

## The Difference Opinion Between Male and Female in Preventing Dengue Haemorrhagic Fever

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**Abstract:** Community participation has an important role in controlling larva of *Aedes*. Different roles between males and females lead consequences in decision making process. This study reports male and female's opinion regarding DHF prevention. This qualitative research was conducted at urban area in Malang, East Java, Indonesia. Data were collected from a Focus Group Discussion with community leaders, an in depth interview with staffs of Community Health Center (CHC) and observation. Data were analyzed using triangulation method. Both male and female group have similar opinions regarding to DHF infection but there are differences opinion in the use of prevention methods. Male group prefers to use fogging method as a preventive action to DHF transmission or infection. In contrast, female group favors a behavior change. Common problems related to DHF that had been identified were lack of participation of some individuals in the community and the presence of empty houses or neglected lands. Health cadres expect that community can be involved in monitoring mosquito larva. Women are responsible for the cleanliness inside the house and men are responsible for the cleanliness in the outside are common job division. Sustainability of the program can be improved by advocacy to village leaders. Health cadres' communication skill should be improved.

**Key words:** Male, female, DHF, prevention, behavior, communication

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### INTRODUCTION

There had been increasing cases of Dengue Hemorrhagic Fever (DHF) three times since 1994 at Malang city they were in 1998, 2001 and 2006. The number of DHF cases tend to decrease down from 676 in 2006 to 642 cases in 2007. As 408 cases (three died) were found in 2008 and the number increased in 2009 (656 cases, four died). The House index of 14.43% in 2008 still had not met the target of 5%. In 2008 to 2009 the biggest number of DHF patients was found at Sawojajar area. With population number of 29.711 in 2008 and of 29.651 in 2009 the amount of DHF patients in this area were 30 and 40, respectively.

The distribution of DHF depends on the distribution of the vector which is *Aedes aegypti* mosquito. The ecology of the mosquito is closely related to some factors including environment, social and human behaviors. Since, these factors are interrelated, ecosystem approach to prevent DHF is critical. In ecosystem approach, gender has an important role due to its impacts on health, access to available sources and management. Males and females mostly have different roles in many situations including in the decision making of health problems.

Therefore, it is important to have a different analysis based on gender (Forget and Lebel, 2001; Lebel, 2003). Subsequently, gender has become an essential consideration in the development of DHF intervention. This study aimed to report the opinions of male and female in terms of dengue prevention.

### MATERIALS AND METHODS

This research was a qualitative research with method of data collection consisted of the Focus Group Discussion (FGD), in depth interview with key figures and observation. The study was conducted in Sawojajar area Malang city East Java Indonesia from July to November 2009. The participants of FGD were community leaders (Larva Monitoring Observer (LMO) cadres/health cadres/ Women Union Representatives (WUR) and village leaders). This women union is women organization in every level of government in Indonesia to improve family's welfare. Some of WUR are health cadres and most of health cadres are LMO cadres.

In depth interview was made with the local Community Health Center (CHC) officers. Observation was made on the ability of cadres in observing larva. Data

processing was started by making a transcript of FGD. Furthermore, the results would be summarized in accordance with the theme of FGD and recapitulated. Data analysis was conducted by using thematic analysis method. The validity of collected data was examined by source triangulation, methods triangulation and data triangulation.

The themes that had been displayed in the discussion were: job division, cause factors of DHF, prevention methods, prevention obstacles, the expectation on community health center role, the expectation on larva monitoring observer role and community involvement.

## RESULTS AND DISCUSSION

**Characteristics of FGD participants:** All FGD participants were adults. Focus Group Discussion was conducted in 2 (two) sessions. The first session was attended by 26 village leaders (male group) as most participants (92%) were male. This group was divided into four small groups.

Whereas the second FGD session was attended by health/LMO cadres and WUR (female group) in the area of Sawojajar which consisted of 36 people in total. All participants were female who were divided into four groups.

**Incidence of DHF:** Male group was concern about the number of DHF patients and Chikungunya fever in their territory. Some participants thought that patients were infected at school or outside their environment/neighborhood. Similar opinion was launched by female group. The number of patients stated by both of the two groups made the DHF becomes the primary concern of the society.

**Cause factors of DHF:** The two groups considered that some factors triggered the high incidence of DHF in Sawojajar area. Female group also agreed with the male group who viewed that environmental factors, individual conditions (such as immunity) and behaviour were causes of DHF. However, both groups had differences regarding weakness of prevention method as cause of DHF

transmission. Male group focused on un appropriate fogging and inadequate role of LMO while female group focused on poor implementation of draining, covering, burying (popular methods in dengue prevention used in Indonesia). The comparison can be seen in Table 1.

From in depth interview with CHC staffs it was concluded that the behavior of the community has a major contribution to the increase number of DHF cases than other factors.

**Prevention methods:** Fogging was the method agreed by almost all of male participants although other technical methods such as fish, abate and behaviour change were also proposed. On the other hand, female group more focused on increasing community participation through several ways and intensifying draining, covering and burying method. Various opinions of male group and female group regarding prevention methods for DHF can be seen in Table 2.

**Prevention obstacles:** Male group and female group have similar opinion regarding to challenges in the implementation of prevention actions in the community. Male group stated that communication factor is the most challenging issue. According to female group, member attendance in women union meeting is essential. During the meeting, there are many things discussed especially their involvement in the DHF prevention program in the community including how they communicate any progress and reports. Both groups agreed that empty houses were major potential problems and they still

Table 1: Opinion about cause factors of DHF by gender

Community leader (Male group)	Health/LMO cadres/Women union representatives (Female group)
Malnutrition	Environmental (Shrubs, plants lush and juicy plant, covered ditches)
Non immunity	Building (empty houses, moist and damped building)
Environment (uncultivated land, water plants, covered ditches, stagnant pools)	Weak physical condition
Empty houses	Poor lifestyle
Poor methods of applying fogging	Not maximal of application of draining, covering, burying
Fragmented eradication	
People's behavior	
Public unawareness	
Neglect of LMO	

Tabel 2: Opinion about prevention method of DHF by gender

Male group (Community leader)	Female group (Health/LMO cadres/Women union representatives)
Some individuals agree that fumigation (fogging) activities conducted by either CHC (with appropriate dose) or independently by community are important, some individuals disagree to this method because it is a temporary action and may raise new problems	Draining, covering, burying were more effective methods than fogging
Keeping fish in some potential mosquito breeding nest such as bath tanksand/or apply abate	Reminding people to keep their environment clean through LMO cadres
Changes in community behavior	Involving residents
	Tried to make themselves involved in any activities/program held by existing institution
	Participated in any competition related to hygiene of the community
	Socializing draining, covering, burying method more intensively to the community

\*LMO cadres regularly warned people of the danger of DHF and to empty the bath tanks for resident who will have travelling

Table 3: Opinion about prevention obstacles of DHF by gender

Community leader (Male group)	Health/LMO cadres/Women union representatives (Female group)
Lack of hygiene awareness	Refusal of home visits from rich people and people with intense activities
Refusal of citizens to apply abate	No entry into the empty houses
People ignorance to prevent DHF	Limited time to conduct survey on every house
Absence of mothers (women) in women union meeting	False condition of larva monitoring because of prior notice
Refusal of people to welcome the counseling cadres	Schools often escaped from the observation
Limited manpower of the health agency	The residential occupants were more difficult to be monitored than Kampong occupants
The citizens being scared of fogging	Limited land to bury the old stuff particularly in residential settlement
LMO could not monitoring larva in the empty houses	

cannot find any solution to monitor these empty houses. Nevertheless, sometimes cadres would try to get into the premises anyway Table 3.

Constraints related to the larva survey are highlighted by LMO cadres. Residents clean up their house soon after they were notified that the LMO cadres were going to visit their houses. If there were no notification they were less likely to clean their house properly. The LMO cadres also said that public places such as mosque and schools were not their responsibility.

Based on the status of residency, Sawojajar area can be divided into two areas, housing complex area and Kampong area. In terms of acceptance of the role of LMO cadres there are differences between housing complex residents and Kampong residents. The housing complex was more difficult to be monitored by LMO cadres than Kampong area. It may due to different characteristics of residents in both areas. Residents in housing complex area are characterized by well-structured housing and more homogenous in social economic status while residents in Kampong is characterized by unstructured housing, usually their social economic status were more heterogeneous.

**The role of community health center:** The male group had a great expectation to the roles of local health agency through community health center in the prevention of DHF infection. The male thought that no other parties but community health center who showed concerns on DHF prevention in the community. The staffs of community health center affirmed that they had done many things such as health education, training for cadres and giving supports to LMO to empower the community. However, the impacts are more likely being determined by the participation of the community itself (Table 4).

**The roles of larva monitoring observer:** The male group has noticed that mosquito larva monitoring at household level had been conducted by LMO cadres. However, the male group expected that the activity can be conducted as a routine activity, not occasional action when there was an outbreak. The group was also suggested that in order to relieve the burden of cadres, several community member activities such as keeping fish in bath tanks will

Table 4: Opinion about the role of community health centre regarding DHF by gender

Community leader (Male group)	Health/LMO cadres/Women union representatives (Female group)
More active in monitoring or surveying	Larva monitoring
Facilitating the cadres	Applying fogging and abate
Socializing DHF to citizens	Facilitating cadres
Conducting fumigation regularly	Conduct socializing and campaigning more intensively
Distribute abate	
Give detailed information directly to the community	
Give free treatment	
Respond to reports of DHF instantly by fumigation	
Set up a calendar of mosquito monitoring	

help decreasing the number of mosquito larva. All community members should have responsibility to monitor their houses.

Furthermore, LMO cadres should give a health education in the regular meeting in their neighborhood regarding to DHF prevention and report the progress to the community leaders. Larva monitoring observer cadres were also expected to be a role model in the community by practicing healthy living, visiting people affected by DHF and reminding people to keep their houses free from mosquito larva each month. On the other side, female group expected that the welfare of LMO cadres should be considered by local health agency. They were paid monthly as a reward for their efforts monitoring their neighborhood and it can motivate them. The LMO cadres expected all residents can be cooperative when the cadres visit their houses. The cadres also expected that their efforts are supported by the community leaders. However, it has been known that some of the cadres are still new and may not have significant roles in the community.

Based on the observations, the existing health cadres and LMO cadres had done many activities related to health, not only DHF prevention. In the contrary, the larva monitoring results were not as good as expected. The percentage of houses with positive mosquito larva remained high. Mosquito larva were more likely to be found in Kampong area than housing complex area. About 50% houses surveyed in Kampong area were positive with larva.

**The community involvement:** According to male group, the potential of community involvement in DHF

prevention actions is meaningful and necessary. However, DHF problems had never been discussed comprehensively, formally and systematically in the community. At the moment, the community conducted fogging using government funds combined with community voluntary work. Male group also content that: the success of DHF eradication was in the hands of housewives through existing organizational structure like women union.

This opinion is strongly in line with female group opinion which has argued that: the cleanliness inside the houses is the responsibility of mothers and children while fathers (men) have responsibility to take care the cleanliness outside the houses such as cleaning the ditches in through organized community voluntary work

According to female and male groups, the potential involving community in the prevention of DHF is high. Changing community behavior and increasing their awareness is essential. The female group hypothesized that education status and level of awareness of individuals determine the level of participation in any DHF prevention program.

**Job division:** The responsibility of monitoring mosquito larva in the community was mostly given to female group either they were the health cadres or LMO cadres. It seems that the problem in the community regarding DHF prevention is the problem of female group. This female role can be analogized as a part of Indonesian culture where women are supposed to do any activities within home while men do being responsible to any problems outside home (Zalbawi and Handayani, 2004). Generally women are responsible for cleanliness, tidiness and water availability (Boischio *et al.*, 2009; Perez-Guerra *et al.*, 2005). Women have greater concerns to reduce the risks of mosquito bites through various actions (Raude *et al.*, 2012; Paz-Soldan *et al.*, 2011). Similar situation was also found in United States where the majority (82%) of community health workers were female (Berthold *et al.*, 2009) and in some developing countries (Wibulpolprasert, 2004).

**Causes factors of DHF:** Community leaders noticed that the risk factors of DHF can be very complex, ranging from an individual characteristics, society, technology and environmental conditions of buildings and land. The practice and campaign of draining, covering, burying or behavior change is emphasized by WUR and health cadres.

There were some assumptions that the source of infection came from outside of the settlement such as from schools as mentioned by both male and female groups. This assumption was supported by the fact that there

were numerous school children who had DHF. It has been assumed that the mobile viraemic people is the main cause of dengue virus transmission rather than the mobile of *Aedes aegypti*. Therefore, close monitoring in public places such as school and hospitals should be highly considered (WHO, 1999).

The risk of water stagnant and difficulty in cleaning ditches were earlier considered as the cause of DHF by all FGD participants. This misassumption is common among WUR and LMO cadres whose believe that the ditches is one of mosquito breeding place. Larvae of *Aedes aegypti* are less likely to live in the ditches, the larvae are only live in clean water. Sampling of sewage conducted by researcher showed that there were no *Aedes aegypti* larvae found in it.

**Prevention methods:** The number of public requests for fogging especially those initiated by village leaders showed that there had been inadequate communication between health cadres or WUR and village leaders. It is common that many community leaders viewed the fogging as an instant way to respond the public need to be free from DHF. Nevertheless, a study in Puerto Rico found that females strongly prefer spraying insecticides to prevent dengue (Perez-Guerra *et al.*, 2005).

Community health education plays an important role in DHF prevention. In fact, health cadres had received knowledge and education in preventing DHF infection as also reported in rural Kambodia (Khun and Manderson, 2007) in contrast they were not much involved in the decision making process. Knowledge factor may not contribute significantly to behavior change if the individuals who had proper knowledge are not much involved in the decision making process in the community. It is suggested that developing good communication between health cadres, WUR and village leaders are beneficial to prevent DHF.

Inadequate involvement of health cadres and LMO cadres in the decision process in the community reflects communication problems occurred in the community. The cadres may not have sufficient communication and advocacy skill to influence decision makers in the community. Health education done by the cadres may have an impact to the awareness and knowledge of the community members. However, these efforts are considered inadequate to change community behavior. Furthermore, there are few community members who willingly became health cadres or LMO cadres. The number of health communicator in Indonesia is considered low.

Communication skill is essential in delivering health education or community advocacy. Any cadres should have adequate communication skills as well as other

competencies such as knowledge base about the community, health issues, health services, managerial skills, capacity-building skills, advocacy skills, teaching skills and organizational skills (Somsanith, 2009). Communication skills are required to develop trusted relationship between cadres and the community members. Communication skill is also an important tool for community empowerment. Both theory and practice of communication in training will have contribution for greater empowerment and information sharing (Hien *et al.*, 2008).

The tendency of male group to choose fogging probably is based on Parson assumption regarding instrumental men and expressive women. This assumption lead to paradigm that men are provider while women are dependant despite increased participation rate and support of women. Kettel as cited by Forget and Lebel (2001) states that people tend to occupy and manage their surroundings based on gender.

Ideally, fogging can only be applied in certain conditions such as emergency situation to suppress current epidemic. The objective is to kill the adult vector population. It has recommended that fogging should be followed by vector resistance monitoring (WHO, 2009). It has been reported that mosquito resistance to organophosphate and pyrethroids occurred (Ranson *et al.*, 2010).

Methods of DHF prevention are varied in many places. In Indonesia, the most common method is health education. The challenge is health education itself cannot change individual behavior. It should be combined with other methods which require comprehensive planning and sustaining implementation. Therefore, Indonesia health agency intensively conducts draining, covering and burying campaigns to community and followed by related trainings. For example, reduction of the source of larva was performed by training primary school teachers and female volunteers to have ability to identify cases of dengue fever by health workers.

In Singapore, there was a comprehensive program which aimed to control *A. aegypti* and *A. albopictus*. This program consisted of slum clearance, resettling migrated individuals, reduction of resources by the suited health officer, cleaning channels, putting anti mosquito into water tanks, health education and penalty. This program can reduce the *Aedes house index* in the slums of 27.2 in 1966 to 5.4 and 1.8% in 1981 (WHO, 1999).

**Obstacles in the prevention of DHF:** Based on FGD and observation in Sawojajar area there are obstacles found in the implementation of DHF prevention actions. These

obstacles include characteristics of the residents, empty houses, poor implementation of draining covering and burying methods by residents.

According to village leaders, DHF problems are strongly related to human factors. The presence of LMO cadres and their efforts have a major contribution to changes in the community. However, the characteristics of the community may determine the impacts of LMO cadres activities. People with high socioeconomic level are more likely reluctant to be visited by cadres. In addition there are residents who mostly leave their houses unattended because they work or have another house in other town. LMO cadres often report to village leader that they often find empty houses with lots of garbage.

The slogan of draining, covering and burying which has been socialized to society need to be revised. Dealing with burying it is hard to conduct due to limited space of land. Burying the old items actually contradict environmental waste friendly management program by WHO (2009) that emphasizes on reduce, reuse, recycle. secondhand goods can be profitable if well managed.

Besides, buried items need a long time to decompose. Introducing new idea such as the proper use of abate may not be easily accepted by community. LMO cadres and other health cadres should socialize new methods continuously and develop strategies to introduce the idea to different characteristics of individual according to the Diffusion of Innovations Theory.

**Expectations of the role of larva monitoring observer:**

Expectation of village leader that LMO cadre needs to deliver the management of DHF in the neighborhood is an opportunity for women to deliver her voices. Women may have a different point of view regarding DHF prevention since most of their activities are in home. Besides, usually women are the main target of health education conducted by CHC.

Multiplying effects of training women to train others intended to broaden the impact of the project and increasing the chances of a successful and sustainable program (Manderson *et al.*, 1996). Thus, LMO ability to confidently convey training results from CHC to village leaders need to be improved. In Puerto Rico, female group strongly prefers house visits and group discussions as methods disseminating health messages to prevent DHF in the community (Perez-Guerra *et al.*, 2005).

**The expectation on community health center role and community involvement:**

Community in Sawojajar area especially males tend to choose an instant method to solve the problem of DHF compared to a behavioral

change. It is necessary to increase the awareness of the community that DHF problems is not LMO cadres problems. All residents should have equal responsibilities in keeping their environment free from mosquito larvae (WHO, 2001). However, government through local health agency should provide supports to empower the community. Therefore, the sustainability of DHF prevention programs in the community can be sustained (Espino *et al.*, 2004). For example, the government should pay attention to the welfare of the cadres as a reward for their contribution in the community. Adequate incentives in various forms can increase cadres commitment and productivity (Wibulpolprasert, 2004).

On the other hand, the quality of larva survey conducted by LMO cadres need to improved since there were differences in the results of larva surveys conducted between researchers and LMO cadres. Results obtained by researchers on the percentage of positive larva is bigger than the results obtained by the cadres. The differences might be due to the difference of the sensitivity of the observation. Sometime the cadres becomes careless to check potential breeding places outside the house. Overload tasks of LMO cadres may also contribute the quality of their performance. Therefore, increasing the number of cadres and improving their competencies are highly necessary.

### CONCLUSION

Village leaders are more represented by men than women. Women especially LMO cadres have bigger roles in DHF prevention in the community. Nevertheless, policy supports related to DHF prevention actions and LMO cadres at the local level were still lacking. This may be due to the lack of women's involvement in forums attended by village leaders and the lack of public trust to the competency of LMO cadres. To improve the quality of LMO cadres they should have proper survey skills and coaching skills such as monitoring larva and how to approach communities and village leaders. These cadres can be considered as potential community groups to be mobilized. Cadre's welfare should be increased by enhancing the ease of access to health facilities or by giving more attention to them.

There is a major different point of views between village leaders and LMO cadres in terms of cause factors of DHF in the community and methods of its prevention need to be taken. Village leaders have stronger beliefs that fogging is the most efficient method while cadres are emphasizing the heed of behavior change.

Considering gender issue in every method of prevention is important to be understood by health policy

maker and community health center. Trained LMO cadres can be empowered by giving more skill and attention to their welfare.

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