

# Effectiveness of Educational Communication in Knowledge, Attitude, and Practice to Hand-Foot-Mouth Disease Prevention of Mother Having Children Under 5 Years Old

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**Background:** Hand-foot-mouth disease (HFMD) is an infectious disease that mainly occurs in children under five years old. Vietnam is a developing country with high prevalence of the disease outbreak every year. Can Tho City, Co Do District had the highest incidence of children under five years old acquired HFMD.

**Objective:** 1) To determine the factors correlating with knowledge, attitude, and practice in HFMD prevention of mothers having children under five years old, and 2) to evaluate the alteration in knowledge, attitude, and practice in prevention HFMD of mothers having children under five years old after intervention with health educational communication.

**Materials and Methods:** Community intervention study was done in 420 subjects. At first, all the participants would do the questionnaire and practicing assessment. Then, the participants were divided into two groups, the intervened group for educational communication, and the control group with no intervention. The intervention included three steps, 1) training knowledge and skills for medical staffs and collaborators, 2) providing information about HFMD for the mothers, 3) broadcasting information leaflets to the subjects' house every month. The assessment in awareness, attitude, and practice would be performed again after one month. The present study staff achieved approval from the Science and Educating Council of Can Tho University of Medicine and Pharmacy. In addition, the present study also received the agreement from The People's Committee of Co Do District.

**Results:** The present study results shows that 23.3% of mothers had the right knowledge, 50.5% of mothers had the right attitude, and 17.4% of mothers with children under five years of age had the right disease prevention practice. There was an association between education level of mothers with children under five years of age with knowledge, attitude, and practice in disease prevention. After intervention, knowledge of the mothers in the intervened group improved more than 2.79 times, right attitude more than 2.84 times, and practice improvement more than 1.83 times in compared with the control group.

**Conclusion:** Educational communication plays an important role in HFMD disease prevention through increasing the awareness, opinion, and disease prevention of the mothers who directly take care of the under five years old children.

**Keywords:** Hand-foot-mouth disease; Knowledge; Attitudes; Practices; Effective intervention

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Hand-foot-mouth disease (HFMD) is a common viral infectious disease of infants and children caused

by a group of enteroviruses, including Coxsackievirus A16 (Cox A16) and Enterovirus 71 (EV71). Infection with EV71 is of particular concern as it can cause severe disease in children, sometimes resulting in death<sup>(1)</sup>. The epidemic of these viruses changes by time, areas, and season. A study in Shaanxi Province of China showed the rise of EVs as time passed. Between 2014 and 2018, the proportion of Cox A16 was between 20.06% and 23.08%<sup>(2)</sup>. Besides that, in Uruguay, Uruguayan strains were more related to strains reported in Russia, Turkey, and Germany between 2014 and 2017. The present study warned about the Cox A16 associated HFMD during winter<sup>(3)</sup>. Clinical symptoms usually initiate with a low-grade fever, malaise, a maculopapular or

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papulovesicular rashes on the palms and soles of the feet, painful oral vesicles, and ulcerations<sup>(4)</sup>. Of note, severe and even life-threatening complications can develop rapidly in young children, especially patients younger than 10 years, such as acute pulmonary edema, cardiopulmonary failure, aseptic meningitis, encephalitis, and acute flaccid paralysis<sup>(5)</sup>.

In the past three decades, a continuous increase of HFMD occurred worldwide. In Japan, EV71 was the most pathogen related to HFMD outbreak in Fukushima in 1984, 1987, 1990, 1993e, 1997, 2000, and 2003<sup>(6)</sup>. In 2008, China underwent the largest Asia-Pacific pandemic, causing a significant threat to public health. The prevalence of the disease increased rapidly from 86.59 per 100,000 in 2009 to 203.16 per 100,000 in 2014<sup>(7)</sup>.

In Malaysia, some studies showed the relationship of mothers' educational level with these issues in HFMD. The intervention in educational communication brought positive effects in changing the awareness, attitude, and action of these mothers in HFMD prevention<sup>(8,9)</sup>. A research in Thailand about knowledge of caregivers of children under five years old in Bangkok revealed a considerable result with 50.4% had low knowledge, and only 3.7% had high overall knowledge in HFMD. The present study highlighted the need to provide more information about HFMD to the home caregivers especially among those caregivers with low income and low education<sup>(10)</sup>.

In Vietnam, the last decade illustrated a rise in number of the cases and the fetal case with 5,719 and 23 in 2007, 10,958 and 25 in 2008, and 10,632 and 23 in 2009<sup>(1)</sup>. The notable outbreak in 2011 was estimated at 110,000 cases in 63 out of 63 provinces in Vietnam with 163 death cases in 30 provinces and cities<sup>(11,12)</sup>. Can Tho City is the largest city on the Mekong Delta of Vietnam. There were 1,141 HFMD cases and one death in 2011. Co Do District is a promoted area of Can Tho City. It had 51 cases of HFMD and was responsible for the one death in that year<sup>(13)</sup>. With the reported figures and no study that had ever been done about knowledge, attitude, and practice in HFMD prevention, the authors conducted a study to find the epidemiological factors of HFMD in Co Do District. In addition, an intervention was made to change the awareness, attitude, and practice for women having children under five years old to improve the HFMD situation, not only in Co Do District but also in Can Tho City. The study aimed at 1) finding the factors correlating with knowledge, attitude, and practice in HFMD prevention of mothers having children under

five years old, and 2) evaluating the effectiveness of educational communication in changing the knowledge related to HFMD prevention.

## **Materials and Methods**

### **Study design**

The authors conducted a community intervened study and comparison with a controlled group.

### **Study population**

After approval by the Can Tho University of Medicine and Pharmacy, Co Do District people's committee, the authors conducted the study with 420 mothers who had children under five years old. The subjects were randomly chosen in three villages from four wards of Co Do District. The present research was initiated with the participants answering the questionnaire. Then the researchers assessed how these women practiced to prevent HFMD for their children.

### **Intervention with educational communication**

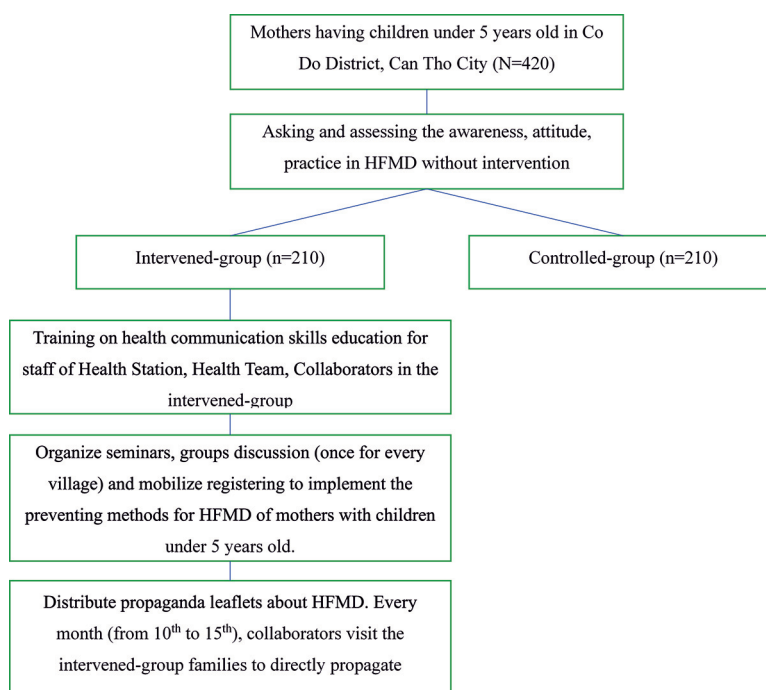
The researchers separated these subjects into two groups, the intervened group with 210 mothers and the controlled group, also with 210 mothers. Then, educational communication would be initiated with the intervened group. At first, they were provided appropriate information about HFMD including causes, signs, and symptoms, and how to prevent the disease. This was based on the preferences of the Vietnamese Ministry of Health<sup>(14,15)</sup>. The activities in the educational process depended on the guideline of the Vietnamese Ministry of Health, which consisted of diagnosis, treatment, supervising, and prevention of HFMD<sup>(16,17)</sup> (Figure 1).

### **Ethics statement**

The present study protocol received approval from the Science and Educating Council of Can Tho University of Medicine and Pharmacy (no. 1024/D.CTUMP). In addition, the study received the agreement from The People's Committee of Co Do District. Based on conducting the research to collect necessary data and to ensure the ethics issue, the researchers used professional questions, so it did not affect the health or harm to the target audience. All the participants information were kept secret.

### **Outcome measures**

Determining the most influencing factors that affected the HFMD prevention. The researchers assessed the positive changes in knowledge, attitude,



**Figure 1.** Activities in HFMD educational communication.

and practice in HFMD prevention of the mothers who directly took care of their children one-month after the education.

### Statistical analysis

The data were encoded, managed by EpiData. It was processed and analyzed by Stata, version 10.0 (StataCorp LP, College Station, TX, USA). The characteristics of subjects were performed by prevalence. The characteristics of the objects would be presented in prevalence and frequency. To determine the relationship between those characteristics with the awareness, attitude and practice of the mothers, the researchers used chi-square, p-value less than 0.05, and odds ratio with 95% confidence interval.

## Results

### Characteristics of the study subjects

Four hundred twenty mothers having children under five years old participated in the present survey. Demographic information of the subjects is shown in Table 1.

About the knowledge of HFMD, 98 mothers had adequate awareness, (23.3%). In addition, 50.5% of the subjects had the right attitude toward the need of HFMD prevention. Seventy-four subjects (17.4%) had good practice on HFMD prevention.

Awareness of hand hygiene was surveyed. The

**Table 1.** The common characteristics of study subjects (n=420)

Variable	n (%)
<b>Age</b>	
≤30 years old	276 (65.7)
>30 years old	144 (34.3)
<b>Education</b>	
≤ grade 5	262 (62.4)
> grade 5	158 (37.6)
<b>Ethnics</b>	
Kinh	411 (97.9)
Others	9 (2.1)
<b>Occupations</b>	
Farmer	289 (68.8)
Others	131 (31.2)
<b>Economic situation</b>	
Poor household	24 (5.7)
Non-poor household	396 (94.3)
<b>Children having HFMD</b>	
Yes	7 (1.7)
No	413 (98.3)

HFMD=hand-foot-mouth disease

results showed that 70.9% mothers washed hands before cooking, 45% mothers washed hands with

**Table 2.** The correlation between education level with awareness and practice in HFMD prevention

Characteristic	Awareness; n (%)		Practice; n (%)	
	Know	Unknow	Right	Wrong
Education				
≤ grade 5	47 (17.9)	215 (82.1)	35 (13.4)	227 (86.6)
> grade 5	51 (32.3)	107 (67.7)	38 (24.1)	120 (75.9)
p-value	0.001		0.005	
OR (95% CI)	0.46 (0.29 to 0.73)		0.49 (0.29 to 0.81)	

OR=odds ratio; CI=confidence interval

**Table 3.** The alteration in knowledge, attitude and practice after educational communication

Contents	Intervened group; n (%)	Controlled group; n (%)	p-value	OR (95% CI)
Knowledge				
True	112 (53.3)	61 (29.0)	<0.001	2.79 (1.87 to 4.18)
False	98 (46.7)	149 (71.0)		
Attitude				
Agree	168 (80.5)	124 (59.0)	<0.001	2.84 (1.83 to 4.41)
Disagree	41 (19.5)	86 (41.0)		
Practice				
True	75 (35.7)	49 (23.3)	0.005	1.83 (1.19 to 2.80)
False	135 (64.3)	161 (76.7)		

OR=odds ratio; CI=confidence interval

detergent after going to toilet, 62.9% mothers washed hands after changing diapers and clothes for their children, 64.8% mothers washed their children's hands after school. Finally, 12.9% of women knew how to do hand-wash based on the guide of the Ministry of Health.

Among these common characteristics, there was a statistical relationship between mother education with the knowledge and practice in HFMD prevention (Table 2).

### Results after intervention

The educational communication made changes in the awareness, attitude, and practice in HFMD of the mothers having children under five years old. The mothers of the intervened group had the right answers 2.79 times more than the controlled group ( $p<0.0001$ ). This group also changed their opinion toward HFMD with 2.84 times higher when compared with the controlled group ( $p<0.0001$ ). The suitable ways applied to prevent HFMD of the educated group were also higher than the controls at 1.83

times ( $p=0.005$ ) (Table 3). In contrast, there was no considerable change in handwashing technique of the intervened group.

## Discussion

### Knowledge, attitude, and practice assessment in HFMD before educational communication

The present survey was initiated in Co Do District of Can Tho City, Vietnam. This is a district far from the city and most people are farmers. Therefore, the results about the common characteristics of participants were suitable. To compare with the other studies in Vietnam about HFMD prevention, the women having children under five years old in Co Do District had lower awareness in HFMD than that of Bien Hoa City in Dong Nai Province at 23.3% versus 34.4%<sup>(18)</sup>. In fact, the remote areas had less ability to reach enough medical information than the city. In addition, asking about the ways to achieve medical information also helped to elucidate these issues. These mothers mainly approached medical news in general and HFMD information through television, as only a few of them could contact medical personal and the collaborators at 6.2% and 4.8%, respectively. This could be a problem to consider.

Only 50.5% and 17.4% of the participants had good knowledge and practice to HFMD prevention, nearly a half when compared with Ho Chi Minh City, a big city in Vietnam, at 91.3% versus 34%, respectively<sup>(18)</sup>. Typically, the importance of hands' hygiene was not the first consciousness for these mothers when taking care of their children, and only 12.9% of the surveyed subjects knew the six steps of hand washing. Therefore, it is important to provide and strengthen the medical education through various facilities, especially the practical training.

Relationship between education grade with HFMD matters was a highlight issue in the present study. These subjects would be categorized in priority group for health education communication projects, not only in HFMD.

### The alteration after intervention

After intervention by educational communication, there was an important change in awareness, attitude, and practice in HFMD prevention of the mothers participating in the present study. The numbers of women had good knowledge about HFMD increase more than 2.79 times than the control group ( $p<0.0001$ ). The increased awareness about the disease made change in both opinion and prevention method of the HFMD. In fact, the intervened group

had changed into right attitude toward HFMD more than 2.84 times compared with the control group ( $p < 0.0001$ ). This was a highlighted change, and those mothers also changed their activities to protect their children from HFMD at home and even in school.

In the assessment in preventive practice, the number of intervened women that achieved good results were 1.83 times more than the control group ( $p < 0.005$ ). However, there was no obvious improvement in hands hygiene in most of the mothers although this was one of the key points to prevent infectious diseases. The effect of hands hygiene in HFMD had been demonstrated in a survey conducted in Hong Kong. The incidence of HFMD (2.1%) in the trained group was significantly lower than in control group (4.2%) at year 2 ( $p < 0.001$ )<sup>(19)</sup>. To explain for the lack of change in hands hygiene, education in a short time could not easily alter the process of washing hands, which had become a rigid habit in most people. Therefore, the training course in hand washing practice should be continuously performed.

The highlight difficulty in the present research was to control the quality of each collaborator. For this issue, the researchers required every collaborator taking part in the workshop to take post-testing after completing the workshop.

## Conclusion

The present study emphasized the importance of educational communication in changing the knowledge, opinion, and method to prevent HFMD for the remote areas of developing countries. The results revealed the positive alteration from the participants after intervention, so it could help to reduce the prevalence of HFMD in children.

## What is already known on this topic?

HFMD is an infectious disease with sufficient information published. In addition, the process of how to launch a campaign to educate about this disease to every people was made in detail by the World Health Organization (WHO) and the Ministry of Health of many countries. Data about the disease were also concerned and collected to monitor the situation.

## What this study adds?

The prevalence of HFMD increases every year in some developing countries. This is because of the lack of knowledge, inappropriate attitude, and ineffective practice to protect the children from HFMD. Besides that, the educational campaign about communicable diseases for remote areas were not effective.

Therefore, a positive and more efficient strategy is necessary for improving the situation of HFMD.

## Conflicts of interest

The authors declare no conflict of interest.

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