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### An interventional study to compare the effect of teaching on lecture method and the use of educational package on the knowledge and performance of health care providers

**Background:** Health care providers are considered as a group of primary health service workers increasing their scientific and practical ability. Providing an effective and desirable teaching is one of the main ways to improve the quality of services; however, this will be possible by selecting an appropriate training method. Therefore, the goal of this study was to determine the effect of teaching the principles of caring for pregnant mothers on knowledge and health care providers' performance with on-site and non-attendance methods.

**Methods:** This study was conducted as an interventional and semi-experimental study in 2017-2018. Sixty four health care providers were enrolled in Mashhad's health center. They were randomly divided into two groups of 32. For the non-attendance group, the educational package contents were prepared in the form of PowerPoint slides consisting texts and images. For the on-site teaching group, the participants were taught in lecture for six hours. The amount of knowledge of health care providers was assessed before and after training by using a written test questionnaire and their performance at work was controlled by a checklist

**Results:** By comparing the scores before and after the educational intervention, the difference in mean scores in the on-site group was  $4.50 \pm 0.334$  and in the non-attending group was  $3.77 \pm 0.332$ . This difference in the values in each group was significant. The difference between the mean post-test scores in the two groups was  $0.70 \pm 0.463$ . The difference in the mean of functional scores with two types of training was determined  $17.1 \pm 0.246$ , and no significant difference was found for the groups ( $p = 0.496$ ).

**Conclusion:** In this study, the increase in the level of health care information was acceptable. Both methods had the same effect in the cognitive and functional domain. Therefore, the method of using the educational package can be a good alternative to the lecture method.

**Keywords:** Teaching, Lecture, Educational package, knowledge, performance, health care providers

### دراسة تدخلية لمقارنة تأثير التدريس على طريقة المحاضرة و استخدام الحزمة التعليمية على معرفة و ممارسه مقدمي الرعاية الصحية

**خلفية:** يعتبر مقدمو الرعاية الصحية مجموعة من العاملين في الخدمات الصحية الأولية و من الأهداف الاستراتيجية في النظام الصحي هي ازدياد قدرتهم العلمية و العملية لتحسين جودة الخدمات ، و سيكون هذا ممكناً عن طريق اختيار طريقة التدريب المناسبة. و لهذا، كان الهدف من هذه الدراسة هو تحديد تأثير تدريس مبادئ العناية للأمهات الحوامل على أداء مقدمي الرعاية الصحية و معرفتهم مع أساليب في الموقع و غير الحضور

**الطريقة:** أجريت هذه الدراسة كدراسة تدخلية و شبه تجريبية في سنة 1397-1396 شمسيه. 64 من مقدمي الرعاية الصحية في مركز مشهد الصحي ينقسمون إلى مجموعتين من 32. تم إعداد محتويات الحزمة التعليمية لنهج غير محاضره و التدريس محاضره في الفصول الدراسي للآخرين ثم تقييم مقدار المعرفة باستخدام استبيان اختبار مكتوب و الأداء من خلال قائمة مرجعية.

**النتائج:** مقارنة الدرجات قبل التدخل التعليمي و بعده ، كان الفرق في متوسط الدرجات في الموقع المحاضره  $4.50 \pm 0.334$  و في حالة عدم الحضور كان  $3.77 \pm 0.332$  . كان هذا الاختلاف في القيم في كل من المجموعتين كبيراً و ذا معنى. كان الفرق بين متوسط الدرجات في الاختبار الاخر في المجموعتين  $0.70 \pm 0.463$ . تم تحديد الفرق في متوسط الدرجات الوظيفية مع نوعين من التدريب  $17.1 \pm 0.246$  و لم يتم العثور على فرق كبير للمجموعات.

**الاستنتاج:** في هذه الدراسة ، كانت الزيادة في مستوى معلومات مقدمي الرعاية الصحية مقبولة و كانت لكلا الطريقتين نفس التأثير في المجال المعرفي و الوظيفي. و لهذا ، فإن طريقة استخدام الحزمة التعليمية يمكن أن تكون بديلاً جيداً عن طريقة المحاضرة.

**الكلمات المفتاحية:** التدريس ، المحاضرة ، الحزمة التعليمية ، المعرفة ، الأداء ، مقدمو الرعاية الصحية

### يك مطالعه مداخله ای برای بررسی مقایسه ای تاثیر آموزش به روش سخنرانی و استفاده از بسته آموزشی بر دانش و عملکرد مراقبین سلامت

**زمینه و هدف:** مراقبین سلامت گروهی از ارائه دهندگان اولیه خدمات بهداشتی درمانی محسوب می شوند و افزایش توان علمی و عملی آنان یکی از اهداف استراتژیک در نظام سلامت می باشد. ارائه آموزش اثربخش و مطلوب جهت یادگیری، از راهکارهای اساسی بهبود کیفیت خدمات بوده و این امر با انتخاب شیوه مناسب آموزشی امکان پذیر خواهد بود لذا هدف این مطالعه تعیین تاثیر آموزش اصول مراقبت مادران باردار بر دانش و عملکرد مراقبین سلامت به روش های حضوری و غیرحضوری بود.

**روش:** این مطالعه از نوع مداخله ای و نیمه تجربی بوده و در سال 97-1396 انجام شده است. 64 نفر از مراقبین سلامت شاغل در مرکز بهداشت مشهد به دو گروه 32 نفری تقسیم شدند. برای آموزش غیرحضوری مطالب بسته آموزشی آماده گردید و برای گروه آموزش حضوری به روش سخنرانی تدریس شد. میزان دانش با کمک پرسشنامه آزمون کتبی و نحوه عملکرد با چک لیست مهارتی کنترل گردید.

**یافته ها:** با مقایسه نمرات قبل و بعد از مداخله آموزشی ، تفاوت میانگین نمرات در گروه حضوری  $4/50 \pm 0/334$  و در گروه غیرحضوری  $3/77 \pm 0/328$  بود. این تفاوت مقادیر در هر یک از گروه ها معنادار بود. اختلاف میانگین نمرات پس آزمون برای دو گروه به میزان  $0/70 \pm 0/463$  بود. تفاوت میانگین نمرات عملکردی با دو نوع آموزش  $0/0 \pm 17/246$  تعیین شد و تفاوت معناداری نیز برای گروه ها مشخص نشد .

**نتیجه گیری:** در این پژوهش، افزایش سطح اطلاعات مراقبین سلامت قابل قبول بود و هر دو روش تاثیر یکسان و مشابهی در حیطه شناختی و عملکردی داشت. بنابراین روش استفاده از بسته آموزشی می تواند جایگزین مناسبی برای روش سخنرانی شود .

**واژه های کلیدی:** آموزش، سخنرانی، بسته آموزشی، دانش، عملکرد، مراقبین سلامت

### طبی خدمات پیش کرنے والوں پر لکچر کے طریقہ کار اور تعلیمی پکیج کے اثرات کا جائزہ

بیگ گراؤنڈ: ابتدائی طبی خدمات دینے والے ایسے افراد ہوتے ہیں جنہیں جن کی علمی اور عملی توانائیوں میں اضافہ کرتے رہنا ایک استراتیجک امر شمار ہوتا ہے۔ بہتر طبی خدمات حاصل کرنے کے لئے ضروری ہے کہ طبی عملے کو بہتر تعلیم دینے کے لئے اقدامات کئے جائیں۔ اس تحقیق کا یہی هدف ہے اور اس میں حاملہ خواتین کی نگہداشت کے اصولوں کی تعلیم کا ابتدائی طبی سہولیتیں دینے والے افراد پر کیسے اثرات پڑتے ہیں۔

**روش:** یہ تحقیق دوہزار سترہ اور اٹھارہ میں انجام پائی تھی اس میں مشہد میں طبی مراکز میں کام کرنے والے چونسٹھ افراد کو شامل کیا گیا تھا، بتیس بتیس افراد کی دو ٹیمیں بنائی گئی تھیں۔ جس گروپ کو کلاس میں نہیں بلایا گیا تھا اسے نوٹس ڈئے گئے تھے ، دوسرے گروہ کو کلاس میں تعلیم دی گئی تھی ۔

تحقیق میں شریک افراد کا کتبی امتحان لیا گیا اور مہارتوں کی چیک لسٹ سے ان کی توانائیاں جانچی گئیں ۔

**نتیجے:** کلاسوں سے پہلے اور بعد میں دونوں گروہوں کے نمبروں کو دیکھنے سے پتہ چلتا ہے کہ دونوں گروہوں میں تعلیمی لحاظ سے خاصہ فاصلہ پایا جاتا ہے ۔

**سفارش:** اس تحقیق میں چونکہ طبی خدمات دینے والے افراد کی معلومات قابل قبول تھیں اور انہوں نے دونوں روشوں سے فائدہ اٹھایا تھا لہذا یہ کہا جاسکتا ہے کہ تعلیمی پکیج کلاس میں لکچر کی روش سے بہتر ثابت ہوسکتا ہے۔

**کلیدی الفاظ:** تعلیم ، لکچر ، تعلیمی پکیج ، علم ، طبی خدمات

## INTRODUCTION

Applying innovative and active teaching methods will help employees play their role effectively. One of the components of society health is the educational empowerment of staffs in service centers of that community (1). Pregnant women are desirable as a part of society in need of health services (2). Efforts to maintain and promote the health of mothers have always been a global action (3). One way to reduce the maternal mortality rate which is one of the indicators of developing countries, is to take care of mothers' adequacy during pregnancy and after delivery, so there is no doubt about its effectiveness in fostering a healthy pregnancy and providing maternal and infant health (4). There is always a need to build capacity in health care providers to diagnose and manage the complications during pregnancy, childbirth and postpartum, therefore regular education is recommended in relation to services and in some cases, healthcare providers need to be approved by their professional associations (5).

Paying full attention to health care providers (as a large group of health care staffs) and increasing their scientific and practical ability is one of the strategic goals in the health system. Considering the large number of health care providers and the high volume of their hours of study and their employment, it has always been one of the concerns of higher education centers to choose a suitable and cost-effective educational method for their training courses.

In the present time, education is known as the basic rights of humans (6). Education can be learning of learners and a process for acquiring knowledge and skills and increasing the ability of individuals to make health decisions and thus to change behaviors (7).

In a categorization, the educational method is categorized in two ways, "on-site" and "non-attendance" (8). With the advent of science and technology, modern technology replaces old technology quickly to provide a powerful tool for users (9). Also, the rapid development of information and communication technology has created new opportunities for planning and implementing new methods of training (10).

Using these technologies in the field of health has always been sought to achieve three outcomes including the learning of correct information, changes in health related attitudes, and new health interventions (11).

The purpose of this study was to compare and determine the effect of on-site and non-attendance teaching on the care principles of pregnant mothers to promote knowledge and practice of health care providers in 1396; however, it is hoped to help in choosing the appropriate and effective ways to transfer information and skills.

## METHODS

The present research was an intermediate and semi-experimental type done in the Imam Reza Educational Center, as well as 35 comprehensive health service centers in Mashhad. The statistical population of this study was 175 health care providers having family health public and health certificates of whom 64 were selected by available sampling

method. These numbers were randomly assigned to two groups of 32, and the quota of educational qualifications was considered equal in each group.

Educational materials were provided for participants and then a written pretest were taken. The compact disc (CD) containing power pint slides was put into the on-site Group, and 3 weeks of study were considered for this group. After this period, the presentation was presented in the form of a lecture for 6 hours. At that time, the written posttest was performed for the groups. Subsequently, by referring to the workplace of the research samples, the performance of all was based on health care providers' checklist of control and score.

The data collection tool was a written test questionnaire with 24 questions and a checklist of performance review with 20 skill titles. Also, some check list items were indirectly controlled by the Electronic File System (Sina System). The scores were identified from zero to 20 and compared to determine the amount of knowledge and performance by groups and also by degrees.

In order to determine the validity of educational materials, a written test questionnaire and a checklist were used to apply the final corrections so that they could evaluate the status of performance while considering the content and objectives of the lesson based on the opinions and experiences of 10 people including midwifery and family health educators in the provincial education centers, professors of the university, and technical assistants responsible for the training unit in Mashhad's Health Center. To determine the reliability of the questionnaire, the number of questions and their difficulty levels were considered and split-half test with a sample of 18 people was used to determine the correlation coefficient of the questions, as well as the accuracy and reliability of the questionnaire. In analyzing this test, the reliability of the questionnaire was confirmed with a coefficient of 0/851. The criteria for entering this study were the working of health care providers at the time of study at Mashhad Health Service Centers, passing elementary education courses, and having a relevant certificate. Exit criteria included care providers that did not attend training sessions, whether they were on maternity leave or in holiday.

Ethical considerations, including obtaining a university license, responding to participant mistakes, not manipulating the information, and mentioning all sources in this research were observed. The study was approved by the Ethics Committee of Mashhad University of Medical Sciences, by ethical approval code: 1397.431.

All research data including pretest, posttest and performance tests were categorized into two groups and academic records in Excel software. Based on the SPSS software program, descriptive indexes including mean, minimum and maximum grades, variance and standard deviation were determined and the distribution of data was also determined according to elongation and skewness. With the help of statistical tests, distribution and normalization were examined.

## RESULTS

The findings of this study included the following:

- In the on-site group, 25% were family health experts and 75% were public health bachelors, while in the non-attendance group, 21.88% were family health experts and 78.22% were public health bachelors. The two groups did not differ significantly in terms of educational qualification (P=0.768).
  - The average age of health care providers in the on-site group was  $32.28 \pm 0.777$  and in the non-attendance group was  $31.09 \pm 0.855$ . Based on the t-test, differences in age groups were not significant (P=0.308).
  - The mean, standard deviation, the minimum and maximum scores for quantitative variables in pretest, posttest, and performance status are in accordance with Table 1.
  - In order to determine the effect of each educational method on the knowledge and performance of health care providers, the mean scores were considered before and after intervention. The difference in mean scores in the on-site group was  $4.50 \pm 0.334$  and in the non-attending group was  $3.77 \pm 0.332$ .
  - In one of the educational methods, there was a significant difference between the mean scores before and after training (P < 0.001).
- According to Table 2 in comparing the effect of the type of educational method, there was no significant difference in the mean scores before and after training of the study groups in the posttest or performance condition in comparing the effect of the type of educational method.
- Mean scores for public health bachelors were  $16.77 \pm 0.151$  and family health experts were  $17.56 \pm 25.88$ . Mean differences were not significant (P = 0.162). In the performance condition, the mean scores of the public

health bachelors were  $17.18 \pm 0.223$  and  $17.62 \pm 0.140$  for the family health experts and there was no significant difference between mean performance scores in two groups (P = 0.131).

**DISCUSSION**

The purpose of this study was to investigate and compare the effect of on-site and non-attendance education on the level of knowledge and practice of health care providers in the field of maternity care principles. To this end, an effective and desirable educational method for transmitting information was selected to improve the level of learning and practical skills. According to the findings of the study, both educational methods through lecture and the use of compact discs on the level of knowledge and performance status of health care providers in the field of maternity care principles have been very effective and have had a positive effect. In a comparative study, the education of pregnant women's care using the two methods of on-site and non-attendance showed the same effect on the information and skills of participants. The results of educational study were similar for two groups of public health bachelors and family health experts, and it was determined that the difference in educational degrees of health care providers does not play any role on their cognitive and functional aspects. Therefore, due to the large number of training courses and a high number of health care providers, in the same conditions, non-attendance education (compact disc) was more appropriate in terms of time and cost; on the other hand, it can be used and run at all times of the day. Therefore, this new method can be replaced with the traditional method. Also, the compact discs can be used as a

**Table 1. Descriptive Indicators of Quantitative Variables in Study Groups**

Maximum Score	Minimum Score	standard deviation	± mean Standard error	Quantitative Variable	Study Group
18.33	10	2.103	13.22±0.371	Pretest score	on-site
20	14.17	1.629	288.0±17.73	Posttest score	
19.5	15.25	0.946	17.60±0.167	Performance Score	
15.83	8.33	1.897	13.25±0.335	Pretest score	non- attendance
20	12.5	2.051	0.362±17.03	Posttest score	
19.25	15.5	1.026	17.42±0.181	Performance Score	

**Table 2. Comparison of the effect of educational methods on mean scores in study groups**

Independent sample T test results	95% confidence interval		Levin test result	mean standard± deviation	Educational method	Quantitative Variable
	Upper limit	Lower limit				
t= 1.518 p= 0.134	1.629	0.222-	0.114	0.70±0.463	on-site non- attendance	Pretest
t= 0.728 p= 0.469	0.672	- 0.313	0.469	0.17±0.246	on-site non- attendance	performance

complement to the lecture method for health care educators. By studying and reviewing the texts of other research in the field of comparing the effect of both on-site and non-attendance teaching methods, as well as the results of this study, Mardigan (12), Sharifinia (13), Ebadi (14), Agarwal (15), and their colleagues have been in line with the results of this study and all of them concluded a significant difference in comparison between the effectiveness of on-site and non-attendance teaching methods. In this research, every type of on-site trainings, including computer-based, compact disc, and online traditional way of lecturing in terms of impact on knowledge scores or performances has been studied.

The results of the research done by Nastizai and Hazareh Moghaddam (8), Abotarboosh (16), Enayati and Rayatnezhad (17) about the effect of comparing the two educational methods with the current review were not similar and the impact of the teaching has been reported according to the findings of each study.

The research of Hashemi and colleagues (18), for his target group, showed more impact on the method of simulator training using the patient than the traditional method (lecture). Even in Abotarboosh's research, participants were more satisfied with the traditional way.

By reviewing the mentioned research and their results, the appropriate actions including problem statements, applied goals, method of implementation and suggestions were considered. This was the strength of the plan. Also, the new and educational needs of study, the good support of managers, and the good cooperation of health care providers were other positive points of the present research.

There were some limitations in this study, which involved spending more time of reviewing the performance and attending to the comprehensive health service centers, and the fluctuations in the population under their control. Also, before conducting a training course and doing a study, due to the lack of full service of health care providers to pregnant

mothers, their work performance was not possible.

Considering the results of the study, it is suggested:

1-In addition to organizing classes for Behvarzi (practical nursing) instructors and curriculum instructors, holding non-attendance courses in more appropriate ways and taking the necessary lessons into practice are suggested.

2-In the rehearsal or in-service training courses for health care providers and other health workers that are conducted annually, non-attendance teaching methods with the help of educational packages are also used to enhance their knowledge and skills.

3-Attitude and opinions of employees on the impact of on-site training and non-attendance surveys will be conducted.

4-The effect of comparing two educational methods with the follow up of the monthly maximum should be considered.

5-Also, designing and intervention to identify effective factors and effective performance problems on health care providers' performance should be considered in future studies.

#### 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.

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**Conflict of interest:** None

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