

Original Article

Knowledge of hygienic food-handling Practices among street Food vendors in Dhading Besi, District Dhading, Nepal

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Abstract: The research titled “ Knowledge and practice regarding street food vendors in selected area of Dhading District. Food is an important basic necessity, its procurement, preparation and consumption is vital for the sustenance of life. However, diseases that spread through food are common and persistent problems result in appreciable morbidity and occasionally in death. The study was conducted to assess the knowledge and practice regarding food hygiene among street food vendors of Dhading Bensi. A cross sectional descriptive study includes total number of 47 street food vendors. A purposive sampling technique was adopted. The semi- structured questionnaire, direct face to face interview and observation checklist were used to conducted study. Ethical consideration was maintained during the study. The obtained data was organized, coded and entered into Statistical Package for Social Science (SPSS version 16) and was analyzed using descriptive statistics. Chi-Square test was to determine the level of knowledge with selected variables at P value < 0.05. Among the respondents (42.6%) belong to age group between 15 years to 25 years of age with Mean $\pm$ S.D = 32.40 ± 13.61 . More than half of the respondent (63.8%) had an adequate level of knowledge regarding food hygiene whereas (36.2%) of the respondent had an inadequate level of knowledge. Whereas, duration of current employment of street food vendor is significantly associated with knowledge regarding food hygiene. Similarly, most of the respondents (80.9%) had an inadequate level of practice whereas only the few number of respondent had adequate level of practice regarding food hygiene. The knowledge and practice of food hygiene of street vended food can however be improved if a sufficiently high proportion of vendors receive training in basic hygiene skill. Though knowledge of food hygiene was good, but still lack food hygiene knowledge and there was not adequate practice regarding food hygiene hence, the food hygienist and environmental health professional should make concerted effort to promote or increase awareness of food hygiene through mass media and social media. As well as Local level of government of Dhading District should enforce quality food hygiene assessment parameters for food establishment.

Keywords: knowledge, practice, street food vendors, awareness

1. INTRODUCTION

Food is a basic necessity of life, its procurement preparation and consumption is vital for the sustenance of life. Food is a product that is rich in nutrients required by microorganism and may be exposed to contamination with the major sources from water, air, dust equipment, sewage, insects, rodents and employees. Due to the changes in food production, handling and preparation technique as well as eating habits, the fact remains that food is the source for microorganism that can cause illness [1]. According to the World Health Organization "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. Street food is ready-to-eat food or drink sold by a vendor, in a street or other public place, such as at a market or fair. It is often sold from a portable food booth, food cart, or food truck and meant for immediate consumption [2]. Most street foods are cheaper on average than restaurant meals. Street food vendors are characterized into two group; mobile vendor and stationary vendors. Mobile vendors travels from place to place with prepared and packaged food intended for sale on their heads, carts, bicycles, motorcycles or tricycle. Stationary vendors have fixed stalls where food is prepared, stored and served to consumers [3]. The consumption of street food is common in many countries where unemployment is high, salaries are low, work opportunities and social programs are limited, and where urbanization is taking place. They benefit from a positive cash flow, often evade taxation, and can determine their own working hour. In selling snacks, complete meals and refreshment at relatively low prices, they provide an essential service to workers, shoppers, travelers and people on low incomes [4]. It is estimated that 40% of the Urban population in the developing world eat street foods because it is cheap. The World health theme for 2015 was "Food Safety" and the slogan was Farm to Plate, make Food Safe. Worldwide, Foodborne illness affects one in every ten people each year [5]. The key causes of foodborne illness are viruses, parasites, bacteria, and chemicals which is an important cause of morbidity and mortality with significant public health impact. The global burden of food borne diseases in 2010 was 33 million healthy life years lost with about 600 million food borne illness and 420,000 deaths of which foodborne diarrheal disease, the most frequent cause of food borne illness contributed about 23,000 deaths [6]. However, diseases that spread through food are common and persistent problems results morbidity and occasionally death. But unfortunately, a large proportion of food borne diseases are caused by improperly prepared and mishandled food by food vendor [7]. And food handlers lack understanding of their roles in ensuring proper personal and environmental hygiene accompanied with the basic food hygienic practices when they buy, prepare and sell food. Symptoms of foodborne parasitic infections vary greatly depending on the type of parasite. Most commonly cause diarrhea and other gastrointestinal symptoms. Helminthic infections can cause abdominal pain, diarrhea, muscle pain, cough, skin lesions, malnutrition, weight loss, neurological and many other symptoms depending on the particular organism and burden of infection [8]. In large scale cooking, food passes through many hands, thereby increasing the chances of food contamination due to improper handling [9]. Deliberate or accidental contamination of food during large scale production might endanger to the health of the consumers. Despite the numerous benefits provided to people, street vended food can also be a source of food borne illness resulting from poor hygiene practices by vendors, insanitary conditions at food vending points, among other. Food vendors prepared at very dirty surrounding with waste water and garbage disposed nearby, providing nutrient and breeding ground for rodents and vermin. Food handlers may also carry some human specific food borne pathogen such as Hepatitis A, Salmonella, Staphylococcus aureus and Shigella [10]. Food hygiene is a vital issue both in developed and developing countries given that food borne illness contribute to millions of illness and thousands of deaths annually. Food may be exposed to contamination with the major sources are like water, air, dust, equipment, insects, rodents and food handlers that can caused foodborne illness. Many

organisms can also be transmitted by water, soil, or person-to-person contact. Often in developing countries, a wide variety of helminthic roundworms, tapeworms, and flukes are transmitted in foods such as: undercooked fish and crabs, undercooked meat and raw vegetables that have been contaminated by human or animal feces. Some foods are contaminated by food service workers who practice poor hygiene or who work in unsanitary facilities [11]. Street foods are very well patronized in many developing countries since they are affordable, easily accessible and also serve as an important source of income. However, these street foods largely do not meet proper hygienic standards and can therefore lead to morbidity and mortality due to food borne illnesses [12]. A study conducted on two hundred street food vendors randomly selected from New Okhla Industrial Development Authority (NOIDA) of Gautambudh Nagar district of Uttar Pradesh with the help of questionnaire and observation of vending site result showed that most of the vendors had good level of knowledge but the practice were poor on environmental as well as personal hygiene [14]. This study is important to describe the knowledge and practice of street food vendors in an urban setting regarding food hygiene. The ability of street food vendors to prepare safe foods could still be questionable with the perception sustained that street food vendors pose a health risk for all consumers. In light of the important contribution the street food vendor make to the economy and food hygiene of many people in Urban place. Therefore, good knowledge and practice regarding food hygiene among street food vendor, somehow reduce the foodborne diseases. So, the researcher is interested to assess the knowledge and practice in food hygiene. Food is essential for life, its sourcing, preparation, and consumption, water, air, dust, equipment, sewage, insects, rodents, and personnel can contaminate food, which is rich in microorganism-required nutrients. Despite advancements in food production, handling, preparation, and eating behaviours, food still contains pathogenic microorganisms [14]. The World Health Organisation defines hygiene as actions that promote health and prevent disease. Street food is prepared food or drink offered by vendors in a street or public location like a market or fair [15]. A portable food booth, cart, or truck sells it for immediate consumption. Street cuisine is usually cheaper than restaurant fare. Street food sellers are either mobile or stationary. Mobile vendors carry prepared and packed food on their heads, carts, bicycles, motorbikes, or tricycles. Stationary sellers create, store, and serve food in stalls. People eat street food in many nations with high unemployment, poor wages, few job possibilities and social programmes, and urbanization [16]. A study of 200 street food vendors from Gautambudh Nagar district of Uttar Pradesh's New Okhla Industrial Development Authority (NOIDA) revealed that while most of the vendors had a good level of knowledge, their personal hygiene and environmental practices were lacking. About 400 respondents were chosen for a descriptive study conducted in Port Harcourt utilizing a multi-stage sampling procedure. Despite the fact that most people knew a fair amount about food hygiene, a small percentage did not; for this reason, the study suggested that environmental health professionals and food hygienists work together to raise public awareness of food hygiene through social media and the media at large [17]. A 95% confidence interval (CI) multivariable logistic regression analysis was utilized to determine the parameters that were substantially linked to high standards of food safety and hygiene. In contrast to over half (53%; 10/19) of street food vendors, nearly three-quarters (72%; 84/116) of food handlers in food establishments showed good levels of food hygiene and safety standards [18]. Owerri, in the Nigerian state of Imo, hosted another cross-sectional descriptive study. There were 200 people in the sample. Pretested semi-structured interviewer-administered questionnaires were used to gather data. 81% of the respondents had a good degree of understanding about food hygiene, according to the overall score for knowledge. In Terengganu, Malaysia, six districts participated in a cross-sectional survey employing a basic random sample technique; two districts served as the pilot study and the remaining four as the main study. A systematic questionnaire was used to interview 135 abattoir workers from the chosen districts,

and the study's findings were as follows [19]. Sixty-six (60.9%) of the respondents had a mean knowledge score of 18.59 ± 5.90 , indicating good knowledge, there is a statistically significant correlation ($P < 0.001$) between age and the practice of food safety and hygiene [20]. The biggest number of respondents (81.2%) had average knowledge, while the highest percentage (84.8%) had average practice. The correlation was tested using the chi square test [21]. When it came to food safety, 77% of the sellers knew something about the regulations governing food hygiene, whereas 23% didn't know anything at all. A little over half of the sellers (55.0%) had their food sufficiently covered from flies and dust, while the other 45.0% had none at all. In general, food providers showed to be highly knowledgeable about safe food handling procedures. Furthermore, the research suggested that additional health education be required to raise food vendors' awareness of food safety and hygiene [22]. A thorough, in-depth, methodical, and critical assessment of academic publications, unpublished scholarly print materials, visual materials, and private correspondence is known as a review of the literature. Every day, 2.5 billion people eat street food, according to the FAO [23]. Since most vendors either have a few years of formal education or none at all, they are ill-equipped to properly handle food hygiene. The last ten years have seen a number of research on food hygiene in Ghana, and the results have shown that street food practices and awareness of food hygiene are lacking. A study on street meals conducted in Uttar Pradesh found that while most vendors had a decent degree of expertise, their practices regarding personal hygiene and the surroundings were subpar. Even while street food sellers have many benefits, the rise of unofficial food businesses can be harmful to public health if improper handling and preparation of the food is done [24].

2. MATERIALS AND METHODS

A descriptive cross-sectional study design was adopted, the study was conducted at Dhading Bensi, as its district headquarters located at Dhading district which is a part of province number 8 & 84km far from Kathmandu by transportation to reach Dhading Bensi. The transnational Prithvi Highway connecting Kathmandu and Pokhara runs through the southern portion of the district making for easy access to the Kathmandu valley. The sample size was $N=47$ street food vendors from Dhading Bensi. The sample size was 54 by sample size calculation method but in total 47 street food vendors were involved in the study because of new rules regulated by municipality of Dhading Bensi. Sample size is calculated as:

Total population (N) = 63

Confidence level (Z) = 1.96% (normal score)

Error (e) = 5% = $5/100 = 0.05\%$

Population proportion (p), (q) = 0.5%

Sample size = ?

Population size (n) = $Z^2 pq / e^2$

$Z = 1.96$ at 95% significance level

$Z^2 = (1.96)^2 = 3.8416$

We know that,

Population size (n) = $Z^2 pq / e^2$

$$= 1.96 \times 1.96 \times 0.5 \times 0.05 / 0.05 \times 0.05$$

$$= 0.96 / 0.0025$$

$$= 384.16$$

Sample size = $N \times n / N + (n - 1)$

$$= 63 \times 384 / 384 + (63 - 1)$$

$$= 54$$

Non response error = 5%

$$= 54 \times 5 / 100 = 2.7 \approx 3$$

The final sample size = $54 + 3 = 57$

Formal approval letter was taken from B&B Medical Institute. Formal permission was taken from the concerned authority of Dhading Bensi, by explaining the purpose of the study. Informed written consent was taken from respondents. Interview technique was adopted for knowledge and observation checklist was used for the practice. Collected data was kept in order for coding and was checked for its completeness and accuracy. The data were entered into SPSS (Statistical Package for the Social Sciences) for data processing. The finding were analyzed by using descriptive statistics such as frequency, percentage and inferential statistics was used to find the association between selected variables with knowledge.

3. RESULTS AND DISCUSSION

Total 47 of food vendors included in the research, the collected data were compiled with and tabulated in academic table. Data analysis was done and computed in frequency and percentage are shown in table.

Table 01: Respondents' Socio-demographic Information n=47

Description	Number (n)	Percentage (%)
Age (In completed years)		
15 - 25	20	42.6
26 – 35	8	17.0
36 – 45	12	25.5
46- 55	5	10.6
56.00 above	2	4.3
Mean ± S.D = 32.40 ± 13.61		
Gender		
Male	21	44.7

Female	26	55.3
Religion		
Hinduism	35	74.5
Buddhism	6	12.8
Islam	4	8.5
Christianity	2	4.3
Ethnicity		
Janajati	23	48.9
Madhesi	14	29.8
Bramin/Chhetri	8	17.0
Others (Thakuri/Sanyasi)	2	4.3
Marital status		
Married	35	74.5
Unmarried	12	25.5

Table 01 shows that among 47 respondents, more than half (51.1%) respondents were between age group 15 years to 25 years of age. Similarly, female respondents were 55.3% slightly higher than male respondent 44.7%. Maximum numbers of respondents (74.5%) belonged to Hinduism and minimum (4.3%) belonged to Christianity and others respectively. Regarding ethnicity, nearly half of the respondents (48.9%) were Janajati while 4.3% were Others (Thakuri/Sanyasi). Most of the respondents (74.5%) were married.

Table 02: Respondents' Socio-demographic Information n=47

Description	Number (n)	Percentage (%)
Educational Status		
Illiterate	6	12.8
Can read and write	7	14.9
Primary level	18	38.3
Secondary level	9	19.1
Higher secondary level and above	7	14.9
Socio-economic status		

Upper middle (II)	1	2.1
Lower middle (III)	28	59.6
Upper lower (IV)	16	34.0
Lower (V)	2	4.3
Duration of current employment		
≤ 5	35	74.5
>6	12	25.5
Co-worker works in stall		
≤3	42	89.4
>4	5	10.6
Food serve in street in a day		
≤10	20	42.6
>11	27	57.4

Table 02 shows that (38.3%) respondents had primary level of education while least (12.8%) were illiterate. Regarding socio-economic status, most of the respondents (59.6%) were lower middle (III) class while 2.1% of respondent were in upper middle (II) class. Maximum respondents (74.5%) had duration of current employment were less than 5 years while only (25.5%) had more than 5 years of duration of employment. Majority of respondents (89.4%) had co-workers below 3. Likewise, most of the respondents (57.4%) served food in street was less than ten hours in a day.

Table 03: Respondents' Socio-demographic Information n=47

Description	Number (n)	Percentage (%)
Types of cart		
Mobile cart	12	25.5
Fixed cart	35	74.5
Main occupation		
Yes	43	91.5
No	4	8.5
Source of getting information		
Television	22	46.8

Radio	6	12.8
Social media	8	17.0
Neighbour	5	10.6
Newspaper	4	8.5
Friends	2	4.3

Table 03 depicts that (74.5%) of the respondent had fixed cart while 25.5% of respondent had only used mobile cart. Ninety two percent of the respondent said that their main occupation was to sell street food. Most of the respondents (46.8%) got information about food hygiene from Television.

Table 04: Respondent's Knowledge Regarding Food Hygiene n=47

Description	Number (n)	Percentage (%)
Mean by food hygiene		
Properly cooked food in good sanitation	45	95.7
Suitable place for preparation of food		
At food serving place	20	42.6
Suitable time for food preparation		
During the sale	14	29.8
Source of water used for food preparation*		
Filter water	2	4.3
Jar water	7	14.9
Tap water	43	91.5

Multiple response question*

Table 04 reveals that (95.7%) of the respondent gave the correct answer to the meaning of food hygiene. Less than half (42.6%) of the respondent can identified the suitable place for food preparation. only (29.8%) of respondent that they knew about suitable time for preparation of food. Majority of the respondent (91.5%) used tap water for food preparation.

Table 05: Respondent's Knowledge Regarding Food Hygiene n=47

Description	Number (n)	Percentage (%)
Material used for washing utensils		

Soap with water	47	100.0
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Best utensils for serving food*

Paper utensils	3	6.4
Stainless utensils	47	100.0
Covering food		
Yes	47	100.0

Hand washing is importance of*

For prevention from diarrhea	26	55.3
For having disease	1	2.1
For having diarrhea	1	2.1
Additive color are good for health	24	51.1
No	47	100.0

Multiple response question*

Table 05 shows that (100%) all the respondent said that they used soap and water for washing utensils as well as they used stainless utensil for serving food to the consumers. More than the half of the respondent said hand washing is important for prevention from diarrhea. All the respondent said that additive color are not good for health.

Table 06: Respondent's Knowledge Regarding Food Hygiene n=47

Description	Number (n)	Percentage (%)
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Clean surrounding is required for*

Free from presence of flies and rodent	25	53.2
Free from dust and dirt	20	42.6
For clean environment	17	36.2

Management for left-over food*

Throw away	35	74.5
Refrigerated at right temperature	13	27.7

Waste materials should be disposed on*

Cartoon	13	27.7
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Plastic	11	23.4
Dustbin	33	70.2
Food borne diseases are *		
Diarrhea	45	95.7
Typhoid	22	46.8
Malaria	2	4.3
Others	11	23.4

Multiple response question*

Table 06 demonstrates that more than half of the respondents (53.2%) said that free from presence of flies and rodent is required for clean surrounding. Only (27.7%) of the respondent said that they refrigerated food at right temperature for the management of leftover food. Seventy one percent of the respondent said waste materials should be disposed on dustbin while other said plastic, cartoon respectively. Maximum of the respondent gave correct answer about food borne disease.

Table 07: Respondent's Level of Knowledge n=47

Knowledge level	Number (n)	Percentage (%)
Inadequate	17	36.2
Adequate	30	63.8

Table 07 illustrate that more than half of the respondent (63.8%) had an adequate level of knowledge regarding food hygiene whereas (36.2%) of the respondent had an inadequate level of knowledge.

Table 08: Respondent's Practice Regarding Food Hygiene n=47

Description	Number (n)	Percentage (%)
Use of chopping board		
Yes	40	85.1
Cleanliness of chopping board		
Yes	20	42.6
Dry plate using cloths		
Yes	12	25.5
Utensils used for serving food*		
Paper	11	23.4

Plastic	5	10.6
Stainless steel	41	87.2
Others	1	2.1

Serving of prepared food by using*

Food served with fork/spoon	1	2.1
Food served with bare hand	47	100.0
Food served with gloves	3	6.4

Multiple response question*

Table 08 shows that most of the respondent (85.1%) used chopping board while 42.6% less than the half of the respondent had maintained cleanliness of chopping board. Only the some of the respondent (25.5%) dried plate using cloths to serve food as well as maximum number of respondent (87.2%) used stainless steel utensil for serving food. They served food by using bare hand.

Table 09: Respondent's Practice Regarding Food Hygiene n=47

Description	Number (n)	Percentage (%)
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Proper covering of food

Yes	30	63.8
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Heating of food before selling

Yes	22	46.8
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Clean utensils before used

Yes	28	59.6
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Personal hygiene*

Head covering	2	4.3
Use of gloves	1	2.1
Use of apron	1	2.1
Neatly dressed	45	95.7
Short and clean nails	39	83.0

Multiple response question*

Table 09 depict that more than half of the respondent (63.8%) properly covered of food. Fourty seven percent of the respondent heat of prepared food before selling also 59.6% of the respondent clean utensil

before used for the serving food. Most of the respondent had maintained their personal hygiene by neat dress, short and clean nails even though they did not covered their head, used of apron and gloves.

Table 10: Respondent's Practice Regarding Food Hygiene n=47

Description	Number (n)	Percentage %
Environmental hygiene*		
Presence of flies on food	8	17.0
Presence of dust and dirt on food	12	25.5
Stored food protected from flies and rodent	26	55.3
Prepared food protected from flies and rodent	27	57.4
Uncooked food items placed on bare hand	13	27.7
Disposal of waste*		
Cartoon	16	34.0
Plastic	12	25.5
Dustbin	27	57.4
Hand wash after sweeping the serve area		
Yes	5	10.6

Multiple response question*

Table 10 illustrate that average of the respondent had maintained their environment hygiene and they disposed waste in the proper place. But only few (10.6%) of the respondents had good practices of hand wash after sweeping the serve area.

Table 11: Respondent's Level of Practice n=47

Practice level	Number (n)	Percentage (%)
Inadequate	38	80.9
Adequate	9	19.1

Table 11 reveals that most of the respondent (80.9%) had an inadequate level of practice whereas only the few number of respondent had adequate level of practice regarding food hygiene.

Table 12: Association between Selective Variables and Level of Knowledge n = 47

Variables	Level of knowledge	Chi value	P value
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Inadequate		Adequate		
Gender				
Male	8	13	0.061	0.805
Female	9	17		
Age				
≤ 30.00	6	18	2.651	0.104
31.00+	11	12		
Religion				
Hinduism	13	23	0.001	0.988
Non-Hinduism	4	7		
Marital status				
Married	13	22	0.056	0.813
Unmarried	4	8		

Pearson's test*

*p value (<0.05) at 5% significance level

Table 12 demonstrate that gender, age, religion, marital status were not significantly associated with knowledge regarding food hygiene.

Table 13: Association between Selective Variables and Level of Knowledge n = 47

Variables	Level of knowledge		Chi value	P value
Inadequate		Adequate		
Educational status				
Illiterate	4	2	2.771	0.096
Literate	13	28		
Serve food in street in a day				
≤ 10.00	9	11	1.176	0.278
11.00+	8	19		
Duration of current employment				

≤ 7.00	11	27	4.484	0.034
7.01+	6	3		
Main occupation				
Yes	15	28	0.362	0.547
No	2	2		

Pearson's test*

*p value (<0.05) at 5% significance level

Table number 6b shows that duration of current employment of street food vendor is significantly associated with knowledge at p value 0.034 regarding food hygiene whereas, educational status of the street food vendor, serve food in street in a day and main occupation were not significantly associated with knowledge of food hygiene.

3.1 Discussion

This study examined street food vendors' food hygiene knowledge and practise. Descriptive cross-sectional method achieved goals. The survey comprised 47 street food vendors. The statistics showed that 42.6% of respondents were 15-25 years old. Most responses (55.3%) were women [25]. A conducted a similar study in Noida and found that 42.5% of respondents were 15–30 years old and 85% were male. Most responders (74.5%) were Hindu. In terms of ethnicity, 48.9% were Janajati and 4.3% Others (Thakuri/Sanyasi). Most respondents (74.5%) were married. Thirty-nine percent had primary education, while 12.8% were illiterate [26]. Most respondents (59.6%) were lower middle (III) class, whereas 2.1% were upper middle (II). In this study, 74.5 percent of respondents had less than 5 years of employment experience, while 25.5% had more than 5 years [27]. Similar findings were found in a study conducted where 75% of respondents were Hindus, and 48.9% had secondary education. Approximately 80% had one year of job experience, and 63.3% were married. Most responders (89.4%) had coworkers under 3. Most responders (57.4%) served street food less than ten hours a day. About 74.5 percent of respondents had a fixed cart, while 25.5% utilised a movable cart. Maximum (91.5%) of respondents sold street food as their main job [28]. The majority (95.7%) of respondents correctly defined food hygiene. Fourty-three percent can identify a good meal preparation spot, just 29.8% know an appropriate food preparation time. 100% of respondents washed utensils with soap and water and served food using stainless steel. Over half of respondents claimed hand washing prevents diarrhoea. All respondents believed added colours are unhealthy [29]. The study found that 53.2% of respondents felt a clean environment requires no flies or rodents. For leftover food, just 27.7% of respondents refrigerated food at the correct temperature. Seventy-one percent responded to put rubbish in a dustbin, while others said plastic or cartoon. Most respondents answered food-borne sickness correctly [30]. The survey found that 63.8% of respondents had good food hygiene knowledge and 36.2% had inadequate knowledge, similar study in Port Harcourt, study found that 80.5% of respondents knew food hygiene. Most respondents (85.1%) utilised a chopping board, however 42.6% less than half kept it clean. Few respondents (25.5%) dried plates with rags to serve food, while most (87.2%) used stainless steel utensils. Bare-handed servers served food [31]. The study showed that 63.8% of respondents covered their meals. 44.7% of respondents heat meals before selling, and 59.6% clean utensils before serving. Most respondents wore immaculate clothes, short and clean nails, aprons, and gloves, even though they didn't

cover their heads [32]. A study found that 98.0 percent of respondents sold meals sans gloves. 80% did not cover their heads and 76.8% did not wear aprons. The average respondent kept their environment clean and disposed of rubbish properly. Only 10.6% of respondents washed their hands after sweeping the service area. In Nigeria, Iwu, AC et al. (2017) found that 62.5% of respondents prepared food protected from flies and rodents, 59.5% stored food protected, and 37.5% placed uncooked food on bare floors [33].

4. CONCLUSIONS

This study concluded that more than half of the street food vendors had adequate knowledge regarding food hygiene however, level of practice was inadequate among them. While concern with association, there were no association between gender, age, religion, marital status, educational status, food serve in a street in a day and occupation. Whereas, duration of current employment of street food vendor is significantly associated with knowledge regarding food hygiene. The knowledge and practice of food hygiene of street vended food can however be improved if a sufficiently high proportion of vendors receive training in basic hygiene skill. Though knowledge of food hygiene was good, but still lack food hygiene knowledge and there was not adequate practice regarding food hygiene hence, the food hygienist and environmental health professional should make concerted effort to promote or increase awareness of food hygiene through mass media and social media. Local level of government of Dhading District should enforce quality food hygiene assessment parameters for food establishment.

REFERENCES

- [1] Bhandari, N., & Bhusal, B. R. (2021). Food safety, sanitation and hygiene practices among street food vendors in Pokhara, Kaski. *Age (in years)*, 40, 40.
- [2] Bhandari, R., Singh, A. K., Bhatt, P. R., Timalisina, A., Bhandari, R., Thapa, P., ... & Adhikari, N. (2022). Factors associated with meat hygiene-practices among meat-handlers in Metropolitan City of Kathmandu, Nepal. *PLOS Global Public Health*, 2(11), e0001181.
- [3] Rakha, A., Fatima, M., Bano, Y., Khan, M. A., Chaudhary, N., & Aadil, R. M. (2022). Safety and quality perspective of street vended foods in developing countries. *Food Control*, 138, 109001.
- [4] Panta, S. (2022). QUALITY EVALUATION OF STREET FOOD OF TINKUNE, KATHMANDU CITY.
- [5] Warda Anam, Khadija Anum & Muhammad Anas (2023). Literature Review on Effectiveness of Mirror Therapy and Conventional Therapy in Patients with Stroke. *Dinkum Journal of Medical Innovations*, 2(07):240-248.
- [6] Gautam, O. P., & Curtis, V. (2021). Food hygiene practices of rural women and microbial risk for children: Formative research in Nepal. *The American Journal of Tropical Medicine and Hygiene*, 105(5), 1383.
- [7] Wallace, F., Mittal, N., Lambertini, E., & Nordhagen, S. (2022). Vendor knowledge, attitudes, and practices related to food safety in low-and middle-income countries: a scoping review. *Journal of Food Protection*, 85(7), 1069-1078.
- [8] Adam, S., Algumassa, J. T., Thanh Nguyen, T. T., Van Pham, H., Dang Xuan, S., & Bui, D. T. (2024). Assessing Food Safety Knowledge, Attitudes and Practices (KAP) of Street Food Vendors and Sanitary Conditions of Vendor Stalls in Gia Lam, Ha Noi, Vietnam. *International Journal of BioLife Sciences (IJBS)*, 2(3), 409-423.

- [9] Sarah Rehman, Saira Rana & Mehru-Nisa (2023). Knowledge, Influence of Factors, and Management Strategies among Family Members with Behavioral Conditions. *Dinkum Journal of Medical Innovations*, 2(03):79-84.
- [10] Oladipo-Adekeye, O. T., & Tabit, F. T. (2021). The food safety knowledge of street food vendors and the sanitary compliance of their vending facilities, Johannesburg, South Africa. *Journal of Food Safety*, 41(4), e12908.
- [11] Salamandane, A., Malfeito-Ferreira, M., & Brito, L. (2023). The socioeconomic factors of street food vending in developing countries and its implications for public health: a systematic review. *Foods*, 12(20), 3774.
- [12] Ghimire, P., Khand, S., Chaulagain, B., Siwakoti, A., Dhakal, D., & Shrestha, U. T. (2021). Microbial Quality Analysis of Panipuri Samples Collected from Different Parts of Bhaktapur. *Tribhuvan University Journal of Microbiology*, 38-45.
- [13] Sakore, D. N., Parande, M. A., & Bhattacharya, S. (2023). Knowledge, attitude, and practice regarding food hygiene among food handlers of eating establishments of a medical college, Pune, Maharashtra: A cross-sectional study. *Medical Journal of Dr. DY Patil University*, 16(2), 160-166.
- [14] Rubab Rasheed & Manisha Nagpal (2023). Psychosocial issues in Parents and Patients with Thalassemia. *Dinkum Journal of Medical Innovations*, 2(05):188-193.
- [15] Adem, A. Y., Werkneh, A. A., Yimer, F., & Belew, M. T. (2023). Food Hygiene Practices and Associated Factors Among Street Food Vendors in Northeastern Ethiopia: A Cross-Sectional Study. *Global Social Welfare*, 10(3), 275-283.
- [16] Adem, A. Y., Werkneh, A. A., Yimer, F., & Belew, M. T. (2023). Food Hygiene Practices and Associated Factors Among Street Food Vendors in Northeastern Ethiopia: A Cross-Sectional Study. *Global Social Welfare*, 10(3), 275-283.
- [17] John Petter (2023). Anti-Depressant Consumption, Patterns, Prevalence, and Risk Considerations among Women in the Fertile Age Range. *Dinkum Journal of Medical Innovations*, 2(03):85-90.
- [18] Moghnia, O. H., Rotimi, V. O., & Al-Sweih, N. A. (2021). Evaluating food safety compliance and hygiene practices of food handlers working in community and healthcare settings in Kuwait. *International journal of environmental research and public health*, 18(4), 1586.
- [19] Nyokabi, N. S., Phelan, L., Gemechu, G., Berg, S., Lindahl, J. F., Mihret, A., ... & Moore, H. L. (2023). From farm to table: exploring food handling and hygiene practices of meat and milk value chain actors in Ethiopia. *BMC Public Health*, 23(1), 899.
- [20] Mwove, J. K. (2023). Quality and Safety of Ready-To-Eat Street-Vended Foods Sold in Selected Locations within Thika Town, Kiambu County, Kenya (Doctoral dissertation, JKUAT-CoANRE).
- [21] Mali, S. K., Haque, M. R., Sen, L. C., Debnath, S., & Rashid, M. H. (2020). Vendors and Consumers Status and Microbial Analysis of Open Restaurant Foods in Patuakhali District University.
- [22] Isanovic, S., Constantinides, S. V., Frongillo, E. A., Bhandari, S., Samin, S., Kenney, E., ... & Blake, C. E. (2023). How perspectives on food safety of vendors and consumers translate into food-choice behaviors in 6 African and Asian countries. *Current Developments in Nutrition*, 7(1), 100015.
- [23] Kwoba, E., Oduori, D. O., Lambertini, E., Thomas, L. F., Grace, D., & Mutua, F. (2023). Food safety interventions in low-and middle-income countries in Asia: A systematic review. *Zoonoses and public health*, 70(3), 187-200.

- [24] Misiko, A. J., & Kisiang'ani, R. I. (2024). Effects of the Informal Street Food Vendors' Operations on the Socio-cultural and Economic Wellbeing of Nyeri Town Public. *African Journal of Tourism and Hospitality Management*, 3(1), 30-55.
- [25] Gazu, L., Sharma, G., Alonso, S., Samad, M. A., Begum, R., Akter, R., ... & Lindahl, J. F. (2023). Food safety in Bangladesh: Market characterization and food safety awareness of food vendors and customers.
- [26] Sarah Gul Rehman & Deepak Singh (2023). Thalassemia Consequences and Survival Rates in South Asian Kids and Adults. *Dinkum Journal of Medical Innovations*, 2(05):194-200.
- [27] Muendo, C. M., Kikui, G., & Mambo, S. (2022). Determinants of microbial contamination of cooked foods hawked in Tharaka Nithi County, Kenya: a cross-sectional study. *Pan African Medical Journal*, 41(1).
- [28] Gammanpila, H. M., & Shrestha, R. B. Food Safety: Current Status, Challenge, Opportunity and Policy Perspectives in Sri Lanka. *Food Safety in South Asia*, 157.
- [29] Geming, L. (2023). Chinese Consumer Preference for Certain Asian Native Restaurants and the Role that Hygiene Plays in Their Options. *American Journal of Food Sciences and Nutrition*, 5(2), 1-12.
- [30] Muendo, C. M., Kikui, G., & Mambo, S. (2022). Microbial Contamination of Cooked Foods Hawked in Tharaka Nithi County, Kenya. *Food and Public Health*, 12(1), 1-6.
- [31] Tesfaye, A., & Tegene, Y. (2020). Assessment of food hygiene and safety practices among street food vendors and its associated factors in urban areas of Shashemane, West Arsi Zone, Oromia Ethiopia, 2019. *Sci. J. Immunol. Immunother*, 4, 1-5.
- [32] Hassan, J. K., & Fweja, L. W. (2020). Assessment of food safety knowledge and compliance to hygienic practices among street food vendors in Zanzibar urban district. *Current Journal of Applied Science and Technology*, 39(7), 59-72.
- [33] Prevolšek, V., Ovca, A., & Jevšnik, M. (2021). Fulfilment of technical and hygienic requirements among street food vendors in Slovenia. *British Food Journal*, 123(13), 105-123.
- [34] Negassa, B., Anbesse, A. T., Worku, G., Areba, A. S., Seboka, B. T., Debela, B. G., ... & Soboksa, N. E. (2023). Food hygiene practices and associated factors among street food vendors in urban areas of Gedeo Zone, Southern Ethiopia. *Environmental Health Insights*, 17, 11786302231168531.
- [35] Mwove, J., Imathiu, S., Orina, O., & Karanja, P. (2020). Food safety knowledge and practices of street food vendors in selected locations within Kiambu County, Kenya.