

ORIGINAL ARTICLE

Knowledge, Attitude and Practice towards Hand, Foot and Mouth Disease (HFMD) Among Nursery Governesses in Klang Valley, Selangor

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ABSTRACT

Introduction: Hand, foot and mouth disease (HFMD) is reported as endemic and rank in the third place among other communicable diseases in Malaysia. HFMD outbreak is often found in nurseries and playgroups where children have lots of close contacts with other children. The objective of study is to study the knowledge, attitude and practice of HFMD among nursery governesses of nurseries at public universities and residential areas. **Methods:** A total of 102 nursery governesses were selected as respondents which include 83 respondents from public university while 26 respondents from residential areas in Klang Valley. Questionnaires were administered to determine socio-demographic, knowledge, attitude and practice on HFMD among the study population. **Results:** The result indicated that no significance different between knowledge, attitude and practice between two groups ($Z = -0.321$, $p > 0.005$; $Z = -1.196$, $p > 0.005$; $Z = -1.155$, $p > 0.005$) respectively. Furthermore, there was no association between knowledge with practice ($p = 0.581$, $p > 0.005$) and attitude with practice ($p = 0.298$, $p > 0.005$). Thus, nursery governesses in this study perceived moderate knowledge and attitude level. However for practice, public universities showed better application of practice if compared to residential areas. **Conclusion:** Hence, it is recommended for the nursery governesses to attend program such as health talk on HFMD occasionally, as it can be efficiently induce positive outcome.

Keywords: Knowledge, Attitude, Practice, Hand, foot and mouth disease (HFMD), Nursery governess

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INTRODUCTION

Children between six months age to five years old normally suffering Hand, foot, mouth and disease (HFMD) due to low immunity (1) with incidence and mortality rate was highest in the 12 to 23 month age-group (2). Coxsackie A virus 16 (CAV 16) and Enterovirus 71 (EV 71) is the main caused of HFMD (3). These enteroviruses transmitted from person to person through direct contact, air, and also through the faecal-oral route (4). HFMD mostly will present its clinical manifestation through skin which the disease will start with mild fever then by appearance of papulovesicular rashes, Herpangina and Onychomadesis (5). The palms, hands, soles, knee, feet, and buttocks areas will commonly appear with rashes. The children who will be diagnosed on HFMD usually have 3 – 4 days fever; about 7 days of the mouth sores; and the lesions on palms and soles as

well about 10 days (6). Some severely affected patients may die of aggressive malignancy of HFMD (7). A stool or blood sample obtained from the patients is the best way to confirm whether the children can be diagnosed suffering with HFMD.

Nursery is temporary place for children and babies to taken care by governess when their parent is at work (8). Nursery is chosen due to the children send there would be in the range of age below than five years. Children within range of age less than five years old are the group at risk of getting this disease. Besides, in nurseries the children will spend around eight hours per day there due to their parents are working approximately eight hours, thus he children will be easily exposed to HFMD infection. The nursery governess will take over parents' roles for a while in terms of fulfilling children's personal need such as providing food, changing diapers and helping them cleaning (9).

Nurseries, playgroups, schools, and households where children have lots of close contacts with other children are often found as HFMD outbreaks (10). Hence,

contacting with HFMD patients and sharing toys with other children are the independent risk factors affecting the incidence of HFMD (11). Therefore, nursery is the place where HFMD virus can be easily disperse as children sent there will be sharing toys with the other children.

Nursery governess is chose as study population due to children less than five years old might not aware that they are actually suffering HFMD. Nursery governess is a person who is employed by the owner of the nursery to take care of the children send to the nursery. Her tasks include providing food, changing diapers and helping the children cleaning. Children in day care centre are more prone to be infected with HFMD (10). Young children rely mostly to their caregivers (12) which in context of nursery the caregiver is the nursery governess. Thus, nursery governesses are the individuals that are responsible to detect the sign and symptoms that arise as the children are depending on adults. In order to be able to detect the signs earlier and prevent from the children suffering the disease, they need to have the better knowledge, attitude and good practice on this disease.

Because of the time span which was only 6 months to finish off, this study was only conducted in the nurseries of public universities and residential areas in Klang Valley. To our knowledge, this is the first study in Malaysia to compare the HFMD in two types of nurseries. Thus, our results should be useful for providing instructions and recommendations for the government to tackle this issues. However, we encourage further research to accomplish the study, in particular, relating to various types of nurseries, such as company attached nursery and private university nursery.

First HFMD cases that were reported in Malaysia were in the middle of year 1997 which a few children were died during epidemic of Enterovirus – 71 (EV – 71) in Sarawak (13). Later on, from Jan 3 to Aug 6 2016, a total of 23,454 cases of HFMD were reported nationwide, which recorded with an average of 757 cases per week, an increase of 17.8 per cent compared to 19,916 cases reported in the same period in 2015. The highest number of HMFMD were recorded in Selangor with 7,471 cases, Sarawak with 3,007 cases; 2,294 cases in Johor; 2,084 cases in Kuala Lumpur; 1,535 cases in Sabah; Perak with 1,361 cases and Penang with 1,357 cases (14).

Next, till 18 July 2018, highest number of cases reported in Malaysia as well with 33,425 cases. Selangor recorded the highest number of HMFMD with 9,981 cases (15). Malaysia is one of the countries that also confronted with HFMD. The incidence rate of HFMD was the highest in those children that are less than two years (16).

According to the Health Facts by Ministry of Health (2015 & 2016), although the incidence rate of HFMD in Malaysia has been decrease from 104.07 per

100,000 populations in year 2014 to 74.09 per 100,000 populations in year 2015, but HFMD still be among the diseases that has the highest incidence rate. HFMD with the incidence rate 74.09 per 100,000 populations came in third after dengue with 357.49 and tuberculosis with 74.95 per 100,000 populations in year 2015 (17). The highest reported cases was in 2012 with 34 519 cases which showed increases 27 517 cases from the year before 2011 (7 002) (18).

MATERIALS AND METHODS

This research was using comparative cross sectional type of study design. This study was conducted in nurseries of public universities and residential areas that located in Klang Valley. For the nurseries in public universities, only Universiti Putra Malaysia (UPM), Universiti Malaya (UM) and International Islamic University Malaysia (IIUM) that gave permission to do the research in their nurseries. Due to limitation of withdrawal and refusal of nurseries located at the residential areas to participate, Taska Bijak Cerdik (9 respondents), Taska Murni (7 respondents) and Taska Al – Ilmi (10 respondents) were chosen as they were willingly to give cooperation to involve in this study. Total number of nursery governesses that working at all three nurseries were 26 and all will be selected in this study.

The sampling population was all nursery governesses in nurseries at UPM, UM, IIUM, and all three nurseries selected in residential areas. For UPM, there are total of three nurseries which are Taska Ceria Cerdas (Faculty of Engineering) (9 respondents), Taska Permata (Faculty of Human Ecology) (14 respondents) and Taska Cahaya Mata Koperasi (Taska A, Taska B and Taska C) (20 respondents) while for UM there is only one which is Taska UM (TASKUM) (10 respondents). For IIUM, there were three nurseries involved which were Taska IIUM Educare Petaling Jaya (6 respondents), Taska IIUM Educare Gombak (17 respondents) and Taska IIUM Educare MIDA (7 respondents). Total number of nursery governesses that working at all six nurseries were 109 and all will be selected in this study.

The respondents will be assessed by using self-administered questionnaire which will comprise of four sections: Section A, B, C and D. Section A will be collecting on their socio-demographic status. Section B will be questioning on the respondents' general knowledge regarding on HFMD. For Section C is comprise of three subsections which will be asking on knowledge of the respondents, attitude towards HFMD and practices on preventing and dealing with situation when the disease occurs. For Section D, it comprised of the suggestion part on how to efficiently disseminate HFMD information. Questionnaire was modified from (19). The information in the questionnaire was obtained from baseline report (19). However for the structure of questions, Likert scale format was used.

The data obtained from the questionnaires will be analysed by Social Sciences Statistical Programme (SPSS). The scoring method and scoring level were according to (20).

Knowledge

Right answer : 1 point

Wrong answer : 0 point

Attitude

Strongly agree : 5 points

Agree : 4 points

Not sure : 3 points

Disagree : 2 points

Strongly disagree : 1 point

Practice

Very frequently: 5 points

Frequently : 4 points

Not sure : 3 points

Rarely : 2 points

Never : 1 point

Scoring level

Good : score > mean + SD

Bad : score < mean - SD

For quality control, a pre – test had been used as a quality control in this research. A sample of questionnaire had been distributed to 10 nursery governesses as the representative of respondents from nursery in Universiti Tenaga Nasional (UNITEN) which is excluded from the sample population to observe their ability and understanding of answering the questionnaire in order to produce a good research result. The value of Cronbach alpha obtained for reliability was 0.901. (21) stated that, Cronbach alpha value of 0.7 or more was acceptable for reliability test for questionnaire. Before conducting the study, the approval from the Ethical Committee for Universiti Putra Malaysia (JKEUPM) was gained with the JKEUPM Ref No. of FPSK (EXP16-OSH) U017.

RESULTS

In this study, 109 samples of questionnaires and consent forms were distributed. The questionnaires were distributed to all nursery governesses in each nurseries selected. Out of 109 samples, 102 (93.6% response rate) samples of questionnaires and signed consent forms were returned.

Socio-demographic data of the respondents

It included the age, race, education level and year of employment. The data of the socio – demographic characteristics were tabulated in Table I. The range of age group among nursery governesses was large as there is no age specific requirement for becoming nursery governesses. They can ask for this job as long as they have the ability to handle the children (9). For race and gender, all nursery governesses in both public universities and residential areas are Malay and female. For education level, majority of the nursery governesses

Table I: Socio-demographic data of the respondents

	Public university	Residential area
Age		
Less than 20 years old	10 (13 %)	3 (12.0%)
21 to 29 years old	36 (46.8 %)	16 (64.0%)
30 to 39 years old	21 (27.3 %)	4 (16%)
More than 40 years old	10 (13 %)	2 (8.0%)
Race		
Malay	77 (100 %)	25 (100 %)
Chinese	-	-
Indian	-	-
Others	-	-
Education level		
No education	-	-
Primary school	2 (2.6 %)	-
Secondary school	57 (74 %)	17 (68.0%)
College or University	18 (23.4 %)	7 (28.0%)
Others (<i>Giatmara</i>)	-	1 (4.0%)
Year of employment		
Less than and equal to 1 year	19 (24.7 %)	10 (40.0 %)
2 – 3 years	25 (32.5 %)	9 (36.0 %)
4 – 9 years	18 (23.4 %)	3 (12.0 %)
10 – 19 years	13 (16.9 %)	3 (12.0 %)
More than 20 years	2 (2.6%)	-

in both population have qualification up until secondary school only. Regarding on duration of employment, majority of nursery governesses worked between 2 – 3 years. The main reason is; young children are known to have aggressive behaviour (22) especially at the age of 2 or 3 (23). Thus, for those who are unable to handle the children tend to leave the job and can only withstand it up until few years only.

Descriptive statistic on general information

Five questions have been asked to the respondents. The purpose of asking this question was to know their general knowledge on HFMD. Descriptive statistics was done to get the frequency and percentage (Table II).

Majority of the nursery governesses got information on HFMD via television which was 81 (79.4 %), followed by internet 70 (68.6 %). According (24), health education program through television channel is

Table II: Descriptive statistic on general information data

Variable	Frequency (n)	Percentage (%)
Hearing about terms of "HFMD"		
Yes	100	98
No	2	2
Notice about HFMD phenomenon in Asia continent		
Yes	95	93.1
No	7	6.9
Aware of HFMD outbreaks in Malaysia		
Yes	99	97.1
No	3	2.9
Sources of information		
Television	81	79.4
Radio	24	23.5
Internet	70	68.6
Friends	69	67.6
Employers	63	61.8
Parents of the children	40	39.2
Others	10	9.8
Recognize symptoms of HFMD		
Yes	94	92.2
No	8	7.8

highly recommended as television is the most effective source of information. There were 94 (92.2 %) of nursery governesses recognize the symptoms of HFMD. Considering that majority of the nursery governesses recognize the symptoms, it is good because symptoms are the early indicator to detect whether those children are suffering from HFMD or not.

Level of knowledge on HFMD between governesses

The distribution of knowledge level was shown in Fig. 1. A mean score of 14.47 and standard deviation of 2.48 were used to classify respondents into three groups. The three groups were as followed:

- Good level : score of 17 or above
- Moderate level : score between 13 – 16
- Poor level : score of 12 or below

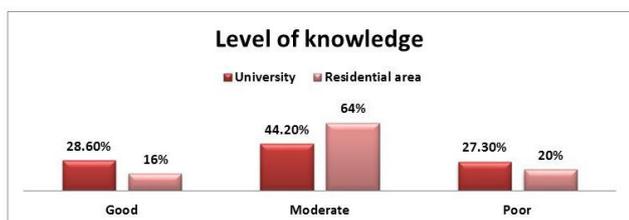


Figure 1: Level of knowledge

Level of attitude on HFMD between nurseries in public universities and residential areas

The score obtained was sum up and classified into three levels which were high, moderate, and low level of attitude. A mean score of 83.58 and standard deviation of 9.72 were used to classify the subjects into three levels as follow:

- Good level : score of 93 or above
- Moderate level : score between 75 – 92
- Poor level : score of 74 or below

To sum up the attitude toward HFMD, the distributions were tabulated in Fig. 2. Most of the respondents from nursery governesses in both public universities and residential areas had moderate attitude which were 58 (75.3 %) and 19 (76 %) respectively.

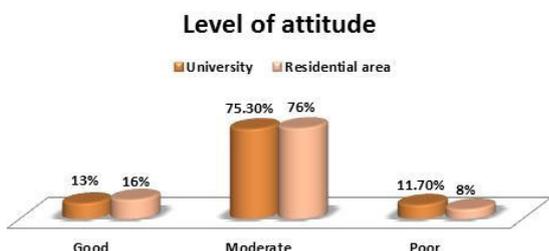


Figure 2: Level of attitude

Level of practice on HFMD between governesses

The practice score was converted in terms of score level and classified into two groups which were good and bad practice (Fig.3). A mean score of 81.51 and standard deviation of 8.74 were used to classify the respondents into two groups as follow:

- Good practice : score of 82 or above
- Bad practice : score of 81 or below

For this present study, nursery governesses in universities have better practice habit if compared to nursery governesses in residential areas. This can be supported by study from (25) that state individual motivation and abilities, as well as environmental opportunities influenced by health behaviour. In universities, nursery governesses are surrounded by people that are aware and concern on health as universities are the centre of learning. University usually organize variety of health promotion programmes to increase awareness on certain health issues. Workplace environment plays an important role in ensuring employee’s job performance (26). In order to increase efficiency, effectiveness, performance and job commitment of employees, the management must satisfy the needs of its employees by providing good working conditions (27).

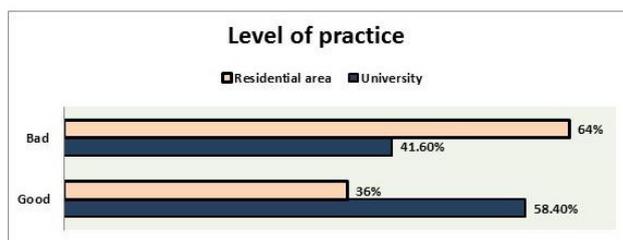


Figure 3: Level of practice

Comparison of Knowledge, Attitude and Practice of HFMD among nursery governesses

For the knowledge score, the mean rank of nursery governesses in public universities was 51.99 while the mean rank of nursery governesses in residential areas was 49.98. Based on Mann – Whitney U test, the Z statistics was – 0.321 and p – value is 0.748 which is $p > 0.05$. There was no significant difference of median knowledge between governesses between public universities and residential areas. The differences of mean rank between both nurseries in universities and residential areas were not too large. This shows that the knowledge between both is more or less the same. This might be because the distribution of education level between both populations was the same. Majority of nursery governesses from both populations were studying up until secondary school.

For the attitude score, the mean rank of nursery governesses in public universities was 49.51 while the mean rank of nursery governesses in residential areas was 57.64. Based on Mann – Whitney test, the Z statistics was – 1.196 and p – value is 0.232 which is $p > 0.05$. There was no significant difference of median attitude between public universities and residential areas. It indicates that knowledge on HFMD does not influencing the attitude during HFMD. It was supported by the study from (28) amount of knowledge had only little impact to the attitude – behaviour change. However, knowledge – attitude and behaviour model argue the previous statement which according to this model, attitude will change as knowledge accumulates (29).

For the practice score, the mean rank of nursery governesses in public universities was 54.08 while the mean rank of nursery governesses in residential areas was 43.54. Based on Mann – Whitney U test, the Z statistics was – 1.550 and p – value is 0.121 which is $p > 0.05$. There was no significant difference of median practice between public universities and residential areas.

Association between Social Demographic with governesses’ Knowledge, Attitude and Practice

There is an association between social demographic (age) with attitude level among nursery governesses in public universities. However, for others, there is no association between social demographic (age, education level and year of employment) with knowledge, attitude and practice among nursery governesses in both public universities and residential areas.

Furthermore, there was no association ($p > 0.05$) between socio-demographic (education level and year of employment) with attitude among nursery governesses in public universities. However, for age factor, there is association with attitude of nursery governesses in public universities ($p = 0.015$, $p < 0.05$). There was no association ($p > 0.05$) between socio-demographic (age, education level and year of employment) with practice on HFMD among nursery governesses in public universities.

There was no association ($p > 0.05$) between socio-demographic (age, education level and year of employment) with knowledge on HFMD among nursery governesses residential areas. Hence, there was no association ($p > 0.05$) between socio-demographic (age, education level and year of employment) with attitude on HFMD among nursery governesses residential areas. There was no association ($p > 0.05$) between socio-demographic (age, education level and year of employment) with practice on HFMD among nursery governesses residential areas. However, for age factor, the p value was reaching 0.05 as the p value of it was 0.066.

In summary, the result from this study showed that there is association between age and practice of the nursery governesses. It is contrast from the result obtained from study by (30) that found a relationship between practice of HFMD prevention and age. However, the age factor found significantly difference with level of attitude of nursery governesses in this present study.

In this present study, educational level does not associated with knowledge, attitude and practice of the nursery governesses. It can be supported by the study from (31) that confirmed educational level does not associated with healthy behavior. Healthy behavior can be influenced by good level of knowledge and attitude. Thus, indirectly, the knowledge, attitude and practice

are not associated with educational level of nursery governesses. However, the result obtained by this study is contrast from the study from (32) that argues child caregivers that have higher educational levels would influence lower risk of EV infections. Study from (33) also support the hypothesis of individuals with higher educational level will have high cognitive attitudes than individuals with lower educational level.

For this study, there is no association between year of employment with knowledge (K), attitude (A) and practice (P) of nursery governesses. Although some of the nursery governesses start the job at late age, they still gain experience through their long – term learning throughout their live. According to (34), younger teachers tend to have less experience raising children. This referred to age of individuals. Thus year of employment is unable to influence KAP of certain individuals under certain conditions.

Association between Knowledge, Attitude and Practice on HFMD

Association between knowledge and practice

About 14 (53.8 %) nursery governesses had poor knowledge and bad practice on HFMD. The Chi – square value obtained was 11.631 and the p – value obtained was 0.581, $p > 0.05$. Therefore, there was no association between knowledge and practice on HFMD (Table III).

Table III: Association between knowledge and practice

Knowledge level	n	Practice level		X ²	p – value
		Good	Bad		
Good	26	13 (50 %)	13 (50 %)	1.085	0.581
Moderate	50	29 (58 %)	21 (42 %)		
Poor	26	12(46.2%)	14(53.8%)		

N = 102, Chi – square test

A positive correlation between knowledge of child caregiver and child caregiver’s preventive behavior towards HFMD in child care centers was found in study (35). Besides, the PRECEED – PROCEED model states that knowledge was related to behaviour, and knowledge as the antecedent to the behaviour (36). However in this present study, there is no association between knowledge on HFMD and practice when dealing with HFMD. It can be supported by the study from (37) that argue good knowledge and attitude did not influence behaviour and practice of hygiene in daily lives.

Association between attitude and practice

About 6 (54.5 %) nursery governesses had poor attitude and bad practice on HFMD. The Chi – square value obtained was 2.421 and the p – value obtained was 0.298, $p > 0.05$. Therefore, there was no association between attitude and practice on HFMD (Table IV). Self – efficacy display confidence in the ability to engage control over one’s own motivation, behavior and social environment as well (38). An individual’s choice of

Table IV: Association between attitude and practice

Attitude level		Practice level			X ²	p – value
		n	Good	Bad		
	Good	14	10(71.4%)	4 (28.6%)	2.421	0.298
	Moderate	74	38 (50 %)	38 (50 %)		
	Poor	11	5 (45.5 %)	6 (54.5%)		

N = 102, Chi – square test

action and responses to challenges, incentives and rewards are influenced by attitude (39). Self-efficacy has been ascertained as a dominant factor in the practice of many preventive health behaviors (40). Self – efficacy directs a person’s behavior and stimulates how to fulfill activities well (36). Self – efficacy also guides all aspects of behavior, including the gaining of new behaviors, and the suppression and disinhibition of existing behaviors (40). When people believe that they are able to perform a behavior and to see significant health benefits, they will effectively execute that behavior (40).

DISCUSSION

Level of knowledge on HFMD between nurseries shown that (Fig. 1), nursery governesses in public universities had a good level of knowledge which was 28.6 % compared to nursery governesses in residential areas which was 16 %. Furthermore, there were 27.3 % for nursery governesses in public universities and 20% for nursery governesses in residential areas who had a poor level of knowledge. Surprisingly, with the advanced internet technologies nowadays, any information could be acquired easily. However, this study population is not only among the Z – generation (1990s – 2000s) that is highly exposed to these current technologies. There are some of the nursery governesses that are in the population that are still mainly dependent on mass media such as television (TV). However, in this type of medium the information on HFMD is not sufficient as there are only short segments explaining on HFMD for example during short TV advertisements.

To sum up the attitude toward HFMD (Fig.2), most of the respondents from nursery governesses in both public universities and residential areas had a moderate attitude which was 75.3 % and 76 % respectively. It was revealed by a previous study that showed attitude towards environment is shaped by level of knowledge about the environment (41). This example shows that with good knowledge can elevate the attitude of the nursery governesses. Attitude is a complex mental construct (perception) which emerges out of an integration of an individual’s belief and values system (42). Hence, it was quite challenging to ensure the application of a good attitude as attitude is already accumulated and formed throughout the upbringing process and the attitude involves what they believed about and what positive value they got (43).

Referring to the distribution of level of practice (Fig. 3),

nursery governesses in public universities had a good level of practice which was 58.4% compared to nursery governesses in residential areas which was 36%. Practice was an indicator to know the outcome of any programmes. The programmes were effective and successful if the participant can commit to applying good practice right after attending the programmes. For this present study, nursery governesses in universities have a better practice habit if compared to nursery governesses in residential areas. This can be supported by a study from (25) that states health behaviour is influenced by individual motivation and abilities, as well as environmental opportunities. In universities, nursery governesses are surrounded by people that are aware and concerned about health as universities are the centre of learning. Universities usually organize a variety of health promotion programmes to increase awareness on certain health issues. Workplace environment plays an important role in ensuring employee’s job performance (26). In order to increase efficiency, effectiveness, performance and job commitment of employees, management must satisfy the needs of its employees by providing good working conditions (27).

CONCLUSION

The study showed that nursery governesses in the study population have a moderate level of knowledge and attitude on HFMD. However, the level of practice was bad for nursery governesses in residential areas but in public universities, they were applying good practice. This result revealed that although the environment between both populations is different, which nurseries in universities might expose to various kinds of health promotion and might be the one that organizes them, the level of knowledge and attitude of them with nursery governesses in residential areas is still the same.

In applying good practice, it must be supported by having good knowledge and attitude. However, in this study, it is found that there was no association between knowledge – practice and attitude – practice. This might be because they might already know the basic transmission of HFMD and the symptoms that children might encounter but it is still not enough. There is still a lack of knowledge on certain areas.

Knowledge of the respondents was mostly at a moderate level. In order to increase the knowledge it is recommended for the management of the nurseries to enable the nursery governesses to attend health talks and health promotion on HFMD occasionally. The content of the talk might include and explain more on the signs and symptoms of HFMD. According to this study, most of the nursery governesses are still confused about the symptoms. Signs and symptoms are important indicators to detect the occurrence of the disease. If they are unable to detect it earlier, they will make the disease become worse and it will spread to other children in the nursery.

Government also needs to search and get information on communicable disease such as HFMD itself to enrich their KAP on this issue.

Furthermore, social media is the medium that they chose as the most suitable medium in disseminating information on HFMD. Thus, Ministry of Health or State Health Department can try to create new alternative using this medium. While they are having their break during work, they might hold their phone and scrolling their social media such as facebook. Therefore, official page that will give information on HFMD such as mode of transmission, signs and symptoms of HFMD can be created on facebook account. This page needs also to post routinely and have two – way of communication which people can ask directly any enquires on HFMD. Besides, this page needs to publicize widely in order for people to know its existence. Finally, information focusing on signs and symptoms of HFMD should widely being posted on every nursery. Posters on HFMD can be obtained from District Health Office or City Council nearby.

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