

LOCAL PERCEPTIONS AND PRACTICES IN REGARD TO OPISTHORCHIASIS IN TWO VILLAGES IN LAO PDR

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Abstract. The aim of the present study was to assess local perceptions and practices in regard to opisthorchiasis in a village receiving treatment and health education compared to a village where no intervention was offered. The study was conducted two years after a health education campaign had been carried out. Focus group discussions and semi-structured interviews were performed among 68 men and women. The results of the study show there were distinct differences in perceptions about opisthorchiasis when comparing the two villages. It appears that introducing health education alongside treatment does have an effect on knowledge and change in behavior. Eating raw fish was mainly practiced by men, however women were not aware they were exposed to opisthorchiasis while preparing food. Although there is no locally derived term, a medically appointed term for opisthorchiasis was acknowledged. Due to the vague disease symptoms, no treatment seeking behavior was found in relation to the disease. Further studies are needed to shed light on gender differences in regard to eating behavior and to assess infection risk among different Lao dishes containing freshwater fish.

INTRODUCTION

Opisthorchiasis, caused by the liver fluke *Opisthorchis viverrini*, is widely distributed in Lao PDR but the highest prevalence is found in the South (Rim *et al*, 2003; Ministry of Health, 2003). Infection is acquired through consumption of raw or inadequately cooked fish, harboring infective metacercariae. The southern part of Lao PDR is the poorest, where poverty is most pronounced in rural areas (Anonymous, 2000). Despite many ethnic groups, the majority of Lao people may be grouped into the Lowland (Lao Loum), Mid-

land (Lao Theung) and Highland (Lao Soung) groups. The Lao Loum constitute the majority of the Lao population (65%) and the prevalence of opisthorchiasis is higher among the Lao Loum than among the other ethnic groups (Phetsouvanh and Vanisaveth, personal communications). The risk of getting infected with *O. viverrini* is high as more than 70% of farmers in Lao PDR are engaged in fishing from natural freshwater resources and only 8% of all consumed fish are farmed (Anonymous, 2000). The risk for fecal contamination is high as only 34% of the rural population has access to sanitation facilities (Anonymous, 2000).

A 10-year control program in southern Lao PDR, applying mass treatment and health education, only moderately reduced the prevalence of opisthorchiasis (Teixavavong, personal communication). The limited success of the program was associated with lack of public

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awareness about the disease combined with inadequate sanitation and high infection risk (Pholsena and Khamkeo, 2003). In the Lao language, opisthorchiasis is referred to as "payaat bai mai nai tarb", which means "disease with leaf in the liver". The term has been developed and used for many years by medical personnel to explain the disease to the people. The term refers to the appearance of the adult parasite under a microscope and its location in the liver. However, the choice of appropriate terminology is a crucial prerequisite for success of health education (Green *et al*, 1994; Yoder, 1995, 1997). It is important to find a local term for a certain illness which gets close to the biomedical term and does not have unwanted connotations. In the field of medical anthropology, this is highlighted by two concepts, namely "disease" (referring to the biomedical, scientific understanding of etiology, pathogenesis, treatment options and prognosis) and "illness" (referring to the lay perspectives of the same) (Eisenberg, 1977; Kleinman, 1980). In more general terms, the two perspectives are coined "etic" and "emic", respectively (Pike, 1971). In the present study, we have used the term "perception" to describe "what people know", based on the recommendations of the medical anthropologist Good (1994). "Perception" is described as a neutral cover term for both "knowledge" and "beliefs". Traditionally, "knowledge" has connotations of comparing lay people's ways of looking at things to a true, gold (scientific) standard (related to the etic perspective). "Belief" has implications of more genuinely reflecting what the study population think (related to the emic perspective), but has at the same time a certain implicit, pejorative distance seeing these beliefs as being primitive and untrue. As infection with *O. viverrini* is determined by human eating behavior, information about local perceptions and practices becomes essential for the development of appropriate health education messages and campaigns

directed towards control of the disease.

In 2002, a community-based Opisthorchiasis Control Program was initiated in two districts in Vientiane Province. The approach combined regular mass treatments backed up by health education at the first treatment. The aim of the present study was to assess local perceptions and practices in regard to opisthorchiasis two years after a health education campaign had been conducted in a health education intervention village compared to a village where no interventions had been offered.

MATERIALS AND METHODS

Study area and population

The study was conducted in two villages in Vientiane Province in August 2004, *ie* two years after the health education campaign had taken place. The villages were Nala Village in Keo Udom District, with a population of 420, and Ponehang Village in Viengkham District, with a population of 525 people. Both villages are situated on the flatlands and the population is predominantly Lao Loum. The main occupation is farming, in particular rice cultivation, but fishing in local ponds, small streams and rivers, for their own consumption, is a daily practice.

Intervention

During 2002-2004, the Center for Malariology, Entomology and Parasitology, Ministry of Health organized a community-based Opisthorchiasis Control Program for all villages in Thoulakhom and Keo Udom districts (including Nala Village). The control program included three rounds of mass treatment with a single oral dose of praziquantel (40 mg/kg) once per year. Stool samples were collected prior to the first round of treatment and 4-5 months following each round of treatment in four randomly selected villages (including Nala Village) to measure their infection status during the control program. The treatments were backed

up by a health education campaign at the first treatment in June-July 2002. This included training workshops for local governors, health staff, village health workers and village headmen as well as distribution of information, education and communication (IEC) materials. The health education materials consisted of: (a) simple posters showing a family eating cooked fish dishes and informing about the necessity of cooking fish; (b) comic books telling a story about the disease and its prevention; (c) booklets informing about prevention and control of opisthorchiasis. The Ponehang Village, which served as a control village, was situated in a neighboring district outside the control program area and therefore received neither treatment nor health education. However, stool samples were collected from 203 randomly selected individuals during September 2004 in Ponehang Village to measure their infection status.

Methodology

This cross-sectional study applied qualitative techniques to elucidate the perceptions and practices in the two purposively selected villages. The data collection methods included semi-structured interviews, focus group discussions (FGDs) and observations. Semi-structured interviews were carried out among village headmen to learn about their roles and activities in the village and to explore their perceptions about opisthorchiasis. The village headman from each of the two villages was interviewed.

The FGDs were based on a discussion guide covering perceptions about the disease, its diagnosis and its treatment as well as perceptions and practices in eating fish. In each village, four groups were interviewed and each group was divided according to age (< 40 years and > 40 years) and gender, in order to avoid persons feeling uncomfortable when talking and any possible intimidation between younger and older people, as well as between men and women. The interviews were carried

out by a bilingual Thai/Lao communication facilitator and recorded by a local health person. All interviews were done in Lao and translated into English.

Ethical considerations

Ethical approval was provided by The National Ethics Committee for Health Research (NECHR), Ministry of Health, Lao PDR. In the intervention village (Nala), all people participating in the control program were informed about the benefits and risks as well as about their rights. In cases where children infected with opisthorchiasis were not eligible for praziquantel treatment (because they were < 4 years old), caretakers were encouraged to seek immediate treatment for their children upon reaching the age of 4 years. In the non-intervention village, all people found positive for opisthorchiasis received treatment and were informed about the benefits and risks as well as about their rights. Additionally, all involved children (age 5-15 years) in both villages were included in a concurrently implemented school-based control program addressing other helminth infections using a single oral dose of mebendazole (500 mg) as treatment. All participants in semi-structured interviews and focus group discussions gave informed consent and were assured confidentiality.

RESULTS

A total of 68 individuals participated in four focus group discussions. Thirty-five of the participants were men. The mean age of the younger women was 32 years, while that of the older group was 55 years. For the men's groups, the mean ages were 30 and 62 years, respectively.

The pre-treatment (April 2002) prevalence and geometric mean intensity (of egg positives) for infection in Nala Village was 62% and 380 eggs per gram feces (epg), respectively. The post-treatment prevalence and geometric

mean intensity of infection in Nala Village 4 months following the last treatment in July 2004 were 34% and 199 epg, respectively. The prevalence and geometric mean intensity of infection (September 2004) in Ponehang Village were 35% and 271 epg. No significant differences in age or gender were detected regarding the overall prevalence and intensity of *O. viverrini* infections in both villages.

Perceptions

The village headman of Nala (the intervention village) was well informed about the causes of opisthorchiasis and how to prevent and treat the disease. The village headman stated that he had this information from the training workshop implemented in the beginning of the control program. Furthermore, the village headman in Nala had been very active in informing his fellow villagers of the objectives of the control program and in organizing the gatherings of persons when mass treatment took place as well as when stool containers were distributed to and collected from persons subjected to stool examinations. The village headman of Ponehang (the control village) had no knowledge about the disease.

In order to explore if the participants in the FGDs knew about the "leaf in the liver" disease (as they had been taught in Nala but not in Ponehang), they were asked if they knew any diseases related to eating fish. The majority of persons in Nala knew about the relationship between fish and the disease causing "leaf in the liver" and claimed that this knowledge was acquired through the activities of the control program, especially through the visits and presence of health staff. In Ponehang very few people knew about the "leaf in the liver" disease. The ones who knew were mainly women, who had heard about it either through personal communication, through family experience with opisthorchiasis, or during visits to hospitals. None of the participants in Ponehang made the relationship between eat-

ing raw fish and the disease.

Only persons above the age of 40 years in Nala could describe the symptoms associated with the "leaf in the liver" disease, such as pain around the liver, burning sensation in the abdomen and fatigue. In both age groups in Ponehang, many different symptoms were described, most of which from a biomedical perspective, were not associated with opisthorchiasis. Regarding the diagnosis of opisthorchiasis, everyone in the FGDs in Nala, with the exception of women < 40 years, knew how opisthorchiasis was diagnosed, namely through stool sampling followed by blood sampling. It cannot be ruled out that women in the age group < 40 years may have felt uncomfortable with answering how to diagnose opisthorchiasis, although they were well aware of the disease. Very few persons in Ponehang knew about the diagnostic procedures for opisthorchiasis.

Attitudes

All people in Nala were very appreciative of the opisthorchiasis control program and wished for it to continue. In the FGDs, for example, many expressed that the "leaf in the liver" disease campaign was very good, because it took care of people's health and provided free stool examinations and free medicine. In Ponehang, many people expressed a wish for more knowledge about opisthorchiasis. One man from the FGD < 40 years said, "We can change if we know the cause". Another man from the FGD > 40 years said, "If we often hear about the disease 'leaf in the liver', like for instance when a doctor comes to talk about it, then may be we can change". On the other hand, some men from the focus group > 40 years said, "We cannot change because we are used to eating raw fish. It is too hard to change".

Fish eating and treatment seeking practices

In both villages, fish is eaten on a daily basis. The reason for this is that fish are easy

to catch in nearby natural ponds, streams and rivers, and it does not require money, in contrast to food from the market.

During FGDs, specific dishes prepared with fish were mentioned which people frequently consume. The traditional raw fish salad dishes, "koi pa" and "larp pa" were the most commonly eaten dishes. Fermented dishes such as "som pa" (pickled fish) were eaten regularly as well as "pa dek" (fish stored for 2-3 months). Everyone claimed to eat "pa dek" almost daily as a snack, dip or sauce in different dishes, as an ingredient in papaya salad or on its own. Interestingly, no one considered the "pa dek" as a raw fish dish.

All men and women in the two villages claimed that it was mainly men who ate raw fish. Women and men both answered that the women were generally in charge of the cooking in the households. All women admitted to tasting the fish dishes during food preparations. Additionally, in Ponehang, many men in both age groups stated that they themselves prepared the raw fish dishes, such as "koi pa", during social gatherings, as they preferred to make the dish according to their own taste. Some persons in Nala said they had eaten less raw fish since the start of the campaign. One woman in the FDG > 40 years said, "I am very afraid, I did not eat raw fish after I learned about the 'leaf in the liver' disease from the health staff". One man from the FGD >40 years said, "We are very afraid and worried about the 'leaf in the liver' disease. Now we try to prevent ourselves from getting infected by not eating raw fish and vegetables".

According to all villagers, the first choice in seeking any treatment in general was to visit local pharmacists to purchase "over-the-counter" drugs. No specific treatment seeking practices were identified in relation to opisthorchiasis. The general explanation was they did not know about the disease or the drug used for treatment.

Sanitation practices

Many households in both villages had pit latrines, 90% and 60% in Nala and Ponehang, respectively. Since rice farming is the main occupation, a great deal of time is spent in the paddy fields either on a daily basis or on a seasonal basis. Sometimes families build small huts close to their rice fields, where they stay at times, as a second home. Most of these huts had no latrines and consequently people had to defecate out in the open, which contributes to transmission of opisthorchiasis.

DISCUSSION

The present study showed a distinct difference in the perceptions about opisthorchiasis between the village where treatment and health education were provided compared to the village where no such activities had taken place. Several key issues arose during FGDs concerning fish eating practices. Everybody stated that mainly men ate raw fish. However, the women were not aware that they were exposed when they prepared the dishes. In addition, no specific treatment seeking practices in regard to opisthorchiasis were revealed.

The study showed that the headman of the intervention village, Nala, was much more aware of opisthorchiasis than the headman of the non-intervention village, Ponehang. It is clear that the initial workshop benefited the headman of Nala Village and that he played an essential role in the community based activities of the control project. Distinct differences in perception were found between the populations of the two villages. The control village population had very vague perceptions about "leaf in the liver" as a disease entity as well as about its symptoms, cause and health consequences. The differences in perceptions regarding opisthorchiasis can most likely be attributed to the control program. This may be due to the health education campaign or

the presence of health personnel in Nala. The term "leaf in the liver", being medically adopted, could be perceived as problematic in terms of developing appropriate health messages. However, as the term "leaf in the liver" has not arisen among the local populations themselves, it is possible that people do not relate to the disease very well, which could be perceived as a disadvantage. Furthermore, the symptoms of the disease were not well recognized by the local populations. It cannot be ruled out that the acquired knowledge in the intervention village on how to diagnose the disease emerged as a result of the stool sampling interventions that took place during the control program rather than through health education. It would have been useful to use a two-way factorial design where the effects of "mass treatment" and "health education" could have been evaluated separately.

Men ate the raw fish dishes, whereas women did not actively participate in eating raw fish. Nevertheless, the women prepared the dishes and thereby tasted them. According to Sithithaworn and Haswell-Elkins (2003), Thai "koi pla", the equivalent to the Lao dish "koi pa", is a fish dish with the highest infection risk, followed by "som pa" (a fish dish preserved < 7 days). Furthermore, the Thai "pla ra", the equivalent of "pa dek", is consumed daily by 68-98% of Thai and lowland Lao people. Since the women did not know that the fish dishes, "pa dek" and "som pa" were sources of infection and did not consider them as eating raw fish, this may explain why they claimed not to eat raw fish. Alternatively, women may have been reluctant to admit that they ate raw fish. Nevertheless, these findings emphasize that such gender-based behaviors need to be taken into consideration when designing interventions. The statements that it was men who were eating raw fish rather than women were not consistent with the findings of the parasitological surveys that were conducted in both villages. The parasitological

surveys showed that the prevalence and intensity did not differ significantly between genders. This is in accordance with studies from both Thailand and Lao PDR (Sornmani *et al*, 1974; Kobayashi *et al*, 2000). Interestingly, women were very surprised when they learned from the results of stool examinations that they were equally infected as men. Several people from the intervention village claimed that they ate less raw fish since the start of the campaign. However, the parasitological data from the monitoring surveys did not support this claim. These results emphasize the need to evaluate possible gender related eating habits, as well as the potential risks for *O. viverrini* infection from different fish dishes/preparations.

No specific treatment seeking practices were found in relation to opisthorchiasis. This is most likely due to the fact that opisthorchiasis causes vague and non-specific symptoms. Thus, there is no local term, which describes the disease opisthorchiasis, according to the terminology of Eisenberg (1977) and Kleinman (1980). In terms of control strategies and interventions, this lack of demand for treatment has two possible implications. First, it may be difficult to introduce passive case treatment, where people themselves seek treatment as opposed to active treatment (mass treatment), which could simplify sustainable control of opisthorchiasis. In Thailand, passive case detection is employed once the prevalence is lower than 10% (Jongsuksuntigul and Imsomboon, 2003). The effects of this measure are not well documented. Since opisthorchiasis is commonly asymptomatic, and since 5-10% of heavily infected people present with non-specific symptoms (Mairiang and Mairiang, 2003), it is difficult to rely on people seeking treatment unless they are asked to go for regular routine check-ups and treatments or health staff are encouraged to routinely check people and treat cases. Secondly, since self-medication without a definitive diagnosis by doctors is a common prac-

tice, future self-treatment of opisthorchiasis may present both a problem and a possibility. It is likely that people will continue to eat raw fish and combine it with occasional self-medication, since they know the treatment is available. However, this practice may lead to drug resistance.

The design of the study did not allow a direct comparison between the two villages, Nala and Ponehang, since the study was a descriptive cross-sectional study and not a case-control study. When looking at the overall pre- and post-treatment prevalences in four randomly selected villages (including Nala Village), which were part of the Opisthorchiasis Control Program, the results were 40% and 24%, respectively. The prevalence in the control village (35%) was similar to the post-treatment prevalence in the intervention village. Stool examination in the control village was conducted only once, prior to the semi-structured interviews and FGD's. As stated above, all positive cases were treated following stool examinations.

Looking at the outcomes of the control program in the two districts in Vientiane Province in terms of prevalence and intensity in the four monitored villages (including Nala Village), the effects were disappointingly low. The main reasons for the modest impact may be that the health education component was only carried out in relation to the first round of treatment and that the teaching materials distributed were inadequate. It is possible that the control program could have benefited by continuing to reinforce health education throughout the entire intervention period with focus on creating awareness and increasing knowledge of opisthorchiasis on a regular basis, and thereby possibly contributing to changing eating habits and reducing reinfection with opisthorchiasis. A limitation of this study was that the health education materials were not analyzed with respect to how people perceived them. It is possible that the developed

health education materials were not appropriate for increasing people's knowledge about the disease and promoting behavioral changes. Another possible explanation for the limited reduction in prevalence and intensity could be that the rate of reinfection was high. Seasonal variability of food and limited cash to purchase food, for example, influences the consumption of fish considerably and human transmission of opisthorchiasis has been shown to be highest after the peak in monsoon flooding when fish are abundant (Sithithaworn and Haswell-Elkins, 2003). It may be useful having campaigns informing people of the types of cyprinoid fish to avoid eating raw, possibly during particular seasons.

In Thailand, large-scale control of opisthorchiasis has been implemented since the 1980s. Opisthorchiasis affects particularly northeastern regions of Thailand, where the people share close ethnic ties with lowland Lao people. The strategies employed in Thailand were comprised of mass screenings with treatment of positive cases, mobilization of communities and intensive health education directed at improving food habits, by distributing cooking pots with demonstration of cooking techniques as well as promotion of latrine construction and use. These control measures successfully reduced the prevalence from 64% to approximately 10% in all regions after more than 20 years of control (Jongsuksuntigul and Imsomboon, 1997, 2003). It may not be feasible to implement similar approaches, such as selective treatment of positive cases, given that the cost of such an intervention is high and the socio-economic situation of Lao PDR is different from Thailand. However, future interventions for opisthorchiasis control in Lao PDR may benefit from studying and employing the Thai approaches towards encouraging community participation and designing and implementing similar health education measures. Considering the amount of time villagers spend away from their households during

rice farming, promotion of latrines may prove difficult but essential.

In essence, the present study provides four major insights for future opisthorchiasis control programs in Lao PDR: 1) The absence of a locally derived term for the disease makes passive case finding infeasible; 2) women were unaware of their risky behavior in eating raw fish during food preparation; 3) promotion of latrines as a control measure may prove difficult due to seasonal mobility of villagers during rice farming, 4) villagers expressed willingness to participate in and benefit from the services of the control program.

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