Original Article

Improving Community Health Workers' knowledge and behaviour about proper content in malaria education

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Abstract

Objective: To enhance knowledge and behaviour of Community Health Workers (CHWs) regarding adequate educational content of malaria.

Methods: A quasi-experimental study was undertaken in 2003 in Sistan va Baluchestan province, Islamic Republic of Iran. Sixty-four CHWs were selected in both intervention and control groups. A questionnaire consisting of 17 open-ended questions was developed to assess CHWs' knowledge and behaviour about adequate content needed to be taught to the community. A multipurpose programme was held for the intervention group. Two follow-ups were carried out after three and six months. The data were analyzed using t-test, paired t-test, and ANOVA for repeated measurement.

Results: The knowledge and behaviour about proper content increased considerably after three months in both the groups. The knowledge increased in the intervention group significantly as compared to control group.

Conclusion: The results showed these simple and inexpensive interventions effect to improve proper content in malaria education. The findings highlight the importance of considering the proper content in malaria education when planning CHWs education programmes (JPMA 59:395; 2009).

Introduction

Health workers' education has been considered most important historically. However, appropriate and comprehensive education has become more difficult to achieve.[1] Health workers need educational materials that are evidence based and ethnically relevant.[2] It is important for educators to know what learners should know.[3] More attention needs to be focused on the preparation of educational materials to make them understandable.[4]

If learners are not able to read or comprehend the education materials provided to them, they will be useless.[5] In addition, there is a strong need for learners to gain in depth knowledge and understanding of the important facts, ideas, principles and concepts. Different studies have been conducted to assess content adequacy of educational materials.[6-9] These studies have shown need for modification and to be written at more appropriate reading levels.[10] Most important, good quality educational materials help promote the relationship between the learners and the health workers as well as enhance knowledge and self-care.[11] Most health workers tend to give too much information on too high level for learners to understand. Health workers who speak in similar language, repeat their instructions and demonstrate key points enhance their learners' understanding.[12] Few health workers are trained in how to produce effective and appropriate health education materials.[13] Studies showed positive influence on knowledge and behaviour of health workers by education.[14-16]

In Iran, Community Health Workers (CHWs) called Behvarzes chosen from among natives, high school graduates from rural areas who are qualified and confirmed by influential village person. They are trained in Behvarz Training Center for two years, one year theory and one year practical. A study in this area showed that education by Behvarzes had a significant role in increasing the awareness of subjects but did not have an effective role in preventive behaviours.[17]

About 50 to 70 % of malaria cases in Iran have been reported in Sistan va Baluchestan (Sistan va Baluchestan Province Health Centre, 2003). The Sistan va Baluchestan province is a 181,470 square kilometers area with the common border of 1265 km with Afghanistan and Pakistan. In 2002, its Annual Parasite Incidence (API) was 8 per 1000.

Studies have often focused on written education materials, whereas oral education is the main aim of community programmes in many cases especially among illiterate people. Malaria education is one of prevention strategies in malaria areas. CHWs usually deliver health messages through face-to-face verbal communication methods. Although majority of community education by health workers is presented directly, no article has examined educational materials to ascertain whether they are appropriate for the target audience.

This study was conducted to enhance CHWs'

knowledge and behaviour about proper contents in malaria education through a training programme.

Methods

A quasi-experimental study was undertaken between January and September 2003 in Nikshahr and Sarbaz districts, Sistan va Baluchestan province, Islamic Republic of Iran. Thirty-two CHWs working in Nikshahr were selected as the intervention group. For the control group, 32 CHWs were selected in Sarbaz. The API, socio-economic, and culture in these districts were similar. Some probable confounding variables such as age, gender, education level, and work history of CHWs were matched.

The questionnaire had been designed to measure CHWs' knowledge about the essential educational materials in malaria needed to be taught to the community. It includes 18 questions and it was divided into different subjects in malaria education. Content and face validity of the questionnaire was considered in a panel by technical committee. They considered all of the items and discussed about necessity, clarity, and perceptibility of questions. Then revised version was sent to an infectious diseases specialist and two health experts to confirm applicability and readability of the questionnaire. The reliability analysis was done using completed questionnaires in the first stage of the intervention group. After excluding one question Alpha Cronbach increased to 0.69. The final questionnaire included 17 questions, one question about signs of malaria, two questions about malaria high-risk people, nine questions for malaria transmission and vector's lifestyle, five questions about preventive methods which CHWs used in malaria education programme.

Each question had a score 0.5 or one. Five questions, which needed to say just "yes or no", could get 0.5 and others were open-ended questions and they could get one if the answer was correct completely, therefore, total score was 14.5. A technical committee in a panel had determined the correct answers of open-ended questions. This committee considered correct answers of each question, and then divided each answer to several main parts. Majority of questions had three or four parts to be answered, so each part could get 0.33 or 0.25 score.

A two-day workshop was held for the intervention group to increase a range of outcomes such as their knowledge about appropriate education content. A manual of Active Teaching Skills in Malaria Education was developed and given to each participant (it is online available in: www.emro.who.int/tdr). Two follow-ups were done after three and six months for the intervention group and only one follow-up after three months for the control group.

To analyse the data, questionnaires were marked by principal investigator twice to be accurate. Then data were analyzed by appropriate test such as t-test, paired t-test, and ANOVA for repeated measurement by GLM (General Linear Model) using SPSS version 12.

The CHWs were informed about the project's objectives, its benefits, and the duration they required to participate in the project. Their right to withdraw from the study was explained to them. The Research Ethics Committee of University of Medical Sciences approved the conduct of this project.

Results

There were 10 female and 22 male CHWs, Behvarzes, in both intervention and control groups. The average ages in the intervention group and the control group were 28.9±5.0 and 30.6±5.6 years, respectively. The average years of schooling in the intervention and control groups were 8.8±2.2 and 8.2±2.7 years, respectively. The average years of work history among the intervention and control groups were 5.3±4.3 and 6.3±5.5 years, respectively. The intervention and control groups were similar relating to their sex, age, education level, and work history (Table 1).

Table-1: Characteristics of CHWs in intervention and control groups.

Characteristics	Intervention group (N=32) Number (percent)	Control group (N=32) Number (percent)	p-value
Age (year)			
Range	20-41	20-46	
Mean (SD)	28.9 (5.0)	30.6 (5.6)	
20-25	9 (28.1)	9 (28.1)	
26-30	10 (31.3)	10 (31.3)	p=0.21
31-35	11 (34.4)	11 (34.4)	
>=36	2 (6.3)	2 (6.3)	
Education level (year)			
Range	12-May	12-May	
Mean (SD)	8.8 (2.2)	8.0 (2.7)	
5-8	20 (62.5)	20 (62.5)	p=0.18
9-12	12 (37.5)	12 (37.5)	
Work history (year)			
Range	14-Jan	19-Jan	
Mean (SD)	5.3 (4.3)	6.3 (5.5)	
1-5	20 (62.5)	20 (62.5)	p=0.42
6-10	7 (21.9)	7 (21.9)	
>=11	5 (15.6)	5 (15.6)	

SD=Standard deviation
CHW=Community Health Worker

Thirty-two CHWs participated in the education workshop in the intervention group. Three CHWs in the three-month follow-up and one of them in the six-month follow-up were on vacation, so for repeated measurement analysis 28 cases were entered.

The repeated measurement analysis showed significant difference between different times, the paired t-test

was used to compare the measurements in every two observation times (Table 2). The knowledge about malaria educational content increased considerably after three months ($p<0.001$), whereas CHWs' knowledge from three to six-month follow-up did not show significant difference. Also, a significant increase was observed in control group after three months ($p=0.003$).

Table 2: CHWs' knowledge about malaria educational content over the time.

Groups Stages	Intervention group (N=28) Mean (SD)	Control group (N=32) Mean (SD)
Prior to the intervention	7.05 (2.1)	6.02 (0.3)
3-month follow-up	9.81 (1.6)	7.09 (6.3)
6-month follow-up	9.93 (1.9)	—
Repeated measurement results	p<0.001	p=0.003

SD=standard deviation.

The mean difference of knowledge before and three months after intervention were showed significant difference between the intervention and control group ($p=0.002$). It means that knowledge increase in the intervention group was more than the control group.

The results indicated participants' knowledge about malaria education enhanced from 48.6% before intervention to 68.5% six months after intervention. The greatest increase was observed in proper content about malaria vector and its lifestyle with 30% increase. One of the essential capabilities of CHW is making connection between contents while teaching. This ability helps learners to understand subjects better and to follow malaria-preventive behaviours. This ability was assessed using some questions for example 93.9% of CHWs before intervention declared that people need to be taught about Anopheles' life-style, but when they were asked what content is necessary and how to use this content to explain about malaria-preventive behaviours, 62% of answers were acceptable which increased to about 75% six months after intervention. Also they were asked to describe how people's knowledge about malaria transmission from malaria patient to healthy people assists learners to adhere malaria-preventive behaviours. Before intervention 15% of participants explained correctly which enhanced to 54.8% six months after intervention.

Discussion

The present results showed before training programme, CHWs' skill about selection of proper content in malaria education was 48.6%. It indicated that CHWs require an ability to choose the educational content properly to overcome this problem. The Pan American Health Organization has developed an effective methodology to orient the design, use, and evaluation of health education materials.[13]

Some of CHWs mentioned that in education sessions when they describe the different malaria parasites, it confuses the audience. Many contents used in malaria education may not meet the true needs of the target groups. Many studies concluded that most educational materials are written at higher levels for the general public[7,9,10,18] and some included misleading or incorrect information.[6,8] It was observed in the panel that experts in malaria control had different opinions about responses to questions. Such disparities demonstrated that the proper content in malaria education were not considered.

Six months after intervention CHWs' skills to select proper content increased significantly. This is similar to another study that revealed education intervention was successful in both increasing knowledge and changing behaviour.[19] In the control group, mean knowledge increased, but not as much as in the intervention group. Because of a high standard deviation, it was concluded that a small number of CHWs in the control group improved their knowledge. This could be related to filling of the questionnaire which later made them search for the proper answers.

The linking ability between the information about malaria and malaria-preventive behaviours plays an essential role in teaching sessions. This study showed CHWs' ability to explain this bridge linking which increased after the training programme. The finding indicated that CHWs know about education content more than how to link this information follow malaria-preventive behaviours. The findings highlight the importance of considering the proper content in malaria education when planning community and CHWs' education programmes.

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