

Zoonoses and Food Hygiene News

Vol. 12 No.2 April- June, 2006

Government of Nepal, Registration Number: 148/049/050

This Issue has been Supported by Urban Eco System Health Project Phase - II, IDRC, Canada.

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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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Present Situation Challenges in Treatment and Elimination of Taeniasis/Cysticercosis in Nepal

D. D. Joshi

Summary:

The disease in human and pigs is an ancient parasitic disease rooted in developing countries and emerging as a major health problem of global dimensions (Sciutto et al., 2000). The infection is also present in India, Pakistan, North China, Thailand and Nepal (Scantz et al., 1992). *Taenia* cysts were first time observed in pig meat slaughtered in Kangeswari, Kathmandu (Joshi, 1973 and Joshi, 1991).

Parasitic cestode Zoonoses or cestode infections transmitted from animals to humans or from humans to animals are likely to become more important in the spectrum of emerging and re-emerging infectious diseases worldwide, either developed or developing countries.

Taeniasis refers to a human infection with the adult tapeworm of *Taenia solium* and *Taenia saginata*. The infective stage of *T. solium* called *Cysticercus cellulosae* develops in the pig while that of *T. saginata* called *Cysticercus bovis* develops in buffalo. The adult stages of *T. solium* and *T. saginata* are obligatory intestinal parasites for man. The infection with the larval stage of *T. solium* is called cysticercosis.

Humans become infected by ingesting uncooked or poorly cooked water buffalo meat or pork infected with cysticerci, and the mature tapeworms develop in the intestines. Eggs and gravid proglottids release from adult worms and excrete to the environment. The eggs

are ingested, and the larval stages, *Cysticercus bovis* of *T. saginata* is found in the muscles of water buffaloes and *Cysticercus cellulosae* of *T. solium* in those of pigs.

Human infection by *Taenia solium* metacestodes is recognized, when it is a systemic infection, as cysticercosis, and when focused in the brain, as neurocysticercosis (NCC). The infection frequently occurs in populations living in poor sanitary conditions. Persons infected with *T. solium* will initiate the spread of proglottids into an endemic environment. Cysticercosis is, therefore, a communicable infectious disease among humans residing in poor and unhygienic communities.

Human and porcine taeniasis/cysticercosis are reported among the major zoonotic diseases in Nepal (Poudel, 1998; Thapa, 2000; Joshi et al., 2001; Joshi et al., 2003; Joshi et al., 2005). Particular ethnic groups that could add up to 25% of the population of Nepal are pig farmers and pork consumers with very low hygienic and sanitation practices and no control on pig husbandry and slaughtering. Epilepsy cases in Nepal are increasing with studies showing that up to 7.3 per 1000 population may suffer from it and almost 50% of the cases are due to neurocysticercosis (Rajbhandari, 2003).

National Zoonoses and Food Hygiene Research Centre (NZFHRC) has been actively involved in putting surveillance, diagnosis and control of cestode diseases in the public health agenda for the last ten years. As an organizer of the first national seminar (December 7-9, 2005) on the subject to take place in Nepal, we have involved the Ministry of Agriculture and Cooperatives, Department of Livestock Services and Ministry of Health and Population, Department of Health Services, Medical Colleges, Private Hospitals and National Agriculture Research Council and Institute of Agriculture and Animal Science, Tribhuvan University so that research might be linked to governmental policy to control this disease.

In conclusion this seminar has brought both veterinarian, and medical and public health professionals to share their experiences and we have expected as immediate results of the meeting to be:

- a) The formation of a national network on cysticercosis and echinococcosis.
- b) Raised awareness of the policy decision-making bodies so that the control of these diseases is incorporated in the government national agenda.
- c) Enforcement of the present slaughterhouse and meat inspection act.

The seminar recommended the establishment of National Networking Group (NNWG) for Taeniasis/Cysticercosis and Echinococcosis/Hydatidosis. TOR and work plan of this NNWG for TCEA will be formulated by this group itself. Secretariat of this group will be in NZFHRC office.

A National Referral Centre for *Echinococcosis/Hydatidosis* (NRC/EH) was established in 1996 in Nepal. National Zoonoses and Food Hygiene Research Centre (NZFHRC) had been recommended to work as an NRC/EH by the participants of the National Seminar on *Echinococcosis/Hydatidosis*, January 23-24 1996 Jointly organized by NZFHRC Nepal and IDRC, Canada, (Joshi et al., (Edt. 1996). This centre has been working jointly with different medical college hospitals, Government hospitals DHS and Veterinary hospitals of DLS in diagnosis cases by ELISA test. This centre has also established research network with Queensland Institute of Medical

Research Australia and identified three genotypes of *Echinococcus granulosus* in Nepal i.e. G1, G5 and G8 in isolates in the mammalian host, by the method of genomic DNA isolation and purification and PCR amplification. (Zhang *et al.*, 2000).

At present this centre is collaborating and also developed research network linkages with Asahikawa Medical College, Japan for both.

Using Taeniasis and Echino serological diagnosis ELISA and Western Immuno Blot and DNA analysis for *T. cyst* fluid with PCR method Asian genotypes Taeniasis has been so far identified (Joshi *et al* 2004-2005).

Following networks have already been established. Nepal should have network linkage with them. It will enable us for closer links to promote the health of people in Nepal.

1. A networking of Veterinary Public Health and Zoonotic disease in Asia established in 2003. Its website is www.vphasia.org
2. FAO/WHO/OIE has special website for VPH and food safety concerns.
3. FAD's regular programme has established a global network of professionals involved in Zoonotic and food borne disease.
4. WHO Informal Working Group on *Echinococcosis* (IWGE)
5. WHO Expert Committee on Zoonoses
6. Network for Control of Cestode Zoonoses in Asia and the Pacific has been established and approved by the *Taeniasis/cysticercosis and Echinococcosis* International symposium with focus in Asia and the Pacific and the third congress of federation of Asian parasitologists focused on cestode Zoonoses, 5-8 July 2005 Asahikawa, Japan.
7. South East Asian Tropical Medicine and Parasitology Network established in 1967 for Education, Training and Research.
8. South East Asia Ministers of Education Organization of Tropical Medicine (SEAMEO/TROPMED) established in 1996.
9. Federation of Asian Parasitologists (FAP) established on November 2000.
10. International Livestock Research Institute (ILRI), Nairobi, Kenya.

In conclusion, NZFHRC would like to establish linkages with these above mentioned international networks as well as with medical and veterinary institutions involved in emerging parasitic zoonoses research and control programme in both humans and animals in the community to form a national network.

Dog Rabies Vaccination in Bharatpur and Ratnanagar Municipalities of Chitwan District, Nepal

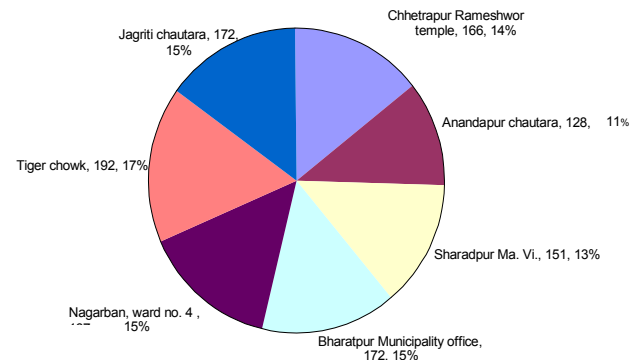
Dr. D. D. Joshi

Summary:

Altogether 2088 pets were vaccinated during the campaign; 1148 from Bharatpur Municipality and 940 Ratnanagar Municipality. Out of 1148 vaccinated in Bharatpur Municipality 1064(92.68%) were dogs, 83(7.22%) were cats and 1(0.087%) was others. One domesticated monkey (i.e. 0.087% of others group) of age 8 months and an unidentified breed was also brought. Like wise, out of 940 pets vaccinated in Ratnanagar Municipality, 861 were dogs i.e. 91.51% and 75 were cats i.e. 7.97% followed by 2 jackals and 2 white mice. During the vaccination many people became aware about the rabies. The dogs from age group of three months and above up to 13 years of age were vaccinated. The breeds of dog brought ranged

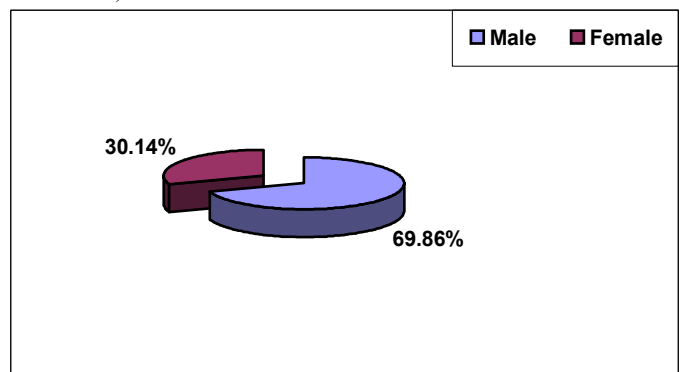
from local breeds like Mongrels, Bhote, utility groups like Japanese spitz, Apso and working groups like Doberman and German Shepherd. But most of the dogs were from hybrid breed.

Vaccination Coverage in Bharatpur Municipality:



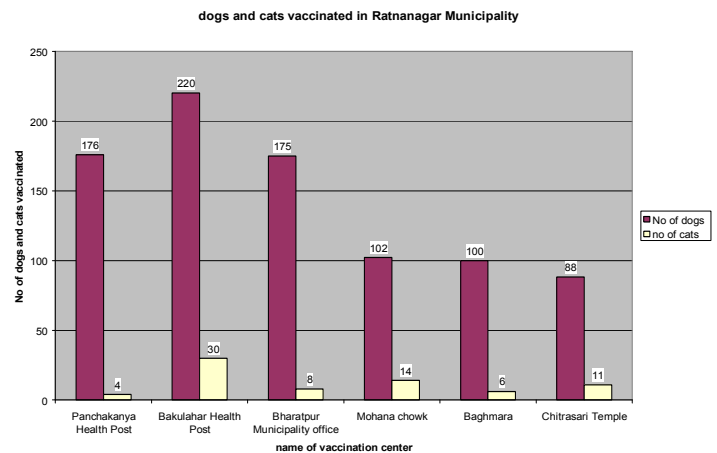
Graph no. 1: Chart of Total dog and cats Vaccinated in different centers of Bharatpur Municipality.

As shown from the table and figure above; in Bharatpur municipality, the highest no of pets were vaccinated in Tiger chowk i.e. 192(16.72% of total pets vaccinated) and lowest no of pets were vaccinated in Anandapur Chautara i.e. 128 (11.14% of total pets vaccinated).

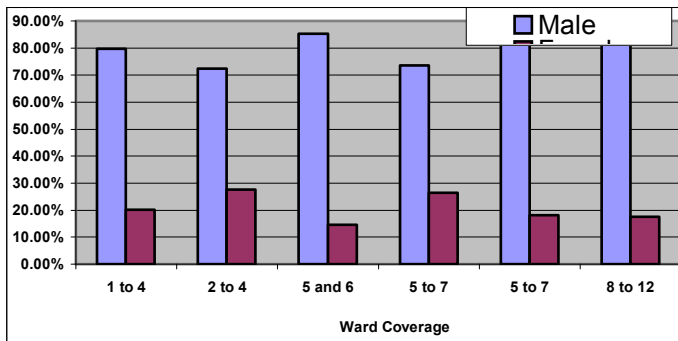


Graph no. 2: Sex wise distribution of dog and cats vaccinated against rabies.

Vaccination Coverage in Ratnanagar Municipality:

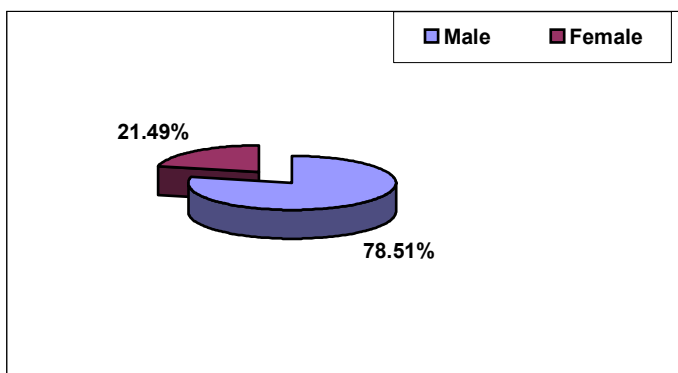


Graph 3: Dogs & cats vaccinated according to vaccination centre.



Graph no. 4: Center and sex wise vaccination distribution in Ratnanagar Municipality

Out of the total population of 940 vaccinated dogs, cats and other animals. Among them 738(78.51%) were found to be males and 202(21.49%) were females. Basic of the below pie chart, this could significantly prove a point that males are relatively more preferred as pets rather females to avoid nuisances during heat periods.



Graph no. 5: Sex distribution of dogs and cats vaccinated against rabies.

Demographic Family Health Survey in Ward no. 19 and 20 KMC Report

Ms. Minu Sharma, Sociologist, NZFHRC

The demography health survey under Urban Ecosystem Health Project Phase – II, resulted carried out during 2005 in a better understanding and identification of priority environment management actions for improving and led to intervention like waste disposal in Bishnumati river, slaughtering and meat quality, squatter and slum, street vendors marketing place, family planning, education status, and other many more things which are directly link with the environment and health. The present case study on demography health survey is presented the multiple activities carried out of different stakeholders, definition and monitoring of socio and economic indicators. The aim of this Demographic Survey is to gather the real condition of the different stakeholder. In order to design of program which aim to improve the health, environment condition and living status of ward 19 & 20 and also to identify gaps in existing knowledge which need to be filled in order for programs to function effectively.

- To Study the Social and Economic Condition of family household of Ward 19 & 20 of KMC.
- To study the different stakeholder family health status
- To understand the husband and wife relation about family planning and child care.
- To have a mass awareness programme to be developed to all stakeholders.

The sampling unit of this survey was a household of stakeholder and other residential people's household. The household for interview was selected purposively. So that non- probability sampling was used. In first phase the team interviewed 117 households of specific stakeholders and in second phase 216 households of local people. Out of the total 216 interviewed households 135 households were from ward 19 and 81 households were from ward 20.

During the survey, in ward 19 total 728 people and ward 20 total 420 people were selected for the interview among them, in both ward 15 to 29 age group population is highest range than the other age group people. Under the 4 years age and above the 65 years age group population is lowest then other age group. Basic of the table in ward 19 and 20 young age population is more than the other age group. (See table no.1)

Table no. 1: Distribution by age group in different wards.

		Ward Number		Total
		19	20	
Age group	0-4 Years	10	11	21
		1.4%	2.6%	1.8%
	5-9	24	22	46
		3.3%	5.2%	4.0%
	10-14	64	27	91
		8.8%	6.4%	7.9%
	15-19	88	58	146
		12.1%	13.8%	12.7%
	20-24	89	51	140
		12.2%	12.1%	12.2%
	25-29	77	56	133
		10.6%	13.3%	11.6%
	30-34	55	42	97
		7.6%	10.0%	8.4%
	35-39	69	24	93
		9.5%	5.7%	8.1%
	40-44	54	26	80
		7.4%	6.2%	7.0%
	45-49	58	22	80
8.0%		5.2%	7.0%	
50-54	46	25	71	
	6.3%	6.0%	6.2%	
55-59	20	20	40	
	2.7%	4.8%	3.5%	
60-64	29	18	47	
	4.0%	4.3%	4.1%	
65-69	13	7	20	
	1.8%	1.7%	1.7%	
70+	32	11	43	
	4.4%	2.6%	3.7%	
Total		728	420	1148
		100.0%	100.0%	100.0%

As shown in table no. 2, 17.1% people were not using any family planning methods, which were mention on above table. 59.7% people were done the sterilization, pills and Injection were following by 10.6% and implant and condom were used by .9%.

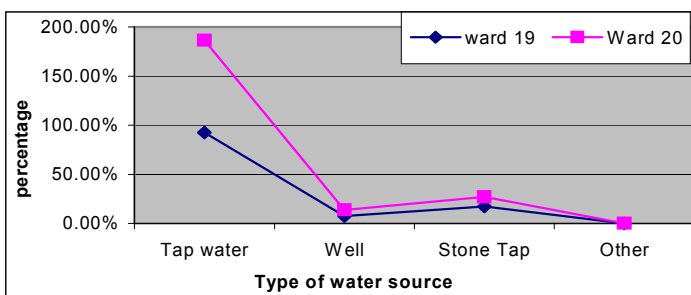
Table no. 2: FP Methods * WARD number.

		19	20	
FP Methods	Pills	17	6	23
		12.6%	7.4%	10.6%
	Injection	20	3	23
		14.8%	3.7%	10.6%
Sterilization	75	54	129	
	55.6%	66.7%	59.7%	
Nothing	22	15	37	

		16.3%	18.5%	17.1%
Implant		1	1	2
		.7%	1.2%	.9%
Condom		0	2	2
		.0%	2.5%	.9%
Total		135	81	216
		100.0%	100.0%	100.0%

Sources of Drinking Water:

As shown in the above graph no.1 about 93% people using tap for the drinking and other propose and beside the tap water, 17% people and 10% using stone tap in both wards for their daily work in ward 19& 20 respectively.



Graph no. 1: Distribution by main sources of drinking water in surveyed area.

Type of Toilets:

Basic of the table no 3, distribution by type of toilet in surveyed area only 0.9% people have a latest mordent ventilated toilet, otherwise 76.4% people have using a traditional toilet in both ward.

Table no. 3: Distribution by type of toilet in surveyed area.

Type of toilet	Ward Number		Total (n=216)
	19 (n=135)	20 (n=81)	
Flush toilet	31(23.0)	18(22.2)	49(22.7)
Traditional toilet	102(75.6)	63(77.8)	165(76.4)
Ventilated toilet	2(1.5)	-	2(0.9)
Community toilet	1(0.7)	1(1.2)	1(0.5)

Recommendations:

- Awareness programmes through mass media, must be expanded for protecting Bishnumati River and riverside.
- Encouraging the people for education.
- Concerned body of government should make legal rule for street-vendors and butcher about slaughtering animal and meat marketing

- Both urban health clinics must start their diagnostic facilities as early as possible as per the guidelines given by NZFHRC.
- All stakeholders should start their work plan as per discussion and decision made by implementing coordination committee of NZFHRC.
- Household family members should read male, female children equally.
- Gender issue should be taken seriously by ward office and KMC to upgrade the economy and social status of different stakeholders women.
- Old houses should be repaired and try to recapitulate the old and modern culture architectural look of the city.
- Garbage collection and management part must be improved.
- Two more public toilets should be constructed in the project area for renter population, migrant population (Temporary), street vendors, and pedestrians.
- To improve the existing physical structure, hygiene and sanitation of the schools of both wards. Such as toilets, drinking water, cafeteria, playground, schoolrooms and library etc.

NEWS:

Dr. Durga Datt Joshi, *Executive Chairman*, Ms. Minu Sharma, *Programme Officer*, Mr. Sushil Prasad Neupane, *Board Member*, Ms. Purna Joshi, *Board Member*, NZFHRC participated in "WSPA Member Society by Annual Meeting and WSPA 25 Years Symposium". Dr. Joshi presented joint paper titled "Animal Welfare Issues and Future Strategy in Nepal". Organized by WSPA, UK, London. 7-9 June 2006.

Dr. Durga Datt Joshi, Executive Chairman, NZFHRC participated in "Preparing for Pandemic Influenza; The Avian Dimensions and Other Emerging Threats". Organized by Asia Medical Forum The Lancet 2006 3-4 May 2006, Sintec Singapore.

K.D.M.A. Research Award for the year 2063 (2007)

Please kindly submit your research work paper on allergy for trust award consideration by the end of May 2007 to KDMART office Chagal, G.P.O. Box 1885, Kathmandu, Nepal, Phone: 4270667 and Fax 4272694. This award was established by Dr. D.D. Joshi in 2049 B.S. on the memory of his wife, the late Mrs. Kaushilya Devi Joshi. The award includes a grant of NRs. 10,001 with certificate.

**From: Zoonoses & Food Hygiene News, NZFHRC
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TO:

Dr/Mr/Ms

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