

# Effectiveness of a Human Capacity-building Initiative on Improving the Health of Rural Communities

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## Research

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# Abstract

**Background:** Given the major role of capacity building in improving the health of rural communities and due to the lack of studies performed on this issue, we aimed to investigate the effectiveness of educational and capacity building intervention on staff communication, job motivation skills, educational performance, and knowledge and behavior of health house clients in Ardabil city's rural communities.

**Methods:** The pretest-posttest nonequivalent control group design was conducted. In this study, convenience sampling was performed and a total of 220 health care recipients and 108 staff were surveyed in both interventional and control groups. The intervention was designed based on four approaches for capacity building introduced by Crisp et al. Data were collected using three questionnaires including knowledge and practice about healthy lifestyle, communication skills self-assessment, and Wright's job motivation. All statistical analyses were fulfilled using IBM SPSS Statistics software.

**Results:** At the end of the study; the mean scores of knowledge and practice of referrals to health centers about a healthy lifestyle and communication skills and job motivation of healthcare worker increased statistically in the intervention group compared to the baseline ( $p < 0.05$ ), but changes in these variables were not significant in the control group ( $p > 0.05$ ). Following 3 months of intervention, there were significant differences among the study groups ( $p < 0.05$ ).

**Conclusion:** Capacity building comprehensive interventions can help in identifying rural community health needs, increasing knowledge and practice of rural communities' residents about health issues, promoting health workers empowerment, and improving health workers' motivation.

## Introduction

Research resources reported different affective disorders in rural areas regardless of age, gender, race, gender awareness, and vulnerable rural populations remained under poor conditions(1). Living and working in rural areas have a negative impact on the villagers' health status, partly due to shortcomings in the provision and inadequacy of health services provided for them(2, 3).

Previous studies showed a significant gap between the expectations and perceptions of patients and clients from the quality of services provided by the family physician program from all aspects(4). Moreover, other evidences showed that most rural areas in our country have health promotion problems, which is known as a major obstacle to sustainable rural development and it is necessary to consider rural health promotion in the development plan(5). According to the research results, the capacity of health educators was reported as inadequate and insufficient(6, 7), and perhaps their performance may not be successful(8).

## Capacity-Building

Capacity building in rural communities, by empowering people, increases empowerment and quality of life(9). Crisp et al. in their study defined rural capacity building as a strategy to achieve a healthy and sustainable community and as a goal to achieve rural development policies(10).

Community health workers play a major role and have a potential for health education and identifying inequalities in health and the global health care crisis in developing countries(11). Despite the key differences that exist between developed and developing countries, key themes in rural health are similar worldwide, and access to the trained and motivated health workers is the main issue in rural health(12). In many rural areas, health center staff attempt to spread information and awareness through a proper plan for health education(13). Health education is recognized as one of the most important approaches to eliminate knowledge gaps under the turbulent conditions of social opportunities in rural communities. Although this process may be uncomfortably slow, it has more effectiveness on disease prevention compared to other interventions(14). Health education improves the health of individuals, communities, and nations as well as enhancing the quality of life prevention. Moreover, it can reduce costs (both financial and non-financial), including the costs of premature deaths and disabilities, by focusing on the time spent on medical treatment<sup>5</sup> and making people more skilled and empowered(15). In a study, Mohammad et al. examined capacity building by increasing education in rural communities through participation in Malaysia. The results of their research showed that the readiness of the local community to accept change and the effectiveness of participation is resulted from key factors in capacity building (16). In a study performed in Scotland, capacity building was mentioned as one of the pillars of rural development. Accordingly, another pillar was community interaction. Capacity building in this country with the purpose of increasing self-confidence, support and strengthening skills, and the ability of villagers to perform effective work and activities, plays a key role in the development of rural communities that consequently increases the quality of life and promotes health status(17).

Given the major role of capacity building in improving the health of rural communities and due to the lack of studies performed on this issue, we aimed to investigate the effectiveness of educational and capacity building intervention on staff communication, job motivation skills, educational performance, and knowledge and behavior of health house clients in Ardabil city's rural communities. The present study was a pre-post non-equivalent control group design aimed to determine the effectiveness of educational and capacity building intervention on staff communication, job motivation skills, educational performance, and knowledge and behavior of health house clients in Ardabil city's rural communities.

## **Methods And Materials**

### **Population and Setting**

In Ardabil city, 12 rural health centers and health houses were selected for performing this study. Thereafter, these centers were randomly divided into two groups as interventional and control. Each rural health center covers 4-5 health houses. One of these health houses was found in the same rural with a health center, thus we selected these 12 rural. Health care recipients were mainly unpaid helpers or health

volunteers who are called "health Safier". The number of "health Safier" in each village was limited and variable, thus we selected those who were ready for participation in this study. Of 132 rural health personnel, 108 were recognized as eligible to participate. In this study, convenience sampling was performed and a total of 220 health care recipients and 108 staff were surveyed in both interventional and control groups. All who came to the health houses had a chance to enter the study. The inclusion criteria in this study were as follows: age of 15 years old and older, having a file in health houses and current users of health care services, and willingness to participate in the study. The eligible staff should have at least one year of work experience in rural and participated in the health education program. Finally, the participants who met the inclusion criteria were fully informed about the study's protocol.

The interventional group received the intervention and the control group received no intervention. However, after intervention, the control group received the same intervention due to research ethics considerations.

### **Data collection**

Data collection was done by project executives in the summer and autumn of 2019. Data were collected using three questionnaires including knowledge and practice about healthy lifestyle, communication skills self-assessment(18), and Wright's job motivation(19). Afterward, these questionnaires were completed by the staff according to a predetermined schedule in both interventional and control groups once before and once after the study.

Several questionnaires were developed and then compared to assess rural healthcare workers' communication skills. Finally, the research team selected the communication skills' self-assessment questionnaire, which was adapted from the Solang Kurmier (1999) questionnaire(20). Correspondingly, this questionnaire has 20 items measuring communication skills using a 7-point Likert scale. After the final translation and editing by the research team, the face and content validity of the questionnaire was provided by 6 health professionals and 4 health center personnel. Cronbach's alpha was also calculated to determine the reliability of the questionnaire. For this purpose, the mean scores of communication skills were extracted by a 14-member group of health workers who were not part of the case and control group, at two stages with a two-week interval. The value of Cronbach's alpha was calculated as 0.74.

The questionnaire was completed by the staff following previous arrangements. Each communication skills questionnaire took about 7 minutes to be completed, which was completed for each study rural. Staff communication skills scores are ranging from 0 to 140. In this questionnaire, a score of 20 to 50 indicates poor communication skills, a score of 51 to 80 indicates some communication limitations, a score of 81 to 110 indicates an appropriate level of communication, and a score over 110 shows a mastery of communication skills.

The Wright Occupational Motivation Scale (2004) was used to measure rural healthcare workers' job motivation(19). After the final translation and editing by the research team, the minimum face and content validities of the questionnaire were provided by presenting 6 professors in health education and

promotion as well as 4 health center personnel, similar to the previous questionnaire. This questionnaire has 6 items, which are measured using a 5-point Likert scale, with scores ranging from 6 to 30, with higher scores indicating higher job motivation and lower scores indicating less job motivation. Health care workers are all employees of rural health centers, including physicians, midwives, experts, supervisors, and Behvarzs.

The data collection tool for measuring clients' knowledge and behavior was a self-made questionnaire with the following three sections: demographic information, knowledge section, and behavioral section. This questionnaire was designed using valid articles published on lifestyle(21, 22). The face and content validities of the questionnaire were provided to 6 professors in health education and 4 staff in the city health center. To calculate the reliability, Cronbach's alpha method was used. Accordingly, its reliability(Cronbach's alpha= 0.72) was extracted using a 14-person group of referrals to a rural health center. The knowledge and behavior sections of the questionnaire had 42 and 25 questions, respectively, which was completed by the referrals according to the predetermined table.

## **Intervention**

To design an appropriate intervention program, the required information were collected on the knowledge and practice about the lifestyle of rural residents, in order to diagnose the educational needs of residents. Of note, the communication skills of health care workers and their job motivation were also evaluated.

The intervention was designed based on four approaches for capacity building introduced by Crisp et al., which are as follows:(10)

1. Top-down organizational approach: changing agency policies and practices. In order to realize this approach, some courses were implemented about organizational culture and job motivation, communication skills, and message design for rural health care managers and administrators. The content of the courses was also provided to participants. Moreover, three meetings were held with the deputy health center, technical unit managers, and the university health deputy on appropriate training and motivation programs for rural health care workers.
2. Bottom-up organizational approach: training members of organizations as well as providing them with skills and knowledge. To implement this approach, lectures on social networks (using existing social networks in villages such as female health volunteers and clients in health houses) were conducted in the selected health houses that lasted for 41h sessions (including at least 6 sessions per each village). The topics were explained, and the participants' questions were then answered. The discussed topics were about the risk of heart attack, stroke, and cancer-based on an initial need assessment. Other topics were also suggested by the participants during the education sessions, including osteoporosis, knee and joint arthritis, hair loss, hydatistic cysts. Additionally, several workshops were held on communication skills for both health center staff and interventional group providers within two business days for 8 hours.

3. Partnerships: based on this approach, two interventions were designed and then implemented: A) Villages have fruits solar and groceries and cafes that did not observe health guidelines. Face-to-face training was conducted for these fruits and food business operators in more than 15 cases, in order to create a collaborative network among them and health house workers to deliver healthy fruits and food material. B) Establishment of a telegram channel for the village's health workers in the interventional group, in order to share health information and messages among themselves.
4. Community organizing approach: three interventions were applied to implement this approach as follows: a) lecturing at the villages mosques for village residents, b) conducting group discussions with men in one of their gathering places (such as village cafes), and c) face-to-face training for homeowners who dumped sewage into passages and alleys.

Environmental health position, weight and client satisfaction, and health workers' satisfaction were not the goals of this study. The program's outputs were assessed by measuring the following approaches by passing three months from the intervention: 1) residents' knowledge and performance, 2) communication skills of health center staff, and 3) and occupational motivation of health center' staff.

### **Statistical Analyses**

All statistical analyses were fulfilled using IBM SPSS Statistics software (Version 24) (IBM SPSS Statistics, Armonk, USA). The normality of the variables was confirmed using Kolmogorov-Smirnov test. To compare the categorical data between treatment groups at the baseline, Chi-square test was employed. Independent sample t-test and paired sample t-test were applied to compare parametric continuous data between and within the groups, respectively. Mann-Whitney U test and Wilcoxon signed-rank test were also applied to test the differences in asymmetric variables between and within the groups, respectively. A p-value less than 0.05 was considered to be statistically significant.

## **Results**

Overall, 328 participants (108 health care workers and 220 residents) were included in the interventional and control groups. As shown in Table 1, the study groups were homogenous in terms of demographic characteristics including age, sex, marital status, education level, and work experience ( $p > 0.05$ ). No significant differences were also seen in the subjects' knowledge and practice of referrals to health centers about a healthy lifestyle and communication skills and job motivation of healthcare workers between the two groups, at the baseline of the study ( $p > 0.05$ ). (Table 2 and Table 3)

Table 1  
Demographic characteristics of healthcare worker and referrals to health centers

Variables		Healthcare Worker				Referrals			
		Experimental group		Control group		Experimental group		Control group	
		N	%	N	%	N	%	N	%
<b>Age category(yrs.)</b>	<b>20–29</b>	11	31.43	11	32.35	29	26.85	27	26.47
	<b>30–39</b>	17	48.57	15	44.12	34	31.48	33	32.35
	<b>40–49</b>	6	17.14	6	17.65	25	23.15	23	22.55
	<b>50–59</b>	2	5.71	2	5.88	20	18.52	19	18.63
<b>Education</b>	<b>Less than a high school diploma</b>	0	0	0	0	16	14.81	15	14.71
	<b>High school diploma</b>	0	0	0	0	54	50	52	50.98
	<b>College graduated</b>	35	100	34	100	38	35.19	35	34.31
<b>Marital</b>	<b>Married</b>	28	80	28	70	18	16.67	17	16.67
	<b>Single</b>	7	20	6	30	90	83.33	85	83.33
<b>Gender</b>	<b>Male</b>	10	28.57	9	26.47	15	13.89	14	13.73
	<b>Female</b>	25	71.43	25	73.53	93	86.11	88	86.27
<b>History of Job or referrals(yrs.)</b>	<b>1–5</b>	4	11.44	4	11.76	19	17.59	20	19.61
	<b>6–10</b>	9	25.71	9	26.47	25	23.15	26	25.49
	<b>10–15</b>	16	45.71	16	47.06	34	31.48	36	35.29
	<b>16–20</b>	6	17.14	5	14.71	30	27.78	20	19.61
<b>Economic status</b>	<b>Income less than expense</b>	10	28.57	10	29.41	53	49.07	55	53.92
	<b>Equal income and expense</b>	20	57.14	19	55.88	47	43.52	40	39.22
	<b>Income more than expense</b>	5	14.29	5	14.71	8	7.41	7	6.86

Table 2  
Knowledge and practice of referrals to health centers about healthy lifestyle

Variables		Experimental group		Control group		*P value
		Mean	SD	Mean	SD	
Knowledge	Before	24.38	5.20	25.55	5.71	P > 0.05
	After	28.77	7.35	25.79	5.85	P < 0.001
	**P value	P < 0.001		P > 0.05		
Practice	Before	16.81	2.33	17.34	2.06	p > 0.05
	After	19.23	3.03	17.85	1.81	P < 0.001
	**P value	P < 0.001		P > 0.05		
SD; standard deviation						
*Independent t test						
**Paired t test						

Table 3  
Communication skills and job motivation of healthcare worker

Variables		Experimental group		Control group		*P value
		Mean	SD	Mean	SD	
Communication skills	Before	108.20	12.34	110.73	13.5	P > 0.05
	After	116.32	14.78	111.11	12.7	P < 0.05
	**P value	P < 0.001		P > 0.05		
Job motivation	Before	19.04	4.64	19.65	4.12	P > 0.05
	After	22.55	5.91	20.07	3.77	P < 0.05
	**P value	P < 0.001		P > 0.05		
SD; standard deviation						
*Independent t test						
**Paired t test						

At the end of the study; the mean scores of knowledge and practice of referrals to health centers about a healthy lifestyle and communication skills and job motivation of healthcare worker increased statistically in the intervention group compared to the baseline ( $p < 0.05$ ), but changes in these variables were not

significant in the control group ( $p > 0.05$ ). Following 3 months of intervention, there were significant differences among the study groups ( $p < 0.05$ ). (Table 2 and Table 3)

## Discussion

Data analysis showed that interventions based on capacity building had a statistically significant effect on healthcare workers' communication skills and job motivation as well as on knowledge and behavior of referrals to rural health centers. According to the findings of the present study, there was a statistically significant change in the communication skills scores of the health care workers in the interventional group, while there was no significant increase in the communication skills scores of the control staff. In this regard, the results of previously performed studies are conflicting. For instance, in the study by Helitzer et al., the brief training in communication skills of health workers produced significant and large differences in the intervention group providers, which persisted even by passing 2 years from the training(23). In contrast, in the study by Morgan in South Africa, employees reported that their communication skills had changed after the intervention, but this did not lead to a change in client satisfaction as a result(24). In explaining this finding, it can be said that each healthcare worker had a certain communication potential, and people with high capacity had better communication skills. Moreover, the villagers were mostly satisfied with their health care workers' performance, especially their training; however, they were not satisfied with the educational performance of family medicine.

In the present study, one of the aims of the capacity building program was increasing the health care workers' motivation. Motivation and desire or willingness to do work are known as the key factors in creating individuals' efforts and activities in the community(25). Notably, motivation is one of the most effective tools for employees to generate more productivity, create a positive work environment, and implement anticipated programs successfully(26). Since health-related activities and occupations are among the most difficult jobs, the quality of health services, effectiveness, and equity in providing services are directly and closely related to the health workers' motivation(27). In the present study, the findings showed that the job motivation score of the intervention workers significantly increased compared to the control group. These results are consistent with the findings of the study by Darbia et al(27). Furthermore, the study results by Hosseini et al. indicated that training workshops by targeting coping with stress were effective on the motivational component of the studied health workers(28). In another study by Saif et al., training program Fordyce happiness increased job motivation among employees and reduced their diastolic blood pressure(29). However, in the study by Heydari et al., job satisfaction in terms of staff maintenance and support and given the potential and experience of individuals in granting liability, were at the dissatisfied level; in terms of corporative communications, career development, salary and benefits, challenges and job management, at relatively dissatisfied; and from the aspect of social acceptance level, they were at relatively satisfied. Job satisfaction was found to be significantly associated with work experience, ethnicity, and the city of the service. The studied health workers' job satisfaction was reported to be relatively dissatisfied in general level. The authors concluded that due to poor job satisfaction levels, effective actions should be taken into consideration to improve organizational communication, career development, salary and benefits, social acceptance, staff

maintenance and support, management, job challenges, and granting responsibilities based on the individuals' abilities and experiences(30).

In general, it can be said that factors such as job conscience, awareness, interest in work, recognition and appreciation by the supervisor of the organization, employee's development, and job security can have significant impacts on the healthcare motivation for referrals' education. Sullivan's (2007) study reported that employees' most important motivational factors are manager's gratitude, performance promotion, written gratitude, and public praise(31). It can be concluded that although the quality of health services, efficacy, and fairness in providing them are directly related to the employees' motivation, it seems that the motivational mechanism of health care workers is complicated in Iran due to the disagreement between physicians and non-physician's incomes.

The study's findings showed that residents' awareness and behavior related to healthy lifestyles and the prevention of chronic diseases in the interventional group significantly increased by 12%. The present study's result is in agreement with the results of Seyyed- Emami et al.'s study. Accordingly, the health education intervention presented in their study was effective on promoting knowledge, total physical activity rate per week, and mean sitting time per day among the female health volunteers(32). In addition, the findings of this study are in line with the findings of a study by Babazadeh et al. who concluded that education can be used as an effective tool for the promotion of knowledge, attitude, and practice of child nutrition(33). In the Estebarsari's study, intervention based on the capacity building caused improvements in knowledge attitude and practice(34). However, it seems that interventions such as one performed in the present study would not be effective without increasing the villagers' basic literacy. As well, the changes should be made in the preparation of textbooks for primary education, so that some topics such as the organization providing health services, health system and its levels, the job description of doctors and health staff of rural centers, and ways to prevent the spread of infectious and non-infectious diseases, should be included.

## **Limitations**

Lack of long-term evaluation of health indicators, lack of assessment of the target groups' attitude towards the provided training, and lack of assessment of the target groups' health literacy were the limitations of the current study.

## **Conclusion**

Capacity building comprehensive interventions can help in identifying rural community health needs, increasing knowledge and practice of rural communities' residents about health issues, promoting health workers empowerment, and improving health workers' motivation. Moreover, interventions performed based on capacity building approaches may positively affect enhancing the health of rural areas. Education and training are essential in capacity building in the health system, which will continue playing main roles in the future by supporting health services improvement.

# Declarations

## **Ethics approval and consent to participate:**

The participants who met the inclusion criteria were fully informed about the study's protocol. This protocol, approved by Medical Ethics Committee of Ardabil of Medical Sciences, is in accordance with the Declaration of Helsinki (approval number: IR.ARUMS.REC.1399.412). Each subject will sign an informed consent form.

## **Consent for publication:**

Not applicable

## **Availability of data and materials:**

Not applicable

## **Competing interests:**

The authors declare that they have no competing interests.

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## **Authors' Contributions:**

All authors made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

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