Development of the Model for Local Drowning Surveillance System in Northeastern Thailand

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Background and Objective: *There is growing evidence that the drowning fatality rate in Thailand has been increasing, particularly among children. The use of public health surveillance system in accident injury, specifically from drowning, at a community level is limited. This study aimed to develop a surveillance system to reduce risk of drowning in a rural area of Thailand.*

Material and Method: *A 7-step process was used to develop a model for local drowning surveillance system based on community participation. The target population consisted of 182 informants, 562 participating surveillance networks, and 21,234 villagers in two sub-districts of Ubon Ratchathani Province, northeastern Thailand. Two similar sub-districts were chosen as comparison areas.*

Results: *Fifteen months after implementation of the model for local drowning surveillance system (MLDSS) was introduced, improvements were found in all identified risk factors, and the incidence rate ratio of injury in the comparison areas was 23.36 times higher than in the target areas.*

Conclusion: *In the developing world where community bonds remain strong, governments need to encourage local officials, the private sector and the wider community to work together in solving the problem of drowning in their local areas. Such schemes will require national promotion and basic funding.*

Keywords: *Surveillance system, Injury prevention, Drowning, Community participation, Thailand*

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Drowning could be considered a silent health hazard, causing disability or death at an earlier age than respiratory or heart disease and cancer[1,2]. The World Health Organization has reported that over 388,000 drowning deaths occurred worldwide in 2004. Drowning has been ranked as the third leading cause of unintentional injury death with 96% of deaths from drowning in lower and middle-income countries[3]. Drowning rates in low-income and middle-income countries are six times higher than in high-income countries with rates of 7.8 and 1.2 per 100,000, respectively[2].

In Thailand, drowning is the leading cause of death in children aged 1-17 years and accounts for nearly half of all the deaths of children aged 1-4 years[4]. Drowning fatality rates per 100,000 for all ages increased from 5.0 in 1999 to 6.4 in 2010. Fatality rates for children less than 15 years of age increased from 7.7 to 9.3 from 1999 to 2010 and are 5-15 times higher than in developed countries[5]. Considering seasonal variation, fatality rate seemed to be higher during summer than other durations. The Thai government has deployed several methods of educating people about drowning, but the strategies, mainly for those younger than age 15, have been mostly at a secondary prevention level, focusing on solving problems when accidents have already occurred[6]. This has resulted in the non-systematic collection of data in terms of risk factors that have not been sufficiently specific for solving problems in local areas.

The task of saving drowning victims must be accomplished in less than four minutes[7,8]. In Thailand, a low-cost, spontaneously operating surveillance system, which utilizes local wisdom and can be operated by the local community, is needed to accomplish this. There should also be a driving mechanism for ensuring the ongoing operation of the system, and this should

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be based on the integrated use of information monitored by both the private and government sectors. This study aimed to use a participatory action research and development process to develop an effective surveillance system, which entailed the active involvement of local communities of Ubon Ratchathani Province, Thailand, and which would result in the reduction of drowning risks.

Material and Method

This study used a quasi-experimental design and was approved by the Khon Kaen University Human Research Ethical Committee (HE531187) that functions in accordance with the principles of the Declaration of Helsinki and the ICH GCP Guideline.

Location and participants

Ubon Ratchathani is ranked as the province with the fifth highest drowning death rates in Thailand[9,10]. The capital district (Muang district, Ubon Rachathani) has the highest rate of drowning deaths in the province[11]. Two sub-districts, a municipality (Pathum) and a non-municipality (Kudlad), were chosen as target areas for the study based on the numbers of drownings reported in the three years 2007-2009[12] and the strength of their local interest in participation. Two other sub-districts, which together had similar socio-demographic, economic and geographical characteristics and faced similar drowning problems, were selected as comparison areas. These were the municipality of Ubon and the non-municipality of Chaeramai.

The participants in the target areas were divided into three categories: 1) 182 surveillance informants; these were stakeholders who were knowledgeable about the local communities and knew families who had experienced a death by drowning, and they included government representatives (teachers, public health organizations, local government) community leaders, and youth representatives, 2) 562 representatives of surveillance network volunteers, namely district officers (Muang Health Office), local authority personnel, teachers, health officers, community leaders, health volunteers, youth representatives, lifeguards, monks, fishermen, riverside restaurateurs, and residents living near water sources, and 3) 21, 234 households in 26 villages covering 43 water sources of the two target sub-districts; the water sources were areas where there was a high risk of drowning and included natural rivers, lakes and ponds, especially those used for swimming and fishing and where beaches attracted tourists.

Seven-step process

The research was divided into seven steps and required 15 months (June 2010 to August 2011) to complete.

Step 1: situation analysis (2 months)

This involved extracting information from documents and reports and collecting qualitative data from the discussions with three focus groups in each sub-district. The three groups were composed of different kinds of informants: (1) government officers, (2) community leaders and village volunteers, and (3) children and teenage representatives, who used high-risk water sources for swimming and fishing. Each group discussed the drowning problem and the identification of high-risk areas for drowning around the villages.

Step 2: prototype design (2 months)

Representatives from different sectors participated using the Step 1 information to develop surveillance tools appropriate for the target areas and decided that the surveillance system would involve different networks, both in households and in the community. The system should include the surveillance of children by household caregivers and childcare centre personnel. Teachers and school students should be appointed to integrate drowning surveillance with other activities and to seek and share local knowledge about drowning risks and communicate information about drowning surveillance to parents. In health centers, active surveillance information was to be included in all well-baby clinics programs. Village health volunteers should be trained to monitor drowning risks at both domestic and environmental levels, and warnings about the characteristics of high risk drowning groups should be given to riverside restaurateurs and residents. Risks needed to be communicated to the public in water source areas using, for example, flags for warnings about changing water depths.

Step 3: prototype trials (3 months)

A workshop was organized to clarify the system, and tools developed by the local networks were tested in four villages (two in each target area).

Step 4: full system design (1 month)

The Step 3 outcomes were analyzed at a brainstorming meeting, and the system design was finalized for a full system trial.

Step 5: full system trials (6 months)

Trials of the surveillance system were run in all 26 villages of the two target areas. Workshops were held every month to clarify and practice the skills needed to both operate and monitor the system. The workshops involved community representatives, district government officers, regional officers and the researchers.

Step 6: system improvement (15 days)

Surveillance network meetings were organized to exchange information, evaluate the results of the trials, and make system improvements.

Step 7: system dissemination (15 days)

A meeting of 85 people was held to exchange information about the new model surveillance system with seven other Northeast Thailand provinces, which experienced similar drowning problems.

Data collection and analysis

Both qualitative and quantitative data were collected. The researchers obtained information from environmental observations, interviews, focus group discussions, participatory planning workshops, reviews of manuals, media productions and existing reports and records. Qualitative data through interviewing, observation, and focus group discussion were obtained from 377 key informants; 260 active leaders from surveillance system actors, 97 beneficiaries such as officers from public-private sectors, community leaders and lay, and 20 scholars from academic division of related organizations at various levels and universities. A second source of data was primarily quantitative and consisted of the information obtained by use of the surveillance tools to monitor drowning risks. These risks included insufficient safety equipment (lack of flotation devices), unsafe environmental features (lack of fencing and warning signs around high-risk areas), and dangerous personal factors (children unable to swim, lack of parental supervision, tendency of teenagers and adults to go swimming when intoxicated).

Quantitative data validity were controlled by experts, who examined the content validity of the relevant data collection tools. Qualitative data were validated by the researchers, using their knowledge and fieldwork experiences to triangulate findings across time and different sources of information.

Quantitative data were analyzed by using basic descriptive statistics including percentages and incidence rates. Poisson regression was used to compare injury incidence rates (non-fatal and fatal) between target and comparison areas before and after the new system was implemented. Statistical significance was set at $p<0.05$. Analyses were performed using Stata 10.

Content analysis was used for qualitative data. This involved the transcribing audio-records, coding and categorization of transcribed texts, and drawing conclusions from encoded category contents. The data included comments from various key informants after the surveillance system implementation; these included comments by community leaders, the chairperson of the riverside restaurateurs and childcare centre teachers.

Results

The study results indicated outputs and outcomes of the seven-step process, impacts on risk factors, impacts on drowning injury rate, and the sustainability of the developed model.

Outputs and outcomes of the 7-step process

The output results and outcomes of the seven-step process were as follows.

Step 1: situation analysis

Surveys of local informants revealed that from 2007-2010 the numbers of drowning incidents in the target and comparison areas were twice as high as local official statistics indicated. The median age of death by drowning was 24 years (range: 3-70 years), and drowning deaths were 6.6 times more frequent in males than females. Just over half (51.5%) were unable to swim, 36.8% suffered from chronic illnesses or conditions which put them at risk of drowning, and 50% had consumed alcohol. Locations associated with the highest risks of drowning were tourist areas, reservoirs and rivers (36.8%, 26.3%, and 18.4% of deaths, respectively).

Each sub-district had established a disaster prevention division consisting of trained officers and community volunteers (1.1-1.6% of population compared with the national standard of 2.0% as defined by the Department of Disaster Prevention and Mitigation)[13]. Only 1.9-11.2% were trained in first aid and resuscitation and were prepared for appropriate, prompt responses. In addition, mandatory annual refresher training was non-existent. Furthermore, teachers made no effort to prevent delinquent students from going swimming, and each

organization worked independently without a networking relationship. Overall, there was a widespread lack of organizational consistency and awareness.

Step 2: prototype design

Drowning surveillance tools were designed for three phases based on the Haddon Matrix[14]:

Phase 1: Pre-drowning event

Five forms were used: (1) a household surveillance form collected by the health volunteers every month, 2) a health centre surveillance form collected by health officers, who worked at health centers providing well baby clinics, 3) a childcare center surveillance form collected by caretakers and sent to the local organization every three months, 4) a school surveillance form for which data were gathered by teachers and student leaders every four months or once a semester, and 5) a community water resources and tourist attractions form for which data were collected by the local organization officers once a month.

Phase 2: During-event

Formal reporting was the focus. Village witnesses would inform surveillance networks about drownings as they happened.

Phase 3: Post-event

Drowning investigations were conducted by health officers and local administrators. Only one reporting form was used.

Step 3: prototype trials

Much of the information in the surveillance forms was found to be either incomplete or inaccurate, and the surveillance networks clearly still lacked surveillance activity expertise. Communications regarding drowning risks and rescuing victims were unhelpful. Moreover, high risk drowning candidates, such as children and those consuming alcohol, continued to lack awareness of their own vulnerability. In terms of young children, parents and caregivers needed to be fully aware of the risks rather than the children themselves, especially where children were kindergarten age or younger.

Step 4: full system design

The results obtained in Step 3 led to improvements in the surveillance system; for example, the report formats of the surveillance tools were improved by additional graphics in the checklists used for monitoring. Plans were implemented to increase the monitoring and risk-warning skills of the surveillance networks, and local wisdom was included in the processes of making observations and creating warnings. Networks and risk warnings were expanded to cover the entire drowning-prone population, and surveillance was integrated with other existing tasks.

Step 5: full system trials

Information obtained from monitoring was used to reduce risks for drowning-prone groups and the causes of drowning. It was also used for lessening the impacts of dangerous environmental features. With regard to system operations, problems were found with the filing of information. The dissemination of drowning information was also inconsistent. Also problematic was that the information provided by the monitoring was not properly sorted according to risk factors in each area. It was also found that some of the identified risk factors could not be handled immediately because of the financial cost.

Step 6: system improvement

Solutions to the problems found in each sector for both the short and long term were included in the management plans. Revised report formats reduced the monitoring frequency rates according to the degree of risk in each area. Graphics or symbols, like household maps, were introduced into the reports. These adaptations led to creation of an effective set of monitoring instruments, which could provide the information before, during, and after drowning events. In terms of the pre-event phase, drowning monitoring (three different forms) was conducted within households and at water sources, as well as in childcare centers, public health service centers and schools. In the event phase, notifications of incidents were written in record-books (a single record-book was used).

Step 7: system dissemination

The fully developed surveillance system was promoted in seven other provinces. Emphasis was placed on its essential features: 1) the system employed a proactive approach which focused on warning about drowning risks before incidents occurred, 2) four different sectors participated by working together in operating the system, namely government agencies, community leaders and volunteers, ordinary people, and a technical/advisory group, 3) local community activities and ways of life, local wisdom and cultural

traditions were recognized and incorporated into the tasks of analyzing problems and designing an operational system, which was congruent with the communities it served, 4) because of this need to accommodate the socio-cultural characteristics of the target population, the mechanisms for operating the system led to local variations in the key elements of resource support, network assistance, surveillance (information) centers and channels for disseminating drowning information. The drowning surveillance system model is shown in Fig. 1.

Impacts on risk factors

The surveillance system mitigated drowning risks in the target areas in the following ways (Table 1): 1) additional drowning prevention and rescue devices (such as life jackets and boats) were made available at the 43 high-risk water resources. From surveys conducted before and after the surveillance system was introduced, the proportion of sites with these safety devices increased from 18.4% to 83.7%, 2) regarding the physical environment in the high risk water areas, new security measures were taken (such as fences and warning signs); sites with these security measures increased from 13.2% to 76.7%, and the level of surveillance co-operation at the high risk sites rose from 88.4% to 100%, 3) household environment safety for children increased from 47.0% to 62.6% of the children in the before and after surveys, 4) regarding host factors, the initial survey indicated that only 38.5% of children aged 7-15 years could swim; free swimming lessons were offered during the summer, and in the second survey swimming ability levels rose to 52.0%, 5) the co-operation of public health volunteers in supervising the risky behavior of children aged 15 years or less was already high (86.4% of the children), and it improved slightly to 93.3%, but there was an improvement in the behavior of both the children adopting less risky practices (63.8% rising to 83.0%) and the management of their behavior by their caretakers (66.5% rising to 87.6%); schools had played a vital role in making students aware of drowning risks, and an awareness campaign had been launched to make the communities, schools and tourism-related people realize the importance of drowning surveillance, 6) while the proportion of rescue volunteers trained in life-saving and resuscitation increased from 6% to 27.4% (the result was still unsatisfactory), the proportion of village health volunteers trained in resuscitation showed considerable improvement (12.7% increased to 87.9%).

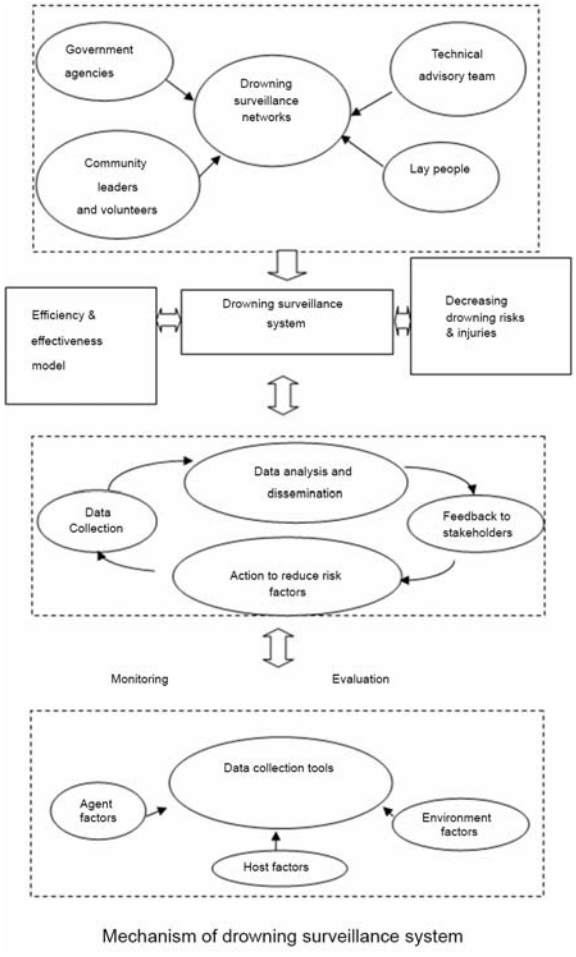

Fig. 1 Drowning Surveillance System Development Model.

Impact on drowning injury rate

In the four years before the introduction of the surveillance system in the target areas (baseline: 2007-2010), the non-fatality drowning rate was higher for each year in the comparison areas (mean annual rate: 53.8 per 100,000) than in the target areas (mean annual rate: 42.8 per 100,000) (Fig. 2). However, there was no statistical difference between target and comparison areas in the years before system implementation ($p = 0.766$; 95% CI, 0.001- 2.483). In the year after system implementation (2011), while there was an increase of the non-fatality rate in the comparison areas to 70.1, the rate for the target areas fell to zero. The fatality rate in the comparison areas remained at approximately the same level as in the previous four years, but dropped to 4.5 per 100,000 in

Table 1. Assessment of risk factors before (February 2011) and after intervention (June 2011) in the 26 villages of the target areas

Risk Factor	Population	Before		After	
		Sample size (%)	No. complying (%)	Sample size (%)	No. complying (%)
Agent					
1. Installation of safety devices at publicwater sources	43 water sources	38 (88.4)	7 (18.4)	43 (100.0)	36 (83.7)
Environment					
1. Water sources with structures to lower community risk	43 water resources	38 (88.4)	5 (13.2)	43 (100.0)	33 (76.7)
2. Low-risk household environment for children (≤15years)	4,260 children	3,673 (86.2)	1,726 (47.0)	3,973 (93.3)	2,487 (62.6)
Host					
3. Able to swim (7-15 years)	1,956 children	1,840 (94.1)	709 (38.5)	1,956 (100)	1,017 (52.0)
4. Children's behave (≤15 years) supervised	4,260 children	3,673 (86.2)	2,442 (66.5)	3,973(93.3)	3,481(87.6)
5. Low-risk behavior of children (≤15 years)	4,260 children	3,682 (86.4)	2,348 (63.8)	3,973(93.3)	3,297 (83.0)
6. Rescue volunteers trained in lifesaving and resuscitation	285 rescue volunteers	285 (100.0)	17 (6.0)	285 (100.0)	78 (27.4)
7. Health volunteers trained in resuscitation	414 village health volunteers	409 (98.8)	52 (12.7)	414(100.0)	364 (87.9)

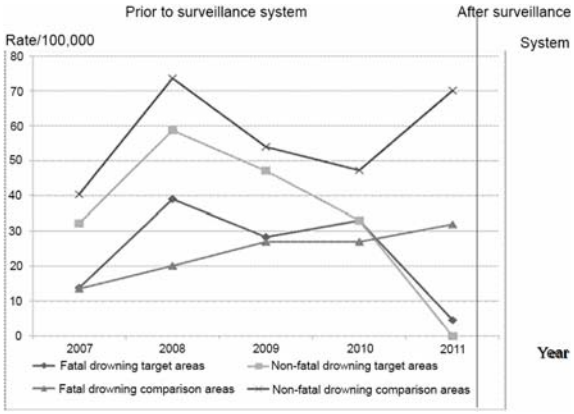

Fig. 2 Comparison of fatal and non-fatal drowning rate per 100,000 population in the target and comparison areas during the period February to July for the years 2007-2011.

the target areas, and the incidence rate ratio of injuries (non-fatal and fatal injuries) in the comparison areas was 23.32 times higher than in the target areas (95% CI: 3.081-176.599, $p = 0.002$) (Table 2).

Sustainability

Data from depth interviews with some key informants, such as the community leaders, showed that after local surveillance was established there were many positive new alliances in the community and multifaceted activities to reduce risk factors in multiple settings. There were also numerous effects on the people who lived in the community: for example, parents living near water paid attention to the activities of their children and were effective in reducing drowning-risk behavior; and teachers in schools warned their students about drowning injury. Communities set up local operation centers for surveillance and took action by indicating dangerous areas for swimming with warning signs and flags. Furthermore, the researcher observed that the riverside restaurateurs provided life jackets for clients who wished to go swimming, and they provided health education about risk reduction by the daily use of volunteers making announcements over a loudspeaker using, for example, slogans warning visitors not to swim after consuming alcohol. The chairperson of the riverside restaurateurs was a very

Table 2. Incidence rate ratios of drowning injuries (fatal and non-fatal cases) before and after implementation (February to July2010 and 2011) in target and comparison areas

Year	Comparison areas			Target areas			Incidence rate ratio	95% CI (*p*-value)
	Number of injuries	Number of person-years	Rate/ 10,000	Number of injuries	Number of person-years	Rate/ 10,000		
Before	11	14,798	7.43	14	21,234	6.6	1.13	0.001-2.483 (0.766)
After	15	14,262	10.51	1	22,180	0.45	23.36	3.081-176.599 (0.002)

active leader and reflected on the results saying, "This project had the good effect of creating greater safety for tourists and making it more well-known that nobody here dies from drowning. More tourists were now coming to the area, and the income of restaurants had increased since the previous year. The project was, therefore, valuable and should operate continuously. People both inside and outside the community have been satisfied with the actions taken by the riverside restaurants to solve the drowning problem".

In all sectors, local personnel in the operation areas had experience and skills in drowning monitoring. This enabled the system to operate efficiently in terms of the spontaneous evaluation of the risk factors, whether host, agent or environmental. Warnings were made in time to prevent drownings, and rescues were in time to save victims. In terms of efficiency, the resulting structure and mechanisms of the drowning surveillance networks were organized and ongoing. Operation centers monitoring drowning were established, and, since the networks were aware of the surveillance system benefits, they integrated the system into their regular activities without requesting extra pay. Other efficiencies existed, such as the use of current local materials and technology for rescue equipment. Surveillance activities became included as routine components of local policy and planning, and various different communication strategies were used by different groups. An additional evaluation in the late stages of the project showed that 83.8% of the networks involved in the surveillance system did not perceive its operation as an increased burden. The evaluation also showed that over 80% of the networks were cooperative in submitting timely reports and using them for action, and that the accuracy of the information in the reports increased from 65% to 90% between February and July 2011.

Discussion

The major strength of this study was its primary focus on community participation. When local people at all levels are drawn together with the purpose of employing local wisdom to solve a problem which they all face, the result is a sense of empowerment[15] to make changes, which are intrinsically sensitive to local circumstances, widely accepted by the local community, and, because of this, more likely to be sustained. Such an approach is consistent with the social mobilization strategies advocated by UNICEF, which defines them as "a process of intersect oral coalition building and action by which social actors come together to raise awareness about specific issues, raise demand, support service delivery, and strengthen local participation"[16].

The success of a surveillance system developed by integrating local customs and knowledge with modern methodology so that at an operational level planning implementation embraces all sectors involved is consistent with the results of similar approaches adopted in poorly resourced areas of South East Asia[17,18]. Co-operative planning involving the action of key persons and cooperation by target groups in the study areas using a 'strategic route map' approach can achieve sustainable effectiveness. This kind of strategic approach can bring about a balanced economic, social and environmental integration in communities and can support the concept of sustainable development[19].

In evaluating the strengths and weaknesses of the present study, it is useful to consider the seven principles identified by Nilsen as important to the effectiveness of a community-based health and safety program[20]. The design of the model drowning surveillance system adhered closely to the principles of community focus, community participation, intersect oral collaboration, multifaceted interventions, and a

community-wide or general population outcome. However, it was less successful in terms of the remaining two principles, a long-term view and substantial resource requirements. Whilst the model system was designed to be self-sustaining, there is no guarantee that this will be case, and the lack of a follow-up study means that the long-term effectiveness of the system remains an open question, especially after the initial enthusiasm for the project abates and key personnel are changed in the target areas. The project also lacked funding, especially for the mitigation of environmental risk factors by, for example, adequate fencing along roadsides around steep inclines to popular water resource and good signage. There was also a need of financial support for the provision of rescue craft, inexpensive access to properly designed flotation devices, and the ongoing, regular training local people in life saving and first-aid.

Another limitation of the study was its probable not being able to generalize the methods to settings where a strong community culture does not exist and where active community participation may not be so easily achieved. While a strong sense of community exists in most parts of South East Asia, particularly in the villages and rural areas, the culture of shared values and mutual responsibility is breaking down in many places due to urbanization and is much less likely to be found in cities or even large townships.

Conclusion

Drowning is an especially serious problem in rural and poorly resourced areas of developing countries such as Thailand. This study suggests a successful way of reducing the problem in these areas by a method, which is relatively inexpensive and capitalizes on the often-undervalued asset of the strong community spirit that usually still exists in rural parts of the developing world. This is an important message of hope for other countries with similar problems in poorly resourced areas.

What is already known on this topic?

Regarding drowning, private protection through fencing, seem to be effective. For public place, safe guard system is effective for small area with high cost. Thai government implements passive surveillance system throughout the country.

What this study adds?

Passive surveillance operated by government system alone may suggest policy formation. However, to minimize harm from drowning, community participation needs to be considered. This study introduces community participation as a way to prevention as well as to minimize harm from drowning that is decreasing mortality rate.

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Potential conflicts of interest

None.

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การพัฒนารูปแบบของระบบการเฝ้าระวังการจมน้ำท้องถิ่นในภาคตะวันออกเฉียงเหนือ

เกศรา แสนศิริทวีสุข, มานพ คณะโต

ภูมิหลังและวัตถุประสงค์: *อัตราการเสียชีวิตจากการจมน้ำในประเทศไทยได้เพิ่มขึ้นโดยเฉพาะอย่างยิ่งในเด็ก การใช้ระบบการเฝ้าระวังสุขภาพของประชาชนในการบาดเจ็บอุบัติเหตุโดยเฉพาะจากการจมน้ำในระดับชุมชนยังมีข้อจำกัด การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อพัฒนาระบบการเฝ้าระวังเพื่อลดความเสี่ยงของการจมน้ำในพื้นที่ชนบทของประเทศไทย*

วัสดุและวิธีการ: *กระบวนการ 7 ขั้นตอนได้นำมาใช้ในการพัฒนารูปแบบสำหรับระบบการเฝ้าระวังการจมน้ำในท้องถิ่น บนพื้นฐานของการมีส่วนร่วมของชุมชน ประชากรกลุ่มเป้าหมายผู้ให้ข้อมูลเป็นผู้มีส่วนร่วมจำนวน 182 คน และเป็นเครือข่ายในการเฝ้าระวัง จำนวน 562 คน และกลุ่มเป้าหมายที่จะทำการเฝ้าระวังใน 2 ตำบลของจังหวัด อุบลราชธานี ภาคตะวันออกเฉียงเหนือ จำนวน 21,234 คน โดยเลือกพื้นที่การเปรียบเทียบสองตำบลที่มีลักษณะคล้ายกัน*

ผลการศึกษา: *ระยะเวลา 15 เดือนหลังจากการดำเนินการแบบจำลองสำหรับระบบการเฝ้าระวังการจมน้ำในท้องถิ่น (MVSS) ได้ทำการปรับปรุงและพัฒนาให้ครอบคลุมปัจจัยเสี่ยงและพบว่าอัตราอุบัติการณ์ของการบาดเจ็บ ในพื้นที่การเปรียบเทียบเป็น 23.36 เท่าสูงกว่าในพื้นที่เป้าหมาย*

สรุป: *ในประเทศที่กำลังพัฒนาที่มีเครือข่ายชุมชนที่เข้มแข็ง รัฐบาลควรสนับสนุนให้ภาคประชาชนและเอกชนเข้ามามีส่วนร่วมในการเฝ้าระวังในพื้นที่ท้องถิ่นของตน และส่งเสริมให้เป็นรูปแบบการเฝ้าระวังในประเทศรวมถึงการสนับสนุนงบประมาณพื้นฐานในการดำเนินการ*