Research Article

Study on awareness about vector borne diseases and education about preventive measures in rural field practice areas of Kurnool medical college, Kurnool

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Abstract

Background: Vector borne diseases (VBDs) account for 17% of the estimated global burden of all infectious diseases. The most deadly VBD, malaria caused an estimated 627,000 deaths in 2012. The world's fastest growing VBD is dengue, with a 30-fold increase in disease incidence over last 50 years.

Objective: To create awareness about common VBDs in the villages through village volunteers and educate them about the measures to prevent the occurrence of the disease by community participation and behavioral change communication and to assess the impact of educational intervention.

Materials and Methods: This study was community-based longitudinal study conducted in five villages in the rural field practice area of Kurnool Medical College, Kurnool. Sample of 50 houses examined in each village before intervention and reexamined after conducting five educational intervention sessions with 1 week gap between each session for a total period of 5 weeks to assess the impact.

Result: A total of 250 villagers and public health workers from five villages participated in both pre-educational and post-educational intervention. There was significant improvement in the habits such as avoiding sleeping, cleaning water containers weekly, and covering of water storage tanks with lids.

Conclusion: It is concluded that with the intensified efforts toward creating a public awareness about VBDs, the measures taken to control vectors other than personal protection measures suggested that health education interventions are effective and remain a valuable tool in community-based vector prevention and control interventions.

KEY WORDS: Vector borne diseases, rural areas, awareness, preventive measures

Introduction

Vector borne diseases (VBDs) account for 17% of the estimated global burden of all infectious diseases. Malaria, the most deadly VBD, caused an estimated 627,000 deaths in 2012. In recent years they have emerged as a major public health problem in India, particularly dengue fever, Japanese encephalitis and malaria now occur in epidemic proportions almost on an annual basis causing considerable morbidity and mortality.[1] The world's fastest growing VBD is dengue, with a 30-fold increase in disease incidence over last 50 years. Every year there are more than 1 billion cases and over 1 million deaths from VBDs. In India, 27% population live in malaria high transmission area. The diseases are commonly in tropical and subtropical regions and places where access to safe drinking water and sanitation system is problematic. They are on the rise because of failure of these existing methods of control of vector and VBDs and the climate change. A steep rise of VBDs is due to several factors such as selection

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of insecticide resistant vector population, drug resistant parasite population, and lack of effective vaccines against VBDs.[2] Recently, it has been suggested that VBDs incidence is between 9 and 50 times greater than reported with approximately 13 fold under estimation of malaria-related mortality.[3] The failure to cap the resurgence of VBDs and the continuing increased incidence of them is warranting a more proactive approach for their prevention.

Vector is an important link in transmission of VBDs and thus, protection from vector serves as one of the best strategies for prevention in population. Environmental pollution, public health hazard, and insecticide resistant vector population indicate that the insecticides are no longer a sustainable control method of vectors and VBDs. Personal protection measures (PPMs) have become important tool against VBDs. A variety of PPMs are available including repellent creams, mosquito nets, mosquito coils, liquid repellents, electric rackets, mats, smokeless coils, intense sticks, and naphthalene balls. Under national VBD control program, government has introduced insecticide treated nets for the endemic communities.[4] Considering the increasing problem of VBDs, it is important that the people should be aware about various measures available and how to use them correctly. Success of these measures largely depends on the access, acceptability, and proper usage by the target population.[5] Further role of community participation in vector control is imminent. Community participation in turn depends on public awareness and knowledge toward the diseases and their prevention.[6] Therefore, for designing evidence-based effective prevention strategies, it is pertinent to study the existing knowledge of the population regarding the disease.

A large number of cases and few deaths were reported from the rural areas of Kurnool district including field practice areas of Kurnool Medical College in the recent years and there was dengue outbreak during July and August, 2014. So we made a humble attempt to create awareness regarding mode of transmission, preventive, and control measures and also to emphasize role of community participation and involvement of village volunteers in controlling VBDs in these areas.

Materials and Methods

This study was a community-based longitudinal study conducted in five villages (Peddapadu, Salkapuram, Munagalapadu, Mamidalapadu, Parla) in the rural field practice area (Parla RHC) of Kurnool Medical College, Kurnool from 1st July 2014 – 15th October 2014. The study subjects were village volunteers such community leaders, self-help groups, women volunteers, youth volunteers, Adolescent girls identified by anganwadi workers, school teachers, ASHA workers, Anganwadi workers, ward members, and household members. The sample size was 250 (50 from each village). Sample of 50 houses examined in each village before intervention and reexamined after conducting five educational intervention sessions with 1 week gap between each session for a total period of 5 weeks to assess the impact.

Procedure

Baseline study will be carried out by house-to-house visit with the help of identified village volunteers during first and second weeks. Sample of 50 houses examined in each village by observation as well as collecting data regarding socio-biological, environmental, and cultural factors related to VBDs. After completing baseline study, capacity building of village volunteers by educational intervention in all the five villages. Five sessions will be conducted in all the villages at weekly intervals using health education materials by group discussions and practical demonstrations by making house to house visits. After five sessions their knowledge and skills will be assessed. And also reexamining 50 houses to assess the impact, which is evident by change in attitude, practices, and behavior of household members. These people may be used for further activity and continuation of sustaining the activity. To educate the villagers about the measures to prevent the occurrence of disease by community participation and behavioral change communication through trained village volunteers as practical demonstrations.

Result

A total of 250 villagers and public health workers from 5 villages participated in both pre-educational and post-educational intervention, of which 96% people in the study community perceived mosquitoes as a problem. Most of the households reported using at least one PPM against vectors [Table 1].

It was observed from above table that habit of sleeping outdoors was significantly improved after education intervention. In this study, the respondents had a behavioral change in their practice of cleaning of water containers weekly varying from 66.4% before intervention to 82.8% after intervention and it was highly significant. In this survey, the frequency of storage tanks covered with lids was 48.4% before the educational intervention has increased up to 74.8% after intervention which was significant. In this study, elimination of breeding sites was 55.2%. But, however, the difference between the pre-intervention and post-intervention was not significant.

In this survey before intervention there was fair knowledge on diseases spread by mosquitoes, breeding places, and personal protective measures among the village volunteers. But after the intervention their knowledge improved to a great extent as shown in above table. In this study, the acceptance of IRS has improved from 12% in pre-intervention to 63% during post-interventional study ($p < 0.001$), which is significant. Usage of PPMs was improved after education intervention among both literates and illiterates.

Table 1: Assessing the effect of educational intervention on habits of study population

Habits of study population	Before intervention	After intervention	*P*-value
Habit of sleeping outdoors	162 (64.8%)	63 (25.2%)	0.0000
Cleaning of water containers weekly	166 (66.4%)	207 (82.8%)	0.0000
Water storage tanks covered with lids	121 (48.4%)	187 (74.8%)	0.0000
Elimination of breeding sites in the village	125 (50%)	112 (44.8%)	0.2
Awareness regarding diseases spread by mosquitoes	50 (32%)	145 (93%)	<0.0001
Awareness regarding breeding places	41 (26%)	139 (89%)	<0.0001
Awareness regarding personal protective measures	142 (91%)	156 (100%)	<0.0001
Awareness regarding free blood examination in government health centers	34 (22 %)	139 (89 %)	<0.0001
Free treatment at all levels	106 (68 %)	142 (91 %)	<0.0001
Acceptance of IRS	19 (12 %)	98 (63 %)	<0.0001
Usage of personal protective measures among illiterates	109/170 (64%)	131/170 (77%)	0.008
Usage of personal protective measures among literates	57/80 (71%)	66/80 (82%)	0.09

Discussion

The study was conducted in rural field practice areas of Kurnool Medical College, which are endemic to malaria and other VBDs. The majority of respondents were farmers with more than 90% of them facing mosquitoes as a problem. The educational program induced participants to gain substantial knowledge of vector ecology and disease epidemiology and to protect themselves against vector borne infection using environmentally sound measures for controlling and preventing them. The success of intervention can be attributed to the following characteristics of education program:

(a) A community-based education that enhanced residents understanding of the VBD problems in their own community.
(b) A participatory approach that allowed participants to gain hands on experience with proper measures to be taken.

Our study findings coincide with the following study: A cross-sectional study was conducted in rural and urban areas of Northeast Thailand by Phuanukoonnon et al.[7] and found the containers were mostly infested with larvae (rural – 37.2%, urban – 35%). The mosquito indices exceeded the target indices for dengue control with the Breteau Indices of 201 and 113, and Container indices of 25 and 28 in rural and urban areas, respectively. Keeping fish was found to be effective method of control. In this study, the respondents had a change behavioral change in their practices varying from 66.4% before intervention to 82.8% after intervention and it was highly significant. A similar survey was conducted in Shuaib et al.[8] in 2010, where covers for the storage tanks were the most frequently encountered protection, 62.2% of the containers have been covered of all the containers, and these containers were protected by abate, a cover. In our survey, the frequency of storage tanks covered with lids was 48.4% before the educational intervention has increased up to 74.8% after intervention. A similar study was conducted by Yasuoka et al.[9] where the elimination of breeding sites was up to 49.3%. In our study, elimination of breeding sites was 55.2%. But, however, the difference between the pre-intervention and post-intervention was not significant. A similar study was conducted by Arpit et al.[10] among the link workers of public health centers where the overall knowledge was increased from 15.7% to 25.6% after intervention ($p < 0.0001$). Before intervention no village volunteer had good knowledge, whereas 37% had poor and 63% had fair knowledge regarding mosquito borne diseases and control measures which was improved after training good knowledge (61%) and fair knowledge (39%). In our survey, before intervention there was fair knowledge on diseases spread by mosquitoes, breeding places and personal protective measures among the village volunteers. But after the intervention their knowledge improved to a great extent as shown above. A similar KAP study was conducted by where the acceptance has Tobay et al.[11] improved significantly from 0.7% in pre-intervention to 93.5% during post-intervention survey ($p < 0.001$). In our study, the acceptance has improved from 12% in pre-intervention to 63% during post-interventional study ($p < 0.001$) which is significant.

Similar educational intervention programs were conducted globally where these VBDs had a great impact on public health especially in the rural areas. The findings of this study were similar to a malaria indicator survey conducted in Bhutan[12] and survey conducted in Swaziland,[13] Malaysia,[14] and Vietnam[15] with majority of the respondents enlightening their knowledge about the vector control management and seeking health facility as the first line of treatment for malaria. However, the community knowledge and practices on vector

prevention and control were better in this study as compared to the studies conducted in Nepal[16] and in India.[17] This could be due to better health-care delivery systems through the public health services. Other studies[18-20] also showed that if health education was planned after proper need assessment, implementation and evaluation by involving community and community leaders throughout the process, it can show good results even in illiterate, rural communities.

Participants in the educational intervention were shown to increase use of environmentally useful methods for vector control and disease prevention such as breeding site elimination and environmental clean-up. A correlation between knowledge, self-reported actions, and vector breeding at residences was demonstrated by monitoring the condition of natural breeding sites after the educational intervention. The community-based approach is considered to have played an important role in creating this link. Level of literacy rate was associated with the knowledge of both vector ecology and disease epidemiology. This study confirms that public health education can be a useful prevention tool for the vulnerable sector of society that is prone to be affected by VBD epidemics. Such community empowerment interventions can be used not only in VBDs but could be of value across many public health issues such as improving mother and child health, HIV/AIDS, etc.[21-23]

Limitation

This study was not able to cover whole population in the villages due to time and resource constraints.

Conclusion

It can be concluded that long-term vector control strategy should be based on generation of increased awareness on the disease and various methods of its control. Health-care access and administrative commitment should be increased for prosperity in resource poor settings. Participation in educational intervention program led to improved knowledge of vector ecology and disease epidemiology, and prevention. With the intensified efforts toward creating a public awareness about VBDs, the measures taken to control vectors other than PPMs suggested that health education interventions are effective and remain a valuable tool in community-based vector prevention and control interventions.

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