicles and public motorcycles cannot be guaranteed. Consequently, foods hawked in Tharaka Nithi County are increasingly likely to be contaminated with pathogenic microbes or heavy metals from public vehicles and public motorcycles.

The majority (86.8%) of respondents hawked their cooked foods at temporary stationary points while the rest (13.8%) hawked the foods by moving from one street to the other (Table 3). On the contrary, a study carried out at Barishal city in Bangladesh observed that a comparatively small proportion of 25% of respondents hawked their foods at stationary points while a majority of 58.3% hawked the foods by moving from one point to the other (Rahman, 2019). In terms of garbage management, it was revealed that 36.4% of hawkers of cooked foods stored their garbage in cartons, sacks, or dumped indiscriminately while 64.6% stored garbage generated from food hawking in environmentally sensitive methods such as in municipal receptacles or standard dust bins (Table 3). These findings compare strongly with a study carried out in South Africa where 38% of food hawkers used substandard bins to store garbage while 11.8% had no means of storing garbage at all (Marutha and Chelule, 2020). In Tanzania, a high of 55.1% of food hawkers sometimes disposed their garbage indiscriminately (Mlay, 2018). Poorly managed garbage is known to provide a conducive environment for breeding of disease vectors such as flies and rodents. This study also revealed that 13.2% of hawkers did not cover the cooked foods during display (Table 3). These findings are in close agreement with a study by Okojie and Isah (2014) where 10.8% of hawkers displayed their foods in open containers. The proportion of hawkers who did not cover their foods during hawking was even higher (31%) at Delhi city in India (Sachdev, 2017) and Hawassa city (51%) in South Ethiopia (Temesgen and Nune, 2016). Just like poorly managed garbage, exposed ready-to-eat foods usually attract flies and other rodents that use the food for resting, habitat, or mostly for their meal (Mlay, 2018). Accordingly, a markedly high number (40.4%) of hawkers reported seeing rodents or other pests of public health importance in the hawking sites (Table 3). These findings are consistent with a study carried out by Alamo-Tonelada et al. (2018) where food hawkers reported sometimes seeing pests in the hawking sites. In Nigeria, a high of 85% of food hawkers at Owerri reported presence of vectors in their hawking sites (Iwu et al.,

2017). Likewise, Hassan and Fweja (2020) reported presence of pests at food hawking sites although at a relatively small proportion (23.4%) compared to the findings of this study. Some of the pests are known mechanical or biological disease vectors. Accordingly, these findings point to a somewhat high risk of contamination of cooked foods hawked in Tharaka Nithi County from these pests. Indeed, key informants observed that hawking of cooked foods at in Tharaka Nithi County was carried out in environments prone to contamination.

Conclusion

The majority of hawkers of cooked foods in Tharaka Nithi County do not observe the basic food safety requirements. Consequently, hawked cooked foods in Tharaka Nithi County present an increased risk of contamination, particularly from pathogenic microbes, harmful chemicals, or foreign materials introduced into the foods through poor food handling practices and unsanitary hawking environments. In order to protect the public from related foodborne diseases, the county government of Tharaka Nithi should develop and implement comprehensive targeted interventions.

Recommendations

The county government of Tharaka Nithi in collaboration with relevant stakeholders to develop and implement a policy on hawking cooked foods in the county. The policy should address all the safety concerns of hawking cooked foods, with some of the priority intervention areas being building the capacity of cooked food hawkers, and securing the hawking environments.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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