Study of meat hygiene practices among the meat retailers in Pokhara metropolitan city.

Binayak Banstola*, Dipendra Kumar Yadav, Rakshya Sharma

Department of Health and Allied Sciences, Pokhara University, Lekhnath, Nepal

Abstract

Introduction: Meat consumption is increasing day by day. Workers hygiene practice directly influence the meat hygiene and poor hygiene has huge public health implication due to possibilities of transmitting animal, human and environmental derived pathogens to the workers and consumers. The objective of the study is to assess the meat hygiene practices among the meat retailers of Pokhara Metropolitan city.

Methods: A cross sectional study was carried out among 240 meat retailers in between July to October 2018 in Pokhara metropolitan city, Nepal. Proportionate simple random sampling method was used. Data were collected through face to face interview and observation using the semi-structured questionnaire and observation checklist. Chi-square test was performed to assess the association between meat hygiene practice and independent variables.

Results: Majority (84.6%) of the participants had knowledge about personal protective equipment and almost all (99%) who have knowledge about personal protective equipment have habit of using it. All had habit of cleaning the shops/slaughter house. Similarly, all had practice of cleaning their hands, equipment's and clothes. More than half (52.5%) of the participants had good hygiene practice. Education and ethnicity of participants (P<0.05) were statistically significant with meat hygiene practice.

Conclusion: The study concludes that hygiene practices of the meat retailers in Pokhara Metropolitan were not found to be satisfactory and practice of hygiene needs to be improved. Provision of training for improving the hygiene practice was discovered as the key recommendation of this study.

Keywords: Hygiene practice, Meat, Retailers.

Introduction

Meat hygiene refers to all conditions and measures necessary to ensure the safety and suitability of meat at all stages of the food chain [1]. As meat consumption is increasing around the world, so do concerns and challenges to meat hygiene and safety [2]. Inadequate facilities and hygiene at slaughter houses can result in contamination of meat and occupational hazards to worker and has huge public health implication due to possibilities of transmitting animal, human and environmental derived pathogens to the workers and consumers [3]. Previous study showed that in developing countries slaughtering places are frequently contaminated and are often deteriorated due to bacterial infection or contamination which may cause food poisoning or diseases to the consumers [4].

The objective of this study is to assess the meat hygiene practices and factors associated with it among the retailers of Pokhara Metropolitan.

Materials and Methods

A cross-sectional study was conducted among the workers of retailers of meat products in Pokhara Metropolitan, Nepal from July-October 2018. The sample size of 240 was derived using finite population formula assuming that 50% practice of meat hygiene and with 637 estimated registered retailers in Pokhara Metropolitan. This study included workers of retailers in Pokhara Metropolitan who were engaged in the handling of meats and excluded those who refused to participate, whose age was below 15 years and above 60 years and those who were unable to answer. The data was obtained through face-to-face interview and observation using semi-structured questionnaire and observation checklist. Simple random sampling was done to choose sample representative. Independent variable included socio-demographic characteristics of the study participants (Age, Sex, Caste/Ethnicity, Religion, Educational level), training and occupation related factors (Working experience, hours of work, training received, provision of inspection, waste management practices). Dependent variable was level of meat hygiene practice, which was derived from observation checklist.

To ensure validity of the study, tool was developed by using standard questionnaire for meat hygiene and in consultation

***Corresponding Author:** Binayak Banstola, Department of Health and Allied Sciences, Pokhara University, Lekhnath, Nepal. Email: binayakbanstola01@gmail.com

***Received:** 06-Aug-2022, Manuscript No. AAJPHN-22-71370; **Editor assigned:** 09-Aug-2022, PreQC No. AAJPHN-22-71370(PQ); **Reviewed:** 24-Aug-2022, QC No AAJPHN-22-71370; **Revised:** 27-Oct-2022, Manuscript No. AAJPHN-22-71370(R); **Published:** 03-Nov-2022, DOI:10.35841/aajphn-5.6.126*

***Citation:** Banstola B, Yadav DK, Sharma R, et al. Study of meat hygiene practices among the meat retailers in Pokhara metropolitan city. J Pub Health Nutri. 2022;5(6):126*

with supervisor. Reliability was ensured by pretesting the tool among 10% of the estimated sample size. Tools was developed in both English and Nepali language. Data entry was done in Epi-data and exported to IBM SPSS version 20 for analysis. Descriptive statistics (like mean, range, frequencies, and percentages) was performed to describe the study population. Chi-square test was done to observe the association between dependent and independent variables.

Ethical approval was obtained from Institutional Review Committee (IRC), Pokhara University. The participants were fully informed about the nature and benefits of the research and written informed consent was taken.

Scoring of practice: Twenty-two questions were developed to assess practice. Positive responses to all 22 variables of the observations were given an equal score of one and grand score was computed by adding all the values. The mean score was 15.26. As per the category the hygiene scores greater or equal to 15.26 is considered as good hygiene and less than 15.26 is considered as poor hygiene.

Results

All the participants (n=240) participated in the study. Quantitative analyses of findings are reflected in different tables. (**Tables 1-4**).

Table 1 shows the socio-demographic characteristics of meat sellers. More than half (63.3%) of the participants were of age between 20-40 years. The mean age was 34.90 years (SD±9.66). Similarly, more than two-third (68.7%) of the participant were male and nearly one-third (31.3%) of the participants were female. Majority (82.1%) of participants were Hindu. More than half (56.3%) of the participants had secondary level of education. Table 2 shows the occupational related factors of the participants. It was observed that majority (89.6%) of the participants did not attend any training regarding the meat hygiene practices, majority (91.2%) of the participants worked for more than 8 hours a day. More than half (60%) of the participants had less than 5 years of working experience, nearly one-third (31.2%) of the participants reported there was no provision of inspection from the higher authorities. Table 3 Association between level

Table 1. *Socio-demographic characteristics of the participants.*

Characteristics	Frequency	Percentage
Age		
<20	13	5.4
20-40	152	63.3
>40	75	31.3
Mean= 35 years, SD= 9.659, Minimum= 18, Maximum= 59		
Sex		
Male	165	68.7
Female	75	31.3
Religion		
Hindu	197	82.1
Buddhist	20	8.3
Christian	14	5.8
Muslim	9	3.8
Ethnicity		
Brahmin	63	26.3
Chhetri/Thakuri	49	20.4
Janajati	70	29.2
Newar	23	9.6
Dalit	27	11.3
Religious Minorities	8	3.3
Marital status		
Married	199	82.9
Unmarried	38	15.8
Widow	3	1.3
Family type		
Nuclear	150	62.5
Joint	90	37.5
Education		
Illiterate	15	6.3
Non-formal	25	10.4
Basic education	51	21.3
Secondary level	135	56.3
Bachelor	13	5.4
Master's and above	1	0.3
Main Occupation		
Meat selling	231	96.3
Others	9	3.7

Others=(Agriculture, other business)

Table 2. *Occupational related factors of the participants.*

Characteristics	Frequency	Percentage
Training		
Yes	25	10.4
No	215	89.6
Working hours		
Less than 8 hours	21	8.8
More than 8 hours	219	91.2
Working Experience		
Less than 5 years	144	60
5-10 years	51	21.2
More than 10 years	45	18.8
Provision of inspection		
Yes	165	68.8
No	75	31.2
Interval for Inspection (n=165)		
Time to time	121	73.3
In every 3 months	17	10.3
In every 6 months	14	8.5
In every 1 year	13	7.9
Measures for waste management (n=240)		
Burning	1	0.4
Burrowing	10	4.2
Using local way (Municipal)	190	79.3
Dumping on open place	9	3.6
Throwing in river and other water source	1	0.4
Food for pig	29	12.1

Table 3. *Hygiene practice of participants.*

Characteristics	Frequency	Percentage
Good hygiene	126	52.5
Poor hygiene	114	47.5

More than half (52.5%) of participants have the good hygiene practice while 47.5% have poor hygiene practice.

Table 4. *Association between independent variable and meat hygiene practice.*

Characteristics	Level of practice				Total		Chi-square-value	P-value
	Good		Poor					
	n	%	n	%	n	%		
Education qualification								
Illiterate and non-formal	12	30	28	70	40	100	13.128	0.04*
Basic	24	47.1	27	52.9	51	100		
Secondary	83	61.5	52	38.5	135	100		
Bachelor and above	7	50	7	50	14	100		
Ethnicity of the participants								
Brahmin	43	68.3	20	31.7	63	100	15.939#	0.007**
Chhetri/Thakuri	27	55.1	22	44.9	49	100		
Janajati	32	45.7	38	54.3	70	100		
Newar	13	56.5	10	43.5	23	100		
Dalit	7	25.9	20	74.1	27	100		
Religious minorities	4	50	4	50	8	100		

*# Likelihood ratio, *p-value significant at α <0.05, **p-value significant at α <0.01*

of practice and independent variables. Table 4 shows the association between meat hygiene and independent variable. Statistically association was observed between educational qualification and practice on meat hygiene (P<0.05). Similarly, strong association was observed between ethnicity of participants and practice on meat hygiene (P<0.01).

Discussion

The mean hygiene score was 15.26 with a minimum value 3 and maximum value of 22. More than half 52.5% of the retailers score equal or more than mean score (good hygiene practice) and 47.5% score less than the mean score (poor hygiene practice). Similar research conducted in Dharan shows that 58% have fair hygiene practice, which is comparatively more than this study [5]. However, the study conducted in pig meat shops of Chitwan district depicts the extremely poor condition of hygiene practice among the handlers [6]. Similarly, in the study conducted in India 45.1% have fair hygiene practice

which is comparatively low than this study [7]. In the study conducted in Nigeria only 13.4% have good hygiene practice, which is extremely, low than this study [8]. Furthermore this study shows that the hygiene practice is relatively good than that of the study conducted in Ethiopia where 53.8% have no sanitary regulation system [9]. Similarly, the hygiene practice of this study is good than study conducted in Sudan [10] and Kenya [11]. Level of hygiene practice is associated with level of education, which is supported by study conducted in Dharan.

Conclusion

Near about half of the respondents reported poor hygiene practice in Pokhara Metropolitan, Nepal. The meat hygiene practice was associated with educational qualification and ethnicity of the respondents. To improve the hygiene practices awareness campaign or training on meat hygiene and safety measures should be conducted frequently by concerned stakeholders as well as frequent supervision should be carried out.

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