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Zoonoses and Food Hygiene News, published four times a year, provides a medium for disseminating technical information on matters related to zoonoses and food hygiene generated in the world, particularly in Nepal. The editors welcome submissions on these topics with appropriate illustrations and references. The views and opinions expressed in the News are those of the authors.

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Presence of Fascioliasis in Buffaloes Slaughtered in Kirtipur Municipality

Anju Shrestha and Durga Datt Joshi, NZFHRC

ABSTRACT

Total 200 water buffaloes were slaughtered and examined of which 100 were observed during the winter time and 100 were observed during the summer time 2008. Out of them, 93 (46.50%) were male and 107 (53.50%) were female. 54 (27%) of them were calves, 51 (25.50%) were adults and 95 (47.50%) were olds. Female were found more infected with fascioliasis. 38.05% of the female had fascioliasis as compared to 16.09% of male. The difference in sex-wise prevalence of fascioliasis was found significant ($p = 0.0004$). Old animals (35.78%) were infected with *Fasciola* more often than calves (14.81%) and (29.41%) adults. Difference in age-wise prevalence of *Fasciola* was significant ($p = 0.0004$). With a higher prevalence in winter, the season-wise prevalence of fascioliasis was found significantly different ($P=0.042$). Out of 35 positive cases of *Fasciola* infection observed during winter, 20 (57.14%) buffaloes had only *Fasciola hepatica* while 11 (31.42%) had only *F. gigantica* and 4 (11.42%) had both *F. hepatica* and *F. gigantica*. Similarly during summer, out of 22 animals that had fascioliasis, *F. hepatica* was found in 7 (31.81%) of them while *F. gigantica* was observed in 12 (54.54%) of them and 3 (13.63%) of them had both *F. hepatica* and *F. gigantica*. Infection with *Fasciola hepatica* (59.65%) was found slightly higher than *Fasciola gigantica* (52.63%).

INTRODUCTION

In Nepal, lack of appropriate slaughtering facilities and unsatisfactory slaughtering techniques are causing unnecessary losses in meat as

well as valuable byproducts. Animals, particularly buffaloes, are slaughtered in Kathmandu in slaughtering places which are frequently polluted with street dust, garbage, human excreta, animal blood, intestinal contents and dirty effluents. Such facilities are not protected against dogs, rodents and insects. Due to lack of meat inspection, meat from the unhealthy and parasite infected animals are acting as a source of infection to human as well as to animals. Besides, meat quality is adversely affected by careless handling condition in the slaughtering places as well as in the meat markets or shops (Joshi, 1991). In Nepal, buffalo meat contribute about 64% of meat consumed, followed by goat meat (20%), pork (7%), chicken (6%) and sheep (3%) (Joshi *et al.*, 2001).

Fascioliasis infection was caused by one of two liver flukes, either *Fasciola hepatica* or *Fasciola gigantica* (Mas-coma, 2007). It is a zoonotic disease for which humans act as an accidental host during the life cycle of the parasite (Price *et al.*, 1993). *Fasciola hepatica* and *F. gigantica* have similar aquatic diheteroxenous life cycles. Humans are infected by ingesting encysted metacercariae on raw vegetation and probably also floating infective metacercariae in contaminated water (Smithers, 1982). Sheep, goats, cattle, horses, donkeys, mules, camels, buffalo, deer, wild sheep, pigs, marsupials, rabbit hare and other rodents and monkeys serve as definitive hosts for both *F. hepatica* and *F. gigantica* (Boray, 1982).

MATERIALS AND METHODS

The study area was Kirtipur Municipality of the Kathmandu district. In this municipality, a total of 12 buffalo slaughtering places and a total of 50 meat shops were surveyed. Samples were collected by visiting the different slaughtering places. *Fasciola* spp. collected from each of the infected animals during slaughter were kept in the separate plastic bags and were brought to the laboratory for further work and analysis. Fresh faecal samples for parasitological examination were collected in 10% formalin solution to preserve the parasite eggs. Collected samples were dispatched as soon as possible to a laboratory in plastic bags. Samples were immediately stored in the refrigerator (4°C) until they were processed. The fecal samples were examined by sedimentation technique.

A brief questionnaire survey of buffalo meat consumers was also conducted among 300 meat consumers during that period to know about their knowledge and perception about parasites in meat.

RESULTS

During the study period, 200 slaughtered water buffaloes were examined thoroughly. A total of 100 buffaloes were observed during the winter; from November 27, 2007 to February 10, 2008 and 100 more buffaloes were observed during the summer; from June 18, 2008 to July 26, 2008. Out of them, 93 (46.50%) were males and 107 (53.50%) were females. Age-wise, 54 (27%) of them were calves (below 12 months), 51 (25.50%) were adults (2 to 14 years) and 95 (47.50%) were old (15 years or more).

Old animals (33.68%) were infected with *Fasciola* more often than calves (14.81%) and (29.41%) adults which is shown in Table 1. Difference in age-wise prevalence of *Fasciola* was significant (χ^2 at 2 d.f. = 6.27, $p=0.043$). Chi-square comparison between old vs. adults and calves also indicated a significant difference (χ^2 at 1 d.f. = 3.47, P

= 0.03). These findings indicate that older animals are significantly highly likely to be infected with *Fasciola*.

Table 1: AGE-WISE PREVALENCE OF *Fasciola* (In faecal)

AGE	TOTAL		
	Observed	Infected	Prevalence
Calf	54	8	14.81%
Adult	51	15	29.41%
OLD	95	32	33.68%
TOTAL	200	55	27.50%

Females were found more infected with fascioliasis. 37.04% of the females had fascioliasis as compared to 16.84% of males. The difference in sex-wise prevalence of fascioliasis was found significant (χ^2 at 1 d.f. = 11.27, P = 0.0004).

Out of 35 positive cases of *Fasciola* infection observed during winter, 20 (57.14%) buffaloes had only *Fasciola hepatica* while 11 (31.42%) had only *F. gigantica* and 4 (11.42%) had both *F. hepatica* and *F. gigantica*. Similarly during summer, out of 22 animals that had fascioliasis, *F. hepatica* was found 7 (31.81%) of them while *F. gigantica* was observed in 12 (54.54%) of them and 3 (13.63%) of them had both *F. hepatica* and *F. gigantica*.

The prevalence of fascioliasis during winter (35%) was higher in compare to summer (22%) which was significant (χ^2 at 1 d.f. = 4.147, P = 0.042).

Total 183 (73.20%) buff consumers replied that they had never seen parasites in the meat however, total 67 (26.80%) said they had sometimes seen the parasites in liver, rumen intestine, etc.

DISCUSSION

We found that older animals are slaughtered more often than the adults and the calves. Among 200 slaughtered animals observed, 95 (47.50%) were the old animals over 15 years of age. Majority of slaughter animals being old is also because buffaloes used for milk or draught power are finally sent to slaughter. The study found fascioliasis, the overall prevalence in slaughtered buffaloes was found to be 27.50%. The prevalence of fascioliasis in buffaloes was 83.00% in Surkhet (Parajuli, 1996) 20% to 87.5% in Dhankuta (Shrestha *et al.*, 1992); 48.57% in Chitwan (Singh *et al.*, 1993), 57.9% in the hills and 4.3% in the Terai of Nepal (Mahato, 1993), 61% in Kathmandu (Adhikari *et al.*, 2003) and Joshi *et al.*, (1997) reported more than 50% *Fasciola* spp in cattle and buffaloes in different parts of Nepal. Similarly, there are several reports from other countries including 46.67% in Vietnam (Nguyen *et al.*, 1999), 75% at the Cajati abattoir of Vale Do Riberia, Sao Paulo, Brazil (Oliveria, 2002), and 20% in Viamao, southern Brazil (Marques *et al.*, 2003). Such a wide range of prevalence in different geographical regions and countries is often associated with the type of habitat of animals. Higher prevalence can be expected where animals have access to encysted metacercariae on raw vegetation or contaminated water (Smithers, 1982).

Females were more likely to be infected with fascioliasis. Out of 107, 40 (38.05%) of the females had fascioliasis as compared to 16.09% males. However, this significant association might also be due to the fact that majority of females slaughtered were old. Prevalence in older animals (35.78%) was higher than that of calves (14.81%) and adults (29.41%). Higher prevalence in older animals is partly because of the chronic nature of the disease. Once the animal is infected, it often remains infected because the owners usually do not seek veterinary attention for minor illness and the animal remains untreated.

Consumers are not aware about the parasites and often the parasites are removed by the people involved in slaughter.

RECOMMENDATIONS

From the outcome of the study performed, following recommendations have been drawn.

1. Slaughterhouse, at least a hygienic mini abattoir should be established in each ward depending the consumption of the meat.
2. Slaughter sheds should be constructed.
3. Information regarding meat borne diseases and zoonotic diseases should be introduced in the text book of primary and secondary level as a compulsory subject.
4. The Slaughter House and Meat Inspection Law which has been approved in 1998 by the Government of Nepal should be strictly considered and implemented.

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Prevalence of Taeniasis/Cysticercosis in the Porcine Population Slaughtered in Kathmandu

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INTRODUCTION

Human and Porcine taeniasis/cysticercosis is one of the major zoonotic diseases in Nepal. Estimation made by WHO, that 50 million persons primarily from budding countries are infected with taeniasis, and 50 thousands people die every year due to this disease. The ethnic groups making up to 25% of the total population of Nepal are pig farmers and pork consumers. They have very low sanitation and hygienic practices, and have no power over pig husbandry and slaughtering (Joshi et al., 2007). It is now emerging as a major public health problem of worldwide dimensions (Sciutto et al, 2000). In a recent study, 87 out of 297 pigs (29.3%) from three districts of Kathmandu valley were found positive for *Taenia solium* cysticercosis, out of which 29 positive from 100 samples (29%) from Lalitpur district, 39 positive from 100 samples (39%) from Bhaktapur district and 19 positive from 97 samples (19.59%) from Kathmandu district. 3 out of 22 Human samples (13.63%) from Institute of Medicine (IOM) were found positive for *Taenia solium* Neurocysticercosis (Ale, 2010). Joshi et al. (2001) showed that 23.5% (204 pig sera) by seroprevalence (ELISA) and 32.5% (419 pig tongues) prevalence by lingual palpation in Nepal. This is a persisting problem in human beings and pigs in Nepal.

MATERIAL AND METHODS

A total of 100 slaughter pig samples from slaughter places in Teku, Kathmandu were used for this study. Blood was extracted directly from the aorta after taking out the heart from the carcass. In the NZFHRC laboratory, serum was extracted and used for further analysis. Blood samples from pigs were collected from 100 pigs presented in Table 1.

Table 1: Number of slaughter pigs used for serological test.

Breed	Male	Female	Total
Black	38	6	44
White	33	4	37
Cross breed	14	5	19
Total	85	15	100

Serological testing of pig serum was done by Enzyme Linked Immunosorbent Assay (ELISA). This sandwich ELISA Method is one among few others which has better sensitivity and specificity. It consisted in the detection of viable metacestodes of *Taenia spp* in

human, porcine and also bovine serum samples with the use of a monoclonal antibody-based sandwich ELISA. A purified antibody (the capture antibody) is bound to a solid phase (polystyrene plate). Antigen (it comes from sera) was then added and allowed to complex with the bound antibody. Unbound products were then washed away. A labeled antibody (the detecting antibody) was allowed to bind the antigen (specificity between the both). It was the so-named 'Sandwich'. The assay was then quantified by measuring the amount of labeled antibody. ELISA Test Protocol was followed during the test.

RESULTS

On the multiple ELISA reading machine, the intensity of the color was measured. Optical density (OD) value were printed and then this information was used in a specific excel program. This program calculates the ratio of the observed OD to the average cutoff OD (average OD of the negative controls). If the ratio is greater than 1 the sample was considered positive.

Total 100 pig serum samples were tested by ELISA. So the prevalence rate was 40% of which OD value ranging from 0.138 to 2.64 and ratio ranges from 1.092 to 21.94.

DISCUSSION

In total, the prevalence was 40%. It's a very high prevalence compared to that of Chitwan, Kathmandu and Lalitpur, which was reported to be approximately 19% (Joshi et al., 2008). The prevalence rate of porcine cysticercosis was found as 0.00%, 0.00% and 29.3% based on lingual, carcass and serum examination (ELISA) of 297 pigs respectively (Ale, 2010). Measures have to be taken in order to improve hygiene conditions and limit the transmission between pigs and human beings. The meat has to be well-cooked and the population has to become more aware of this problem. A solution that could be used of TV program. In order to prevent the risk from contaminating pigs, we have to take care about the access to human feces (human feces not be accessible to pigs).

ACKNOWLEDGEMENT

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Study on Allergy Cases on School Students and Teachers in Cambridge Public High School, Kathmandu

Mr. Sushil Neupane and Ms. Minu Sharma

INTRODUCTION

People are suffering different types of allergy. Mostly children are infected with asthma, house dust and other indoor air dust has been proved the allergy among the children's. Carpet dust and other book dust is the major cause of illness. A hospital-based study was carried out to examine a hypothesis that indoor air pollution was associated with acute asthma in young children living in big cities. Sharing a bedroom with an adult smoker and exposure to mosquito coil smoke at least three nights in a week was both associated with increased risk for asthma. Mostly under 10 years children are suffering asthma and old age people are suffering with asthma. Children's with parasitic infestations develop allergic reactions in the skin of face and some time in legs.

MATERIALS AND METHODS

Total 155 students, teachers and staff were included in the interview at the Cambridge Public High School, Kathmandu. The interview was based on a pre-structured questionnaire with question regarding their knowledge, experience, regular hygienic behavior and other facts associated with allergy in them and their family members.

RESULTS

Number of allergic people like teacher, students and staffs of school with different types of allergy like dust, metal, skin, food and water is presented table no 1.

Table no. 1: Number of allergic people with type of allergy cases.

Type of allergy	Number of allergic people			Total
	Teachers	Students	Staffs	
Dust	7	25	2	34
Metal	2	3	0	5
Skin	3	14	1	18
Food	0	2	0	2
Water	1	10	4	15
Total	13	54	7	74

Out of them 77 (49.6%) were male and 78 (50.4%) were female. Among the 11 to 20 year group, 33 (44.60%) were found allergic which is highest proportion than the other age groups, which is followed by age group 21yr. - 50yr, 21 (28.37%) and 3yr. to 10yr., 20 (27.03%) (See table no. 2). The highest number 48 (30.1%) were found changing cloths and taking a bath twice a week, 40 (25.7%) were changing cloths and bath daily, 34 (28.3%) were changing cloths and bath once a week and 33 (21.1%) were found changing cloth and take bath more than twice a week. Out of 155 of which 74 persons, 13 (17.56%) were teachers, 54 (72.97%) were students and 7 (9.47%) were staffs. Among the 74 allergic cases, dust allergy had been found highest scale i.e. 35 (47.30%), which is followed by metal allergic 15(20.27%), skin allergic 13(17.56%), water allergic 6(8.12%) and food allergy 5(6.75%).

Age Wise Distribution

Table no. 2: Age wise distribution of students, teachers and staffs

Age Group	Allergic Cases	Percentage
3 yr to 10 yr.	20	27.03
11 yr. to 20 yr.	33	44.60
21 yr. to 50 yr	21	28.37
Total	74	100

News:

Dr. Durga Datt Joshi, Executive Chairman, NZFHRC participated workshop on "**Developing Epidemiological Roadmap at National Level**" on March 22-23, 2011, Hotel Shankar, Lazimpat, Kathmandu. It was organized by Nepal Health Research Council (NHRC), Kathmandu, Nepal and World Health Organization (WHO), Nepal.

KDMA Research Award awarded for the year 2007

KDMA research award for the year 2064 B.S. (2007) was awarded jointly to Mr. Sushil Neupane and Ms. Minu Sharma for their research work titled "**Study on Allergy Cases on School Students and Teachers in Cambridge Public High School, Kathmandu**" for the year 2007.

K.D.M.A. Research Award:

Please kindly submit your research work paper on allergy award for the year 2008, 2009 and 2010 for the consideration by the end of July 2011 to KDMART office Chagal, G.P.O. Box 1885, Kathmandu, Nepal, Phone: 4270667, 4274928 and Fax 4272694. This award was established by Dr. D.D. Joshi in 2049 B.S. (1992) on the memory of his wife, the late Mrs. Kaushilya Devi Joshi. The award includes a grant of NCRs. 10,001 with certificate.

**From: Zoonoses & Food Hygiene News, NZFHRC
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