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Food Handling Practices in Public Secondary Schools in Thika, Kiambu County, Kenya

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Abstract

Food poisoning outbreaks in Kenya have been on the rise in recent years, and public secondary schools have not been spared from these incidents. This research paper focused on the assessment of food handling practices in public secondary schools in Thika, Kiambu County, Kenya, to identify potential causes of food poisoning outbreaks and recommend strategies for improvement. The study employed a mixed-methods approach, including observations, interviews, and surveys, to gather data on current food handling practices and identify potential areas for improvement. The study involved 40 respondents from various public secondary school categories and roles, providing insights into food handling practices, knowledge of food safety and suggestions for mitigation. The study's findings reveal that 65% of the respondents were male, with 55% having over six years of experience in the food service industry. A majority (57.5%) were food handlers, and 50% were aged 40 years and above. Despite 92.5% of respondents expressing satisfaction with their food handling practices, only 5% reported the availability of written guidelines, and 70% indicated a lack of temperature control procedures. Furthermore, 80% of the staff could not identify common symptoms of foodborne illnesses, highlighting a significant knowledge gap. The study emphasizes the need for enhanced training, with 82% of respondents advocating for more education on food safety. To address these concerns, the study recommends comprehensive training programs for kitchen staff, the development of written food safety guidelines, and stricter adherence to hygiene practices.

Keywords: Food Handling Practices, Public Secondary Schools, Food Poisoning Outbreaks

1. Introduction

Food safety is a paramount concern in any community, and educational institutions are no exception. The provision of safe and nutritious meals to students is crucial for their overall well-being and academic performance. In recent times, Kenya has experienced an increase in cases of food poisoning outbreaks, particularly in public secondary schools. These outbreaks have raised concerns about the adequacy of food-handling practices within these institutions. The World Health Organization (WHO) estimates that nearly 1 in 10 people fall ill due to contaminated food each year, resulting in approximately 420,000 deaths worldwide. (WHO, 2018). In Kenya, food safety remains a critical issue, with sporadic outbreaks affecting various sectors, including schools. The repercussions of such



outbreaks are far-reaching, affecting not only the health and well-being of students but also the reputation of educational institutions and the community as a whole (CDC, 2021).

Public secondary schools serve as focal points for education and nourishment for the region's youth. However, ensuring food safety within these institutions involves complex challenges. Factors such as inadequate training, lack of awareness, limited resources, and inadequate infrastructure can contribute to the improper handling of food, increasing the risk of contamination and subsequent outbreaks. The diverse nature of food items prepared and consumed in school settings, combined with the large number of students served daily, amplifies the potential impact of any lapses in food handling practices (FAO, 2019).

The significance of addressing food safety concerns in public secondary schools goes beyond the immediate health implications. Students who suffer from foodborne illnesses may experience disruptions in their studies, impacting their academic progress. Moreover, a recurring pattern of outbreaks can undermine parents' confidence in the safety of the school environment, potentially leading to decreased enrolment and diminished educational outcomes. (MOH, 2020).

According to a study by Njuguna et al. (2019), inadequate food handling practices in educational institutions can lead to food poisoning outbreaks and pose a significant risk to the students' health. Despite existing guidelines and regulations, food safety challenges persist in school settings (Gikunju et al., 2021). Therefore, understanding the current practices, knowledge levels, and potential causes of food poisoning outbreaks in public secondary schools is essential for implementing effective interventions and improving food safety.

In the context of Thika, where both urban and rural influences converge, understanding the dynamics of food handling practices is crucial. Factors such as cultural norms, socioeconomic disparities, and limited access to resources may impact food safety measures in schools. Comprehensive research will provide insights into these complexities and help tailor interventions that are contextually relevant and effective. Ultimately, the successful implementation of improved food handling practices in public secondary schools in Thika has the potential to positively impact the health and academic achievements of students, enhance the reputation of schools, and promote a safer and healthier learning environment.

1.1 Statement of the Problem

The lack of comprehensive research on food handling practices in public secondary schools in Thika and the potential causes of food poisoning outbreaks pose a significant risk to the health and well-being of students. Understanding the current practices, knowledge levels, and contributing factors is essential to developing effective strategies for preventing foodborne illnesses in these schools.

1.1 Research Objectives

- i. To assess the current food handling practices in Public Secondary Schools in Thika, Kiambu County, Kenya
- ii. To determine the level of knowledge on food safety practices among food handlers in Public Secondary Schools in Thika, Kiambu County, Kenya
- iii. To identify the areas for improvement in food handling practices in Public Secondary Schools in Thika, Kiambu County, Kenya.



2. Literature Review

Food safety is a critical public health concern globally, and its importance is magnified in institutional settings such as schools, where large populations are served meals daily. Schools, particularly in developing countries like Kenya, face unique challenges in maintaining food safety due to resource constraints, lack of infrastructure, and inadequate training. In public secondary schools in Thika, Kiambu County, Kenya, food safety is a pressing issue given the reliance on centralized food preparation and distribution, which, if mishandled, could lead to widespread foodborne illnesses.

2.1 Food Handling Practices in Schools

Food handling practices encompass activities involved in the preparation, storage and serving of food and they are critical in preventing food contamination and ensuring food safety. In Kenyan schools, studies have shown that food handling practices often fall short of recommended standards. Gikunju et al., 2021 conducted a study on food safety practices in Kenyan schools and found that many schools struggle with basic food safety measures such as proper storage of food items, regular cleaning of kitchen equipment, and adherence to hygiene protocols. Nyamari, 2013 highlighted the absence of systematic food safety management systems in many public secondary schools in Kenya. The study revealed that food handlers often lack access to necessary tools and equipment such as thermometers for monitoring food temperatures which are essential for preventing foodborne illnesses. This lack of infrastructure is a significant barrier to implementing safe food handling practices. The study found that many schools do not conduct regular inspections or audits of their food handling processes, leading to inconsistent adherence to safety standards.

International research echoes these concerns, with Medeiros et al., 2011 emphasizing that in institutional settings like schools, the absence of proper food handling procedures can have severe consequences. The study pointed out that cross-contamination; improper cooking and inadequate storage are the leading causes of foodborne illnesses in schools. These findings underscore the need for food handling practices, including regular training for food handlers and the implementation of food safety management systems that can help mitigate risks.

2.2 Global Perspectives on School Food Handling Practices

Globally, schools face challenges in maintaining food safety due to factors like inadequate infrastructure, training, and adherence to protocols. Medeiros et al., 2011 found that many schools worldwide fail to meet basic food safety standards, with issues including improper storage, temperature control, and hygiene.

WHO, 2015 reported that a significant proportion of schools in low- and middle-income countries lack essential food safety facilities. This includes inadequate storage, refrigeration, and training, increasing the risk of foodborne diseases.

A study by the World Health Organization (WHO, 2015) reviewing food safety in schools across low- and middle-income countries echoed these concerns. The study found that many schools in these regions lack the necessary facilities to implement effective food safety measures, including separate storage areas for raw and cooked foods, sufficient refrigeration, and adequate training for food handlers. The WHO report emphasized that



these deficiencies significantly increase the risk of foodborne diseases, with potentially severe consequences for students' health and academic performance.

2.3 Knowledge of Food Safety Practices among Food Handlers

The knowledge level of food handlers is crucial in determining the effectiveness of food safety practices in schools. In Kenya, the literature indicates significant deficiencies in food safety knowledge among school kitchen staff, which directly impacts the safety of food served to students. Oloo et al., 2023 conducted a study on food safety knowledge among food handlers in public secondary schools and found that a large proportion of food handlers had not received formal training on food safety. The study revealed that while many food handlers are aware of basic hygiene practices, such as handwashing and wearing protective clothing, they lack deeper knowledge about critical aspects of food safety, such as temperature control, cross-contamination, and the identification of foodborne illness symptoms.

This knowledge gap is concerning, as it increases the risk of foodborne illnesses. For instance, food handlers who are unaware of the dangers of improper temperature control may inadvertently serve food that has been stored at unsafe temperatures, leading to bacterial growth and potential outbreaks of foodborne diseases. Mutuku et al., 2018 reinforced these findings, noting that many food handlers in Kenyan schools rely on outdated practices and lack access to ongoing education that could keep them informed about current food safety standards and practices.

The importance of food safety knowledge is also highlighted in studies conducted outside Kenya. Clayton et al., 2002 explored the relationship between food safety knowledge and food handling behaviour among food handlers in the UK. The study found that food handlers with higher levels of knowledge were more likely to adhere to safe food

2.4 Impact of Training on Food Safety Knowledge

Training is a critical factor in improving food safety knowledge among food handlers. Research by Ababio and Lovatt, 2015 on the impact of food safety training programs in Ghana found that regular, structured training significantly improved food handlers' knowledge and practices. The study recommended that schools implement ongoing training programs tailored to the specific needs of food handlers, with a focus on practical, hands-on learning.

In Kenya, Mwangi et al., 2019 also emphasized the importance of training in their study on food safety in schools. The study found that schools with regular training programs had significantly better food safety outcomes compared to those without such programs. The authors advocated for government support in providing resources and training for food handlers to ensure that they are equipped with the necessary knowledge to maintain high standards of food safety.

2.5 Areas for Improvement in Food Handling Practices.

Identifying areas for improvement in food handling practices is crucial for enhancing food safety in schools. Several studies have pointed out the need for regular training, improved infrastructure, and the establishment of clear guidelines for food handlers. Kamau et al., 2020 suggest that addressing the gaps in food safety knowledge through targeted training



programs could significantly improve food handling practices in schools. Additionally, Mwangi et al., 2019 advocate for the implementation of stricter monitoring and enforcement of food safety regulations in schools, emphasizing the need for government intervention to ensure compliance. The introduction of written guidelines and checklists, as proposed by Onyango et al., 2017 could also standardize food handling procedures and reduce the risk of foodborne illnesses.

2.6 Conclusion

The literature indicates that while there are efforts to improve food handling practices in public secondary schools in Kenya, significant challenges remain. The gaps in food safety knowledge among food handlers, combined with inadequate infrastructure and a lack of formal guidelines, contribute to the persistence of unsafe food handling practices. To address these issues, there is a clear need for comprehensive training programs, enhanced infrastructure, and the implementation of standardized food safety protocols. These improvements are essential to safeguarding the health of students and ensuring the overall safety of food served in schools.

3. Methodology

This study employed a mixed-methods approach, integrating quantitative and qualitative data collection methods. The research was conducted in public secondary schools in Thika, Sub County within Kiambu County in Kenya. Data was collected using a structured questionnaire administered to 40 respondents from six public secondary schools in Thika. The schools were deliberately chosen to consist of two boys' schools, two girls' schools and two mixed-gender schools. The study focused on schools offering boarding facilities or meals to day scholars, thus ensuring relevance and specificity to the research objectives. The questionnaire covered demographic information, food handling practices, knowledge of food safety, and mitigation strategies. The participants included individuals directly or indirectly involved in food handling.

4. Results

The demographic profile of the respondents reflected a diverse sample, with a higher proportion of males (65%) compared to females (35%). This gender distribution may reflect the specific roles and responsibilities within the food service industry. The age distribution varied across different age groups, suggesting a multi-generational workforce. A notable percentage of respondents (55%) had over 6 years of experience in the food service industry, indicating a substantial level of expertise among the participants. The majority of respondents (57.5%) held the role of food handlers, while teachers and other positions represented 15% and 27.5%, respectively. This distribution aligns with the observations made by Kamau et al. (2020), who similarly identified that a majority of food handlers in secondary schools were male and tended to be elderly. The congruence between our findings and Kamau et al.'s (2020) work underscores the consistency and relevance of these demographic trends within the food service industry, particularly in educational settings. These insights into the demographic landscape provide a foundational understanding for comprehending the dynamics of food handling practices and inform subsequent analyses within this study.



Table 4.1: Social Demographic Characteristics

Social Demographic Characteristics(N=40)			
Characteristics	Category	Frequency	Percentage (%)
Gender	Male	26	65
	Female	14	35
Age	19-29 years	6	15
	30-39 years	14	35
	40 years and above	20	50
Occupation	Teacher	6	15
	Food handler	23	57.5
	Others	11	27.5
Work Experience	Less than 1 year	3	7.5
	1-5years	9	22.5
	6-10years	22	55
	More than 10 years	6	15

Key: N = Number of participants

4.1 Food Handling Practices

A substantial proportion of respondents (35%) were responsible for food handling practices, which is a critical aspect of food safety. However, the presence of written guidelines for food handling was reported by only 5% of participants. This indicates a potential gap in standardization and consistency in food safety protocols. Although 72.5% of respondents reported discarding food leftovers, the absence of separate storage areas for raw and cooked food in 32.5% of schools raises concerns about cross-contamination risks. Temperature control procedures were found to be lacking in the majority of institutions (70%), which could impact the safety of food products. The high level of satisfaction (92.5%) with current food handling practices contrasts with the identified gaps in guidelines, training, and temperature monitoring. This study's findings align with those of Gikunju et al. (2021), who similarly concluded that food hygiene practices in secondary schools fall below the minimum recommended standards. The consistency between our results and those of previous research reinforces the urgency of addressing the issues identified and implementing robust measures to enhance food safety practices within the secondary school context.



Table 4.2: Food Handling Practices

Food Handling Practices (N=40)			
Practice	Category	Frequency	Percentage
Responsible for the food handling	Yes	14	35
	No	26	65
Training Frequency	Regularly	3	7.5
	Occasionally	23	57.5
	Rarely	14	35
Availability of written guidelines	Yes	2	5
	No	26	65
	Not sure	12	30
Presence of a food safety officer	Yes	2	5
	No	28	70
	Not sure	10	25
Rating of the cleanliness and hygiene	Excellent	6	15
	Good	14	35
	Fair	17	42.5
	Poor	3	7.5
Separate storage for raw and cooked food	Yes	13	32.5
	No	27	67.5
Monitoring food storage temperatures	Yes	4	10
	No	28	70
	Not sure	8	20
Handling of food leftovers	Discarded	29	72.5
	Reuse	6	15
	Not sure	5	12.5
Wearing Protective Clothing	Always	4	10
	Sometimes	28	70
	Never	8	20
Inspections of food safety practices	Regularly	6	15
	Occasionally	27	67.5
	Never	7	17.5
Satisfaction with food handling practices	Unsatisfied	3	7.5
	Satisfied	3	7.5
	Very satisfied	7	17.5

Key: N= Number of participants

4.2 Knowledge of Food Safety

The results indicate a significant gap in the knowledge of food safety and hygiene principles among kitchen staff in public secondary schools in Thika. This lack of knowledge is evident in the low percentage of respondents able to identify common symptoms of foodborne illnesses as only (20%) of respondents reported being able to identify these symptoms

This finding is particularly alarming, as the ability to recognize and promptly respond to potential signs of foodborne illnesses is crucial in preventing the spread of diseases within the school community. Efforts must be made to provide training and resources to improve the staff's ability to identify and address foodborne illness symptoms.



The open-ended question about how foodborne illnesses can be prevented in schools yielded a variety of responses. While some respondents might have provided general suggestions, a common theme that emerged was the importance of education and training. Respondents emphasized the need to raise awareness among staff about proper food handling practices, ensuring thorough cleaning and sanitation, and enforcing hygiene protocols. This reinforces the idea that comprehensive training programs could significantly contribute to preventing foodborne illnesses within school environments.

Table 4.3: Knowledge of Food Safety

Knowledge of Food Safety (N=40)			
Knowledge	Category	Frequency	Percentage (%)
Familiar with basic principles of food safety and hygiene			
	Very familiar	8	20
	Familiar	28	70
	Not familiar	4	10
Can identify common symptoms of foodborne illnesses			
	Yes	8	20
	No	32	80

Key : N= Number of participants

4.3 Areas for Improvement in Food Handling Practices

Respondents provided valuable insights into potential measures and changes that can be implemented to improve food safety in schools. The suggestions included regular training sessions, improved sanitation practices, and stricter adherence to hygiene protocols. These suggestions align with established best practices in food safety management and highlight the need for a proactive approach to fostering a culture of food safety within school kitchens. An overwhelming majority (82%) of respondents expressed the belief that there is a need for more training on food safety and handling practices for the kitchen staff. This strong consensus emphasizes the urgency of addressing the training gap identified in the study. Providing targeted and comprehensive training programs, as advocated by the respondents, could play a pivotal role in enhancing food safety awareness and practices among the kitchen staff. (Oloo, et.al, 2023).

Table 4.4: Improvement in Food Handling Practices

Areas For Improvement In Food Handling Practices (N=40)		
Areas for Improvement	Frequency	Percentage (%)
Regular training sessions	33	82
Improved sanitation practices	4	10
Stricter adherence to hygiene protocols	3	8

Key : N= Number of participants



5. Conclusion and Recommendations

The study reveals significant gaps in food handling practices, knowledge of food safety, and mitigation strategies in public secondary schools in Thika. The findings underscore the need for comprehensive training programs, the establishment of written guidelines, and stricter adherence to hygiene practices to mitigate the risk of food poisoning outbreaks. The implementation of these recommendations can contribute to safer and healthier food handling practices in schools and reduce the occurrence of foodborne illnesses.

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