

Assessing the acceptability of the health education program in Dengue prevention and control in Buon Ma Thuot city in Dak Lak province, Vietnam

Pham Huong Giang,^{1,2} Riris Andono Ahmad,³ Raden Ajeng Yai Suryo Prabandari⁴

¹ Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

² Institute of Development Policy, University of Antwerp, Antwerp, Belgium

³ Department of Biostatistics, Epidemiology and Population Health, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

⁴ Department of Health Behavior, Environment, and Social Medicine Department, Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia

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ABSTRACT Dengue fever is a serious human arboviral infection that globally spreads and is a top concern amongst health care professionals and governments including Vietnam. The best measure to prevent and control dengue is vector control which is supported by social mobilization and health education. This study assessed the acceptability of health education programs in dengue fever prevention and control for the first time in Dak Lak Province, which is located in the endemic area of dengue fever in Vietnam. This study was an implementation research with qualitative methods. Nine in-depth interviews and six focus group discussions involving thirty-four informants were conducted at province, district, and ward levels. The acceptability was analyzed based on the seven components of the Theoretical Framework of Acceptability. Thirty-four informants ranging from ages 26 to 54 years participated. All belonged to the delivering or receiving groups of the health education program. The years of experience of the delivering group were at least two years with the health education program in dengue prevention and control and all individuals in the receiving group participated in the program. Six components, namely affective attitude, perceived effectiveness, intervention coherence, ethicality, and self-efficacy, were coded in all transcripts. Meanwhile, none of the interviews mentioned the opportunity cost. Overall, the acceptability of the health education program in dengue fever prevention and control was considered to be positive. However, the transformation from education to behavior requires time for acceptance and the persistence of the education program. Besides, the major burden of the program was the limited budget that could lead to inadequate facilities for indirect communication and low human resources.

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1. Introduction

Dengue fever is a serious human arboviral infection that globally spreads and is a top concern amongst healthcare professionals and governments including Vietnam. The best measure to prevent and control dengue is vector control which is supported by social mobilization and health education. According to the World Health Organization (WHO), health

education is defined as “constructed communication of knowledge to improve health literacy and improve skills in order to advance individual and community health”.¹ The “health education for dengue prevention and control”, hereafter referred to as the health education program, in Vietnam is a routine program provided in the community through speakers, posters, pamphlets by health collaborators, health workers and in schools through meetings by health educators.²

To be more specific, health collaborators and health workers are responsible for the door-to-door visits to provide risk communication and to distribute pamphlets. They are also in charge of giving

*Correspondence: phamhuonggiang@mail.ugm.ac.id
Faculty of Medicine, Public Health, and Nursing, Universitas Gadjah Mada, Jl. Farmako, Sekip Utara, Yogyakarta 55281, Indonesia (Postal address: 365 Ottergenssesteenweg, 9000 Gent, Belgium).

Table 1. Component of Theoretical Framework of Acceptability (TFA).

Theoretical Framework of Acceptability	Code frequency	No. of interviews with codes
Perceived effectiveness	45	15
Burden	43	15
Intervention coherence	40	15
Ethicality	34	15
Self-efficacy	33	15
Affective attitude	28	15

information regarding dengue prevention and control plans and measures to the community through speakers or by facilitating neighborhood meetings. At schools, health education on dengue was organized, aiming to provide information concerning causes, symptoms, and effective prevention measures such as cleaning water containers, following the Vietnamese Ministry of Health (MOH) recommendations for environmental management.

Dak Lak is a mountain province in Central Highlands region, Vietnam which has a history of outbreaks of dengue fever (DF) and is an endemic area with all four DENV serotypes co-circulating.^{3,4} Among 15 main administrative units in Dak Lak province, Buon Ma Thuot city is the most populous city in Dak Lak province with the highest prevalence of DF of 1.56%.⁵

However, there was no research had been done to assess the acceptability of health education program in DF prevention and control while this is a routine program and has been implemented for years. Thus, here we explored the input, process, and acceptability of the current health education for dengue prevention and control to address this gap, as well as to plan for more effective health education.

2. Methods

The study involved implementation research which was conducted with qualitative methods that included the participation of the community (i.e. representatives of People's Committee - PC, school - SC, and household - HH) and health staff (i.e. representatives of the Center for Disease Control - CDC, district health center - DHC, commune health centers - CHC, and health collaborators - HC) to access their experiences of the acceptability of

the current health education in DF prevention and control. The purposeful sampling specific for the criterion sampling mentioned below for qualitative research was adopted in this study.

The study subjects were: (1) Responsible person in the CDC dengue prevention and control programs of Dak Lak province and Buon Ma Thuot City Health Center; (2) Head of ward/commune health station (3) Ward/commune health staffs or collaborators: who were being involved in the health education program in DF; (4) Vice-chairman who is responsible for the health education work in DF of ward/commune People's Committee; (5) A representative from school who is a responsible person in health education of dengue prevention and control; and (6) Householders who are living in the research area and received the health education intervention of DF. They are the ones with a range of past experiences with dengue (some with dengue infections in their family, and others without).

Semi-structured in-depth interviews (IDIs) and focus-group discussion (FGD) guidelines were developed to collect information. The guidelines were adapted and modified from the pilot research of Murphy et al. in 2019 on Theoretical Framework of Acceptability (TFA).⁶ The length of each IDI was around 35-40 minutes while FGDs lasted for about 55-60 minutes. The IDIs and FGDs were conducted and supervised by the principal investigator of the study.

The research assistant was the person who currently works in the health system in Buon Ma Thuot city, Dak Lak province, with experience in public health research. The language of the interview was Vietnamese. The interviews were conducted with health staff, in the order from provincial to commune levels, prior to the community. Triangulation of

sources was applied in this study by comparing answers from different informant groups and making observations of the surrounding environment of households. Nine in-depth interviews and six focus group discussions involving thirty-four informants were conducted at the province, district, and ward levels in April 2021. The IDIs and FGDs have reached information saturation.

2.1. Ethical approval

Permission for the study was obtained from both Hanoi University of Public Health's (No. 021-092/DD-YTCC) and Universitas Gadjah Mada's Medical and Health Research Ethics Committee (No: KE/FK/0175/EC/2021). Informed consent was obtained from all participants in written form before data collection in the qualitative study.

2.2. Analysis

Directed content analysis with deductive coding was used for qualitative analysis.⁷ All discussions were recorded and transcribed verbatim in Microsoft Word documents. Half of the transcripts were done with support from an additional research assistant, who currently works in the health system with two years' experience in public health. The principal investigator of the study was in charge of analyzing, coding and categorizing data. The coding was then reviewed conscientiously to ensure the quality of the data. Only the quotations shown as illustrations for the findings were translated into English.

3. Results

Thirty-four informants ranging from ages 26 to 54 years participated. All belonged to the delivering or receiving groups of the health education program. The years of experience of the delivering group were at least two years with the health education program in dengue prevention and control and all individuals in the receiving group participated in the program.

Based on Table 1 the TFA could be classified into 6 different components: namely affective attitude, perceived effectiveness, intervention coherence, ethicality, and self-efficacy, which were coded in all transcripts. Meanwhile, none of the interviews

mentioned the opportunity cost. The summary of the study results is provided in Table 2.

4. Discussion

In general, the groups of health staff, health collaborators, teachers responsible for health education at schools, and households answered that they have a positive feeling and appreciate the effectiveness of the health education program. This could be explained by the fact that the health staff/collaborators and teachers have communicated with the community and pupils over many years so that they have built good relationships with these communication receivers. Therefore, the health staff/collaborators and teachers could easily approach the community and pupils and ensure the delivery of the health education program. One study indicated that the pre-existing relationships between health program deliverers and receivers would influence the overall impression and willingness to participate in the program of deliverers.⁶

Similarly, some studies suggested that the truthful relationship between the deliverer and receiver is crucial to facilitate the acceptability of health interventions.^{8,9} It was also noted that the negative relationship could be a barrier in delivering health intervention.⁹ Some of the Peoples' Committee staff showed neutral feelings about the health education program. This might be associated with their role in the program since they were only responsible for preparing broadcasts based on content prepared by their health department counterparts.

Another interesting point was that the direct communication (door-to-door visit) which complemented the indirect communication (speakers and posters) could enhance the effectiveness of the communication among the community. The households shared that the visits of health staff/collaborators made them feel cared for and motivated them to practice preventive measures. Door-to-door visiting was found to significantly increase knowledge of the community in dengue prevention.¹⁰ A case study in community engagement in dengue prevention and control in urban areas of Vietnam showed that the direct consultation is the most effective approach in communication.¹¹ In addition,

Table 2. Summary of study results.

TFA constructs	Results	Illustrative quotes
Affective attitude	Positive feeling about the health education program.	<p>“When we [health staff] communicate about dengue fever and malaria, the public is very pleased, and they thank us. These occasions (communication sessions) make them happy.” (HC1)</p> <p>“Of course, it is very good to prevent dengue for the pupils, and they are very excited ... The second thing is to broadcast about dengue during breaks. Therefore, I am very excited, truly.” (SC1)</p>
	Increase public awareness on dengue fever.	“... the communication in dengue prevention ... raises the public awareness. If we [health staff] come to ask the public now about dengue fever, they would know very well.” (CDC2)
	The practice of the community was considered low by interview health staff.	“...about the eradication of dengue’s larvae, we [health staff] have been guiding the public everywhere we go, but they still leave the water containers uncovered, leading to the increase of larvae and thus dengue fever.” (CHC1)
Burden	Lack of funding was considered as a common burden of the program, leading to inadequate facilities for indirect communication at commune health center, people committee and school (e.g., loudspeakers, mobile vehicle, pamphlets, and posters).	<p>“Previously, the collaborators of the communication program in dengue received an allowance, but now the program has no such specific collaborators. The program used to be done in a commune, but it stops now. There are only health collaborators who have general responsibility and work for all the programs.” (CDC2)</p> <p>“For example, the speakers are old, so they do not work properly, affecting the communication.” (PC2)</p> <p>“We [teacher] prepare the content and print that out. There is no poster about dengue.” (SC2)</p>
	They lacked willingness to practice communicated content of households by interview health staff.	“...they [the households] still leave the water containers uncovered, leading to the increase of larvae and thus dengue fever. We have communicated in many places, but they do not cooperate, so it was difficult to eradicate dengue fever.” (CHC1)
	No difficulty for households to engage and practice all contents related to health education program by interview households	“...We [the households] know to keep personal hygiene and keep the house clean, as well as work with neighbors to clean the neighborhood, join the community to prevent dengue.” (HH1)
Ethicality	Both delivering (except people committee staff) and receiving groups felt comfort with the program. A common motivation was raising public awareness about dengue prevention and control to protect the community.	<p>“We [health staff] want to eradicate dengue as we observe that every endemic season causes a lot of difficulties and also negatively affects the economic status of the community.” (CHC2)</p> <p>“The communication will help the pupils to understand about dengue.” (SC1)</p> <p>“To protect myself and pupils, teachers at my school.” (SC2)</p> <p>“Our objective is that the community is aware of dengue thus protect themselves.” (PC1)</p> <p>“..., I [the household] receive advice about health protection. I am more aware of cleaning house, eating cooked food, and using bed nets to prevent dengue. I feel the importance of preventing dengue.” (HH3)</p>
	Health staff/collaborators, teachers at school could deliver the program content effectively due to frequent trainings.	<p>“We [health staff] mainly communicated about larvae eradication and guided the community how to do that, that is the initial step.” (CHC1)</p> <p>“The content of the communication for households was about cleaning living area (removing bushes), remove standing water, creating flow in standing water bodies, using a bed net. We [health collaborators] had to emphasize about keeping hygiene in the living area and personal hygiene.” (HC2)</p> <p>“At the beginning of the school year, the education department sent official dispatch about training, and then we [teachers] came back to school to communicate to pupils.” (SC1)</p> <p>“The content was checked by the health staff. The content will be selected and edited for broadcasting. There was no difficulty.” (PC2)</p>
	Intervention coherence	

Table 2. (continued).

Intervention coherence	<p>People’s Committee did not face any difficulty when delivering the health education program as the content was prepared by health staff at the commune level.</p> <p>The households showed that they acknowledged the content of the program such as cleaning living area, using bed net, and removing standing water.</p>	<p>“The content was checked by the health staff. The content will be selected and edited for broadcasting. There was no difficulty.” (PC2)</p> <p>“...When the announcement about dengue was given, everyone was aware of cleaning the area, removing standing water, and use a bed net. The objects that might contain standing water, such as tires, were all removed to avoid the spreading of dengue.” (HH1)</p>
Opportunity cost	Not applicable	Not applicable
Perceived effectiveness	<p>The effectiveness of the program was assessed from moderate (teachers at school) to effective (other groups).</p>	<p>“...the community, in general, cares about the communication programs, and eventually reduces unhealthy behaviors... they also know to remove standing water in bottles, vases, and keep them up-side-down to avoid standing water.” (CDC1)</p> <p>“The awareness of the community, or the knowledge, is good... If we do a KAP (Knowledge Attitudes and Practice) survey for 10 households, 10 out of 10 would give very good answers. However, the shift from awareness to practice is very difficult.” (DHC)</p> <p>“The pupils show good awareness in dengue prevention.” (SC1)</p> <p>“..., I [the household] receive advice about health protection. I am more aware of cleaning house, eating cooked food, and using bed nets to prevent dengue. I feel the importance of preventing dengue.” (HH3)</p> <p>“..., I [the household] receive advice about health protection. I am more aware of cleaning house, eating cooked food, and using bed nets to prevent dengue. I feel the importance of preventing dengue.” (HH3)</p>
Self-efficacy	<p>All informant groups showed confidence in the maintenance of dengue prevention and control behaviors among the community and pupils,</p> <p>The large-scale and repetitive communication would be important to help the community to maintain their behaviors.</p>	<p>“Currently, the community changes their behaviors, should be 90%. There are few households have not changed yet due to economic difficulties.” (HC2)</p> <p>“...My school is very clean, and there is no standing water. In general, the self-awareness of pupils is very good, they actively keep classes clean and keep personal hygiene.” (SC2)</p> <p>“..., it [the program] is directly relevant to health, so the community will care about this. When the community is aware and is communicated, it is obvious that they will practice.” (PC1)</p> <p>“Enhance communication program; the communication program requires monitoring and evaluation; training should be provided to health staff and health collaborators at all levels; the authorities and stakeholders should provide budget timely, in order to increase the feasibility of the program.” (CDC1)</p> <p>“To be honest, my family is confident but when the rainy season (July, August) comes, we are more cautious that the cleaning might not be enough. Therefore, we ask the health collaborators to frequently check to achieve effective prevention.” (HH3)</p>

it was suggested that the door-to-door visiting was effective as well as reinforced communication efforts using speakers in the case of COVID-19 prevention in Vietnam, thus they could exert the same effect in the prevention of dengue and other infectious diseases.¹²

The limited budget was considered as a major

burden of the health education program by all delivering groups (i.e., health staff, teachers at school, and the People’s Committee). Especially, the health collaborators were not allocated a specific fund for dengue but received an allowance from a common funding pool for all communicable diseases. This,

together with the increasing population, is a barrier to the implementation of the health education program. The increasing population means that one health collaborator will be responsible for more households. This leads to higher work pressure and increases in both frequency and distance of travel, while the allowance remains the same.

Thus, the outcome of the program could be negatively influenced and there is a risk of health collaborators resigning. Some of these cases actually occurred, as reflected in one sharing: “The allowance was a few hundred thousand Vietnam dong, but they work all the time in the endemic time, and some of them quit” (CDC2). The concern about the limited budget for health programs has been mentioned in many studies.^{11,13–15} Since the financial problem could not be solved in a short term, it is suggested that one health collaborator could concurrently be responsible for other tasks (e.g., member of women’s union, and residency cluster). This would not only diversify their income sources but also increase their familiarity with the community, thus facilitating the communication efforts. The advantages of this solution were mentioned in several studies in dengue prevention and control in Vietnam.^{16–18}

However, in the long term, the financial policy of the program should be adjusted, particularly in aspects such as increasing the allowance of health collaborators, investing in communicating facilities and evaluating the effectiveness of communication channels to propose proper fund allocation. In addition, the financial burden of the program could be reduced by enhancing stakeholders’ participation through community activities such as praising active citizens in dengue prevention and control.¹¹ Despite the difficulties, especially in the financial aspect, the delivering groups were confident about the communication capability. This might be due to the frequent training sessions planned annually.

These trainings provided insights into dengue prevention and control knowledge and improved learners’ communication capability, thus they could improve the effectiveness and efficiency in delivering the program. A study found that training is essential to increase the knowledge of school teachers and health educators about dengue.¹⁹ Another notable

point is that the community was considered, by both deliverers and receivers, to have a very good awareness of dengue after receiving the health education communication. This improved awareness is similar to the results of other knowledge, attitude, and practice assessments.^{20–22} Improving the community’s awareness was mentioned to be the motivation of health staff/collaborators and teachers to work in the program.

This interaction between deliverers and receivers was also indicated in a research that explained the extrinsic motivation of health workers was the responsibility to encourage people to prevent dengue.²³ However, the qualitative results suggested that the practice among the community remained limited, despite the fact that the community was considered to have good knowledge and awareness of dengue by both themselves and the health staff/collaborators. This finding is counter-intuitive since good knowledge is likely to result in good practice in dengue prevention.^{24–26} However, there were studies suggesting that knowledge might not be a sufficient indicator for good practice.^{27,28} In this case, the limited practice of households might be related to low socioeconomic status because these households tend to allocate time to make a living instead of preventing disease in general and dengue in particular, as reflected in one sharing: “There are few households that have not changed [their behaviors] yet due to economic difficulties” (HC2).

This issue was also indicated in another study.¹¹ Another possible explanation could be the reliance of the community on frequent monitoring from health staff/collaborators. Both communication deliverers and receivers said that the maintenance of preventive practice requires longer time and more monitoring from the health staff - “To be honest, my family is confident but when the rainy season (July, August) comes, we are more cautious that the cleaning might not be enough. Therefore, we ask the health collaborators to frequently check to achieve effective prevention” (HH3). One study suggested a similar explanation in the case of the Philippines.²⁸

5. Conclusions

Overall, the acceptability of the health education

program in dengue fever prevention and control was considered to be positive. However, the transformation from education to behaviors requires several years and the persistence of the education program. Besides, the major burden of the program was the limited budget that could lead to inadequate facilities for indirect communication and low human resources.

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Conflict of interests

All authors declare that they have no conflicts of interest.

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