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### Assessment of Health Practices of Food Vendors in the University of Benin

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**Keywords:**

Food Vendors,  
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Students.

This study assessed the health practices of food vendors in the University of Benin. Four research questions and one hypothesis were raised to guide the research. Literatures related to the study were reviewed. The study adopted a school-based descriptive cross-sectional research design and the population of the study comprised 144 food vendors within the University of Benin Ugbowo Campus. The census method was used to recruit respondents for the study. A self-structured checklist and questionnaire was used for the collection of data. The questionnaire was content validated and a reliability coefficient of 0.73 was obtained using the test re-test reliability method. Data obtained were analysed using descriptive statistics of frequency counts, percentages and inferential statistics of Chi-square. The findings revealed that majority of the food vendors in the University of Benin had good health practices as it relates to food safety and moderate level of knowledge of foodborne diseases. The result also showed a calculated chi-square value of 0.16 showing that there is no significant relationship in the observed health practices of food vendors by gender in the University of Benin. The study recommends among others the establishment of a recognition or certification system that acknowledges and rewards vendors who consistently demonstrate good food safety practices.

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## INTRODUCTION

Food, the edible substance consumed to provide nutrients for growth, repair, and energy, plays a pivotal role in maintaining human health and well-being. It serves as the fundamental source of sustenance and fuel for optimal performance. According to Alhaji (2013), food is any substance that when ingested will supply the body with the nutrients and fibre for releasing energy to fuel the body's activities, to provide materials for building and maintenance of the body's tissue and organs as well as to supply substances that help in temperature regulation. For university students, in particular, food holds even greater significance, providing the necessary energy and nutrients to support their demanding academic pursuits. As students navigate the rigors of academic and extracurricular activities as well as social engagements, a balanced and nutritious diet becomes crucial for maintaining focus, enhancing cognitive function, and promoting overall well-being. In the bustling environment of a university campus, food vendors are an integral part of campus life, providing students with convenient and affordable meals. However, the presence of food vendors with poor health practices poses a significant health risk to students, jeopardizing their academic performance and overall well-being. Furthermore, maintaining health practices in the handling and preparation of ready-to-eat foods is crucial, particularly in tertiary institutions, because many diseases can spread through contaminated ready-to-eat food and everyone, including university students, is at risk of contracting foodborne illnesses.

Globally, approximately 600 million people are infected with foodborne pathogens after consuming pathogen-contaminated food, with approximately 420,000 deaths per day (Szakaly et al. 2020). In Nigeria, Odo, Uchechukwu and Ezemadu (2021) noted that the prevalence of foodborne diseases is alarming despite efforts by Government and Non-governmental Organizations to prevent the spread of foodborne pathogens. Foodborne pathogens and diseases emphasize the critical need for enhanced

knowledge of foodborne diseases among food vendors.

Knowledge of foodborne diseases directly influences health practices by guiding food vendors in implementing stringent hygiene measures to prevent contamination, maintaining proper storage and handling techniques to prevent bacterial growth and cross-contamination, and ensuring thorough cooking of foods to eliminate pathogens. However, Oladoyinbo, Akinbule and Awosika (2015) reported that only 7.6% of food vendors had adequate knowledge of foodborne diseases. In a contrary finding, Galgamuwa, Iddawela, and Dharmaratne (2017), revealed that the majority of food vendors had good knowledge of foodborne diseases. These controversial shreds of evidence on the level of knowledge of foodborne diseases are integral normative measures of food vending and health practices.

One way food vendors can ensure health practices as it relates to food vending is to observe proper food safety and good food handling practices. To ensure food vendors observe proper food safety and good food handling practices, the United States Department of Agriculture (USDA) and the Food Safety and Inspection Services (FSIS) developed the "be food safe" campaign. To ensure food safety in schools, vendors are urged to embrace four key principles from this campaign:

**Cleanliness:** This principle emphasizes both personal and food hygiene of food vendors. It stresses regular handwashing, maintaining short and clean fingernails, avoiding hand jewellery while handling food, and wearing clean protective clothing. On the personal and food hygiene of food vendors, Evert et al. (2021) reported that few food vendors wore clean and proper clothes to vending place, covered their hair always when selling their foods, kept their fingernail short and clean most times while majority of the food vendors have sneezed/coughed over food when cooking or selling food.

**Cooking Procedures:** The second principle focuses on cooking of vended food and emphasizes the importance of thoroughly cooking

food to be sold by vendors. It encourages vendors to guarantee that food is cooked sufficiently before being sold. To ensure this, vendors are advised to utilize a calibrated food thermometer to check the internal temperature of food, taking into account the safe and recommended cooking temperatures for different food items.

**Separation of Foods:** To prevent cross-contamination, it is vital to separate raw food from ready-to-eat items. Vendors should designate specific kitchen areas for handling raw and ready-to-eat foods to minimize the risk of contamination.

**Chilling Techniques:** The last principle of the “be food safe” campaign focuses on raising awareness on proper food cooling practices. Properly chilling food inhibits the growth of bacteria. Therefore, food vendors should be familiar with safe cooling methods, such as using ice water baths to rapidly lower food temperatures, to prevent bacterial growth and maintain food safety standards.

Standard health practices relating to food vending and safety can be different by gender. In a study conducted among food vendors in tertiary institution, Lema et al. (2021) reported a significant difference in the health practices as it relates to food safety practices of food vendors based on gender with male food vendors 2.37 times better in food safety/hygiene practice as against their female counterpart. However, in a contradictory finding, Admasu and Kelbessa (2018) reported no significant difference regarding health practices as it relates to food safety practices of food vendors based on gender. Apart from gender assessment, Oumer (2019) stated that in general, health practices of food vendors as it relates to food safety were poor. However, in a contradictory finding, Werkneh et al. (2023) noted that food vendors had good health practices as it relates to food safety.

Conclusively, the University of Benin, like many learning institutions, serves as a microcosm of diverse individuals with unique dietary needs and preferences. Yet, amid the bustling campus life,

there exist the risk of foodborne disease outbreaks as some undergraduates are seen lying on sick beds in the health facility. Their stay on sick beds could probably be occasioned by foodborne disease outbreak as some of the students are seen vomiting, complaining of stomach upset or even visiting the toilet regularly. Even during examinations, these ugly incidents are prevalent and sometimes preventing some of the students from completing the examination. The urgency of this study stems from the inherent vulnerabilities within such an environment, where a lapse in healthy practices of food vendors could precipitate severe health risks for students and school management. Therefore, the study assessed the health practices of food vendors in the University of Benin.

The study was guided by the following research questions:

- What are the self-reported health practices of food vendors in the University of Benin?
- What are the observed health practices of food vendors in the University of Benin?
- What is the level of knowledge of foodborne diseases of food vendors in the University of Benin?
- Are the observed health practices of female food vendors related to that of their male counterparts in the University of Benin?

## Hypothesis

H<sub>01</sub> There is no significant relationship in the observed health practices of food vendors by gender in the University of Benin.

## METHODS AND MATERIALS

The study adopted a descriptive cross-sectional survey research design. This research design allowed the researcher to describe, observe and validate aspects of groups collected through quantifiable information without manipulation of the variables. The population of the study is one hundred and forty-four (144) food vendors within the University of Benin Ugbowo Campus (Researcher's computation, 2023). The complete

enumeration survey method (census method) was used to recruit the 144 food vendors for this study.

The research instruments used for data collection were a self-structured checklist and a questionnaire. The questionnaire elicited information on the gender, self-reported health practices and level of knowledge of foodborne diseases of the food vendors. In the questionnaire, 'always', 'seldom' and 'never' were scored as '2', '1' and '0' respectively. To conclude the first research question, the level of self-reported health practices were brought out as 'good', 'fair' and 'poor' with '30-44', '15-29' and '0-14' respectively as overall points for the food vendors. The checklist was used by the researchers as a means to confirm, through observation, what the food vendors reported as their health practices. The 'yes' and 'no' response options of the checklist were scored as '1' and '0' respectively. Similarly, overall points of '0-5' for poor observed health practice, '6-10' for fair observed health practice and '11-20' for good observed health practice were considered for the levels in the checklist.

The questionnaire was content validated and a reliability index of 0.73 using the test re-test method was obtained. The collected data were coded and analysed using descriptive statistics and inferential statistics of Chi-square. Informed consent was sought from each participant. Participants were informed of their right to make a choice either to take part in the study or not. All through the study, confidentiality was assured.

## RESULTS

*Table 1* shows the frequency counts and percentages of self-reported health practices of food vendors in the University of Benin. It can be seen that when cooking food, 113(78.47%), 131(90.97%), 103(71.53%) and 111(77.08%) of food vendors always wash their hands before engaging in food preparation, after handling dirty equipment and utensils, after using the toilet and when switching between working with raw food and working with ready to eat food respectively. Moreover, 52.64% of the food vendors never wears artificial fingernails while cooking food.

Again, 78.47% of the food vendors always separate raw and ready-to-eat food. Also, 144(100%) of food vendors indicated that they cook their food thoroughly. 54.17% of the food vendors seldom attend food safety programmes/seminars/workshops. However, 77.08% and 50.00% of the food vendors noted that they never undergo comprehensive periodic hospital checkup and wears clean protective clothing such as apron while cooking food respectively. To conclude, the self-reported health practices were brought out in levels after considering the maximum points earned by the food vendors as continued in *Table 2*.

*Table 2* shows the self-reported health practices of food vendors in the University of Benin. The table indicates that 78 (54.17%) respondents reported good health practices, 59 (40.97%) reported fair health practices while 7 (4.86%) of respondents reported poor health practices. Therefore, it can be deduced that majority of food vendors in the University of Benin reported good health practices as it relates to food safety.

**Table 1: Self-reported health practices of food vendors in the University of Benin**

Items	Always	Seldom	Never	Total
When cooking food, do you wash your hands:	113	21	10	144
i. Before engaging in food preparation	(78.47)	(14.58)	(6.94)	(100)
ii. After handling dirty equipment / utensils	131	6	7	144
	(90.97)	(4.17)	(4.86)	(100)
iii. After using the toilet	103	19	22	144
	(71.53)	(13.19)	(15.28)	(100)
iv. When switching between working with raw food and working with ready to eat food	111	21	12	144
	(77.08)	(14.58)	(8.33)	(100)
Do you wear clean protective clothing such as apron while cooking food?	23	49	72	144
	(15.97)	(34.03)	(50.00)	(100)
Do you wear clean protective clothing such as head cover while cooking food?	60	32	52	144
	(41.67)	(22.22)	(36.11)	(100)
Do you handle ready-to-eat food with your bare hand when cooking food?	22	37	85	144
	(15.28)	(25.69)	(59.03)	(100)
When cooking, do you cough / sneeze?	62	35	47	144
	(43.06)	(24.31)	(32.64)	(100)
If your answer to question 5 is always or seldom, do you cover your mouth with a clean handkerchief?	54	18	25	144
	(55.67)	(18.56)	(25.77)	(100)
Do you wear jewellery like wrist watches, bracelets, or fashion rings while cooking food?	106	24	14	144
	(73.61)	(16.67)	(9.72)	(100)
Do you wear artificial fingernails while cooking food?	17	28	50	144
	(17.89)	(29.47)	(52.64)	(100)
Did you undergo comprehensive hospital check-up before you started food vending?	7	0	137	144
	(4.86)	(0.00)	(95.14)	(100)
Do you undergo periodic comprehensive hospital check-up?	33	0	111	144
	(22.92)	(0.00)	(77.08)	(100)
Do you have adequate waste disposal facilities while cooking food?	117	22	5	144
	(81.25)	(15.2%)	(3.47)	(100)
Do you cook food thoroughly?	144	0	0	144
	(100)	(0.00)	(0.00)	(100)
Do you use a calibrated food thermometer to check if food is appropriately cooked?	3	12	129	144
	(2.08)	(8.33)	(89.58)	(100)
Do you separate raw and ready-to-eat food?	113	4	27	144
	(78.47)	(2.78)	(18.75)	(100)
Do you use different cooking utensils and/surfaces to organize ready-to-eat food and raw food items?	98	24	22	144
	(68.06)	(16.67)	(15.28)	(100)
Do you have chilling facilities such as refrigerator for storing perishable food?	123	4	17	144
	(85.42)	(2.78)	(11.81)	(100)
Do you use the optimum refrigeration temperature for storing cooked food?	144	0	0	144
	(100)	(0.00)	(0.00)	(100)
Do you have a professional training in food safety education?	47	0	97	144
	(32.64)	(0.00)	(67.36)	(100)
Do you attend food safety programmes/ seminar/ workshops?	64	78	2	144
	(44.44)	(54.17)	(1.39)	(100)

**Table 2: Level of self-reported health practices of food vendors in the University of Benin**

Level of self-reported health practices	Frequency	Percentage
Good health practices	78	54.17
Fair health practices	59	40.97
Poor health practices	7	4.86
Total	144	100.00



*Table 3* reflects the frequency counts and percentages of observed health practices of food vendors in the University of Benin. It can be seen that 127(88.19%) and 109(75.69%) of food vendor wore clean clothes while handling food and had waste bin respectively. precisely 93.06%, 52.78% and 79.86%% had clean food vending site, clean wash hand bin and had food in covered container respectively. moreover, 55.56%, 54.17% and 75.67% of the vendors did not blow air into cellophane bag to open it, did not handle ready-to-eat food with bare hands had clean service table respectively. Also, 13(90.98%) of food vendors did not recycle water used for washing hands while 109(75.67%) of food vendors had clean service table. Precisely 94.44 % did not have undressed skin lesion in the hand.

Conversely, 77.78%, 81.25% and 71.53% did not use sanitary towel after hand washing, washed hands with only water before handling food and did not have short/well-kept nails respectively. another 68.75%, 87.5% and 79.12% of the vendors wore hand jewellery, did not wear apron and did not wear head cover respectively. Again, 54.88% and 72.78% did not cover mouth with clean handkerchief while sneezing or coughing and handled money and ready-to-eat food with the same hand respectively. 77.78% of them did not wash hands with clean water and soap before handling food. In order to conclude on *Table 2*, the observed health practices were brought out in levels after considering the maximum points earned by the food vendors as continued in *Table 4*.

**Table 3: Observed health practices of food vendors in the University of Benin**

Items	Yes	No	Total (%)
Vendor wore clean clothes while handling food	127 (88.19)	17 (11.81)	144 (100)
Clean food vending site	134 (93.06)	10 (6.94)	144 (100)
Clean wash hand basin	76 (52.78)	68 (47.22)	144 (100)
Vendor used sanitary towel after hand washing	14 (9.72)	130 (90.28)	144 (100)
Vendor washed hands with clean water and soap before handling food	32 (22.22)	112 (77.78)	144 (100)
Vendor washed hands with only water before handling food	117 (81.25)	27 (18.75)	144 (100)
Waste bin	109 (75.69)	35 (24.31)	144 (100)
Vendor had artificial nails	37 (38.95)	58 (61.05)	144 (100)
Vendor had short / well-kept nails	41 (28.47)	103 (71.53)	144 (100)
Vendor wore hand jewellery	99 (68.75)	45 (31.25)	144 (100)
Vendor wore apron	18 (12.5)	126 (87.5)	144 (100)
Vendor wore head cover	30 (20.88)	114 (79.12)	144 (100)
Vendor had undressed skin lesion in the hand.	8 (5.56)	136 (94.44)	144 (100)
Food in covered container	115 (79.86)	29 (20.14)	144 (100)
While handling food, vendor covered mouth with clean handkerchief while sneezing or coughing	65 (45.12)	79 (54.88)	144 (100)
Vendor handled money and ready-to-eat food with the same hand.	112 (77.78)	32 (22.22)	144 (100)
Vendor blew air into cellophane bag to open it	56 (44.44)	80 (55.56)	144 (100)
Recycle water used for washing hands	13 (9.02)	131 (90.98)	144 (100)
Handled ready-to-eat food with bare hand	66 (45.83)	78 (54.17)	144 (100)
Clean service table	109 (75.67)	35 (24.33)	144 (100)

**Table 4: level of observed health practices of food vendors in the University of Benin**

Level of observed health practices	Frequency	Percentage
Good health practices	76	52.78
Fair health practices	23	15.97
Poor health practices	45	31.25
Total	144	100.00

*0-5 points: poor health practice; 6-10 points: fair health practice; 11-20 points: good health practice*

Table 4 indicates the frequency counts and percentages of level of observed health practices of food vendors in the University of Benin. The table indicates that 76 (52.78%) respondents had good observed health practices, 23 (15.97%) had fair observed health practices while 45 (31.25%)

of respondents had poor observed health practices. Therefore, it can be deduced that majority of food vendors in the University of Benin had good observed health practices as it relates to food safety.

**Table 5: Level of knowledge of foodborne diseases among food vendors in the University of Benin**

Level of knowledge	Frequency	Percentage
High	31	21.53
Moderate	84	58.33
Low	29	20.14
Total	144	100.00

*0-6 points: low level of knowledge; 7-10 points: moderate level of knowledge; 11-14 points: high level of knowledge*

Table 5 shows the level of knowledge of foodborne diseases of food vendors in University of Benin. The table indicates that 31 (21.53%) respondents had high level of knowledge of foodborne disease, 84 (58.33%) had level of knowledge of foodborne disease while 29

(20.14%) of respondents had low level of knowledge of foodborne disease. The inference here therefore, is that majority of food vendors in the University in Benin have moderate level of knowledge of foodborne disease.

**Table 6: Chi-square analysis of the relationship in the observed health practices of food vendors by gender in the University of Benin.**

Gender	Health Practices			$\chi^2$	df	Sig.
	Good O(E)	Fair O(E)	Poor O(E)			
Female	55 (50.1)	15 (15.2)	25 (29.7)	3.57	1	0.168
Male	21 (25.9)	8 (7.8)	20 (15.3)			

*O- Observed count; E-Expected count;  $\chi^2$ - Chi-square value; df-Degree of freedom; Sig.-Level of significance*

Table 6 shows the Chi-square analysis on the relationship between gender and observed health practices of food vendors in the University of Benin. The table reveals a calculated chi-square value of 3.57, degree of freedom 1 and level of significance of 0.168 which is greater than the set alpha level of 0.05. Thus, the null hypothesis which states that there is no significant relationship in the observed health practices of food vendors by gender in the University of Benin is retained. Therefore, it can be concluded that there is no significant relationship in the observed

health practices of food vendors by gender in the University of Benin.

## DISCUSSION OF FINDINGS

The study revealed that that the majority of food vendors had good health practices as it relates to food safety based on the self-reported and observed health practices of food vendors in the University of Benin. This finding is in agreement with the findings of Werkneh et al. (2023) who noted that food vendors had good health practices as it relates to food safety. However, this finding

contradicts the findings of Akeredolu, Okafor and Mbah (2014) who reported that food vendors had poor health practices as it relates to food safety. One possible explanation for this finding is that tertiary institutions typically establish stringent guidelines and regulations governing food safety standards for vendors operating within the school premises. These guidelines may encompass hygiene practices, food handling procedures, and storage protocols.

Furthermore, findings from this study revealed that the majority of food vendors at the University of Benin had moderate level of knowledge of foodborne diseases. This finding contradicts the findings of Oladoyinbo, Akinbule and Awosika (2015) and Galgamuwa, Iddawela, and Dharmaratne (2017) who reported that food vendors had low and high levels of knowledge of foodborne diseases respectively. The researchers believe that the moderate level of knowledge of foodborne diseases among food vendors could potentially have been higher if not for various constraints such as food vendors' financial constraints which may lead to limited access to or affordability of training programmes or educational materials that might restrict vendors from deepening their understanding of foodborne diseases.

Finally, this study found no significant relationship in the observed health practices of food vendors by gender at the University of Benin. This finding is similar to the findings of Admasu and Kelbessa (2018) who reported no significant relationship between gender and health practices as it relates to food safety practices of food vendors. This finding however contradicts the finding of Lema et al. (2021) reported that male food vendors were 2.37 times better in food safety/hygiene practice as than their female counterparts. In explaining this finding, the researchers believed that the small sample size might not have been able to detect any existing difference accurately. A larger and more diverse sample might show nuanced variations. Also, both male and female food vendors might receive similar training and education regarding food safety practices. If this training is standardized or

mandatory regardless of gender, it could result in comparable practices.

### **Implications for Disease Prevention**

The findings of the study conducted at the University of Benin regarding food vendors' health practices and knowledge of foodborne diseases have significant implications for disease prevention efforts. The study highlights the importance of stringent guidelines and regulations implemented by tertiary institutions to govern food safety standards among vendors operating within their premises. These regulations serve as a crucial preventative measure against foodborne illnesses, ensuring that vendors maintain good health practices to minimize the risk of contamination and infection among students, staff, and visitors.

However, despite the majority of food vendors demonstrating good health practices, the study reveals a moderate level of knowledge of foodborne diseases among vendors. This suggests a need for continuous education and training initiatives tailored to the specific needs and constraints of food vendors, particularly addressing financial limitations that may hinder access to such programs. By increasing knowledge and awareness of food safety practices and foodborne diseases, vendors can implement effective preventative measures in their operations, contributing to overall disease prevention efforts within educational institutions and beyond.

Finally, the study's findings regarding gender disparities in food safety/hygiene practices emphasizes the importance of standardized training programs accessible to all vendors, regardless of gender. Strengthening food safety regulations, monitoring, and enforcement within tertiary institutions and broader communities are crucial steps towards creating safer food environments and reducing the incidence of foodborne diseases.



## CONCLUSION

Health practices of food vendors as it relates to their food safety practices are a significant public health issue. Therefore, the study has established that the majority of food vendors had good health practices as it relates to food safety based on the self-reported and observed health practices of food vendors in the University of Benin. Moreover, majority of food vendors in the University of Benin had moderate level of foodborne diseases. The study has also established no significant relationship in the observed health practices of food vendors by gender in the University of Benin.

## Recommendations

Based on the findings, the following recommendations were made:

- University of Benin management should establish a recognition or certification system that acknowledges and rewards food vendors who consistently demonstrate good food safety practices.
- Organize regular seminars and workshops specifically focused on foodborne diseases to increase the level of knowledge of foodborne diseases from moderate to high.
- Ensure training programmes, workshops, and materials are designed to cater equally for all food vendors, focusing on food safety practices rather than gender-specific approaches to food safety.

## REFERENCES

- Admasu, M., & Kelbessa, W. (2018). Food safety knowledge, handling practice and associated factors among food handlers of hotels/restaurants in Asosa Town, Northwestern Ethiopia. *SM Journal Public Health Epidemiology*, 4(1), 1051.
- Akeredolu, I., Okafor, J.C., & Mbah, P. E. (2014). Food Handling Knowledge and Safety and Hygiene Practices of Food Vendors in Tertiary Institutions in Lagos State, Nigeria. *Journal of Nutrition Education and Behaviour*, 46(4), S99–S100. Available at: <https://doi.org/10.1016/j.jneb.2014.04.014>
- Alhaji, A. A. (2013). Food and nutrition in health. (Unpublished lecture note for Undergraduate studies, College of Education, Azare).
- Galgamuwa, L. S., Iddawela, D., & Dharmaratne, S. D. (2017). Nutritional status and correlated socio-economic factors among preschool and school children in Plantation Communities, Sri Lanka. *BMC Public Health*, 17(377). Available at: <https://doi.org/10.1186/s12889-017-4311-y>
- Lema, K., Abuhay, N., Kindie, W., Dagne, H., Guadu, T. (2021). Food Hygiene Practice and its determinants among food handlers at University of Gondar, Northwest Ethiopia, 2019. 13, 1129—1137.
- Odo, E. S., Uchechukwu, C., & Ezemadu, U. R. (2021). Foodborne Diseases and Intoxication in Nigeria: Prevalence of *Escherichia coli* 0157:H7, *Salmonella*, *Shigella* and *Staphylococcus Aureus*. *Journal of Advances in Microbiology*. Available at: <https://doi.org/10.9734/JAMB/2020/v20i1230312>
- Oladoyinbo, C. A., Akinbule O. O., & Awosika I. A. (2015). Knowledge of foodborne infection and food safety practices among local food handlers in Ijebu-Ode Local Government Area of Ogun State. *Journal of public health and epidemiology*, 7(9), 268-273.
- Oumer, A. (2019). Determinants of food safety practices among food handlers in selected food establishments. *International Journal of Public Health Science*, 8(2), 229. Available at: <https://doi.org/10.11591/ijphs.v8i2.18364>
- Szakaly, Z., Soos, M., Balsa-Budai, N., Kovacs, S., & Kontor, E. (2020). The effect of an evaluative label on consumer perception of cheeses in Hungary. 9(5), 563.
- Werkneh, A. A., Tewelde, M. A., Gebrehiwet, T. A., Islam, M. A., & Belew, M.A. (2023). Food safety knowledge, attitude and practices of street food vendors and associated factors in Mekelle city, Northern Ethiopia, Heliyon, 9(4).