



# Determining the Effectiveness of an Insurance Document Evaluation Education Course based on Kirkpatrick's Model: A Study at Abu Ali Sina Transplantation Hospital, Shiraz, 2022

Peyman Mirzavand<sup>1\*</sup>, Mahmood Akbari<sup>2</sup>, Abbas Khansalar<sup>3</sup>

<sup>1</sup>Department Education, Administrative, Para Clinic, and Support, Abu-Ali Sina Hospital, Shiraz, Iran

<sup>2</sup>Hospital Manager, Abu Ali Sina Hospital, Shiraz, Iran

<sup>3</sup>Clinic Manager, Department of Clinic, Abu-Ali Sina Hospital, Shiraz, Iran

## Abstract

**Introduction:** Every organization should train its employees to improve their performance. Organizational staff education is useful when evidence shows its effectiveness in changing the performance of participants. However, the evaluation of the results is often neglected. The purpose of this study was to investigate the effectiveness of the education course in the insurance and discharge unit of Abu Ali Sina Transplantation Hospital.

**Methods:** The sample consisted of 18 people, of whom 14 participated in the research. The education course was held in 8 sessions in the hospital environment for the personnel. The main tool of this research consisted of 4 questionnaires for the four levels of the Kirkpatrick model, the content validity and reliability of which have been confirmed. At the learning level, in addition to the questionnaire, pre-test and post-test were used. These questionnaires were completed by the participants after the end of the education course, and the results were analyzed using SPSS software.

**Results:** Based on the results, the highest score was obtained at the learning level. The reaction level also had the lowest score. In total, the effectiveness of the course was 84.05% (4.2±0.5).

**Conclusion:** Considering the positive results of the education course and its effectiveness, organizations are encouraged to train their employees to increase the motivation, initiative, and quality of the employees' work.

**Keywords:** Kirkpatrick model, Education, Program evaluation

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## \*Correspondence to:

Peyman Mirzavand,  
Department Education,  
Administrative, Para Clinic, and  
Support, Abu-Ali Sina Hospital,  
Shiraz, Iran  
**Email:** peymanmirzavand20@gmail.com

## Introduction

Hospital income comes from various sources, including government funding and direct hospital income. However, the main source of income of the hospital is the services provided to people covered by insurance companies (1). These costs are determined and payable after the exchange of financial and clinical documents of the services provided by the hospitals to the insurance organizations and the review of these documents by the insurance companies (2). However, hospitals do not receive a part of the costs from insurance organizations for various reasons. These deductions are one of the most important reasons for reducing hospital resources (3). One of the most common causes of deductions is the incompleteness of the

file documents and the lack of a doctor's seal and signature in various services. According to studies, the most common strategies to reduce deductions are education employees in the field of admission guidelines, proper registration of services and insurance rules, holding documentation education workshops for doctors, clinical staff and income specialists, and continuous interaction (2, 4).

Education is the systematic development of knowledge, skills, and attitudes needed by employees to perform a certain activity or job. In fact, education is a process to increase the skills, abilities, knowledge, and behavior of employees, so that they can do the work faster, more effectively, and more logically (5).

Education in terms of social, intellectual, and mental aspects not only increases the level of

productivity but is essential for the development of the personnel of any organization (6). Also, education is considered one of the most important aspects of employee career development, and it fosters a positive attitude in employees in order to achieve the goals of the organization (5).

Organizational employee education programs are of importance only when concrete evidence shows their effectiveness in changing the behavior and performance of participants. This process is called education effectiveness evaluation. Education evaluation plays an important role in measuring educational results. Evaluation has many benefits, including quality control for education, determining the extent to which organizational goals are being achieved, and helping policymakers make informed decisions. However, education evaluation in organizations is usually neglected. Inadequate and poor evaluation may be an obstacle to the effectiveness of education. Lack of knowledge or lack of access to methods and tools of the evaluation process is another possible reason for inadequate evaluation (7).

One of the widely used methods in evaluating educational effectiveness is the use of the Kirkpatrick model. Kirkpatrick has proposed four levels to evaluate the effectiveness of education in his model. In this model, level 1 (response) assesses whether learners are satisfied with the program or not. Level 2 (Learning) measures whether the program has been able to increase the learners' knowledge to a desired extent. Level 3 (behavior) assesses whether the program could bring about a positive change in the learner's behavior. Level 4 (Results) evaluates whether the education program was able to solve existing problems and meet the organizational goals. Kirkpatrick's four-level model has made a significant contribution to increasing the performance of teaching effectiveness evaluation. This model is the most well-known and widely used framework for evaluating effectiveness (8, 9). In a study, Nagendrababu et al. investigated different models of education effectiveness evaluation, evaluated all education effectiveness models, and compared them with each other. The result of their study showed that the Kirkpatrick model was still the most useful method for evaluating the effectiveness of education (10). In another study, Vivian Fay evaluated management participation in level 3 educational evaluation at the Texas Department of Insurance. The purpose was to determine what measures the management currently takes to evaluate the effectiveness of the training of the employees attend. To achieve the goal, training sessions on the

modified organizational culture were held in the health insurance organization. The effectiveness of the modified organizational culture training was determined using the Kirkpatrick model. The results of the survey showed that administrators used both levels two and three of Kirkpatrick's model to evaluate training (11). Wieboldt studied the insurance claims adjuster's distance learning plan. This study includes a comprehensive training program to address the knowledge gap among remote marine insurance adjusters. The evaluation plan of this study follows Kirkpatrick's four levels of learning and its results will be reported in the next study (12).

Therefore, since one of the main causes of insurance deductions in many cases is related to human error and failure to complete the main patient file, and the effective solution in this field is to hold education courses for employees and evaluate the effectiveness of these education courses. This study evaluates the effectiveness of insurance documentation education courses and workshops in Shiraz Organ Transplant Hospital through Kirkpatrick's program evaluation model.

## Methods

This is a descriptive comparative study conducted in 2022 at Abu Ali Sina Organ Transplantation Hospital. This hospital is an educational, research, and treatment center in the city of Shiraz.

## Sample Research

The sample consisted of 18 people. Simple purposeful sampling was used in this study. The inclusion criteria were the employees of the insurance unit who participated in the education course and willingness to cooperate in the research. The exclusion criteria of the samples were the lack of participation in the education course, lack of taking the test, and unwillingness to participate in the research; of them, 4 cases did not meet the inclusion criteria and a total of 14 subjects participated in the study.

## Education Course

The education course was held in 8 sessions in the hospital environment for the personnel. The classes were held from 12:00 to 14:00. The instructor of the course was a professor at Shiraz University of Medical Sciences with a doctorate degree in health economics and the rank of associate professor. The content of the course was compiled based on the reference books of insurance documents and the rules and regulations of the Ministry of Health and the Health Insurance Organization.

### *Educational Course Evaluation Tools*

The main tools of this research were 4 questionnaires designed based on the study of Eidi et al. and based on the model of Kirkpatrick. Kirkpatrick's model was chosen to evaluate effectiveness because it is widely used as an organizational education evaluation model that can be uniquely adopted and modified by each organization (9). The primary questions were on demographic features (gender, age, educational level, field of study) and the main questionnaires included 45 questions based on a 5-point Likert scale and 2 open-ended questions in the reaction level questionnaire. Open-ended questions were considered with the objective of categorizing the useful and unuseful parts of the education course.

The content validity of the questionnaires was confirmed using "content validity index" and "content validity ratio" by 3 experts in the field of human resources management and 1 expert in health economics. In general, by using the mentioned method, the values of "CVI" and "CVR" were obtained as 0.9 and 0.92, respectively, which indicates a high level of experts' agreement. The reliability of these questionnaires was checked through Cronbach's alpha and the alpha value for all questionnaires was higher than 0.8.

The first level (reaction) was used to check the level of interest of the personnel in the education course and the level of satisfaction of the participants. The second level (learning) was done with the objective of determining the level of knowledge and information acquired during the course. Seven questions were used to check the second level of the questionnaire. Also, pre-test and post-test were used to measure the level of awareness. The tests included 17 questions based on the lesson title and objectives. The time to answer these tests was 20 minutes and each person's score was calculated based on 100.

The third level (behavior) was conducted to examine the behavioral and functional changes of the personnel. During this stage, managers and supervisors observed and inquired about the behavioral and functional changes of the personnel in the actual work environment. Afterwards, they completed a questionnaire related to this level, which consisted of six questions.

The fourth level (results) in this research was used to achieve educational results; this level can be evaluated in the form of four areas of cost avoidance, saving, profit, and strategic results. In this research, a questionnaire was used to determine the strategic results for the stakeholders to determine how much the education course was able to achieve the desired

results. This questionnaire was completed by the hospital education officer. This questionnaire consisted of 11 questions, which were provided to the education officer for completion.

To ensure the protection of the rights of the participants, we considered the anonymity of the participants. At the end of the education course, the personnel were asked to read the questionnaire, ask any questions they may have, and then complete the questionnaire and finally return to their professional duties. The questionnaires for the first two levels were filled out after the course ended. The questionnaires for the third and fourth levels were completed one and three months later, respectively. Finally, by completing this procedure, their answers were evaluated, and the complete data analysis was done.

### *Data Analysis*

To analyze the Likert-type questions, we used SPSS version 25 statistical analysis software, which is a suitable tool for entering and analyzing data. Descriptive statistics was used to calculate factors such as frequency and the average results. In addition, paired-samples t-test was used to compare the pre-test and post-test results.

### *Ethical Consideration*

Informed consent was obtained from the participants and they were provided with sufficient information about the objectives of the study.

The participants could withdraw at any time if they were not willing to participate in the research.

Their personal information was kept completely confidential by the researcher.

All study measures did not involve any cost to the participants.

### **Results**

This study was conducted on 14 subjects working in the insurance and discharge department of Abu Ali Sina Transplantation Hospital in Shiraz. Among them, 6 (42.8%) were male and 8 (57.1%) were female. Most of the participants studied accounting or management (78%) in the university.

#### *First-level Results (Reaction)*

At the reaction level, content factors, instructors, and facilities were investigated. Based on the results in the reaction level, the average level of the course content was  $3.80 \pm 0.13$ , that for the instructor was  $3.78 \pm 0.07$ , and that for the course facilities was  $2.96 \pm 0.04$ . In general, the first level was  $3.51 \pm 0.39$ .

Two open-ended questions were presented to

**Table 1:** The results of the pre-test and post-test

		Paired Samples Test					t	df	Sig. (2-tailed)
		Paired Differences			95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	a-b	-2.07143	0.38516	0.10294	-2.29382	-1.84904	-20.123	13	0.000

**Table 2:** The degree of desirability of four evaluation levels based on Kirkpatrick’s model

Evaluation levels	Mean/ Standard deviation	Score out of 100
First-level	3.51±0.39	70.2%
Second-level	4.85±0.34	97%
Third-level	4±0.81	80%
Fourth-level	4.45±0.65	89%
Overall Index		84.05%

identify the useful and unuseful parts of the education courses; most of the participants did not answer these questions.

*Second-level Results (Learning)*

In the second level, the amount of learning was evaluated in two ways:

1. Questionnaire: Based on the results obtained from the questionnaire, the mean learning level was 4.85.
2. Pre-test and Post-test: The average pre-test and post-test scores of 14 participants were 70.7 and 81.05, respectively.

Paired-samples t-test was used to compare the effect of the course on the learning rate of the participants before and after the course education. The results are presented in Table 1.

The output of the Paired-samples t-test showed that there was a significant difference in the average scores of the participants before and after the education.

*Third-level Results (Behavior)*

In the third level, the amount of change in behavior was investigated through a questionnaire. Based on the results obtained from the questionnaire, the mean behavior level was 4.

*Fourth-level Results (Results)*

In the fourth level, the number of organizational results was investigated through a questionnaire. Based on the results obtained from the questionnaire, the mean level of behavior was 4.45. The score obtained from the fourth level is presented in Table 2. According to the results, the highest grade belonged to the learning level. The reaction level also got the lowest score. In total, the level of effectiveness of the course was 84.05%.

**Discussion**

The general results of the questionnaires show positive results for the entire sample, adding daily difficulties and unforeseen factors that cannot be included in the educational planning, the evaluation course seems successful based on the goals and requirements of the hospital.

At the reaction level, the average scores of the content and instructor were above 70, which means that most of the participants in the mentioned course were satisfied with the content, professor, and type of teaching. The results of Esmaili et al.’s study were similar to those of the present study. They used the Kirkpatrick’s model to evaluate the effectiveness of the training course. The data of this study were collected through three questionnaires and hospital records. The findings indicated that the participants were satisfied with the training course, and there was a significant difference in the average scores of the three learning level evaluations (13). The results of Yoon et al.’s study showed positive results in the first level of Kirkpatrick’s model and the average satisfaction score was 4.48 out of 5 (14).

Despite the overall satisfaction in the first level, the results in the field of educational facilities were low, and the participants were not satisfied with them. Educational aids and facilities are an integral part of every class and education course. Many benefits of teaching aids have been cited, including helping learners improve comprehension skills, illustrating or reinforcing a skill or concept, differentiating instruction, and relieving anxiety or boredom by presenting information in a new and exciting way (15). Teaching aids help educators bridge the gap and strengthen their participants’ skills. Educational aids help to make the educational environment attractive and improve the quality of education. With the help

of educational facilities, it is possible to understand and consolidate educational materials in the minds of learners, which will improve the learning results (16). Therefore, paying attention to educational facilities and tools in education courses should be considered for more effectiveness.

Based on the results, the learning level of the personnel increased after the education. The results of the level of behavior of the personnel and the level of the results also indicate the achievement of the majority of the goals of the course and the course was effective as a whole, which was in accordance with the results of the study of Panagiotopoulos et al. In their study, they examined the correlation between continuous organizational education of employees and their anticipation with the degree of fulfillment of their work needs, and at the same time the effect of this fact on the development of professional skills. Their sample consisted of 110 employees of a customer service call center, one of the largest insurance organizations in Greece. The statistical analysis of the given answers showed the positive reaction of the employees towards the educational stages as well as the positive impact of the course on the results of organizational educational planning and development (17).

Heydari et al. also investigated the effect of an education workshop on new teaching and learning methods on the response, knowledge and behavior of health care personnel working in a health care center. The evaluation of the program based on the Kirkpatrick's model showed that the education workshop on new teaching and learning methods improved the satisfaction of health and medical workers from the educational environment of the workshops, their awareness of new teaching and learning methods, and their behavior in the implementation of educational workshops (18).

According to studies, the positive effect of education courses can affect the motivation of the personnel (19, 20) because the personnel have skills after participating in the education, and this will lead to better acceptance of tasks and enthusiasm in doing the work (21). In addition, several studies have stated that effective education and motivation have a significant impact on the performance and career advancement of the personnel (22-24). Job performance is very important in an employee's career path. Logical and practical performance evaluation is tied to two interests: the interests of the personnel and those of the organization (25).

However, for the educational courses to be effective and to achieve the benefits, the successful planning

of education programs should be considered, which includes certain factors such as the participants' educational background, work experience, and their cognitive level (26).

Kirkpatrick's model is a useful and popular framework for designing and implementing educational programs. However, it does have its limitations (27). Some critics argue that the model places excessive emphasis on the participants, while others believe that it fails to consider external factors that could impact the effectiveness of training. Despite these criticisms, Kirkpatrick's model remains a valuable tool for assessing the effectiveness of training. It is crucial, though, to recognize the limitations of this model and employ other evaluation methods to thoroughly assess the effectiveness of training (28, 29).

### Limitation

This study only considered educational factors and did not take into account other environmental factors, such as physical space, which may also have an impact on educational outcomes. In addition to Kirkpatrick's method, future studies can also utilize learning environment evaluation questionnaires. This study utilized the perceptions of both participants and supervisors to assess behavioral changes. However, it is important to note that this method may not be entirely accurate, as supervisors may hold differing opinions regarding the participants' behavioral changes. In future studies, in addition to observation, interviews and self-assessment can be used. In addition, this study only considered one group due to time limitations. It would be more beneficial to use two experimental and control groups in future studies.

### Conclusion

The research revealed that the training courses had a significant impact on enhancing the employees' knowledge and skills. This suggests that investing in training programs can be highly beneficial for organizations as it leads to improved employee competence and productivity.

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### Authors' Contribution

PM, SA and AK performed the data collection process. PM analyzed the data and drafted the manuscript. AK edited the manuscript. All authors read and approved the manuscript.

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## Availability of Data and Materials

Data sets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

## Ethics Approval and Consent to Participate

Informed consent to participate in the research was obtained from all participants. Participants participated in the study voluntarily and their names were not mentioned in the study.

**Conflict of Interest:** None declared.

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