



COMBI Approach as Community-Based Intervention in Dengue Control through Leadership

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Authors' contributions

This work was carried out in collaboration between all authors. Author SMS designed the study, wrote the protocol and supervised the work. Author SKZ carried out all data collection. Authors SMS and SKZ performed the qualitative analysis and managed the analyses of the study. Authors MNA, SMS and BF wrote the first draft of the manuscript and managed the literature searches. Author MS edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To understand the characteristics of the communities that applied Communication for Behavioural Impact (COMBI) approaches actively as compared with other areas where activity levels have waned. More of an understanding of these attributes will inform future COMBI approaches and work towards assuring greater success with dengue prevention and control in the community.

Study Design: Multi centered cross sectional study.

Place and Duration of Study: Sample: Across Peninsular and East Malaysia between October 2010 and June 2011.

Methodology: A multi centered cross sectional study was conducted from October 2010 to June 2011 across Malaysia. The sites used in this study were two sites in each of six states representing 5 zones in Malaysia that is north, south, east, central zone of Peninsular Malaysia and East

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Malaysia were selected based upon their high incidence of dengue fever and implementing of COMBI within the past two years. In depth interview was conducted through semi structured questionnaire. Thematic analysis was used for qualitative evaluation where results were presented in a series of discussions with basic coding framework.

Results: Chairmen and Coordinators understood the description of COMBI, have exposure in COMBI activities as well as other factors to empower community on the activities concerning COMBI. There were few factors deterring to maintain strong leadership such as migration, holding various portfolios, opposing political views and feeling unappreciated thus threatening its sustainability.

Conclusion: In general, strong leadership and commitment are needed to achieve community mobilization in conducting and maintaining sustainability of COMBI activities. The inability of leaders to enforce the committee in carrying out activities causes them to be incapable of initiating the COMBI programme resulting in poor management in reducing dengue outbreak.

Keywords: COMBI; sustainability; leadership; dengue; Malaysia.

1. INTRODUCTION

Dengue is a common mosquito borne viral disease and a major public health problem globally. At present, around 40% of the world's population live in areas where transmission occurs [1]. It is highly endemic in urban areas within tropical and subtropical countries mainly in the Asia Pacific region, Central and South America, the eastern Mediterranean, and Africa. It has been estimated that 50 to 100 million dengue viral infections occur annually; approximately 500,000 of these annual infections are in the form of Dengue Hemorrhagic Fever (DHF), which can be fatal [2].

The Ministry of Health (MoH), Malaysia has put much effort into implementing dengue prevention and control programmes yet with only limited success [3]. Community-based interventions are one of the methods for controlling dengue by reducing vector numbers [4].

A community-based intervention is defined as an intervention conducted within, and by members of, a particular community [5,6]. It could conceivably be made up of a single intervention, but conceptually the term suggests multiple components put together as an intervention programme.

An integrated marketing approach to social mobilization known as Communication for Behavioural Impact (COMBI) was advocated as essential for attaining effective dengue prevention involving the community as active partners has therefore been employed in order to reduce the burden of infection in affected communities [7].

COMBI approach emphasizes on the 5 Pointed Star of Integrated Marketing Actions which

consists of Public Relations/Public Advocacy/Administrative Mobilization, Community Mobilization, Personal Selling (Interpersonal Communication), Advertising (Massive, Repetitive, Intensive, Persistent @ M-RIP), and finally Point-of-Service Promotion. COMBI has compliment previous knowledge and attitude (including fear generating) Information-Education (IEC) approaches and has engendered a strong commitment at multiple levels in a variety of countries and cultures to modify behaviors related to limiting breeding sites and responding to early signs of dengue [8,9]. The major issues are not the effectiveness of COMBI in dengue control but achieving long-term sustainability [10].

Sustainability is referring to the continuation of programme when financial, organizational and technical support of external donors/organizations has ceased [11-13] or maintenance of activities and results after external financing and support has been withdrawn [14]. Important categories of indicators assessing sustainability includes maintenance of health benefits from the initial project, continued delivery of community activities and long term capacity building in the community [15-17].

In this study, maintenance of health benefits were referred to whether Dengue Fever (DF) incidence is maintained or decreased and Knowledge, Attitude and Practice (KAP) of community maintained or improved. Continued delivery of community activities includes continued activities in DF control, continued elimination of *Aedes* breeding sites and continued functioning of reporting system. Whereby, long term capacity building in community includes human resource development, allocated maintenance budget,

maintaining diverse participation, and maintaining strong leadership base [18,19].

Assuring long term success from this programme has been difficult as it has been a challenge to engage communities to sustain control actions and effectively communicate with communities in light of reduced vector control staffing and budget shortfalls [20].

Hence, this study was carried out to understand the characteristics of these communities as compared with other areas where activity levels have waned. More of an understanding of these attributes will inform future COMBI approaches and work towards assuring greater success with dengue prevention and control in the community [5].

2. MATERIALS AND METHODS

2.1 Data Collection

A multi centered cross sectional study was conducted from October 2010 to June 2011 across Malaysia. This study consists of 3 parts that include community respondents, COMBI members, and health staffs. For this report, a total of 112 COMBI members were included and of these, 13 respondents were COMBI chairman. 10 COMBI coordinators were health staffs. Study location included two sites in each of six states representing 5 zones in Malaysia that is north, south, east, and central zone of Peninsular and East Malaysia. They were selected based upon their high incidence of dengue fever and implementing of COMBI within the past two years. Status of the study sites were classified as active for continuing with COMBI activities like meeting, briefing, training or any health education activities such as voluntary community participation in cleaning activities and information dissemination such as seminars, distributing pamphlet and personal advice over the past six months. Study sites were considered inactive for discontinuing these activities over this same period. In this study, seven of these sites were active and five were inactive. The twelve study sites were Taman Malihah II and Kg. Bako in Sarawak, Pasir Gudang and Kg. Melayu Majidee in Johore, Kg. Kandis Bachok and Kg. Baru Nelayan Tumpat in Kelantan, Kg. Binjai and Kg. Baru Sg. Ara in Penang, Taman Setia Klang and Sg. Ramal Dalam in Selangor and Taman Tuanku Jaafar and Taman Enstek in Negeri Sembilan.

2.2 Interview Techniques

In depth interviewed were carried out separately among COMBI chairmen and coordinators based on a semi-structured interview guided on themes or issues using a standardized Malay language. These themes were developed by technical research members familiar with the subject matter. The research team conducted briefing sessions with members to ensure standardized data collection. In depth interview and Focus Group Discussions (FGD) were recorded and transcribed verbatim. Semi structured questions were divided into knowledge and training, COMBI structure, leadership, relationship among COMBI members and coordinators, community involvement and activities, commitment and support from other agencies as well as coordination and sustainability.

The same questions were also asked from another 99 respondents among COMBI members by focus group discussion technique. Each group consists of 6-12 respondents with 1 moderator and 2 note taker to facilitate the discussion.

2.3 Data Analysis

Thematic analysis was used for qualitative evaluation where results were reviewed and refined in a series of discussions with research team members' who devised the basic coding framework that emerged from the in depth interview and FGDs texts. The findings were elaborated under the themes consolidating the assessment of sustainability or status of sites and five integrated actions in COMBI which comprises of advocacy, social mobilization, publicity, interpersonal communication, and point-of service promotion to describe factors that affect sustainability of COMBI, the challenges in sustaining COMBI, and areas where COMBI should be improved. Coding was facilitated by use of the computer software package, NVivo version 8.0.

3. RESULTS

3.1 Description of COMBI

Informants' description of COMBI in this study were referred to epidemiology of dengue, COMBI two main messages (spend 10 minutes to search and destroy *Aedes* breeding sites and seek for early treatment when having fever) and COMBI activities (clean-up activities or voluntary

community participation and communicating for a behavioural change by imparting knowledge and skills to household on source reduction activities especially during house visits). At the same time, when describing what comes to mind when they hear the word "COMBI," without exception, informants had strong top-of-mind that COMBI was associated with dengue and voluntary community participation in mass cleaning activities.

Nevertheless, COMBI concept of social mobilization was only mentioned and elaborated by few of the chairmen and coordinators from active sites which indicated their understanding of social mobilization concept and how it works [21].

3.2 Exposures on COMBI

In response to the question about knowledge on COMBI, most of the chairmen and coordinators acquired the knowledge on COMBI either through briefing, seminar, one-day course, meeting, convention or combination of these sessions. There were only few coordinators acquired knowledge on COMBI from a structured training session which was either conducted at initial stage when COMBI was introduced or recently when COMBI was reactivated.

For instance, coordinator from inactive site admitted that he was not sure of five integrated actions in COMBI as he did not attend any formal course or training on COMBI. Chairman from active site commented that he never attended any formal course on COMBI but only briefing at committee level. It was also mentioned by the informants that the exposures either from briefing, seminar or one-day course whereby epidemiology of dengue was emphasized rather than COMBI concept of social mobilization.

3.3 Benefits of COMBI

Besides providing safety in terms of health, all COMBI chairmen perceived benefits of joining COMBI because it is a good practice, expands networking, increases unity and ability to socialize amongst the community as well as early awareness for younger generation on health.

3.4 Publicity and Attraction on COMBI

All informants agreed that there was no continuous publicity on COMBI regardless of active and inactive sites, whereby marketing strategies (M-RIP) were not applied after

launching of COMBI because of discontinuation support from health department and budget constraints.

However, smaller scale publicity was still carried out in active sites after the discontinuation of financial support from health department because COMBI activities were still running or on-going. Publicity via flyers, letters and banners supported by public announcement made through mosque and health mobile unit were utilized inviting the communities to join activities especially in voluntary community participation in mass cleaning. COMBI chairmen indicated that publicity through printed materials especially banner was more visible to assist them in carrying out activities as the community was informed in advanced.

In order to attract communities' attention to join COMBI activities, publicity materials were placed at strategic locations such as shop, mosque, main road/junction, notice board and school. Through the informants' experiences, community activities e.g. family day, recreational, competition, spiritual that involve the whole family and provide refreshments will attract the community interests. As for the younger generation, sport activities would be able to attract them. In few sites, involvement from political assembly man was also able to attract the community.

According to the coordinator, publicity is very important because the members' perceived discontinuation of COMBI publicity as discontinuation of COMBI activities since there was no more dengue outbreak. Thus, the community was no longer concerned about dengue and this might affect source reduction activities.

3.5 Involvement of Coordinator

In certain sites, house to house visits were carried out together with health personnel. For instance, in one of the states, the COMBI voluntary team comprises of COMBI promoters from few sites with health staff jointly conducting house visits. Thus, most of the COMBI voluntary team members were not known by the communities and resulted in low level of acceptance amongst the communities towards COMBI voluntary team without the health staff. Therefore, according to the members, continuous involvement of coordinator during house visits is important in getting the support from the communities.

3.6 Factors Deterring to Maintain Strong Leadership

3.6.1 COMBI chairman

COMBI chairmen were appointed by health department or local council, automatic appointment by virtue of Village Development and Safety Committee (VDSC) leadership and on voluntary basis. Almost all COMBI chairmen are influential leaders as they are being appointed as village leaders, ethnic leaders or VDSC chairman, politicians or simply active and respected individuals in their sites. However, factors deterring COMBI chairmen from being active and causing the site to become inactive in the long run include migration, holding various portfolios, opposing political views, and feeling unappreciated thus threatening its sustainability.

3.6.2 COMBI coordinator

Almost all COMBI coordinators in this study are Assistant Environmental Health Officers from Vector Unit and only one coordinator was District Health Education Officer. Few important factors were highlighted by the coordinators as a hindrance to the sustainability of COMBI. According to them, they were assigned as COMBI coordinator and expected to work on weekends whereby it is not optional. Therefore, amongst the COMBI coordinators there were few coordinators willing to be coordinators whereas most of them were not as willing but they have no choice, as it was part of their duty.

As for health staff working in Vector Unit, they were overwhelmed with daily routine duties such as case investigation and preparation for fogging besides coordinating COMBI programme. They confessed that they have not enough time to do supervision in COMBI activities since they have to work until night and from Monday to Sunday, hence resulted in less commitment on COMBI programme. On top of that, the office vehicle always breaks down and shortages of drivers are causing difficulty for them to go to the community. They admitted going to the community during initial stage when COMBI was introduced but later they only managed when there is a dengue case.

The informants agreed that the community needs their support not only in terms of technical support but also moral support. It is important to the coordinators to join the communities' activities although it was not related to COMBI as

it will help in building rapport between the coordinators and communities and easier in getting the communities' corporations in the future. COMBI coordinators have to put an extra effort to maintain COMBI so it would not burn out and run its course. Other issues raised including shortage of health staff in the district e.g. Public Health Assistant and Health Education Officers.

3.6.3 Funding

Allocation of funding was also mentioned as a hindrance to the sustainability of COMBI. There is no special funding allocated for COMBI hence causing difficulty in carrying out activities. Funding is merely from the initiative of the communities whereby some allocation from health department is necessary to motivate the coordinators and communities as well. Changes in administration which referring to health department and political structure in the community could also threaten the sustainability of COMBI.

3.6.4 COMBI set-up and structure

The vast majority of informants declared that COMBI was initiated by MoH and established or activated during dengue outbreak. Only one chairman from the active site claimed that he initiated COMBI in his site because of dengue outbreak. This study also shows that most of the sites incorporate COMBI committee under VDSC, Neighborhood Committee and one site was under recreational committee, which was also established by the community. According to the informants, incorporating COMBI under this established committee would help in sustaining COMBI because COMBI activities were jointly carried out with the existing committee activities. Those active sites in COMBI are usually active in other activities.

The structured COMBI committee was led by the chairman usually the community leader, supported by the deputy chairman, secretary, treasurer and other committee members and promoters. It is very common for COMBI committees to also be COMBI promoters. In active sites, the COMBI committee was well-structured and has full strength of human resources.

Not surprisingly, the COMBI committee was not well structured with fewer human resources and was literally unknown by the community in the inactive sites. Most of inactive sites, there was no

treasurer since there was no fund allocated hence no budget presentation in COMBI meetings. If there were some allocations it was channelled to the existing committee because there was no specific account for COMBI.

3.6.5 Recognition

The COMBI chairmen have indicated the reciprocal needs which they seek for appreciation from the stakeholders. This is due to lack of recognition to COMBI chairmen and COMBI members although recognition in term of intangible incentives were given such as t-shirt, vest, cap, bag, or uniform and certificate of appreciation as identification to COMBI members to make them proud hence motivating them and others to join COMBI.

4. DISCUSSION

Lack of knowledge and understanding on COMBI amongst coordinators, chairmen and members were due to lack of proper training [18,19]. The existing COMBI training was emphasized on epidemiology of dengue and COMBI concept on social communication and not on social mobilization. This problem occurred probably because the skill to foster active community response in terms of participation, involvement and empowerment is limited [22].

A proper training on COMBI which supposedly imparted skills on mobilizing the community at all stages from problem identification over planning and implementation up to evaluation and also in the future direction of the dengue control programme is extremely important and also should be conducted from time to time because of the turnover among the coordinators, chairmen and members [23].

4.1 Leadership and Programme Champion

The role of COMBI chairman as a leader is very important to lead and mobilize the members and communities [24]. Chairman must have good leadership qualities e.g. good communicator and therefore will be supported by the community. But, most importantly, a chairman must be sincere in carrying out his responsibility as COMBI is a volunteer work. Almost all chairmen are self-empowered but lack the skills to empower the community. This issue needs to be addressed in order to sustain COMBI.

This study also clearly shows that, the active site with chairman who's championing in COMBI and

able to empower his community has succeeded in sustaining COMBI programme. But, when the chairman migrates, resigns or if any structural change in politics result in changes in leadership, the active sites became less active thus threatening sustainability. The advantages of programme champion led by strong, forceful individuals and also as community leaders are that their investment of energy and enthusiasm will often achieve more results in the short-term, while the downside relates to unclear implications for longer-term sustainability without such individuals [9].

The success of COMBI also depends on the commitment of COMBI coordinator as a key person from health department [23]. The interest and liking in community work among the coordinators resulted in committed and less committed coordinators, which could be associated with active and inactive sites and the sustainability of COMBI in those sites. The coordinator must continuously provide technical assistance, moral support and be responsible for monitoring and evaluation at local levels. They need to communicate well with the community whereas their supervisors must also demonstrate their commitment to these efforts. Structural change in administration resulted in changes in leadership and affecting COMBI as well. Therefore, efforts led by "programme champions" have substantial prospects for initial success, but shared authority and responsibility among several or many offer better prospects for long-term success [25,9].

5. CONCLUSION

In general, strong leadership that fully grasps the concept of community mobilization is more capable and confident in conducting COMBI and their success is evident [26].

The inability of leaders to enforce the committee in carrying out activities causes them to be incapable of initiating the COMBI programme [27]. At the same time, apprentices among members should be appointed in order to sustain the continuity of COMBI itself. Younger generations should be involved as they are active and productive and eventually become leaders in their community.

CONSENT

All authors declare that 'written informed consent was obtained from the respondents (or other

approved parties) for publication of this case report and accompanying images.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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