

Original Research

Safety and hygiene practices among street food vendors in Makhado local municipality in Limpopo Province

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Abstract

The street food industry has recently emerged as a major source of employment for the unemployed. It is also a major source of cheap food for many people in urban and rural settings; however, food safety and hygiene standards are, in some cases, mediocre. Street-vended food is perceived as a possible health hazard because some street vendors prepare and sell their food in unhygienic conditions. The aim of this study was to determine the hygiene and safety practices of street vendors operating in the Makhado Local Municipality to ascertain what needs to be improved to reduce the risk of food contamination, which compromises consumers' health. A total of 105 street food vendors in the rural parts of Makhado Local Municipality, Limpopo, responded to a paper-based quantitative questionnaire that contained closed-ended questions. In fact, it is easy to start a street food business as it does not require substantial starting capital, and little expertise is also required. The business is also easy to run as it requires minimal running costs. Mostly, street vendors use cheap and low-quality raw materials, which enables street food vendors to sell food at lower costs than established commercial restaurants. The results show that street food vendors had high levels of knowledge about food hygiene and safety, but this knowledge did not manifest in their operational practices. Most food vendors disregard or overlook basic hygiene practices that have the potential to contaminate food with hazardous substances. The vending stalls had poor sanitary conditions and this compromised the safety and hygienic practices of the street vendors. We recommend that food safety and hygiene training should be provided to street food vendors for them to improve safety and hygiene practices at their food stalls. In addition, local government inspectors should continuously inspect the street vendors' safety and hygiene practices. Such a practice will promote high level food safety and hygiene practices among street food vendors.

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Résumé

L'industrie de la restauration de rue a récemment émergé comme une source majeure d'emploi pour les chômeurs. Il s'agit également d'une source importante de nourriture bon marché pour de nombreuses personnes dans les zones urbaines et rurales ; cependant, les normes de sécurité et d'hygiène alimentaires sont, dans certains cas, médiocres. Les aliments vendus dans la rue sont perçus comme un risque sanitaire potentiel, car certains vendeurs de rue préparent et vendent leurs aliments dans des conditions peu hygiéniques. L'objectif de cette étude était de déterminer les pratiques d'hygiène et de sécurité des vendeurs ambulants opérant dans la municipalité locale de Makhado, afin de déterminer ce qui doit être amélioré pour réduire le risque de contamination des aliments, qui

compromet la santé des consommateurs. Au total, 105 vendeurs ambulants dans les zones rurales de la municipalité locale de Makhado (Limpopo) ont répondu à un questionnaire quantitatif sur papier contenant des questions fermées. En fait, il est facile de créer une entreprise de restauration de rue, car elle ne nécessite pas un capital de départ important, et peu d'expertise est également requise. L'activité est également facile à gérer, car elle ne nécessite que des coûts de fonctionnement minimes. La plupart du temps, les vendeurs de rue utilisent des matières premières bon marché et de faible qualité, ce qui leur permet de vendre des aliments à des coûts inférieurs à ceux des restaurants commerciaux établis. On suppose que les vendeurs d'aliments de rue ont un niveau élevé de connaissances en matière d'hygiène et de sécurité alimentaire, mais ces connaissances ne se manifestent pas dans leurs pratiques opérationnelles. La plupart des vendeurs d'aliments ignorent ou négligent les pratiques d'hygiène de base qui peuvent contaminer les aliments avec des substances dangereuses. Une formation à l'hygiène et à la sécurité alimentaire devrait être dispensée aux vendeurs ambulants pour qu'ils puissent exercer leur activité en toute sécurité.

1. Introduction

Street foods represent a significant part of daily urban food consumption for millions of consumers in developing countries (Alimi, 2016; Singh et al., 2016) and may be the least expensive and most convenient way of obtaining a meal outside the home (Mckay et al., 2016; Sneh et al., 2016). Street food vending plays a vital socioeconomic role in developing countries as regards job creation and revenue generation and often serves as the main source of income for a considerable number of street food vendors (Imathiu, 2017; Martinez et al., 2017). Ensuring the safety of street-vended food is crucial to safeguarding the health of consumers, considering that most of these consumers are often not aware of the food safety risks associated with street-vended foods but rather focuses on their affordability and convenience (Asiegbu et al., 2015; Liu et al., 2015; Singh et al., 2016).

However, literature has established that in developing countries, many informal food service facilities do not comply with most food hygiene standards and regulations (Trafialek, Drosinos & Kolanowski, 2017). Considering that some of these food outlets are situated in areas with poor sanitary resources in terms of potable water, toilets, dedicated storage systems, and appropriate garbage disposal systems (Oladoyinbo, Akinbule & Awosika, 2015; Samapundo, Climat, Xhaferi & Devlieghere, 2015), unhygienic conditions are no surprise. As an informal food business sector, street food vendors often evade formal inspection and supervision (FAO, 2017).

From these previous studies, it is clear that there is a lack of hygienic and food safety practices related to street food vendors' food services. Previous studies also emphasised street food vendors' practices as a risk to public health since the food is prepared and handled in unhygienic and unsafe environments (Okojie & Isah, 2019:528–535; Adana et al., 2018:1–11). In most cases, food is contaminated due to unacceptable handling capabilities and poor storage and cooking facilities. Consequently, many clients suffer from foodborne diseases. Other concerns are that street food vendors have limited access to clean running water, toilets, refrigerators, and washing and waste disposal facilities close to the places where they conduct their business, and their knowledge of food safety and hygiene practices appears to be limited (Samapundo et al., 2016:79–89). In view of the above challenges and concerns, it was crucial to investigate and assess the hygiene and safety practices of street food vending in Makhado Local Municipality, Limpopo Province.

1.1. Research questions

To address the problem of the study, the following research question is posed to pilot the study.

- Do the street food vendors in Makhado Local Municipality adhere to personal hygienic food handling practices when processing food in the kitchen?
- To what extent do the street food vendors in Makhado Local Municipality employ safe and hygienic food handling practices when dispensing food to the consumers?

1.2. Research objectives

The following research objectives were formulated to guide the study:

- To determine if the street food vendors in Makhado Municipality adhere to safety and hygienic food handling practices when processing food in the kitchen.
- To assess the extent to which the street food vendors in Makhado Local Municipality adhere to health sanitary standards for food vending sites.

In this study, many street food vendors were found to possess insufficient food safety knowledge and skill and are thus unable to handle foods in a hygienic manner (Samapundo et al., 2016; Uyttendaele et al., 2016). Unhygienic practices predispose consumers to unsafe food, which can lead to food disease outbreaks and pose serious health problems to the consumers (Alimi, 2016; Mjoka and Selepe, 2017). In this area, many street food vendors have also been found not to have undergone any formal training on food safety (Samapundo et al., 2015); hence, the training of street food vendors is essential in ensuring the safety of street-vended foods (Liu et al., 2015). The training of street food vendors has been proven to be effective in improving their food safety knowledge and practices to prevent foodborne hazards (Paudyal et al., 2017). Moreover, the street food industry is a source of employment (Sharma & Mazumdar, 2014:169–171) because street vendors use cheap and locally available resources, which enables street food vendors to sell food at lower costs than established commercial restaurants (Hill, 2016:38). Even though street vendors' food is consumed by millions of people, this food is also perceived as a possible health hazard because street vendors prepare and sell their food in unhygienic conditions, which pose a threat to people's well-being (Sharma & Mazumdar, 2014:169–171). Food safety seems to be compromised by street food vending, and public health officials are concerned due to serious outbreaks of foodborne diseases that can and do occur any-where in the world after people consume street food (Khan, Sayeed, Akteer, Islam & Akteer, 2018:57–65).

This research could be perceived as an opportunity to appraise the safety and hygiene standards of street food in order to highlight the safety and hygiene loopholes and anomalies that need to be addressed to enable street food vendors to dispense hygienic food to consumers. Subsequently, food that is processed in an unsafe and unhygienic manner will taint the street vendors' food quality. Given the concerns that have been raised regarding the enforcement of proper safety and hygiene standards, it was envisaged that the investigation would produce findings that would contribute to improving street vendors' food-handling practices.

2. Literature review

2.1. Street food vending food safety and hygiene

Several researchers (Cataluna & Rukumini, 2024) have observed that the amount of foods sold on the street have increased and become popular especially in lower-middle countries. Street food vending is done at different open spaces such as bus stops, along the streets, open markets and many other informal places without proper infrastructure. Unfortunately, in some cases those who manage street food do not comply with the highest levels of hygiene and food safety. Most street food vendors work in unhygienic settings that encourage food contamination and above all they lack basic food handling skills and understanding (Rakha et al., 2022). Consequently, the consumers of street food are vulnerable to microbiological food-borne illness because of microbial contamination of food (Odeyemi, 2016). Cataluna and Rukumini (2024) observed that each year, approximately 600 million people worldwide suffer illness after eating food that has been contaminated and this caused 420 000 deaths worldwide. In light of this problem, several researchers and scholars have emphasised the importance of giving food handlers training in food safety and hygiene because most of the current crop of street vendors lack understanding and attitude concerning food hygiene and sanitation (Tropea, 2022). In a previous and related study (Werkneh et al., 2023) found that 31.1% of the participants did not handle food safely, 45% did not have access to equipment for appropriate hand washing, 98.9% handled food with unwashed hands, and 35.6% indicated that they were not aware that street food may cause of illnesses as a result of consuming food prepared in unhygienic conditions.

2.2. Food handling practices vis-à-vis foodborne diseases and food contamination

Literature has been established that foodborne diseases and food contamination continue to be significant public health issues in both developed and developing countries. Approximately 30% of the population of industrialised countries suffers from foodborne diseases annually (WHO, 2012). Unsafe food handling practices of street food vendors result in foodborne diseases and, hence, an increased morbidity and mortality rate, and serve as a major obstacle to socio-economic development (WHO, 2015). In fact, many acute and life-threatening diseases are caused by unsafe food handling practices (Carbas et al., 2013). The risk of food poisoning outbreaks associated with street food remains a global threat. Therefore, lack of knowledge on the causes of foodborne diseases among street food vendors is a major risk factor (FAO, 2009). Most street food vendors lack knowledge on food storage and holding temperatures, leading to microbial proliferation in food (Sani & Siow, 2014).

Access to clean facilities and running water is a primary requirement to enable street vendors to provide safe food to consumers (Samapundo et al., 2015:457–466). Several studies have been conducted across Africa to investigate the provision of food services by street vendors, and the researchers generally agree that street food vendors have poor food safety knowledge (Okojie & Isah, 2019:528–535; Adana et al., 2018:1–11). Ensuring that street-vended food is safe to eat is crucial in safeguarding the health of consumers, considering that these consumers tend not to be aware of the food safety risks associated with street-vended foods, focusing instead on their affordability and convenience (Asiegbu, Lebelo & Tabit, 2015; Liu et al., 2015; Singh et al., 2016). During this study, many street food vendors have been found to possess insufficient food safety knowledge and skill and therefore do not handle foods in a hygienic

manner (Samapundo, Cam Thanh, Xhaferi & Devlieghere, 2016; Uyttendaele, Boeck & Jacxsens, 2016). As a result, unhygienic practices expose consumers to un-safe food, which can lead to food disease outbreaks and pose serious health threats to those consuming the food (Alimi, 2016; Mjoka & Selepe, 2017). Many street food vendors have also been found not to have undergone any formal training in food safety (Samapundo et al., 2015). In consequence, the training of street food vendors is essential to ensuring the safety of street-vended foods (Liu et al., 2015). The training of street food vendors has been proven to be effective in improving their food safety knowledge and practices to prevent foodborne hazards (Paudyal et al., 2017).

2.3. Informal food service facilities

In South Africa, several street vendors need access to clean facilities and running water to provide safe food to consumers (Hill, 2016; Samapundo et al., 2015). Several studies have been conducted across Africa to investigate the provision of food services by street vendors, and the researchers generally agree that street food vendors have very limited food safety knowledge (Okojie & Isah, 2019; Adana, Teka, Gismu et al., 2018; De, Misra & Pal, 2018). What was unclear was whether the street food vendors who are conducting this business in Makhado Local Municipality were observing safety and hygiene practices to reduce food contamination and poisoning among the consumers. Therefore, this study assessed the hygiene and safety practices of street food vendors in the Makhado Local Municipality, Limpopo Province, to ascertain whether they have knowledge of food safety and hygiene, which would enable them to reduce food contamination and poisoning.

3. Methods

A mixed method approach was adopted in the study by triangulating different methods of collecting data. This investigation was carried out in Makhado Local Municipality in Limpopo Province and Elim Road Crossing in South Africa. These two sites were used as the research site. The Elim area was established because of the establishment of Elim Hospital.

3.1. Participants and the selection of participants

Records of street food vendors within the designated study were provided by the Makhado Local Municipality, Department of Environmental Health, who indicated that there were approximately three hundred and fifty (350) street food vendors who have applied for hawkers' licences for street trading in meals and perishable foodstuffs. Therefore, 350 vendors were identified as the accessible population for this study ($N = 350$). With a clearly identified sampling frame, the researcher utilised the simple probability sampling strategy to select a representative sample, which comprised 30% of the target population. The sample size for this study therefore consisted of 102 street food vendors ($n = 102$) and three (3) municipal health inspectors. Simple probability sampling was employed to select the research subjects because it ensures that there is a full representation of subjects and it eliminates bias on the part of the researcher (Babbie, 2010). The study included all street food vendors above the age of 18 who sold cooked food in Makhado. Vendors who did not sell cooked food or were under 18 years old were excluded from the study.

3.2. Instrumentation and data collection

Data were collected using a structured questionnaire, observational checklist and key informant interviews. The questionnaire comprised of closed ended questions which collected information on socio-demographic characteristics, food hygiene knowledge, and practices of the street food vendors. Overt or observational checklist was also used to assess food handling and processing practices, and sanitary conditions of the vending stalls. Open-ended questions were used to collect the opinions and perspectives of the environmental health practitioners (EHPs) regarding food hygiene knowledge and practices of the street food vendors.

Data collection only took place after the supervisor trained the three environmental health practitioners (EHPs) and the researcher on how to interview respondents and the techniques to follow in the interview. The structured questionnaire was administered orally and it was used to collect data about the participants' socio-demographic information, food safety knowledge, and the vendors' working environment and food hygiene practices. The questionnaire included standardised and predetermined questions and responses that sought data that corresponded with the research goals. The closed-ended questions were self-administered for those who could read and write, while those vendors who could not read and write were assisted by the researcher, supervisor, and three Environmental Health Practitioners (EHPs) from Elim Hospital to collect data from the street food vendors (Taherdoost, 2016:64; Annum, 2015:1; Canals, 2017:390). In-depth face-to-face semi-structured interviews were conducted with three key informants (Makhado Municipality health inspectors). This method was preferred due to its accuracy, as it allowed for follow-up questions to clarify responses and ensured efficient data collection. The questionnaire, the checklist and the interview schedule were initially prepared in English using the CODEX food hygiene and safety principles and guidelines (FOA/WHO, 2018) and adopted from previous researchers (Adane et al., 2018; Akabanda, Hlortsi, & Owusu-Kwarteng, 2017; Donkor, E.S., Kayang, B.B., Quaye, J. & Akyeh, 2009). The instruments were translated to the local languages, Sepedi, Venda, and Sesotho and were later translated to English by language experts to ensure its consistency. The structured questionnaire was pilot-tested on 25 street food vendors (8% of the sample population) of Makhado Local Municipality street vendors. The pilot study was done in order to evaluate the questionnaire's face validity in the research context, and to ensure whether the data collectors or street food vendors understood the questions. Based on the results of the pilot study, the ambiguous questions were corrected and necessary adjustments and amendments were made. It took 30 to 35 minutes to complete the questionnaire.

3.3. Method of data analysis

Quantitative data collected from structured questionnaires were cleaned, coded, and checked for completeness and inconsistencies. Data entry was performed using Microsoft excel and exported into IBM SPSS Statistics for windows version 25.0 for analysis. Street food handlers' level of hygienic knowledge, hygienic practice and sanitary conditions of the vending stalls were categorised as poor and good (see operational definitions described in Table 1). The dependent variable, hygienic practices for street food vendors, was coded as those who have poor hygienic practices "0" and "1" for good hygienic practices.

Table 1: Operational definition of terms

Term	Operational definition
Good knowledge	Refers to street food handlers who scored $\geq 70\%$ “yes” responses
Good hygienic practices	A food handler’s practice is regarded as good if the answers provided were $\geq 70\%$
Good sanitary condition	A vending score which scored $\geq 70\%$ is considered to have a good sanitary condition.

Frequency distribution tables were used to present the results. Data from individual semi-structured interviews and key informant interviews were analysed using the Thematic Analysis method. The triangulation of data collection instruments was essential for enhancing the validity and credibility of the study (Saunders et al., 2019). In addition, the method allows the researchers to use multiple perspectives providing a more nuanced and holistic understanding of the research problem as well as reduce bias and increase objectivity (Cohen, Manion & Morrison, 2018).

3.4. Ethical considerations

Ethical clearance for the study was obtained from the Tshwane University of Technology Faculty Committee for Research Ethics. The ethics committee provided the ethical approval after reviewing the data collection tools and the adherence to the ethics principles of conducting a research with human participants. An ethics certificate with the Reference number (FCRE 2022/ FR/04/004(MS) (2) was given as approval for the study.

4. Results

4.1. Demographic characteristics of street vendors

Data were collected from Makhado Local Municipality street vendors ($n = 96$). The response rate was 100%. Among 96 street food vendors who responded to the questionnaire the majority (71%; $n=68$) were female. The mean age was 31.4 and 39(41%) were in the age group of 31 – 40. Most of them 59(62%) had secondary education (Grade 12) education status and 26(27%) had primary education. Concerning marital status most of them 87(91%) were married while 9(9%) were single. The majority of the foods 78(81%) were prepared in street shacks while 18(19%) were prepared in rented houses along the street. Among the participants, only 12(12%) have received food safety training while the majority 84(88%) did not receive any food safety training as shown in Table 2.

Table 2: Sociodemographic characteristics of 96 street food vendors in Makhado Local Municipality (Source: Authors)

Variables	Descriptive dimensions	Frequency	Percent
Gender	Male	28	29%
	Female	68	71%
Total		96	100%
Age	18-30	24	25%
	31-40	39	41%
	41-50	27	28%
	51+	6	6%
Total		96	100%
Education status	Primary education	26	27%
	Secondary education (Grade 12)	59	62%
	Certificate	9	9%
	Diploma	2	2%
	Bachelor degree	0	0%
Total		96	100%
Marital status	Married	87	91%
	Single	9	9%
Total		96	100
Work experience	Less than a year	25	26%
	1-3 years	15	16%
	4-6 years	22	23%
	7-9 years	23	24%
	10+ years	11	11%
Total		96%	100%
Location where foods were prepared	Street shelter	78	81%
	Rented houses	18	19%
Total		96	100%
Food safety training	Yes	12	12%
	No	84	88%
Medical check up	Yes	72	75%
	No	24	25%
Inspection conducted	Yes	66	69%
	No	30	31%
Food handler is a cashier	Yes	76	79%
	No	20	21%

4.2. Food safety knowledge and hygiene practices of the street food vendors

Only 77% of the respondents had knowledge on food borne diseases. This was assessed by asking the respondents to mention at least three types of food borne diseases. Regarding the hygienic practices of the street food vendors, 92% of the respondents knew the importance of washing their hands with water and soap before starting food preparation activities and 67% know the importance of not coming to work when they have a cold or flu. This shows that the majority of the respondents were aware that sick vendors could transmit disease-causing organism. The overall good knowledge of the respondents was 77% while the overall good hygienic practice of the respondents was 76% as described in Table 3.

Table 3: Food safety knowledge and hygiene practices of 96 street food vendors in Makhado Local Municipality.

Variable	Frequency	Percent
Knowledge of food borne diseases	Yes (76) No (20)	79% 21%
Knowledge of the importance of washing hands	Yes (88) No (8)	92% 8%
Knowledge of the importance of medical check up	Yes (79) No (17)	82% 18%
Knowledge that water can be a vehicle for food borne-disease causing agent	Yes (76) No (20)	79% 21%
Knowledge of food and beverages handling process	Yes (69) No (27)	72% 28%
Knowledge of preparing food in a healthy and safe manner	Yes (57) No (39)	59% 41%
Overall knowledge status		
Good knowledge	445	77%
Poor knowledge	131	23%
Hygiene practices of 96 street food vendors		
Washing hands before starting food preparation	Yes (83) No (13)	86% 14%
Washing hands after visiting toilet	Yes (90) No (6)	94% 6%
Trimming fingernails after visiting toilet	Yes (89) No (7)	93% 7%
Coming to work when having common cold	Yes (32) No (64)	33% 67%
The overall hygiene practice		
Good hygiene practice	294	76.5%
Poor hygiene practice	90	23.5%

4.3. Sanitary and safety conditions of the food stalls and vending sites: Observations

A significant proportion of the street vendors (61%) showed effort to maintain hygiene, particularly with clean clothing and basic waste management. The results from the observation checklist indicated that the majority of the vending sites (76%) were unclean as the vendors did not have functional handwashing and access to toilets. Major gaps were found in temperature control, food storage, and pest management. Limited use of personal protective equipment like gloves and hairnets was also observed.

4.4. Key insights from interviews with key informants

Interviews with Environmental Health Practitioners (EHPs) provide critical insights into the safety and hygienic challenges and practices associated with street food vending. The challenges highlighted in the interviews includes inconsistent compliance with health regulations, pets control issues, and lack of knowledge in food safety and hygiene practices because most street food vendors have not received formal training. The interviews underscore significant gaps in street vendors' safety and hygienic practices, enforcement and infrastructure support for street food vendors.

5. Discussion

Among the street food vendors who participated in the study (71%) were females, which could be attributed to the fact that food preparation is fundamental to the upbringing of a female child in African society (Okojie & Isah, 2014). Moreover, in African communities, many females are the breadwinners in their households, as confirmed by (Marutha & Chelule, 2020). In fact, this resonates well with Chauke, Munzhelele, and Maiwashe (2015), Chingono (2016) and Mramba (2015), who indicated that women are empowered through street vending. The findings of the current study converge with the findings of studies conducted in other parts of South Africa, which indicated that females are introduced to food handling and preparation earlier in life compared to males (Mukhola, 2014; Mathaulula et al., 2015; Hill et al., 2019). In agreement with the findings of the current study, Dwumfour-Asare (2015) confirmed that female food vendors are dominant players in the field. In fact, these findings agree with those of Mukhola (2014), Mathaulula et al. (2015), and Hill et al. (2019), namely that females are introduced to food handling and preparation early in life.

There are several factors that are associated with the food safety and hygiene practices of street food vendors. These factors include socio-demographic factors such as education level, religion, and extra employees in the food stall (Faremi, Olatubi & Nnabuife, 2018; Jores, Arif & Rahman, 2018:201). Secondly, hygienic factors such as food safety knowledge, food safety training, poor attitudes towards food safety, personal hygiene practices (e.g., hand-washing, head cover), and lack of sanitation at the vending stalls (Afolaranmi et al., 2015; Rane, 2011). Other factors, including raw supplies, food handling, and storage practices, have been found to influence the safety of street-vended food (Majunga, Nayiga & Brenda, 2011). Access to portable water remains a big problem in Africa and other developing countries. In the current study, water availability was found to be adequate, except in a few cases where water had to be brought to the stalls with buckets. At most of the vending sites, water was drawn from a nearby tap, which contributed to vendors' ability to provide quality food (see item 4.12, p. 79).

Hand hygiene plays a significant role in ensuring the safety and hygiene of street vendors food. One of the five keys to safer food is that food handlers should always keep their hands clean (World Health Organisation, 2009). Frequently washing hands could reduce the risk of food contamination because the handwashing process is considered a fundamental practice in preventing foodborne diseases (Afreen et al., 2019). Reang and Battacharjya (2013) and Aquino et al. (2015) further reported that street food vendors with low levels of formal education exhibited good knowledge of handwashing procedures. In a study conducted in Ghana, Apanga et al. (2014) found that most of the street food vendors were well informed of hand-washing procedures and understood the consequences associated with poor handwashing practices. The Centre for Disease Control and Prevention (CDC) (2014) recommends that hands be washed thoroughly before, during, and after food preparation, after using the ablution facilities, and after touching garbage to prevent disease transmission. The fact remains that ignorance leads to unacceptable food handling customs that may cause microbiological contamination of food sold by street food vendors (Park, Kwak & Chang, 2010). Therefore, washing hands and utensils with cold water alone may not be sufficient to remove all food safety hazards, unlike washing with water and soap (Shukla et al., 2019). This implies that there is a high potential for contamination of street-vended food due to inadequate washing practices for washing hands and utensils. These findings are corroborated by the results reported by Muyanja et al. (2011). Dudeja and Singh (2017:179–191) pointed out that street food vendors must exercise

sound washing practices with respect to their hands, equipment, and food to ensure the safety of street-vended food.

5.1. Limitations of the study

The study was confined to street food vendors in the Makhado Local Municipality, and convenience sampling was used. This implies that the findings of the study cannot be generalized to a larger context than the study area. The study could be improved by examining a larger sample to undertake a more comprehensive assessment of the safety and hygiene practices of street food vendors. Interviews with customers and public health officers in the Makhado Local Municipality could have provided more in-depth information regarding street food vendors' knowledge of food safety and hygiene. The study could also be improved by using additional data collection methods, such as the mixed-method approach and document analysis, to enhance the data set. More importantly, the data need to be compared with other local municipalities in the Limpopo Province, and preferably other provinces in South Africa, to fully understand the deeper social determinants and other associated factors, which may help to generalize the findings.

6. Conclusion

In conclusion, street food vending is an important source of income and employment for the unemployed in South Africa. Street food vendors sell food and beverages along the streets and other public places. Furthermore, it is a source of cheap food for many people in urban and rural settings. It is easy to start a street food business as it does not require substantial starting capital, and little expertise is also required. Due to these requirements, the participation of many women is guaranteed. The business is also easy to run as it requires minimal running costs. Mostly, street vendors use cheap and low-quality raw materials, which enables street food vendors to sell food at lower costs than established commercial restaurants.

However, despite the importance of street food vending to the South African economy, it is important to be cautious because this sector can be a source of foodborne diseases and infections. Key issues that need to be addressed include food safety and food hygiene. These are crucial aspects of food dispensing, and they should not be compromised at all costs. The findings revealed that the street food vendors in Makhado Local Municipality possess knowledge of food and beverage handling processes, but this knowledge did not manifest into real, everyday practices. These results show that street-vended food consumed in Makhado could be a public health concern due to substandard food hygiene practices. Significantly, most of the street food vendors demonstrated high levels of knowledge regarding the use of protective clothing such as gloves, face masks, and head covers when handling food to help reduce the risks of food contamination.

Recommendations for practice and future research

Given the results of the study, it is recommended that street food handlers should attend have safety training to remind and motivate them to prepare safe foods. The training should include clear descriptions of food contamination from diverse processing of foods, critical temperatures for keeping cold, hot, or ready-to-eat foods, the risk of foodborne pathogens, awareness of good personal hygiene and handling practices, and adequate sanitation of foods, utensils, and

the environment. In order to improve the safety and hygiene of street-vended foods in Makhado Local Municipality, the government should make such basic infrastructure available to the vendors. More focus must be directed towards providing water, proper stalls, and of vendors in food management. Street food stalls should be monitored for the sanitary conditions of their food production.

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Conflict of interest

The authors declare that they have no conflicting interests.

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