



Bahar Moarrab¹, Lida Jarahi², Seyed Masoud Hosseini¹, Ali Emadzadeh¹, Roya Moallem³, Mojtaba Mousavi Bazaz^{2,4}

¹Department of Medical Education, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

²Department of Community Medicine, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

³Department of Medical Ethics, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

⁴Faculty of Medicine, Mashhad University of Medical Sciences, Azadi Sq. Mashhad, 9177948564 Iran

Tel: +98 5138002386

Fax: +98 5138002385

Email:

Mousavim@mums.ac.ir

Evaluation of the training program of the community medicine interns based on the Kirkpatrick model

Background: Instructional advance organizers are tools that help learners to learn and understand educational materials better. This study aimed to investigate the role of explanatory and visual advance organizers on the learning of health workers working in the Shirvan city health center.

Method: This study was conducted as an interventional (quasi-experimental) study in health houses covered by the Shirvan County Health Center in 2023. The required sample was 120 staff entered the study using the census of the entire population and were randomly divided equally into three groups. In the two intervention groups, education was provided by the method of explanatory and visual advance organizers, and in the control group, education was provided in the form of lectures. Post-test questions were reviewed by five specialists in medical education, general practitioners, and infectious diseases.

Results: Demographic variables in pre-test and post-test scores were not statistically significantly different except for marital status which had a statistically significant relationship with pre-test scores and educational status of individuals with diplomas with pre-test and post-test scores. There was a statistically significant relationship and difference in post-test scores in all three groups ($P=0.00$).

Conclusion: Advance organizers help learners activate their prior knowledge and connect it with new knowledge. In addition, they can lead to meaningful learning, facilitate and increase motivation in learning. The group that was trained using visual advance organizers had significantly higher average learning scores than the other two groups.

Keywords: Advance Organizer, Visual Advance Organizer, Explanatory Advance Organizer, Learning

تقييم البرنامج التدريبي لمتدربي طب المجتمع على أساس نموذج كيركباتريك

الخلفية: تقييم البرنامج التعليمي يلعب دوراً حاسماً في تحسين جودة التعليم. هدفت هذه الدراسة إلى تقييم البرامج التعليمية للمتدربين في طب المجتمع على أساس نموذج كيركباتريك.

الطريقة: تم إجراء هذا البحث الوصفي التحليلي في قسم طب المجتمع بكلية الطب بجامعة مشهد للعلوم الطبية من عام ٢٠١٥ إلى عام ٢٠١٨. وتم تضمين جميع طلاب الطب الذين كانوا متدربين في طب المجتمع في المراكز الصحية في مشهد خلال أربع سنوات أكاديمية في الدراسة بطريقة التعداد (ن = ١٢٠). وتم تقييم البرنامج التعليمي على ثلاثة مستويات: رد الفعل، والتعلم، والسلوك. اعتبرت $P > 0.05$ ذات دلالة إحصائية في جميع الاختبارات الإحصائية.

النتائج: توصلت الدراسة إلى نسبة رضا إجمالية قدرها ٨٧,٠٢%. مع انخفاض طفيف على مدى السنوات الدراسية الأربع. ومع ذلك، ظل الرضا العام مرتفعاً نسبياً. تحسن متوسط درجة التعلم في الفئات الثلاث بشكل تدريجي على مر السنين ($P > 0.05$). كما زاد إجمالي درجات تعلم كيركباتريك بشكل ملحوظ ($P > 0.001$). وأظهرت درجات التغيير السلوكي اتجاهها تصاعدياً عاماً متقلباً على مدى السنوات الأكاديمية الأربع، مما يشير إلى الأثر الإيجابي للبرنامج التدريبي على سلوك المتدربين. وكان التحسن في التغيير السلوكي ذات دلالة إحصائية ($F = 6.31$, $P = 0.00$).

الاستنتاج: يقدم التحقيق في برنامج التدريب في طب المجتمع باستخدام نموذج كيركباتريك فهماً شاملاً لفعاليتها في تحسين رضا المتدربين وتعلم المهارات والسلوك. **الكلمات المفتاحية:** تقييم كيركباتريك، تعليم المتدربين الطبيين، طب المجتمع

ارزشیابی برنامه آموزشی کارورزان پزشکی اجتماعی مبتنی بر الگوی کرک پاتریک

زمینه و هدف: ارزشیابی برنامه آموزشی نقش اساسی در ارتقای کیفیت آموزشی دارد. مطالعه حاضر با هدف ارزشیابی برنامه های آموزشی کارورزان پزشکی در بخش پزشکی اجتماعی مبتنی بر الگوی کرک پاتریک انجام گردید.

روش: این پژوهش توصیفی-تحلیلی در بخش پزشکی اجتماعی دانشکده پزشکی دانشگاه علوم پزشکی مشهد طی سال های ۱۳۹۴ الی ۱۳۹۷ انجام شد. کلیه دانشجویان پزشکی که طی یک بازه چهار ساله در مراکز بهداشتی در سطح شهر مشهد مشغول به گذراندن دوره کارورزی پزشکی اجتماعی خود بودند، به تعداد ۱۲۰ نفر و به روش سرشماری وارد مطالعه شدند. برنامه آموزشی در سه سطح واکنش، یادگیری و رفتار مورد ارزشیابی قرار گرفت. در تمامی آزمون های آماری، $p < 0.05$ به عنوان سطح معنی داری در نظر گرفته شد.

یافته ها: نمره رضایت کلی ۸۷/۰۲ درصد بود. روند رضایت کلی از دوره آموزشی طی چهار سال تحصیلی کاهش جزئی را نشان داد، اگرچه رضایت کلی نسبتاً بالا بود. میانگین نمره یادگیری در هر سه دسته، بهبودی پیشرونده ای را در طول سال ها نشان داد ($p < 0.05$). نمره کل کرک پاتریک در سطح یادگیری نیز افزایش قابل توجهی را نشان داد ($p < 0.001$). نتایج ما یک روند نوسانی و در عین حال به طور کلی صعودی را در نمرات تغییر رفتار در طول چهار سال تحصیلی نشان می دهد، که تأثیر مثبت برنامه آموزشی بر رفتار کارورزان را برجسته می کند. بهبود در تغییر رفتار از نظر آماری معنی دار بود ($F = 6.31$, $P = 0.00$).

نتیجه گیری: بررسی برنامه کارورزی پزشکی اجتماعی با استفاده از مدل کرک پاتریک، درک کاملی از اثربخشی آن در بهبود رضایت کارورزان، یادگیری مهارت ها و رفتار آن ها ارائه می دهد.

واژه های کلیدی: مدل ارزشیابی کرک پاتریک، پزشکی اجتماعی، آموزش کارورزان پزشکی

کرک پیترک ماڈل کی بنیاد پر کمیونٹی میڈیسن انٹرنز کے تربیتی پروگرام کا جائزہ

پس منظر: تعلیمی پروگرام کی تشخیص تعلیمی معیار کو بہتر بنانے میں اہم کردار ادا کرتی ہے۔ اس مطالعہ کا مقصد کرک پیترک ماڈل کی بنیاد پر کمیونٹی میڈیسن انٹرن کے تعلیمی پروگراموں کا جائزہ لینا تھا۔

طریقہ: یہ وضاحتی تجزیاتی تحقیق مشهد یونیورسٹی آف میڈیکل سائنسز کی میڈیکل فیکلٹی کے کمیونٹی میڈیسن ڈیپارٹمنٹ میں ۲۰۱۵ سے ۲۰۱۸ تک کی گئی تھی۔ وہ تمام میڈیکل طلباء جو چار تعلیمی سالوں کے دوران مشہد کے مراکز صحت میں کمیونٹی میڈیسن کے انٹرن تھے۔ مردم شماری کے طریقہ کار سے مطالعہ ($n = 568$)۔ تعلیمی پروگرام کا تین سطحوں پر جائزہ لیا گیا: ردعمل، سیکھنے، اور برتاؤ۔ $P > 0.05$ کو تمام شماریاتی ٹیسٹوں میں اہم سمجھا جاتا تھا۔

نتائج: مطالعہ نے ۸۷.۰۲% کا مجموعی طور پر اطمینان کا اسکور پایا، جس میں چار تعلیمی سالوں میں معمولی کمی آئی۔ تاہم، مجموعی طور پر اطمینان نسبتاً زیادہ رہا۔ تینوں زمروں میں اوسط سیکھنے کا اسکور بتدریج سالوں میں بہتر ہوا ($p > 0.05$)۔ کل کرک پیترک سیکھنے کے اسکور میں بھی نمایاں اضافہ ہوا (پی > 0.001)۔ رویے میں تبدیلی کے اسکورز نے چار تعلیمی سالوں میں مجموعی طور پر اوپر کی طرف رجحان کو ظاہر کیا، جو انٹرنز کے رویے پر تربیتی پروگرام کے مثبت اثرات کی نشاندہی کرتا ہے۔ رویے کی تبدیلی میں بہتری شماریاتی لحاظ سے اہم تھی ($F = 6.31$, $P = 0.00$)۔

نتیجہ: کرک پیترک ماڈل کا استعمال کرتے ہوئے کمیونٹی میڈیسن انٹرنشپ پروگرام کی تحقیقات انٹرنز کے اطمینان، پھر سیکھنے اور رویے کو بہتر بنانے میں اس کی افادیت کا مکمل ادراک پیش کرتی ہے۔

مطلوبہ الفاظ: کرک پیترک کی تشخیص، میڈیکل انٹرنز کی تعلیم، کمیونٹی میڈیسن

INTRODUCTION

Currently, the educational system and decision-makers in every country prioritize the quality and efficacy of education as a significant priority (1). Evidence-based evaluation practices are critical for systematically assessing educational programs, particularly in medical training. Models like Kirkpatrick's framework are widely recognized for evaluating the effectiveness of training programs, covering multiple levels such as reaction, learning, behavior, and results (2,3). Structured frameworks improve learner satisfaction, skill acquisition, and application in real-world settings (2,4).

Considering the key and constructive role of education in increasing the level of knowledge, insight, and ability of learners, educational centers are always facing various challenges; such as the lack of evident results and evidence of education, dissatisfaction among specialists over the performance of institutions, the lack of effectiveness of educational programs in the professional development and self-efficacy of students, doubts about the changes expected from the education process, dissatisfaction of students and learners with the process and the results of education, and the discrepancy between input and output (5).

Of note, it is not possible to raise such issues and comment on them without adhering to the systematic process of collecting, classifying, analyzing, and interpreting accurate and timely information, and finally making a decision based on the analysis of the results. In specialized literature, this process is referred to as evaluation (5).

Everyone agrees that education evaluation is very important in the redesign of educational processes (5). Educational evaluation is defined as determining the effectiveness of the training in creating the practical skills needed by the organization (6). Educational evaluation is one of the most important programs of any organization that provides useful information in the field of designing and revising educational systems (7). The evaluation of training courses, in one hand, allows managers and employees of the organization to get a clearer picture of the quality of training activities, and on the other hand, enables the planners and training staff of the organization to gain knowledge on the positive and negative aspects of programs (8). Effectiveness is achieved when learners' performance changes in the work environment and their learning is transferred to the real environment (9). To determine the value of educational courses, there are many models and patterns, the most important of which is Kirkpatrick's evaluation model. Kirkpatrick's model has been applied successfully in medical education to address training challenges (2, 10). In this simple and practical model, the effectiveness of educational programs can be examined at four levels, which are reaction, learning, behavior, and results. In the first level of this model, the reaction that learners show in response to all the effective factors in the implementation of an educational course is assessed. To be more precise, the participants' feeling (satisfaction) about the training program is measured. The learning stage is to determine the level of acquisition of skills, techniques, and information that was taught and explained to the participants during the training course, which is determined by

examining the training before, during, and after participating in the training course. Behavior is defined as the manner and number of changes that occur in the behavior of the participants after participating in the training course. Finally, the results level is defined as the degree of success in achieving goals that are directly related to the organization (11, 12). There are several tools for clinical evaluation, among which, a logbook is considered a useful evaluation tool (13). A logbook is a kind of simple and comprehensive registration tool, which is also called a portfolio, training booklet, and clinical skills registration book. The logbook provides a time-saving framework for organizing and recording various educational activities (14). In addition, since the logbook reduces the distance between theory and the bedside, it can also help professors and students achieve the desired educational goals (13). Various studies have also shown that the logbooks are more effective than the traditional evaluation methods (15). Overall, the logbook provides valuable data in the field of training effectiveness, and its information can be used to analyze and evaluate training programs by using reliable evaluation methods such as Kirkpatrick's, which aligns theoretical learning with practical application, ensuring skill retention and improved outcomes (2, 3, 10).

Evaluating educational programs, especially the educational program of undergraduate medical interns is crucial. Research on structured evaluations of community medicine curricula has highlighted their role in bridging gaps in public health and primary care training, ensuring students are well-prepared for real-world challenges (3). Although many studies applied Kirkpatrick's model to assess medical education, most focused on residents, single-subject courses, or healthcare providers. Research specifically targeting community medicine interns is notably lacking. Community medicine internships are a critical phase for preparing medical graduates for independent practice and equipping them with essential public health skills. However, variability in exposure and evaluation methods during these internships (16), underscores the need for structured evaluations in this area (2, 17). To the best of our knowledge, no similar research has been carried out in Mashhad, Iran. Thus, the present study aimed to evaluate the educational programs of community medicine interns based on Kirkpatrick's model in the Medical Faculty of Mashhad University of Medical Sciences.

METHODS

This research was a descriptive-analytical study conducted in the Community Medicine Department of the Medical Faculty of Mashhad University of Medical Sciences. The study population included all medical interns in a period of four academic years ($n = 568$). Of these, 96, 176, 189, and 107 participants were from the first to the last period, respectively. The criteria for entering the study were as follows: a): all medical interns in the community medicine department of the Medical Faculty of Mashhad University of Medical Sciences during four academic years, and b): who completed the logbook and presented it to the department. Incomplete documentation of performance evaluation was

excluded. Accordingly, one intern was excluded from the study due to incomplete documentation. It should be noted that the general objectives of training interns in this course are based on the curriculum of the general medicine course and include the practice of role-playing, management, and leadership in community health, implementation of health programs and interventions, and disease management in the covered community and outpatient management. The training in the aforementioned one-month department was conducted theoretically through educational workshops in the first week, and then practically for three weeks in the comprehensive health service centers in the city. Educational programs were evaluated at three levels of reaction, learning, and behavior using the following tools. Level 4 (results) assessment of Kirkpatrick's model was not conducted in the present study.

- At the first level of Kirkpatrick's model the satisfaction and reaction of the learners towards the content, instructor, and facilities, which are effective factors in the implementation of a training course, were investigated by a self-assessment, researcher-made questionnaire consisting of 13 items. Each item was primarily scored on a scale of 0 to 20. Thereafter, the percentage of each item was calculated to represent the interns' satisfaction. The content validity of the questionnaire was assessed by presenting it to 10 professors, after which the necessary revisions were made. The content validity ratio (CVR) was subsequently calculated to be 0.72. Reliability was determined by calculating Cronbach's alpha, which yielded a value of 0.78.

- The level of learning was evaluated based on a score out of 15 through the three categories of a) Health System Research (HSR) (4 scores), b) the logbook completed by interns in the comprehensive health service centers (6 scores), and c) written exam of educational content in the form of multiple choice questions with four options at the end of the first week (5 scores), in which the questions were designed by the teachers of each topic. The logbook was designed by extracting and determining the educational goals of medical interns in the community medicine department from the general medicine curriculum. It was then reviewed by eight experts in the field of community medicine and was approved after revision, with a CVR of 0.8. The logbook included the minimum requirements to record the training material and practical learning, which was completed by the interns along with the date and method of performance. It should be noted that all interns were required to complete their logbooks individually. The teacher who presented the theoretical content of each section was responsible for the evaluation of that content in the logbook. The interns' director, one of the professors of the educational group, calculated the overall score of the logbook.

- The third level of Patrick's model was assessed out of a score of 5 through a checklist consistent with the logbook which was completed by the professors during in-person visits to comprehensive health services. The professors were informed about how to complete the checklist in the logbook design sessions.

Thus, three levels of Kirkpatrick's model were investigated using the results obtained from the aforementioned tools.

To describe the quantitative data, mean, median, standard deviation, and frequency the percentage were used. To compare quantitative data with normal distribution, one-way ANOVA was used.

All statistical analyses were performed using SPSS statistical software (version 16) and in all statistical tests, the significance level was considered as $p < 0.05$.

RESULTS

A total of 568 community medicine interns were evaluated over four consecutive academic years. The gender distribution varied across the academic years, with females consistently representing a larger proportion of the intern population each year. Specifically, in Year 1, 55.2% of the interns were female, and 44.8% were male. This trend continued across the subsequent years, with the percentage of female interns peaking at 60.7% in Year 4. Overall, 42.4% of the interns were male, and 57.6% were female (Table 1).

Table 1. Distribution of community medicine interns in the four consecutive academic years by gender

Academic Year	Gender		Total N (%)
	Male N ^a (%)	Female N (%)	
Year 1	43 (44.8 %)	53 (55.2 %)	96 (16.9 %)
Year 2	69 (39.2 %)	107 (60.8 %)	176 (31.0 %)
Year 3	87 (46.0%)	102 (54.0%)	189 (33.3 %)
Year 4	42 (39.3 %)	65 (60.7 %)	107 (18.8 %)
Total	241 (42.4 %)	327 (57.6 %)	568 (100 %)

^a Number

The evaluation of the Community Medicine Internship Program at Mashhad University of Medical Sciences was conducted using the Kirkpatrick model, focusing on the first three levels: reaction, learning, and behavior.

1. Reaction (Level 1)

The satisfaction of interns with various aspects of the training course was assessed using a 13-item questionnaire, yielding an overall satisfaction score of 87.02%. The highest satisfaction was observed in the area of the amount of compliance with professional ethics and behavior toward interns (94.39%), followed by the effectiveness and support provided by the health center supervisor in helping interns gain information and develop capabilities aligned with the department's goals, which received a score of 90.99%. Similarly, self-satisfaction with qualifications and abilities in relation to the internship's goals was rated highly, with a satisfaction score of 90.55%. Interns also expressed a high level of satisfaction with the educational content provided by the community medicine department, which scored 91.56%. In terms of practical tools, the duty checklist used in the field was considered effective in informing and familiarizing interns about their responsibilities, receiving a satisfaction level of 89.43%. The effectiveness of conference presentations in increasing professional knowledge received a positive rating of 89.79%. When

assessing the satisfaction with the impact of the training program on knowledge, attitude, and skill development, scores were also strong. Satisfaction with knowledge change was rated at 85.05%, attitude change at 83.35%, and skill development in alignment with internship goals at 84.22%. The field experience itself was viewed favorably, with 81.57% of interns acknowledging its usefulness in gaining relevant information and capabilities. Additionally, satisfaction with the effectiveness of training classes in helping interns achieve the department's goals scored 87.04%.

The trend of overall satisfaction with the training course showed a slight decline over the four academic years, starting at 91.40% in Year 1, dipping to 85.80% in Year 3, and slightly recovering to 87.05% in Year 4. This trend, presented in Figure 1, suggests some fluctuations in interns' satisfaction with the training program over time, although the overall satisfaction remained relatively high.

2. Learning (Level 2)

The learning outcomes were assessed through three key components: Health System Research (HSR), a multiple-choice test, and the completion of a logbook. The mean scores significantly improved across the years in all three categories ($p < 0.05$).

The mean HSR score increased from 2.89 in Year 1 to 3.28 in Year 4, indicating an improvement in students' research capabilities. The Multiple-Choice Test scores also improved, with the mean rising from 3.53 in Year 1 to 3.74 in Year 4.

Similarly, the Logbook scores showed a significant increase from Year 1 (mean = 4.41) to Year 4 (mean = 4.82), reflecting better documentation and learning outcomes over the years (Table 2).

The total Kirkpatrick Level 2 score also demonstrated a significant increase, with a mean of 11.30 and the total score rising from 10.83 in Year 1 to 11.84 in Year 4 ($p < 0.001$), as depicted in Figure 2.

Statistical analysis revealed significant differences across the years for all three learning outcome measures, with P values < 0.05 , indicating that the improvements observed were statistically significant.

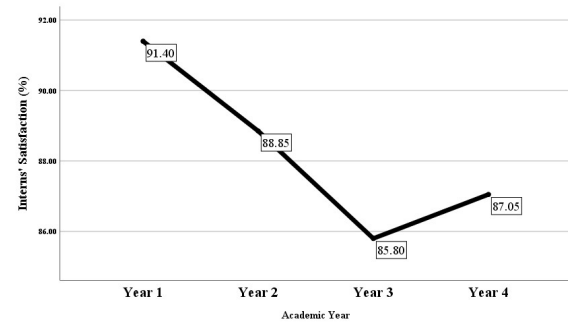


Figure 1. The trend of overall satisfaction of interns with the training course in the four academic years

Area	Year	N ^a	Minimum	Maximum	Mean (SD ^b)	F	P value
HSR	Year 1	96	1.50	4.00	2.8932 (0.68031)	7.20	0.00
	Year 2	176	1.50	4.00	3.0369 (0.60950)		
	Year 3	189	1.00	4.00	3.1296 (0.58209)		
	Year 4	107	1.50	4.00	3.2804 (0.66029)		
	Total	568	1.00	4.00	3.0893 (0.63312)		
Multiple Choice Test	Year 1	96	1.00	5.00	3.5286 (0.75295)	13.93	0.00
	Year 2	176	1.70	4.90	3.3123 (0.64689)		
	Year 3	189	1.00	5.00	3.7378 (0.71132)		
	Year 4	107	1.50	5.00	3.7435 (0.70734)		
	Total	568	1.00	5.00	3.5717 (0.72209)		
Logbook	Year 1	96	2.50	6.00	4.4089 (0.88639)	6.73	0.00
	Year 2	176	2.75	6.00	4.5901 (0.67303)		
	Year 3	189	3.00	6.00	4.7217 (0.67326)		
	Year 4	107	2.75	6.00	4.8178 (0.65298)		
	Total	568	2.50	6.00	4.6461 (0.72071)		
Kirkpatrick's Level 2	Year 1	96	7.00	13.75	10.8307 (1.49802)	17.47	0.00
	Year 2	176	7.50	13.85	10.9393 (1.23908)		
	Year 3	189	7.40	14.36	11.5892 (1.35352)		
	Year 4	107	9.00	14.25	11.8416 (1.20861)		
	Total	568	7.00	14.36	11.3071 (1.37522)		

^a Number; ^b Standard Deviation

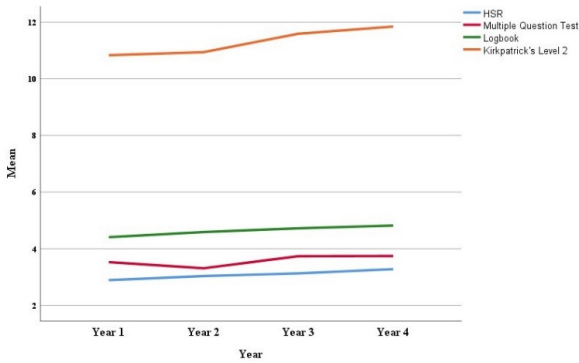


Figure 2. The trend of the evaluation results of the community medicine internship training program at the level 2 Kirkpatrick's model in the four academic years

3. Behavior (Level 3)

The behavioral change of interns was assessed through a checklist aligned with the logbook, which professors completed during in-person visits. The mean scores for behavioral change showed a significant increase across the years, with the mean score in Year 1 being 3.78, increasing to 4.09 in Year 4. The improvement in behavioral change was statistically significant ($F = 6.31, p = 0.00$) (Table 3).

The trend of behavioral change is illustrated in Figure 3. The figure shows a fluctuating yet overall upward trend in the behavioral change scores over the four academic years, highlighting the positive impact of the training program on interns' behavior.

DISCUSSION

The Community Medicine Internship Program at the Medical Faculty of Mashhad University of Medical Sciences (MUMS) was evaluated based on three levels of Kirkpatrick model which yields valuable insights regarding the efficacy of educational interventions and is a potential tool for the support of public health education (18).

Intern satisfaction is an essential indicator of the initial impact of an educational program since it can predict future levels of learning and engagement. The study revealed significant levels of satisfaction, specifically concerning professional ethics and the quality of supervision.

These findings align with the research conducted by Albanese et al. (19), which emphasized that student satisfaction is greatly influenced by the consistency

between educational content and professional expectations. Their research indicates the correlation between student contentment and the overall quality of the educational setting, as well as the alignment between the curriculum and students' professional ambitions. Research has shown that a supportive educational environment plays a crucial role in promoting satisfaction among students. This implies that variables like teacher support, efficient instruction, and a relevant curriculum are significant factors that contribute to favorable student responses.

Ensuring and improving satisfaction levels is vital, as variations in satisfaction, like those seen between the initial and subsequent years of this study, might influence the overall efficacy of the program. Harden and Laidlaw (20) concluded that variations in student satisfaction frequently arise from alterations in curriculum structure or instructional approaches, which may not consistently align with student expectations.

The observed continuous enhancement in learning outcomes across the academic years, as demonstrated by higher scores in HSR, multiple-choice tests, and logbook evaluations, corresponds with the conclusions of prior research, emphasizing the program's effectiveness in improving the knowledge and abilities of interns. Prince et al. (21) demonstrated that engaging in practical, experiential learning in medical education had a substantial positive impact on students' learning outcomes, including in the areas of research expertise and clinical decision-making ability. Their study points out the need to combine theoretical knowledge with practical application.

Furthermore, the ongoing enhancement in logbook scores indicates that the organized and thoughtful approach of logbook evaluations plays a role in fostering enhanced learning and long-term retention of clinical skills. Van der Hem-Stokroos et al. (22) emphasized that logbooks, when utilized efficiently, establish a crucial connection between theoretical learning and clinical practice, enabling the practical application of knowledge in real-life situations. This discovery is especially relevant to the program of this study, as logbooks play a crucial role in assessing interns' advancement and ensuring that learning is not only obtained but also implemented efficiently in the field.

The program's success to put learning into practice, a crucial goal in medical education, is evident from the behavioral changes found among interns. The consistent increase in behavior scores, with occasional variations, indicates that the

Table 3. Comparing the evaluation results of community medicine internship training program at the level 3 Kirkpatrick's model over the years

Year	N ^a	Minimum	Maximum	Mean (SD ^b)	F	P value
Year 1	96	2.75	4.75	3.7813 (0.52220)	6.31	0.00
Year 2	176	2.50	5.00	4.0181 (0.52453)		
Year 3	189	2.25	4.91	3.9175 (0.60970)		
Year 4	107	2.75	5.00	4.0905 (0.52632)		
Total	568	2.25	5.00	3.9582 (0.56207)		

^a Number; ^b Standard Deviation

program successfully cultivates the acquisition of professional behaviors essential for clinical practice. These results align with the findings of Zare and Vizesfar et al. (23), who observed that educational programs that are well-organized and include explicit behavioral goals are more likely to lead to substantial changes in behavior among medical trainees.

In addition, Bates et al. (24) presented a discerning perspective on assessing behavioral results, suggesting that although behavioral changes are essential, they should be evaluated within the broader learning environment and the specific objectives of the educational program. This emphasizes the significance of matching behavioral assessments with the overall goals of the internship program, guaranteeing that the behaviors being assessed are directly applicable to the interns' future professional positions.

The findings from this study reveal that while the Community Medicine Internship Program is generally effective, there are areas where further enhancement could be beneficial. Continuous feedback and adaptation are vital to sustaining high levels of intern satisfaction, as variations in this area can undermine the overall effectiveness of the program. Furthermore, the significant increases in learning and behavioral outcomes underline the relevance of practical, experiential learning methods in medical education. Research by Ashghali Farahani et al. (25) supports the use of interactive learning strategies, such as role-playing and simulation, to promote both information retention and the application of skills in clinical settings. Given these findings, the program can potentially include more diverse and collaborative training strategies corresponding to medical education research. Simulation-based training and other experiential learning methods have been found to improve information acquisition and clinical environments (20).

CONCLUSION

The investigation of the Community Medicine internship program utilizing the Kirkpatrick model offers a thorough comprehension of its efficacy in improving interns' satisfaction, learning of skills, and behavior. Although the program has shown notable abilities, especially in promoting professional development, ongoing efforts to adjust and upgrade are required to sustain and improve these results. Future assessments should be added by including further levels of assessment, such as the enduring influence of the program on interns' professional pathways and patient care results.

Ethical considerations

Ethical issues including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc. have been completely observed by the authors. The current research was approved by the organizational ethics committee of Mashhad University of Medical Sciences with the IR.MUMS.MEDICAL.REC.1399.051 code of ethics. It is worth mentioning that to comply with the principles of confidentiality, interns' names and personal information were not included in the data analysis.

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