

Original Article



# Effectiveness of peer assisted learning in improving HIV knowledge, attitude, and perception among community health workers

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## Article info

### Article History:

**Received:** December 10, 2022

**Accepted:** May 5, 2023

**Published:** August 29, 2023

### Keywords:

Community health workers, HIV/AIDS, Peer-assisted learning, Knowledge, Attitude, Perception

## Abstract

**Background:** Community health workers (CHWs) act as a bridge between community and clinical care in caring for HIV patients. This study aimed to evaluate the effectiveness of peer education in improving HIV knowledge, attitude, and perception of CHWs in Babol, Iran in 2019.

**Methods:** This was a quasi-experimental study conducted among CHWs in the health centers of Babol, Iran. The city was divided into two areas of the North and the South according to the geographical map. Then, based on the list of the health centers in each of the areas, one health center was randomly selected and assigned to either the experimental or the control group.

**Results:** Following peer education, all study variables including knowledge score, attitude, and perception about HIV-related issues significantly improved in the experimental group compared to the pre-intervention phase ( $P=0.002$ ,  $P=0.02$ , and  $P=0.00$  respectively). The most significant change was in misconception score with a approximately large effect size (0.78), presenting an increase of 95.53% from 15 to 29.33 after the intervention, while attitude and knowledge respectively presented 85.04% and 81.07% increase with a smaller effect size of 0.57 and 0.52.

**Conclusion:** In the study peer education proved to be an effective strategy in improving the knowledge, attitudes, and perception of CHWs concerning HIV/AIDS. Therefore, the peer-to-peer training model can fill a critical gap in the training of CHW based on the idea that not only do the CHWs themselves need to enhance their knowledge of related topics but they also need to train others. In turn, this will result in providing cost-effective health promotion and prevention services in a more culturally appropriate manner.

## Introduction

HIV is regarded as a leading public health issue worldwide, having claimed 38.4 million lives so far and 1.5 million newly infected people with HIV in 2021. Despite a global decline in new HIV infections, the HIV pandemic is still affecting many people in Iran. According to the Iranian Ministry of Health and Medical Education reports, 59000 HIV-infected patients lived in Iran in 2019 with 400 new infected cases each year and 2500 AIDS-related mortalities.<sup>1,2</sup> Community health workers (CHWs) act as a bridge between community and clinical care in caring for HIV patients and can identify structural inequalities, HIV-related stigma, and discrimination that endanger people living with the virus.<sup>3</sup> To reduce existing inequities and decrease the number of new infections, community-based interventions are required with a particular emphasis on

improving treatment access for HIV patients.<sup>4</sup>

In achieving the mentioned goals, CHWs play a crucial role in making an effective connection between HIV patients and necessary healthcare.<sup>5</sup> In fact, an effective integration of CHWs into the HIV primary care system entails appropriate training and supervision arrangements with cultural responsiveness toward the complex medical and social needs of infected people.<sup>6</sup> Developing a participatory practice-based curriculum allows CHWs to address significant access barriers to HIV services and act as an important facilitator for vulnerable populations to increase their access and affordability.<sup>7</sup> Following the Alma-Ata conference in 1978 and the emphasis on primary healthcare, the World Health Organization highlighted the role of CHWs in addressing community health needs, referring populations for HIV testing,

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linking them to care, providing psychosocial support, and making referrals to other services.<sup>8</sup>

The Zimbabwe study for Enhancing Testing and Improving Treatment of HIV in Children (ZENITH) evaluated the effect of a community-based intervention offered by CHWs to caregivers of children living with HIV. Study results affirmed that home visit by CHWs is a helpful mechanism for providing social support and adherence to antiretroviral therapy among children.<sup>9</sup> Similarly, previous systematic reviews emphasized the indispensable role of CHW interventions in HIV prevention; provision of adequate care, and patient medication adherence.<sup>10-15</sup> Likewise, findings of a systematic review by Mushamiri et al revealed that community-based interventions implemented by CHWs improved HIV prevention and treatment outcomes significantly.<sup>16</sup> Furthermore, the usefulness of strategies such as training of community champions, peer-to-peer education, community-based follow-up care, home-based care, psychosocial support, and integrated care for mothers and children has been affirmed. Actually, community-based primary health care was highlighted as a key approach to providing preventive and curative health services to the community level beyond the health facility level and therefore meet the gap in access to HIV services.<sup>17</sup> In another study, the barriers to community-based interventions in improving HIV-related health outcomes were mentioned as stigma caused by AIDS, lack of respect for CHWs, inadequate number of CHWs and poor job training, poor stakeholders' involvement, poor access to healthcare services, insufficient incentive mechanisms and lack of support and supervision.<sup>18</sup>

In 1985, with the approval of Iran's parliament, all medical schools were integrated into the Ministry of Health and formed a new ministry called the Ministry of Health and Medical Education. Afterward, the auxiliary health workers (called Behvarz/es) began to offer relatively effective primary health care (PHC) services to villagers as the main staff in rural health houses. To improve their retention, successful training of Behvarzes/ CHWs has been accentuated through improving their access to basic training, effective coordination, and the insertion of CHWs programs at different levels of the health system.<sup>19,20</sup> However, evidence has provided strong support for the existence of potential challenges in the training process of CHWs. The fragmented approach in CHW training, lack of consistency in training programs, and variation in CHWs' roles and responsibilities were among the key factors contributing to challenges. To fill an important gap in CHW training, a peer-to-peer training model was introduced based on the idea that not only do the CHWs themselves need to enhance their knowledge of related topics but they also need to train others, resulting in delivering cost-effective health promotion and prevention services in a more culturally appropriate manner.<sup>21</sup> Today, much attention has been given to the use of Peer Assisted

Learning (PAL) in various fields of health sciences and most of the studies have confirmed the usefulness of this approach in terms of educational purposes.<sup>22</sup>

Since CHW peer training is hypothesized to be a supportive strategy for the robustness of standardized training, we conducted a study to compare the knowledge and attitude levels acquired by CHWs about HIV-related issues through two different methods of teaching (PAL and a classic training method).

## Materials and Methods

### *Design and the study sample*

This quasi-experimental, controlled before/after study was conducted in 2019 on CHWs in the health centers of Babol city. To do so, the city was divided into two areas of North and South according to the geographical map. Then, based on the list of health centers in each of the areas, one health center was randomly selected and assigned to either the experimental or the control group. Both groups were ensured to be similar in any factors that might impact the dependent variable. Given the Cochrane formula, the sample size needed for PHC workers was calculated to be 20 per group (N=40, in total). Through a random number generator, participants were randomly assigned to a control or experimental group. The former group received training via a traditional classroom-based approach, while the latter group engaged in a peer learning approach. A course plan was written for two groups. Both groups of CHWs received objectives, syllabuses, and reference material. Inclusion criteria for PHC workers were continued employment for the next year, at least one year of work experience, and willingness to participate in the study. In case of being absent from two consecutive training sessions, health workers were excluded from the study. Those who had received education about AIDS in the last year were excluded from the study. Before participating in the study, informed consent was obtained from each participant and data confidentiality was ensured. In the intervention group, information transition was between PHC workers and each of them acted as a teacher in one topic and as a student for other topics.

### *Measures*

All participants at the beginning of the study completed the demographic information form and International AIDS Questionnaire (IAQ) measuring four dimensions of HIV/AIDS awareness, factual knowledge, prejudice, personal risk, and misconceptions about HIV transmission. A Persian version of this questionnaire was validated and found to be reliable in Iran. In a study by Eskandari et al, the construct and concurrent validity and reliability of the international AIDS questionnaire were tested for Iranian students using confirmatory and explanatory factor analysis, and Cronbach's Alpha respectively. Correspondingly, the ratio of content validity was

estimated at 0.78 and the KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) was reported to be 0.84 approving the appropriateness of the correlation for the confirmatory factor.<sup>23</sup> At the end of the course, the participants also filled out the questionnaire as a post-test.

### Intervention and control groups

The peer education program was designed based on the theory of diffusion of innovation which suggests that peer educators better characterize the social structure of the target group and consequently are more likely to pursue the behavior of role models. Furthermore, the study intervention included a participatory education method through discussion and role plays which occurred in three groups of six PHC workers to increase their skills to protect themselves from risky behavior, through socialization between peers and adult mentors. The teaching topics were specified for them, and the students received advice from their professor concerning the topic of teaching, teaching methods, and improving teaching. A PowerPoint presentation, a discussion, and role play were the methods used by students in this group to teach each other. The traditional program consisted of 8 sessions, lasting 60 minutes each. We commenced the sessions by focusing on HIV as a controllable infectious disease and then explored general concepts on the function of the body's immune system, the characteristics of infectious diseases and their functional mechanisms, the comparison of HIV with other pathogens, the disease symptoms and diagnosis, and the role of medication on HIV/AIDS control. Using an approach that promoted interaction and participation, the peer educators presented these courses and the facilitators/ mentors assisted with preparation of the sessions, and group discipline.

### Statistical analysis

The pre-intervention questionnaire was administered to all control and intervention groups at baseline. Once sessions of the program completed, the post-intervention questionnaire was administered to intervention group. The program was run in 2019 and data were collected before and after one month of the intervention phase in mentioned study year. Then, using descriptive statistics and paired t-test, the data analysis was performed.  $P \leq 0.05$  was considered as significant difference.

### Results

The study evaluated 40 participants in two categories of individuals, including an experimental and a control group. Characteristics of study participants are shown in Table 1. Among primary health workers, 58.3% were females, 55.6% were below 35 years old and the majority (63.9%) lacked an academic education.

Table 2 depicts that before the educational intervention, there was no statistically significant difference between intervention and control groups in terms of knowledge,

**Table 1.** Basic demographic characteristics of control and experimental groups

Variables	Control group	Experimental group	
	No. (%)	No. (%)	
Age	<30	6 (21.5)	4 (14.3)
	30-35	5 (17.9)	5 (17.9)
	36-40	6 (16.6)	7 (19.3)
	>40	1 (12.04)	2 (24.09)
Gender	Male	7 (16.7)	8 (19.18)
	Female	10 (17.15)	11 (18.86)
Educational level	Diploma	10 (15.6)	13 (20.3)
	Academic education	7 (19.39)	6 (16.62)
Marital status	Single	4 (14.38)	6 (21.58)
	Married	17 (23.54)	13 (18)

attitude, statement and conception of CHWs ( $P > 0.05$ ); while after intervention, a significant difference was found between these groups in terms of study variables ( $P < 0.05$ ).

As presented in the table, following the educational intervention, all study variables including knowledge score, attitude, and trainees' conception improved significantly in the experimental group compared to the pre-intervention phase ( $P < 0.05$ ). Table 3 depicts the differences of study variables in the experimental group before and after peer education.

Based on the data, the most significant change was in misconception score with a approximately large effect size (0.78), presenting an increase of 95.53% from 15 to 29.33 after intervention, while attitude and knowledge respectively presented a 85.04% and 81.07 increase with smaller effect size of 0.57 and 0.52.

### Discussion

This research aimed to evaluate the effectiveness of PAL method in improving knowledge and attitude of CHWs working in healthcare centers of Babol, Iran in 2019. In fact, PAL was mentioned as an efficient way of training which allows trainers to share more experiential information that resounds more strongly with the peers' experiences.<sup>24</sup> Based on the results, an increase in CHWs' awareness, and attitude was statistically significant in the intervention group indicating a remarkable effect of peer education in the mentioned group. Similarly, in a systematic review by Medley et al peer education was reported to have a strong impact on changing HIV knowledge and attitudes. They also highlighted the role of this educational intervention in positively having impact on every aspect of the trainees' knowledge about HIV/AIDS; so that after intervention, the level of awareness about blood transfusion, sexual intercourse, and unsterilized sharp objects as modes of transmission of HIV significantly increased in the study group.<sup>25</sup> Peer education also revealed a significant impact on trainees' attitudes towards HIV/AIDS. Indeed, if

**Table 2.** Comparison of study variables pre-post intervention in experimental and control groups

Variables	Before intervention		P value	Post-test		P value
	Experimental	Control		Experimental	Control	
Knowledge	7.61±1.33	7.17±1.47	0.2	13.78±1.17	7.56±1.25	0.001
Attitude	11.5±5.19	10.39±5.29	0.05	21.28±1.13	11.06±4.22	0.01
Statements regarding the perception toward HIV/AIDS risks	7.33±1.08	7.33±1.08	0.1	13.06±1.63	7.33±1.08	0.02
Misconceptions about transmission of HIV	15±5.24	13.61±5.34	0.9	29.33±2.14	18.06±4.24	0.00

**Table 3.** Differences of study variables in the experimental group before and after peer education

Variables	Pre-intervention	Post-intervention	Change %	Effect size	P value
Knowledge	7.61±1.33	13.78±1.17	81.07	0.52	0.002
Attitude	11.5±5.19	21.28±1.13	85.04	0.57	0.02
Statements regarding the perception toward HIV/AIDS risks	7.33±1.08	13.06±1.63	78.17	0.22	0.00
Misconceptions about transmission of HIV	15±5.24	29.33±2.14	95.53	0.78	0.00

adequate training with supportive supervision is provided for students, positive behavioral changes can be achieved in an effective teaching environment. A study by Rajabiun et al introduced a comprehensive, participatory, and supervisory training curriculum which integrated CHWs into the HIV care team to create a practical learning experience and build the capacity of CHWs working with competing medical and social needs of HIV diagnosed people.<sup>26</sup> Likewise, a systematic review by Adams et al found a constant need for creating participatory learning methods to directly connect CHW training programs to health outcomes. The consequence of this training program reinforces CHW competencies in both PHC and HIV specialty care.<sup>7</sup> Another evidence about the impact of PAL method on CHW knowledge and attitude revealed that providing a learner-based teaching framework with real life scenarios and interactive training sessions could encourage sharing relevant information among participants through building communication skills.<sup>26</sup>

Proponents of peer education method believe that similar knowledge base between the learners and teachers known as cognitive congruence, is an important factor in the success of this training method. In fact, transmitting information through a common and understandable way for trainees is an innovative, self-directed learning technique which promotes information retrieval, critical thinking, clinical reasoning, and continuous education. In this method, learners act as a teacher and take a responsibility for their own learning in a safe environment. The method also reduces trainees' stress and anxiety and increases active participation in the learning process.<sup>27</sup> In line with these findings, van Rooyen et al mentioned PAL as an effective way of positioning peers in relation to each other as important information resources addressing the challenge of preparing competent professionals. In addition, PAL activities enable trainees to learn in context and from experience, where teamwork is integral to the individual health.<sup>28</sup> Regarding the CHWs' feeling about

the efficacy of PAL method, study findings affirmed a positive impact of the training approach on their knowledge acquisition and attitude toward capability development. By interacting with CHWs, the need to expand participants' awareness of capability as a learning approach to self development, personal awareness and understanding, and perceptions of acquiring new knowledge, skills and attitudes was highlighted.<sup>29,30</sup>

### Study limitations

Our results may not be generalized to all health care settings due to a small sample size and follow up rate. Therefore, further study is required to examine the impact of PAL on the knowledge, skills and attitudes of CHW. The level of training can also be supplemented through coaching sessions to reinforce supportive mechanisms. It is suggested that future research assess these strategies independently to shed light on their contributions toward effective CHW integration in the HIV care team.

### Conclusion

The study found that peer education is effective in improving HIV knowledge, and attitudes of CHWs; thus it is recommended that educational programs concerning HIV/AIDS be designed using peer education for effective outcomes. Therefore, peer-to-peer training model can fill a critical gap in CHW training based on the idea that not only do the CHWs themselves need to enhance their knowledge of related topics but they also need to train others. In turn, this will result in providing cost-effective health promotion and prevention services in a more culturally appropriate manner.

### Acknowledgments

The authors would like to extend their appreciation to CHWs in the health centers of Babol.

### Authors' Contribution

**Conceptualization:** Peigham Heidarpoor.



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### Competing Interests

The authors declare no conflicts of interests.

### Ethical Approval

This study was approved by the Research Ethics Committee, Vice Chancellor of Research Affairs Shahid Beheshti University of Medical Sciences, Tehran, Iran with the Ethics Code of IR.SBMU.SME.REC.1399.078).

### Funding

None.

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