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The Effects of a Training Program on Teaching Behaviour of Community Health Workers about Malaria in Sistan va Baluchistan Province, Islamic Republic of Iran

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This study aimed to assess the effects of a training program on teaching behaviour of CHWs in malaria education. In 2003, a quasi-experimental study was conducted in rural areas of Sistan va Baluchistan province, Iran. Each of the intervention group and the control group consisted of 32 CHWs (Behvarzes). Their teaching behaviours prior to the intervention were assessed using a designed checklist and the direct observation of actual conduct of a malaria education session. A training program was designed to improve teaching behaviours of CHWs in rural Iran. The intervention group was followed up twice at three and six months after the intervention. The control group was followed up once after three months. There was a statistically significant improvement of teaching behaviours among the intervention group at both follow-ups. There was also a statistically significant difference of teaching behaviour between the intervention group and the control group at three-month follow-up. The teacher-centred learning behaviours showed more improvement than learner-centred teaching behaviour. It is recommended that the education program for CHWs be reinforced with subjects to improve the quality of community education.

Key words: Teaching behaviour, Community Health Worker, Community Malaria Education, teacher-centred learning, learner-centred teaching, Iran

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INTRODUCTION

The Islamic Republic of Iran with a population 68 million and a moderate endemic of malaria is one of the countries of WHO's Eastern Mediterranean Region Organization (EMRO). The EMRO has aimed to reduce the morbidity of malaria in this region by 50% by 2010^[1]. People's behaviour has been identified as one of the factors contributing to malaria^[2]. Studies showed people's knowledge of malaria and its preventive measures were low and this has negative implications for an integrated control program^[3,4]. In addition, different studies showed that knowledge of malaria increases significantly after education program^[5]. Therefore, proper health education is necessary to achieve control of malaria^[6,7].

In Iran Behvarzes (CHWs) are chosen among native high school graduates who have qualifications and confirmed by key village's people. They are taught in Behvarz Training Centre two years, one year theoretically and one year practically. They provide primary health care services including active roles in malaria control and treatment. They are often the first point of contact for many remote communities. One of their responsibilities is community education. Studies in Sistan va Baluchistan province, Iran, showed low knowledge and low malaria-preventive behaviours among people^[8,9]. Over 60% of Behvarzes used the traditional approach of giving advice or providing information through lectures, which is a one-way communication with a CHW-conveyed message. The CHWs' knowledge about learner-centred teaching was low. They also reported that the methods they used were repetitive and boring for both people and themselves^[10]. A number of studies mentioned that involvement of learners in learning is more effective^[11,12] in the delivery of health education. There are many teaching methods, which involved learners and improved the quality of community education^[13,14].

This study aimed to describe a training program for CHWs about teaching methods especially Teacher-centred Learning (TCL) and Learner-centred Teaching (LCT). The second aim was to assess CHWs' teaching behaviours after attending the training program and compare them with the teaching behaviours of the control group.

MATERIALS AND METHODS

Study setting: Fifty percent of malaria cases in Iran have been reported in Sistan va Baluchistan Province^[15]. The Sistan va Baluchistan 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 8/1000. The study was conducted in two districts: Nikshahr and Sarbaz as an intervention area

and a control area, respectively. Sarbaz with the API of 37.8/1000 was the highest incidence in the province^[15]. Both districts are remote areas and the poorest districts in the province.

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

Training program: A two-day workshop was held for the intervention group to increase their knowledge about the learning and teaching process as well as different teaching methods. One day was allocated to teach CHWs about the importance of teaching methods in community education and the role of health educator to involve learners in learning process. Both TCL and LCT were described and how they could be applied in a community. The emphasis was on the LCT to involve learners in the learning process. The CHWs were divided into four discussion groups to take part in the role-playing demonstration. All CHWs were encouraged to use these new LCT methods in a ten-minute role play about malaria education. The weak and strong points of their presentation were discussed. At the end they selected one member of their group to demonstrate teaching behaviours using role-playing to all of the participants. Members of scientific board of Zahedan School of Health conducted this program. A Manual of Active Teaching Skills in Malaria Education was developed and given to each participant (www.emro.who.int/tdr). Two follow-ups were done after three and six months for the intervention group and one follow-up after three months for the control group.

Measurement tools: A 21 item checklist was designed and sent to three health experts to obtain their opinions about its appropriateness. A technical committee included two health education specialists, one epidemiologist and one health expert considered the content validity of this checklist. Factor analysis was also used and the checklist reduced to 13 items. These items were divided into two categories: Items which reflected a TCL behaviour and items which reflected LCT behaviours (Table 2). Direct observation was used to assess the occurrence of LCT and TCL behaviour during actual malaria education by the CHWs. Each item was given a score of one if the behaviour occurred and zero if the behaviour was not demonstrated. In order to reduce an interpersonal

variability, a group of eight CHWs were observed by one health expert throughout the study process. Therefore, a total of eight health experts, four in each group, were taught about how to complete checklist. The CHWs were requested to conduct a malaria education class in their own community for 10 to 15 min. The health expert observed the conduct of teaching without interfering. The Cronbach's Alpha for seven items assessing the TCL category was 71% and for six items assessing the LCT was 63.8%.

Statistical methods: Each checklist item had a possible score of one with the maximum obtainable score of the checklist being 13. The data was then analysed by the paired t-test and the student t-test.

Ethical clearance: The CHWs were informed about the project's objectives, its benefits and the time they would be required to participate in the project. Their right to withdraw from the study was explained to them. The Research Ethics Committee of Zahedan 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 of the intervention group and the control group were 29 and 30 years, respectively. The average years of

Table 1: Characteristics of CHWs in intervention and control groups

| Characteristics (Year) | Intervention group (N=32) (%) | Control group (N=32) (%) | Results of t-test |
|------------------------|-------------------------------|--------------------------|-------------------|
| Age | | | |
| Range | 20-41 | 20-46 | |
| Mean (SD) | 28.9 (05.0) | 30.6 (05.6) | t=1.28 |
| 20-25 | 9 (28.1) | 9 (28.1) | df=62 |
| 26-30 | 10 (31.3) | 10 (31.3) | p=0.21 |
| 31-35 | 11 (34.4) | 11 (34.4) | |
| ≥36 | 2 (06.3) | 2 (06.3) | |
| Education level | | | |
| Range | 5-12 | 5-12 | |
| Mean (SD) | 8.8 (02.2) | 8.0 (02.7) | t=1.37 |
| 5-8 | 20 (62.5) | 20 (62.5) | df=62 |
| 9-12 | 12 (37.5) | 12 (37.5) | p=0.18 |
| Work history | | | |
| Range | 1-14 | 1-19 | |
| Mean (SD) | 5.3 (04.3) | 6.3 (05.5) | t=0.81 |
| 1-5 | 20 (62.5) | 20 (62.5) | df=62 |
| 6-10 | 7 (21.9) | 7 (21.9) | p=0.42 |
| ≥11 | 5 (15.6) | 5 (15.6) | |

schooling of the intervention and control groups were 8.9 and 8.2 years, respectively. The average years of work history among the intervention and control groups were 5.5 and 6.3 years, respectively. The intervention and control groups were similar with regard to their sex, age, education level and work history (Table 1). Table 2 shows the increase of TCL behaviours in the intervention group. Table 3 shows in the intervention group the mean score of TCL behaviours was 1.4 prior to the intervention. The three-month follow-up showed considerably increase score to 4.34 (p<0.001) and to 4.94 at six months after the intervention. This was significantly higher than the score of three-month follow up (p=0.007).

Table 2: Number and percentage of CHWs who conducted each teaching behaviour at different stages of the study

| Statement | Intervention group | | | Control group | |
|--|-------------------------------|------------------------|----------------------|-------------------------------|------------------------|
| | Prior-intervention (N=32) (%) | Three month (N=29) (%) | Six month (N=29) (%) | Prior-intervention (N=32) (%) | Three month (N=29) (%) |
| Teacher-centre Learning (TCL) | | | | | |
| CHW moves around the class | 3 (09.4) | 25 (86.2) | 26 (089.7) | 18 (56.3) | 10 (34.5) |
| CHW listens learners carefully | 8 (25.0) | 23 (79.3) | 27 (93.1) | 17 (53.1) | 18 (62.1) |
| CHW does not reject learners' idea directly | 0 (00.0) | 18 (62.1) | 23 (079.3) | 6 (18.8) | 8 (27.6) |
| CHW uses pictures while teaching | 1 (03.1) | 7 (24.1) | 22 (075.9) | 16 (50.0) | 9 (31.0) |
| CHW asks questions while teaching | 24 (75.0) | 26 (89.7) | 29 (100.0) | 20 (62.5) | 21 (72.4) |
| CHW evaluates the advancement of the learning | 8 (25.0) | 19 (65.5) | 16 (055.2) | 13 (40.6) | 13 (44.8) |
| CHW informs learners about learning advancement | 1 (03.1) | 8 (27.6) | 10 (034.5) | 5 (15.6) | 15 (51.7) |
| Learner-centre Teaching (LCT) | | | | | |
| Majority of learners are active in class | 3 (09.4) | 13 (44.8) | 12 (041.4) | 13 (40.6) | 13 (44.8) |
| Learners express their beliefs freely | 2 (06.3) | 18 (62.1) | 22 (075.9) | 18 (56.3) | 21 (72.4) |
| CHW encourages passive learners to be active | 0 (00.0) | 8 (27.6) | 12 (041.4) | 12 (37.5) | 11 (37.9) |
| CHW uses brainstorming method | 2 (06.3) | 3 (10.3) | 3 (010.3) | 0 (00.0) | 0 (00.0) |
| CHW uses small group discussion (buzz group) | 0 (00.0) | 3 (10.3) | 1 (003.5) | 0 (00.0) | 1 (03.5) |
| CHW gives opportunity to learners to exchange idea | 1 (03.1) | 14 (48.3) | 25 (086.2) | 4 (12.5) | 3 (10.5) |

Table 3: Mean±SD of teaching behaviours

| Teaching behaviour | Possible range of score | Intervention group Mean (SD) | | | Control group Mean (SD) | |
|-------------------------|-------------------------|------------------------------|------------------|----------------|-------------------------|------------------|
| | | Prior- intervention N=32 | Three-month N=29 | Six-month N=31 | Prior-intervention N=31 | Three-month N=32 |
| Teacher-centre learning | 0-7 scores | 1.40 (1.1) | 4.34 (1.6) | 4.94 (1.5) | 3.07 (1.8) | 2.94 (1.9) |
| Learner-centre teaching | 0-6 scores | 0.25 (0.8) | 2.04 (1.6) | 2.42 (1.4) | 1.52 (1.1) | 1.53 (1.2) |
| Teaching behaviour | 0-13 scores | 1.66 (1.6) | 6.38 (2.8) | 7.35 (2.7) | 4.58 (2.1) | 4.47 (2.5) |

In the control group the average score of TCL behaviours was 3.07, which was slightly higher than the average score of 2.94 after 3 months. The majority of behaviour in the control group was unchanged compared with their behaviours at the beginning of the project. Many LCT behaviours showed an increase in the intervention group. Table 3 shows the mean score of LCT behaviours of 0.25 prior to the intervention. At three month follow-up, the score increased significantly to 2.04 ($p < 0.001$) and with the mean score of 2.42 ($p = 0.201$) at six-month follow-up. In the control group the mean score of LCT behaviours was 1.52 prior to the intervention and changed very little to 1.53 at 3 months after intervention.

Overall, the intervention group showed a 43.8% increase in all the teaching behaviours. This increase was 50.6% in the TCL behaviours and 36.2% in the LCT behaviours, separately.

DISCUSSION

The findings of this study showed that the training program has been effective in changing the teaching behaviours of CHWs in community malaria education. This might have occurred due to role-playing method used in the training program. Initial perceived need of CHWs for innovation in education could also contribute to the program outcomes.

A higher level of improvement was observed in TCL behaviours that this might be because it was easier to change the CHWs' behaviours than that of the learners. In addition the CHWs had been taught TCL methods in their education institutes.

There was less change in the LCT behaviours. The changes could be complicated which required repeated practices especially the behaviours of using group discussion and using brainstorming. The important role of learners in LCT styles was also considered in these behaviours changes. The conduct of LCT required mutual interaction between teachers and learners. As the community used to be passive learners, it would take time to change attitude and behaviours to be active participants during the conduct of the education session.

All education organizations, which are responsible for training CHWs, should consider the issue of applying the principle of LCT in their curriculum. A study by Shultz and Amundson^[16] show those who have collected their information by active teaching are significantly more likely to use more active teaching methods. It is anticipated that medical students and allied health experts will be teachers of CHWs after their graduation. It should be beneficial to include the principles of learner-centred teaching in the

current education curriculum and continuing education of medical and allied health personnel.

The main limitation of this study was a relatively short observation that might not allow the CHWs to apply all expected teaching behaviours that they learnt during the training program.

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