Community participation and social engagement in the prevention and control of dengue fever in rural Cambodia

Sokrin Khun, Lenore Manderson

Abstract

The prevention and control strategies for dengue fever require community involvement to succeed. Drawing on data collected in 2003–2004 as part of an ethnographic study in eastern Cambodia, we explore the role of community participation and the factors that influence its success in the prevention and control of dengue fever in Cambodia. Community participation has the potential for effective and efficient control of the disease, but this is subject to how communities are engaged in specific activities. Historical, political, social and economic factors have undermined the social institutions and conventions in the study villages that could facilitate community involvement. In particular, poverty and differences in local interests influence the capacity for people to be involved. Villagers regarded the maintenance of the domestic environment as a personal responsibility and were reluctant to extend their action to a wider domain. Comprehensive programmes, which draw on local institutions and understandings of community and enable community members to participate in the planning and management of prevention and control activities, are essential to ensure programme sustainability and effectiveness.

Keywords: Cambodia; Community participation; Dengue; Social engagement.

Introduction

Community participation is a process of engaging various stakeholders and members of communities, however defined, to participate in the development and management of particular programmes or projects. It is conventionally represented as the lynchpin for the success of targeted health interventions and sustainable programmes. Various pilot projects have been conducted, well described in the literature in relation to the strategies and processes of participation. However, little research has been conducted on how community participation, once under way, is perceived by community members, health workers or other stakeholders. Similarly, the translation of community participation from
policy to practice in health, development and disease control programmes has received little attention, and the effectiveness of community participation both as a process and an outcome in disease prevention and control, including for dengue fever, remains unclear\(^2,3,6,7\).

Cambodia adopted community participation as one of the principles of its primary health care policy and health system in 1999. Yet, dengue fever (DF), dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) remain critical public health problems. Because of the domestic habitat and behaviour of *Aedes* mosquitoes, community participation and effective health education are central to sustainable dengue prevention and control. Most interventions in which community members are urged to be involved are relatively straightforward – maintaining safe water storage to prevent breeding, ensuring that there are no pools of stagnant water, carefully disposing of hard waste and using local biocontrol agents (e.g. copepods). Yet, there has been uneven success in the sustained commitment of communities in DF/DHF-endemic areas to environmental management, in part because of the lack of attention to social factors influencing dengue transmission, and in part because of the superficial nature of community involvement.

In this article, we explore how Cambodian villagers perceive community participation in the prevention and control of dengue fever. We focus on women, as the central players in dengue-related interventions, for it is they who are assumed to be responsible for permitting control programme staff to distribute temephos (as 1% sand granules with a dosage of 1 ppm per litre of water) and to fog and spray outside houses, and for maintaining the domestic environment, disposing of waste, ensuring larvae-free water supplies, protecting children from bites, and taking appropriate action if and when their children are sick\(^8,9\). Women are also more likely than men to face challenges in seeking health care for themselves and their children, due to multiple demands on their time and their lesser role in determining how household cash resources are used\(^10\). This study tries to highlight how the social institutions within the study villages, that have supported community cooperation and reciprocity in the past, have been eroded in recent decades for political and economic reasons.

### Materials and methods

Data were collected from March 2003 to February 2004 in the province of Kampong Cham (KPC), eastern Cambodia, where dengue has especially high prevalence compared to other regions of the country. During 2002–2003, there were 3713 cases of DF, DHF and DSS and 49 deaths in KPC. In the first eight months of 2007, there were 5105 cases of DF/DHF/DSS and 65 deaths in KPC\(^11\). Dengue continues to be endemic despite the National Dengue Control Programme (NDCP) that conducts activities in the area.

### Study area

An ethnographic study was conducted in two villages with the highest reported incidence of the disease in the province. The villages, Khun and Nekry (pseudonyms), are located approximately 30 kilometres in opposite directions from the provincial town centre (also known as Kampong Cham) and around 100 kilometres from the Capital, Phnom Penh. Most villagers are poor farmers, growing rice for subsistence and sale, supplementing this by selling other produce and re-selling non-food goods in small quantities. Environmental conditions in the villages are conducive to dengue transmission. Broken coconut shells,
plastic bags, used packages and other disposable items are indiscriminately scattered in house yards and lanes; these provide ideal conditions for the breeding of the vector, *Aedes* mosquito. Wooden houses are built on stilts using bamboo and thatch. Water jars, stored under houses, are rarely covered and breed larvae all the year round.

**Data collection**

Data collection methods included key informant interviews, focus group discussions, in-depth interviews and ongoing participant observation, as well as structured observations and entomological surveys[12]. Key informant interviews were conducted with all village health volunteers about villagers’ awareness and perceptions about DF, and their participation in prevention, control and development activities. Four focus group discussions were conducted with mothers or other family caretakers of children who had been infected with dengue, to gain insight into their understanding of DF and their involvement in prevention and control measures. In-depth interviews were then conducted with 29 women whose children had been infected in the past year or during the research period, including about their participation in dengue prevention and control activities and their views about control programme activities. Women were also asked about changes in their village, and so could speak of issues about which they may have been reticent publicly. These data were supplemented by questionnaires with 38 other women, representing 15% of households where children had no history of dengue, on their participation in prevention and control activities. Sixteen interviews were conducted with health staff at health centres, provincial and national levels on community participation. All data were entered into computer, codes were developed, and the data were analysed thematically.

Ethics approval to conduct this research study was granted by the Human Research Ethics Committee of The University of Melbourne (Australia), the Ministry of Health (Cambodia), and WHO/TDR. All potential participants were provided with plain language Participation Information Sheets in Khmer (Cambodia’s national language), and the project was explained to them verbally. Consent to participate was verbal, since the collection of signatures held negative connotations for most people.

**Results**

**Social engagement in villages in Cambodia**

The idea of community, if taken to refer not to co-location but also to a spirit of common purpose, shared identity and trust, has declined in Cambodia as a result of its recent bitter history of autocracy, violence, genocide, and poverty. Interviews with participants aged 60 and older, born in both villages, illustrated the extent to which villages were believed to have changed since the 1940s. Prior to political turbulence and civil war in Cambodia in 1970, development activities in the villages, primarily road maintenance and building wells, was conducted under the leadership of Buddhist abbots and monks, senior citizens and local leaders. Under Pol Pot’s regime, in contrast, the population was forced to provide labour for developmental purposes in the villages.

Today, villagers passively participate in village development. Most roads and water wells are constructed with substantial financial and logistic support and management from the government, international organizations and national NGOs. This partly reflects changes in ideas of the role of government, and in some cases, the implementation style of development agencies and NGOs. Villagers
Community participation in the prevention of dengue in Cambodia

have contributed some labour, such as digging water drains along the road in front of their own houses. While this involvement is sometimes relatively spontaneous, it often follows the explicit requests of outside organizations, which undertake development activities on the provision that householders contribute in cash or kind. The rationale is that by contributing, people will have greater ownership of the projects, and so will participate in their maintenance.

But various factors discourage community engagement and involvement. Villagers believe that the level of trust among them decreased significantly during the three decades of domestic political unrest since 1970, and this has continued. During the period of Khmer Rouge rule under Pol Pot (1975–1979), people were divided into “locals” (nak mul tharn) and “evacuees” (nak chum leas). Most evacuees were urban dwellers, sent to rural areas by force to contribute to economic development, in which context “locals” exerted extreme dominance and authority. Those who were forcibly resettled were subject to random terror, murder, forced labour, starvation and absence of basic services. This significantly undermined trust and ties among villagers. As one woman explained, “From the time of the Khmer Rouge, there were more and more unreliable people and there were fewer good people, most of them were cheats and they even cheated the government” (In-depth interview, 11).

Elderly interviewees believed that the level of cooperation among villagers – referred to in Khmer as provass, has gone down. They claimed that in the past, fellow villagers were enthusiastic about helping each other, and were involved on a voluntary basis in a range of activities, from digging water wells to helping to build entire houses; now almost all work involves payment. Political party representatives donate gifts in cash or kind to villagers to gain popularity, but there is little evidence of long-term political commitment to development. Others make public donations to those who are especially disadvantaged or vulnerable, or donate to temples or schools when high profile politicians visit. But the motivation of these activities is questionable, and is seen by villagers themselves as having less to do with aspirations for community development and more with power and popularity.

The standard of living of villagers has also declined. Most villagers reported that, over time, they have had poorer crop yields as a result of lack of irrigation and because of drought and floods in dry and rainy seasons. People reported that they can no longer make a profit from farming because of the expenses of petrol and hiring water pumps and oxen. To meet various recurrent and emergency cash needs, including for medical care, villagers sell or pawn their land and other resources such as cows or pigs and take out loans with exorbitant interest rates. Most villagers generate too little cash to repay loans or retrieve property, and so lose their property and continue to pay interest, so spiralling into extreme poverty[13].

Villagers have to meet direct and indirect costs for medical care to treat sick children. Delays occur because of the difficulty in locating resources, and the poorest households at times have no choice but to rely on home care only[13]. Villagers felt that the level of care and support from others, and from social welfare and public health services, had declined. One elderly woman reported that her neighbours used to accompany her at the Kampong Cham Provincial Hospital whenever she had a medical problem, because she had no relatives. The surgery was free of charge if a person was too poor to pay the fee. Now, this is rare:

“I had a surgery in 1962 or 1963. The surgery was very clean and I was discharged from the hospital after staying only one week. At first I was afraid that I had no money and
no relatives to look after me. My neighbors said, you tell the health staff that you have no money, then the health staff will exempt the fee. And the doctor said, don’t worry, we won’t charge you. I didn’t pay even one cent. I bought some bananas for the head of the ward. But she refused to take them and said to me, please keep them for yourself, we don’t need anything from you (In-depth interview, 36).”

Competing interests

People do not necessarily share the same health-related problems and socioeconomic or political status that could result in collective action[3,14]. This is true for dengue and for the prevention and control activities in the study villages. Key informants in Khun village argued that women whose children had been affected by dengue were far more interested in discussions and health education messages than those whose children had never had dengue. Similarly, mothers of small children were more influenced than mothers of older children because of the pervasive belief that dengue was unlikely to affect older children. Other participants had other health priorities. But, in addition, participants mentioned lack of water for their rice fields and lack of money to buy petrol for water pumps to irrigate drought-affected rice fields, buy piglets or calves to raise them for sale, or buy oxen for farm work. Others reported difficulties in finding employment to earn money to meet their basic expenses or to repay interest and loans to fellow villagers. Dengue prevention was a minor concern against these major problems.

Political divisions at the national level strongly influence village politics. The three main parties in the country have their own party activists and supporters in villages, and everywhere, billboards promote their particular interests. In 2001, Commune Councils were established, to be responsible for the management and development of communes. Although their members were chosen through general election, candidates were elected under the name of their political party. As a result, each elected council member was strongly allied to his or her political party, using village issues for political advantage and working within the community to build networks for their own party and gather support for their platforms. The politicization of village government and of social relations within villages also appears to hamper the spirit of togetherness in village development among people with different political ideologies.

Village cooperation and participation

Development committees were established in 1998 in Nekry and Khun villages, as in most villages nationwide; these included a village development committee (VDC), school committee, temple committee, canal committee, water-well committee, women’s association, and village health volunteers (VHV) and others belonging to the village health supporting group (VHSG)[15]. The tasks of VHVs and VDC included providing health education, assisting with health outreach activities, giving first aid to villagers, and referring patients to health centres. Few of the committees received technical and logistic support however, so they quickly dissolved. In the study villages, the VDC and VHSG are still prominent as entities but are not functional; many other committees no longer exist even in name. As one member of a VHSG explained, “I had no time. I had nothing for my children to eat. It wasn’t just me, everyone quitted” (Key informant interview, 38).

Even so, the cooperation of villagers is critical for village development. Most cooperation occurs through social and cultural activities, but also through the exchange of
labour or provass. Provass is a Khmer term, connotative of reciprocity: according to Nekry and Khun villagers, the term means “working together to share outcomes”. Three types of provass occur in the villages. At the time of the study, the first and dominant type of provass was shared animal husbandry. Many households raised young pigs or cows which belonged to another household, and would share with the owners any piglets or calves according to prior agreement. A second type of provass was the exchange of labour, when householders farmed for a short period for another householder when extra labour was needed. The latter householder would later work for the former to return the labour. Provass also referred to borrowing oxen for farming, with the loan repaid with rice or labour. Provass provides mutual benefits and only occurs between villagers of relatively equal socioeconomic status. In Khun and Nekry, this meant that poor villagers were generally excluded. But this reciprocal assistance has also diluted as a cash economy has taken hold in the villages and other types of help no longer exist as families lack the means to reimburse in cash or kind: “Nobody helped. The word ‘help’ doesn’t exist. I had no oxen to farm so I had to use a hoe to dig the soil. If I wanted oxen, I would have to hire and pay for them. Once I’d paid for the oxen, I wouldn’t have any rice left” (In-depth interview, 5).

Participation in prevention and control of dengue

Aedes mosquito breeding sites are ubiquitous [12,16], explaining the continued endemicity of DF. Women who participated in interviews were asked what villagers should do to prevent dengue. Many suggested that villagers should clean up their own house yards, collecting or burning rubbish such as tyres and coconut shells, to get rid of mosquito breeding sites. The majority believed that people knew of the danger of such breeding sites, and that they should work together to get rid of them to prevent disease. Many said that they would clean up their own yards if someone requested them to do so but they were reluctant to ask others. “I was afraid that they’d be angry. They would say they didn’t need to be told to clean their house. But if someone told me to do so, I’d be happy to follow their advice” (In-depth interview, 14). However, most women complained that while they cleaned up their own houses and yards, others did not, resulting in indiscriminate garbage throughout in the villages; they claimed too that neighbours ignored them when they asked them to clean their yards. Many villagers also felt that all villagers should use temephos to prevent dengue but this did not happen.

Mothers of children not infected with dengue reported individual and collective activities to prevent and control the disease (Table). All but five of the women knew about the disease and appropriate prevention and control activities. Most perceived dengue control to be a personal responsibility, with about half (19/33) reporting that they regularly cleaned their water jars and a third (10/33) stating that they kept their houses clean to discourage mosquitoes. Almost one of four women (9/33) claimed that they used temephos in water jars. A few women also used other (ineffective) activities to prevent and control dengue, such as using mosquito nets at night, removing sewage, clearing bushes and using mosquito coils. The majority overlooked discarded containers, the most common source of larval breeding in the rainy season [12], and made no effort to get rid of them. Only three women reported telling their neighbours to turn coconut shells upside down, or to remove discarded cans and plastic packing bags. Hence despite claims of high knowledge, few women undertook all necessary tasks on a regular basis.
Health workers at the village health centres and at the NDCP faced significant challenges in encouraging villagers’ participation in disease prevention. They complained that villagers prioritized income-generation activities over vector source reduction because of the dictates of their economic status, their reliance on the NDCP to undertake such activities, and the low effectiveness of the dengue health education campaign[12,16]:

“In my opinion, people do not have enough time to clean up their yard because their standard of living is so low; they even do not have enough food to eat... from season to season. When they return home from work in the late afternoon, they cook for their children, then find another job... they have no time to clean up the house. They are too busy to clean the jars even once a month or wash their clothes. Some people never think about their house or hygiene, they only think about food to eat; that was why our health education was not successful.” (Health worker, FGD, 30).

**Discussion**

Community participation as an approach seems to have been most successful in countries with strong political authority, as in Cuba[1,17]. In contrast, in fragmented societies where community members have different interests and problems, and lack trust and confidence...
in political leadership\cite{7,10}, community participation has faced significant challenges. Local social, political and economic factors and associated structural barriers and inequalities compound to affect the ability of members of communities to sustain the activities required of them for disease control\cite{18}. These various factors have influenced the introduction and sustainability of community participation in Cambodia.

The literal translation of community in Khmer is \textit{sahakum}, indicating a group of villages or regions whose residents share the same jobs\cite{19}. While \textit{sahakum} is used in reference to community participation in official contexts, Cambodians prefer to speak of “villagers” (\textit{nak phum}), “residents” (\textit{nak strok}), “provincial dwellers” (\textit{nak khet}) and “city-dwellers” (\textit{nak krong}) to indicate geographical identity, invoking the administrative structures of village, commune, district, province and city. The term \textit{sahakum} only became popular when health and development-related programmes were introduced in the 1990s. In the study on which we report, villagers rarely understood questions when the word \textit{sahakum} was used in relation to participation in preventing or controlling dengue. Women stated bluntly that they did not understand the term and could not explain what it meant. However, all villagers clearly understood the terminology and ideas associated with \textit{provass}, with \textit{tveu kar cheamuy knea} (working together) and \textit{nak phum tveukar cheamuy knea} (villagers working together) to prevent or control dengue.

A number of scholars have argued that community-based programmes are more sustainable than vertical ones\cite{4,20,21}. Studies show that top-down dengue prevention and control activities have a temporary effect but do not lead to the behavioural changes needed to reduce larval indices from the local domestic environment to ensure prevention and control\cite{22}. However, a recent review of community-based dengue control studies\cite{7} indicated that the implementation of community-based interventions has been variable, and noted the lack of involvement by villagers, and specifically village committees, in planning and implementation, so threatening sustainability. The study recommended intersectoral cooperation and stressed the importance of involving local health services, civil authorities and key community members to encourage individuals to take part in and sustain dengue prevention and control strategies.

Village participation in development in Cambodia, as has occurred with road construction, and the tradition of reciprocal labour exchanges, points to the potential for participatory development. However, the low level of village cooperation, the lack of a spirit of collaboration, and economic pressures combine to create significant challenges. Cooperation occurs in villages only if there is material or financial involvement\cite{13,23}. As noted above, willingness and ability to work together is relatively low even when the rewards are tangible (as occurs with labour exchange). The idea of working for the public good is far less familiar. Villagers work individually, including undertaking dengue control activities on request, but they are reluctant to encourage each other to do so. Effective dengue health education is needed to encourage people to undertake such activities on a continuing basis\cite{16}. There is an urgent need to restore trust, confidence and cooperation between villagers and in the society as a whole. This requires the political commitment of the government.

Whiteford\cite{7,10} has suggested that people’s vision of their future plays a major role in their participation in government programmes. She has argued that Cubans consider health to be a collective achievement, and this, coupled
with confidence in the government and feelings of hope for the future, have supported government-community partnerships for disease control, including for dengue. In contrast, in the Dominican Republic, unfulfilled political promises, lack of political will and the lack of belief in community-based social action have resulted in the failure of community participation despite good community understandings of dengue control\(^{10}\). The situation in Cambodian villages echoes that of the Dominican Republic. Suspicion, distrust, increasing poverty, food insecurity, unemployment, landlessness and indebtedness, against the backdrop of violent history, contribute to a lack of confidence in government capacity, its long-term commitment to village development or to improved health, and consequently, people show little interest in community participation.

### Conclusions

Community-based programmes involving local responsibility and for the participation in the elimination of breeding sites are the only cost-effective and sustainable ways to ensure control in any dengue-affected country, in particular, in poorly resourced countries. However, in Cambodia, community participation has been implemented primarily by international organizations, NGOs, government departments and vertical disease control programmes. Local knowledge and local institutions, including those that would serve to achieve the same goals, have largely been overlooked. In this study, community members claimed that community-based dengue control occurred, but, in practice, people had limited opportunity to participate in planning and managing dengue prevention and control in their own villages, and so had little interest in or awareness of the need to ensure that basic control activities were sustained.

In poor communities and poor countries such as Cambodia, disease control programmes need to take into account factors affecting community welfare, engagement and participation. In Cambodia, despite differences in wealth, different health problems and often, different political views and affiliations, everyday life is dominated by the struggle to survive. Given this scenario, health programmes such as DF programmes, using community participation, need to deal not only with source reduction to control the larvae and the mosquitoes but to address larger questions of poverty and income. Until such fundamental issues are addressed, people’s engagement in programme planning and management and in the work of disease prevention will remain partial and episodic.

### Acknowledgments

Sokrin Khun was supported financially by the UNICEF-UNDP-World Bank-WHO Special Programme for Research and Research Training in Tropical Diseases (WHO/TDR) to undertake the degree of Doctor of Philosophy in medical anthropology at the University of Melbourne, Australia, and was supervised by Lenore Manderson. We acknowledge with much gratitude the support of WHO/TDR and of the School of Public Health, The University of Melbourne, throughout his candidature, as well as the support of Monash University when this article was written. The authors thank sincerely the Cambodian National Dengue Control Program, the Ministry of Health, the health workers at the village health centers and referral hospitals, and school teachers, for their interest and cooperation. We are especially grateful to the women and children in the study areas for their generous participation.
Community participation in the prevention of dengue in Cambodia

References


