

Zoonoses and Food Hygiene News

Vol. 13 No.4 October to December 2007

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

This Issue has been Supported by VLIR Project, Belgium and UESHP-III, 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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Urban Ecosystem Health Project Phase – III, Kathmandu

(In Continuation of Vol. 13 No. 3 July to September 2007)

Objective 1: Assess and document the project's influence on policies and local organization and the impact and remaining challenges of these in project wards with respect to community health, environmental sustainability and local economic development.

The overall research questions to guide this objective are:

- What changes were influenced by the project with respect to selected policies (see below) and local organization in the project wards with respect to community health, environment and local development?
- What are the implications of these changes for:
 - o Different levels of government (ward, municipal and national)
 - o Local (ward) organizations and Communities
- What are the challenges that remain ahead?

Policy Influence

Early phases of the project indicated the need to influence the following five acts and city plans to be particularly necessary and relevant in improving community health and the quality of the urban environment in project communities. Key stakeholders for each case are also presented.

1. Modification of present Food Act

- Tea shops
- Street vendors
- Ward offices
- KMC (Public health)
- Department of Food Technology and Quality Control (DoFTQC), Babarmahal
- Ministry of Health

- Ministry of Law and Justice

2. Meat Inspection Act

- Nepal Meat Association Sammittee
- Nepal Khadgi Sewa Sammittee
- Ward Offices
- KMC (Public Health)
- Department of Livestock Services
- Ministry of Agriculture and Cooperative
- Ministry of Law and Justice

3. Safe Drinking Water Supply and Sewerage Plan

- Included all the stakeholder groups (see table 1)
- Ward Offices
- KMC (Department of Public Health and Environment)
- Nepal Drinking Water Supply and Sewerage authority
- Ministry of Water Resources
- Ministry of Law and Justice

4. Revision of Kathmandu Valley Housing Plan

- Squatters
- Ward Offices
- KMC (Housing and Physical Planning)
- Department of Housing and Planning
- Ministry of Housing and Planning
- Ministry of Law and Justice

5. Garbage Disposal Act

- Butchers
- Sweepers
- Ward Offices
- KMC (Department of Sanitation and Environment)
- Ministry of Environment
- Ministry of Law and Justice

For each of the five themes, primary and secondary data will be collected to document achievements influenced by all the earlier phases of the project, and remaining gaps and challenges. The following general approach will be followed, but will be adapted for each of the five themes.

i). Review/ document history of particular policies/ plans (document review) to explain context and why the particular policy or plan was addressed, using data from previous projects on multistakeholder discussions (workshops with government officials and community groups), environmental testing (past data from lab diagnostic testing on different parasitic diseases, bacteriological testing, water testing), socio-economic and health surveys (baseline health survey, and family survey), as well as observations and audio-visual documentation available. This review will also include document research on policy acts/ plans before the project and identify the changes that were brought about through project efforts.

ii). Preparation activities with key actors prior to multistakeholder workshops. This will vary for each act/ plan. Stakeholders for each are presented in table no. 1. Meetings with government officials responsible for the act or plan will be held to provide them with a key set of guiding questions to guide his/her presentation at a multistakeholder workshop. These include questions as to what modifications to the acts/ plans have been made (or not), what rules and regulations on these have been put in place, what are the

problems, gaps and challenges that remain for policies to be effective. Also prior to each of the workshops, meetings with corresponding community stakeholder groups will be facilitated by NZFHRC to help these groups present to government officials their concerns about the policies, rules and regulations (what are practical problems they face in following existing laws and bylaws, or because of their non-application, what are their particular needs with respect to them, etc.)

- iii). For each of the five themes, a multistakeholder workshop will be organized, attended by the corresponding relevant line ministry officials, KMC officials, ward-level officials, key community stakeholder groups, and community representatives. The workshops will be facilitated by NZFHRC. Each workshop will be 1 full day, and in total will involve 25-30 participants. Careful notes will be taken, paying attention to: what rules and regulations have been implemented or not, the needs and challenges in their implementation (from points of view of government officials and community organizations), concerns raised and propositions made from different actors.
- iv). Follow up activities: depending on the theme and discussions on the workshops, focus group discussions and/ or individual interviews with key stakeholders will be carried out to clarify or complete discussions on issues not resolved during the workshops.
- v). Synthesis report, validation and dissemination. A synthesis report for each theme will be prepared and circulated to corresponding community groups and government officials. For the latter, the same follow-up approach of moving the reports up the government ladder that has been used in the past will be carried out. This includes presenting the report to the ward authorities, requesting that they forward the report and their assessment covering letter to the next level up. This includes: ward to city officials (KMC) to departments of line ministries to office of line minister to ministry of law and justice. Depending on the act/ city plan, the corresponding government officers in each level of government will be approached. An overall workshop will be held at the end of the project to present the reports and solicit feedback from the different actors concerned.

These reports will include:

- Background of health and environment issues concerning the particular theme (act or plan)
- Status of the act and corresponding rules and regulations
- Importance of amendments of the acts/ plans brought about by earlier project phases
- Social and economic feasibility of the implementation of corresponding rules & regulations (including challenges & needs)
- Health and environment implications of implementing and not implementing them.

Table no. 1: Local Stakeholder Groups in project wards 19 & 20 created/strengthen in previous projects

S. N.	Name of Stakeholder's Organization	Total Members in Stakeholder Group	Status
1.	Street-vendors society	300	In process of registration
2.	Small tea shop, Hotel & Restaurant society	60	In the process of registration
3.	Maruhity Club Ward no. 19	13	Registered before the UESHHP
4.	Nhoo-phucha Club, Ward no. 20	52	Registered before the UESHHP
5.	Nepal Meat Association Samittee	152	Registered before the UESHHP
6.	Nepal Khadgi Sewa Samittee	152	Registered during the UESHHP

7.	Ward 19 KMC Office	5	Registered before the UESHHP
8.	Ward 20 KMC Office	5	Registered before the UESHHP
9.	Ward 19 Community Urban Health Clinic	10	Registered during the UESHHP
10.	Ward 20 Community Urban Health Clinic	10	Registered during the UESHHP
11.	Sweepers Ward no. 19 and 20	22	In process of registration
12.	Squatters ward no. 19 and 20	63	In process of registration
13.	School Teachers association ward no. 19 and 20	250	In process of registration
16.	Kantipur Youth Club	13	Registered during the UESHHP
15.	Young Star Sports Club	50	Registered during the UESHHP
16.	Kankeshwori Bhajan Mandali	32	Registered during the UESHHP
17.	Bal Shikshhan Kendra	52	Registered during the UESHHP
18.	Indra Binayak Club, Ward no. 19	22	Registered during the UESHHP

Local Organization

The approach to local community development followed in phases I and II consisted in achieving the following things:

- Identify 'natural' and existing stakeholder groups in the communities through consultation with local community members and ward authorities
- Build awareness and knowledge in stakeholder groups with respect to health and environment problems of relevance to the communities
- Help build/ strengthen the influencing capacity of the stakeholder groups to influence local and municipal governments to improve their health, urban environment and forms of livelihood.
- Help build the capacity of local stakeholder groups and obtain legal status to access sources of funding from local ward and municipal programs, and donors (eg. INGOs).

Table no. 1 presents the list of local community groups that were strengthen or created by the project over its several phases. An implementation coordination committee (ICC) was formed with representatives of each stakeholder group and regular meetings were held with it to guide the implementation of the project. The composition of the ICC is presented in table 2.

Table no. 2: Implementation Coordination Committee Members

S.N.	Name of ICC Members	Stakeholder's Organization
1.	Suraj Malakar	Street-vendors
2.	Narayan Dahal	Small tea shop, Hotel & Restaurant
3.	Niroj Ratna Shakya	Maruhity Club
4.	Pramila Shahi	Meat Association Samittee
5.	Bimala Shahi	Nepal Khadgi Sewa Samittee
6.	Mana Ratna Shakya	Nhoo-phucha club
7.	Rajesh Shrestha	Ward 19 office, Secretary
8.	Sarita Manandhar	Ward 20 office, Health Clinic
9.	Prakash Ranjit	KMC ward 20
10.	Bijaya Krishna Shrestha	Community Research Advisor
11.	Hira devi Pode	Sweeper
12.	Manju Maskey	Ward 19, Health Clinic
13.	Minu Sharma	Program officers, NZFHRC (Member Secretary ICC)

The research questions to guide the synthesis/ documentation on community organization are the following:

- What has been the influence of the project in building local organization to improve community health, environment quality and community development?
- What is the status of the local stakeholder groups that were formed/ strengthened by the project?
- What are the perceptions and knowledge of stakeholder groups' leadership on the contribution of their groups to improving the health and environment of their communities, and in community development?

To answer these questions the following steps will be carried out:

Call meeting of the ICC to inform them about the intent to document the community organization process followed by the project. At this meeting, a request will be made to inform their membership about the planning of a survey to answer the perception & knowledge questions.

The meeting will be followed by a workshop with the executive committees (7 members per committee) of all 18 stakeholder groups. Two to three members of each committee will be invited to attend (up to 60 community participants). At this workshop, each group will present their status with respect to legal registration, current membership, status of their work-plans prepared during the last project phase, and expectations, plans and challenges foreseen.

Following this workshop, a survey will be done to assess the perceptions and knowledge of stakeholder groups' leadership on the contribution of their groups to improving the health and environment of their communities, and community development. Semi-structured interviews will be held with three members (randomly selected) from each executive committee (56 in total out of 126). The interview guide will be developed to assess:

- the level of understanding of executive committee members of local groups on health and environment interactions (including the effects on health and environment of their work activities and peoples' behaviour before and after the project)
- their perceptions on the roles and responsibilities of their own group and that of local government authorities and other community actors on improving the health and environment of their communities
- their perceptions on the contributions of their local organizations to community health and in improving their urban environments
- their perceptions on the personal benefits they received by becoming members of the stakeholder group (i.e. how being a member improved or not their work, their health and/or livelihood and why)
- the level of satisfaction with their collaborations with NZFHRC
- their perception as to the fruitfulness of the project

The guide will be pre-tested prior to implementation and interviews will be administered by the project team. The sociologist will train and supervise interviewers & interviews will be in the local language with the assistance of a translator (Newari-Nepali) when necessary.

The expected output of this part of the study is:

A synthesis report which will contain a description of the community organization process utilized in the project, the perceptions and knowledge of the local groups with respect to an urban ecohealth approach, the challenges faced during the implementation of the project, and the contributions each group is making to a healthier community development of the wards.

Impact Assessment and Control of Cysticercosis in the Indian Subcontinent

First Annual Report (1 September 2006 – 31 August 2007)

1. Summary of the objectives of the activity

In the first phase the project mainly addressed the capacity building of the partners (training of staff and transfer of tools), the impact of

cysticercosis on the societies (prevalence, relationship between cysticercosis and active epilepsy) and the local conditions that affect the transmission patterns (pig husbandry systems, sanitation, culinary habits, socio-economic situation).

In the second phase this information has used to design, implement and monitor control strategies that are adapted to the local conditions and needs. The results of these studies will be disseminated to the local stakeholders and international scientific communities.

An important aspect of the project is the South-south collaboration. The CMC Vellore, India has built expertise on immunodiagnosis of taeniasis and cysticercosis, and community health work. Apart from training for one Nepalese laboratory technician in Belgium, training of two Nepalese laboratory technicians on immunodiagnostic tools and of one Nepalese para-medical on community health will be organised in CMC. In addition, information pertaining to the taeniasis/cysticercosis problem and data generated during the project will be exchanged and discussed between the two south-partners.

2. An overview of the activities, which were realised during the period in question.

IR1. Studies on epilepsy and the involvement of cysticercosis are conducted

Act 1.1 Develop research protocols and submit for ethical clearance

- Protocols are devised and submitted

Act 1.2 Community-based epilepsy study (India): Design Formulated, - Areas identified, Survey to be started.

Act 1.3 Hospital-based epilepsy study (Nepal)

- A questionnaire based survey was carried out in five hospitals of the Kathmandu valley, T.U. Teaching Hospital, Bir Hospital, Patan Hospital, Norvic Escorts international Hospital and Nepal Medical College Teaching Hospital. All these hospitals are using CT scan for the diagnosis of cysticercosis. MRI is used by only few hospitals in doubtful cases, as it is very costly and not easily available.

NCC per 1000 admissions ranged from 5,27 (Norvic Hospital) and 2.6 (Patan Hospital). The percentage of NCC in terms of admissions for epilepsy ranged from 39.22% (College of Medical Sciences Teaching Hospital) to 5% in the TU Teaching Hospital. Overall 13.34% of epilepsy cases were due to NCC (2002-06). The highest proportion of NCC cases was found in the 15-35 year age group. More males (58%) than females (42%) were found to be infected

Act 1.4 Clinical, neurological and serological examinations

- In India, the Ag-ELISA has been performed on sera collected on the ICMR study from the rural and urban populations of Vellore District. A total population of 1249 people were tested by the Ag – ELISA, 639 female and 610 male. In this population 185 people had a history of active epilepsy of whom 3.24% were positive for circulating cysticercus antigen.

- In Nepal, 50 serum samples from NCC were collected from various hospital. Eighteen of these samples have been tested by EITB, among these, eight (44.44%) samples were positive.

IR2. Prevalence studies of taeniasis/cysticercosis in humans and cysticercosis in pigs are done in pig-keeping and non-pig-keeping communities

Act 2.1 Develop research protocols and submit for ethical clearance

- India: protocol devised, Field workers selected and trained.

Act 2.2 Smallholder pig production systems characterized

- India: pig rearers and sources in Vellore district identified.
- Nepal: A questionnaire based survey about the pig husbandry was carried out in pig rearing farmers. Questions on the feeding system, housing, floor condition, deworming, education level of the farmers and the availability and use of toilets were addressed. A total of 200 farmers were interviewed from 4 areas. From this survey it appears that 56% of pig raising farmers are illiterate. About 68% of farmers use a toilet.

Act 2.3 Examine and sample 400 pigs in India

- Sample collection started, over 40 porcine samples collected

Act 2.4 Examine and sample 400 pigs in Nepal

- This study was conducted in the Sunsari district in the Eastern and Kathmandu valley. A total of 320 slaughter pigs were examined and sampled. Among these 226 (71%) were male and 94 (29%) were female. Most pigs presented for slaughter were between 7-10 months old. Prevalence of cysticercosis was assessed by both serological examination (Antibody detection by EITB) and carcass inspection. Out of the 320 pigs, 23 (7.19%) were found positive for *T. solium* cysticercosis.

Serology, see under Act 2.5.

Act 2.5 Examination of samples from humans (serum, stools) and pigs (serum)

- (i) Serology for cysticercus antibodies was determined in 1063 people who consented to provide blood during the ICMR study, sampled from a population of 50,423 who were seizure free. 84.4% of the samples were from the rural population and 15.6% from the urban population.

Detection of cysticercus antibodies in serum was by an EITB using lentil lectin specific *T. solium* glycoproteins as antigens, standardized in our laboratory. A sample was considered positive for cysticercus antibodies by the criteria of Tsang et al, i.e. reaction to one or more *T. solium* glycoproteins of molecular weights 50, 38-42, 24, 21, 18, 14 and 13 kDa.

Using this EITB the population seroprevalence of cysticercus antibodies was found to be 15.89% and significantly higher in the rural population (17.72%) compared to the urban population (6.02%) among both men and women. The immunoblot used in this study under reports infections with a single cyst (60% sensitive) suggesting the prevalence in Vellore District may be higher than stated.

The prevalence of cysticercus antibodies was significantly higher in rural women (20.71%) than in rural men (14.73%) but did not differ between urban men and women. Stratified for age, seroprevalence was highest in young adults (16-45 years) (17.43%) and in young adult rural women (24.48%).

- (ii) The Ag-ELISA was performed on 1064 sera from seizure free people who consented to provide blood during the ICMR study. Circulating cyst antigen indicative of *T. solium* infection was detected in 4.51%. In the rural population 5.12% were infected with *T. solium* while only 1.19% of the urban population was positive for cysticercal antigen (See Table below).

- (iii) Taeniasis in Vellore District

Ninety two stool samples from a population in the Jawadi Hills between the ages of 2 and 64 years were collected. Stool samples were received in the laboratory within 6 hours of collection and kept at 4°C until processed. Samples were extracted with 2 volumes of 0.15M PBS pH 7.2+0.3% Tween 20+5% formalin on the day of collection. Extracts were stored at 4°C until assay.

Twenty-seven stool samples negative for *T. solium* segments / ova as determined by microscopy were obtained from the Parasitology Laboratory of CMCH and extracted as given above.

All extracts were assayed for *T. solium* antigens by the coproantigen capture ELISA. A stool sample was considered positive for *T. solium* coproantigen above the mean Absorbance + 3SD of the 27 negative uninfected samples.

Mean A_{412} + SD of 27 negative samples is 0.111 + 0.076. Samples were considered positive for coproantigen in stool at $A_{412} \geq 0.340$.

Among 92 stool samples assayed, 4 were positive for *T. solium* coproantigens

- (iv) Porcine cysticercosis

- Seroprevalence - Nepal

The dot blot strip immunoassay described in 6.1 below was used to assay all pig sera received in the laboratory.

Ninety nine pig sera were received from Nepal and assayed for cysticercosis.

The development of 1 or 2 antigen dots is considered as exposure to *T. solium* and development of ≥ 3 dots is considered as infection with *T. solium* (cysticercosis).

- Porcine sera from Nepal- Dot blot strip assay for cysticercosis

No of antigen dots developed	No of sera positive	Conclusion
0	45	No infection
1	26	Exposed to <i>T. solium</i>
2	10	Exposed to <i>T. solium</i>
3	14	Cysticercosis
4	4	Cysticercosis

Of 99 porcine sera received from Nepal 45.5% of the pigs are not infected with *T. solium*, 36.4% are exposed to *T. solium* and 18.1% are infected and have cysticercosis.

Free Dog Rabies Vaccination in Hetauda Municipality of Makwanpur District Nepal

Minu Sharma & Dr. D. D. Joshi

Ward wise dog vaccinated result for Hetauda municipality are given in table no. 1. This programme was implemented jointly by NZFHRC and Nepal Para-veterinary and Livestock Association (NEVLA), Nepal. This programme was supported by DDJ Research Foundation, Chagal, Kathmandu, Nepal.

Table no. 1: Dog Population Vaccinated Against Rabies by Ward wise in Hetauda Municipality of Makwanpur district.

Ward no.	Estimated Dog Population	Dog vaccinated against rabies	Dog vaccinated in Percentage
1	423	25	5.91
2	488	14	2.81
3	241	0	0
4	904	1	0.11
5	660	23	3.48
6	453	42	9.27
7	334	24	7.19
8	487	22	4.52
9	729	25	3.43
10	509	8	1.57
11	480	5	1.04
Total	5708	189	4.14

NEWS:

Dr. Durga Datt Joshi, Executive Chairman, NZFHRC participated in the Joint International Tropical Medicine Meeting (JITMM) 2007 "Health Security in the Tropics" 29-30 November 2007 Imperial Queen's Park Hotel, Bangkok, Thailand. Two following technical paper were presented at JITMM meeting.

1. "Sero-Epidemiological Evidence of Brucellosis in Human and Animal of Nepal"
2. "Assessment of Water Borne Helminthic Parasites in Drinking Water Sources of Kathmandu City, Nepal"

K.D.M.A. Research Award:

Please kindly submit your research work paper on allergy for trust award consideration by the end of May 2008 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 NCRs. 10,001 with certificate.

From: Zoonoses & Food Hygiene News, NZFHRC
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TO:

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