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# An Academic-Clinical Partnership Project: The Effects of a Scientific Research Skills Education Program

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## ABSTRACT

**Objective:** The present study aims to reveal the effects of the education program provided to nurses on their perceived obstacles to conducting scientific research and attitude for scientific research.

**Materials and Methods:** This interventional study in the pre-test post-test model was carried out between February 2018 and August 2018. The universe of this study consisted of nurses working in three major public hospitals in Manisa (N=1023). The sample was composed of nurses who worked in these hospitals and agreed to participate in this research (n=106). The sociodemographic questionnaire, the nurse and presentation subscales of the barriers to research utilization scale and the attitude scale for scientific research were used in data collection. The scientific research skills education program was presented to the nurses participating in this research.

**Results:** There was a significant difference between pre and post scores of the participants in the reluctance to help researchers, negative attitude towards research and positive attitude towards researchers subscales of attitude towards scientific research scale ( $p < 0.05$ ), but there was no significant difference between the pre and post scores of the participants in the subscales of the barriers to research utilization scale and positive attitude towards research subscale of attitude towards scientific research scale ( $p > 0.05$ ).

**Conclusion:** After the educational program, the findings showed that the participants' reluctance to help the researchers and their negative attitudes towards research decreased, and a positive attitude towards researchers increased. As a result, while education intervention affected nurses' attitudes towards research, it had no effect on their perceptions of an obstacle to scientific research.

**Keywords:** Nurse, scientific research, educational program

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## INTRODUCTION

As cost-effectiveness and quality improvement gain importance in health care, it is important to base the change studies in health institutions on research results and to use the research in quality improvement projects (1, 2). When considered within the framework of these new approaches, which are gaining importance within the health system, the employees in the health sector should also base their applications on scientific research (3). Nurses constitute a large workforce within the health system, so it is important that nursing practices are based on research concerning quality of care. As in many disciplines, there is a large gap between practice and research in nursing, and the inadequacy of research-based practice concerning both quality and quantity is a serious problem in nursing (4).

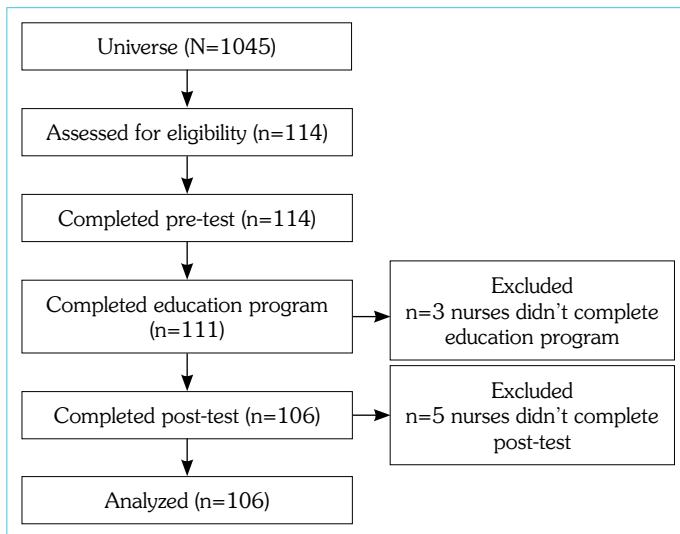
The primary condition of professionalization in nursing is undoubtedly to understand science and scientific method adequately and to reflect it to the profession. Research using scientific methods in nursing will carry nurses from experience-based decisions to evidence-based decision making and as a result, nursing that produces its own knowledge will take more responsibility for the scientific value and use of knowledge (2, 4). With evidence-based practices, it is ensured that practices which are one of the professional occupational criteria are placed on the basis of research (5).

While evidence-based research is so important for professional nursing, nurses working in the clinic are more limited in this regard. Research conducted in the field of nursing is increasing in Turkey, but these studies are mostly conducted and published by academician nurses (6). In addition to academic nurses, nurses working in the clinic should be a part of the scientific research process concerning improving nursing care quality (7). There are many personal and organizational obstacles for nurses working in clinics to conduct scientific research. The lack of qualified research skills of nurses working in the clinic, being isolated from the academic environment in which they can discuss scientific research, and lack of confidence to accept the changes are the most important obstacles for nurses to conduct scientific research (7, 8).

**Table 1.** Data for barriers to research utilization and attitude for scientific research scales

Scales	N of items	Min-Max	Cronbach's Alpha	This study Cronbach's Alpha Pretest-Posttest
Subscales of Barriers to Research Utilization Scale				
Presentation	8	8–32	0.730*	0.702–0.811
Nurse	6	6–24	0.780*	0.776–0.853
Subscales of Attitude Scale for Scientific Research				
Reluctance to help researchers	8	8–40	0.851**	0.844–0.864
Negative attitude towards research	9	9–45	0.814**	0.823–0.831
Positive attitude towards research	7	7–35	0.802**	0.898–0.918
Positive attitude towards researchers	6	6–30	0.764**	0.940–0.657

\*Cronbach's Alpha of Turkish validity and reliability study [(Temel et al. 2010) (13)] \*\*Cronbach's Alpha Turkish validity and reliability study [(Korkmaz, Şahin and Yeşil 2011) (14)]

**Figure 1.** Flow chart of the research

Developing the research skills of nurses, which constitute a large workforce within health services, and creating a research culture will improve the quality of health care services provided to individuals. The present study aimed to find out the effects of the education program provided to nurses on their perceived obstacle to conducting scientific research and attitude for scientific research.

## MATERIALS and METHODS

### Design and Sample

This study was designed as a single group pretest-posttest study. In this study, we evaluated the efficiency of scientific research skills education program. The universe of this study consisted of nurses working in three major public hospitals in Manisa city center (N=1023). The sample was composed of nurses who worked in these hospitals and agreed to participate in this research (n=106) (Fig. 1). While determining the number of nurses to participate in this study from each hospital, stratification was performed by considering the total number of nurses working in these hospitals. Thirty-nine nurses from the first patient, 34 from the second hospital and 33 from the third hospital were included in this study. At the end of this study, according to the power analysis, it was found

that the study had 80% statistical power in a 95% confidence interval. Inclusion criteria were as follows: completing whole periods of the scientific research education schedule and willingly accept to take part in this study.

### The Content of Scientific Research Skills Education Program

The education program which prepared to improve research skills of nurses consisted of the following titles: importance of scientific research in nursing, evidence-based nursing practice, determination of the research topic, research ethics, preparing the research for the ethics committee, research types, steps of the research process, population and sample selection, sample size calculation, data collection and evaluation, reporting research results. While deciding the content of the education program, we benefited from both literature and expert opinions (9–11). The experts consisted of five faculty members who conducted research and biostatistics courses in the field of public health in medical school and in the field of public health nursing in the faculty of health sciences.

### Data Gathering

The data of this study were gathered using a sociodemographic questionnaire, the nurse and presentation subscales of the barriers to research utilization scale and the attitude scale for scientific research between February 2018 and August 2018.

### 1. Sociodemographic Questionnaire

This form consisted of 15 questions on sociodemographic data, such as the participant's age, department, gender, marital status, year of graduation, working position, attending the scientific congress, reading the research, doing research after graduation, following professional journals.

### 2. Barriers to Research Utilization Scale (nurse and presentation subscales)

The scale which was developed by Funk et al. (12) (1991) assesses nurses' perceptions of obstacles to research usage in practice. The scale was adapted to Turkish by Temel et al. (2010) (13). The 29-item scale consisted of the institution (organization), presentation (communication), research (innovation) and nurse (adopter) subscales (Table 1). The scale items range from 1-5; (1) no obstacle (2) less obstacle (3) moderate obstacle (4) multiple obstacle (5) I have no idea. High scores getting from scale indicate a high perception

of obstacle (12, 13). In this study, the nurse and presentation subscales of the barriers to research utilization scale were used

### 3. The Scale of Attitudes towards Scientific Research

The scale measures the common manner for scientific research. The 30-item scale consisted of the reluctance to help researchers (8 items), negative attitude towards research (9 items), positive attitude towards research (7 items), positive attitude towards researchers (6 items) subscales (Table 1). The Scale of Attitudes towards Scientific Research was a 5 point Likert scale: “(1) I disagree”, (2) disagree”, “(3) undecided”, “(4) agree” and “(5) fully agree. While the high scores getting from the reluctance to help researchers and negative attitudes towards research subscales show negative attitudes, high scores getting from the positive attitude towards research and positive attitude towards researchers subscales show positive attitudes (14).

#### Procedures

This study was performed in 3 steps as follows:

**Step 1 (pre-test session):** Data were collected by face to face interviews with the nurses by researchers. First, the sociodemographic questionnaire, the nurse and presentation subscales of the barriers to research utilization scale and the scale of attitudes towards scientific research were applied to the participants before education. It took about 10 minutes to collect pre-test data.

**Step 2 (education session):** The education was delivered by the researchers. One of the researchers was an associate professor, one researcher was an assistant professor, and the other three researchers were research assistants in the nursing department of a university. All of the researchers previously participated in many courses on conducting scientific research in the field of nursing and had national certificates in the field of scientific research in nursing. Also, one of the researchers gave a lecture to undergraduate, master and doctoral level nursing students on scientific research methods in nursing at the university. Questions-answers and demonstration methods were used during education and it was completed in five sessions, each of which lasted 20 minutes. 7-minutes breaks were given between sessions. The total education period lasted two days for each hospital. Since this study was carried out in three hospitals. Presentations of education were made for each hospital separately.

The education was delivered using PowerPoint presentations prepared by the researchers. In addition, before the education, calculators were distributed to the participants, and these calculators were used to teach participants how to calculate the sample size. Questions of the participants were fully answered during education.

**Step 3 (post-test session):** To evaluate the recall knowledge of the nurses, we performed the post-test one month after the education program. The sociodemographic questionnaire, the nurse and presentation subscales of the barriers to research utilization scale and the scale of attitudes towards scientific research were applied to the participants to assess the effectiveness of education.

#### Ethics

The necessary ethical permission was obtained from Manisa Celal Bayar University Ethics Committee (The approval date; February 14, 2018, and the approval number; 20478486) and informed

**Table 2.** Sociodemographic characteristics of nurses

Characteristics	n	%
Age *34.15±8.41, **Min: 20.00, Max: 59.00, Median: 33.00		
34 years and under	58	54.7
Above 34 years	48	45.3
Gender		
Female	91	85.8
Male	15	14.2
Education		
High school degree	17	16
Bachelor's or master's degree	89	84
Marital status		
Married	69	65.1
Single	37	34.9
Total working experience *135.91±103.28 **Min: 2.00, Max: 384.00, Median: 109.50		
136 months and under	67	63.2
More than 136 months	39	36.8
Working periods		
Shiftwork	84	79.2
Daytime	22	20.8
Working position		
Clinical nurse	70	66.0
Executive nurse	27	25.5
Other	9	8.5
Attending scientific congresses***		
Yes	31	29.2
No	75	70.8
Listening nursing research presentation***		
Yes	30	28.3
No	76	71.7
Reading nursing research		
Yes	47	44.3
No	59	55.7
Doing research after graduation		
Yes	33	31.1
No	73	68.9
Attending a nursing course after graduation		
Yes	13	12.3
No	93	87.7
Subscribe to a nursing journal		
Yes	4	3.8
No	102	96.2
Membership to the occupational association		
Yes	34	32.1
No	72	67.9
Total	106	100.0

\*Mean±Standard deviation; \*\*Minimum, maximum, \*\*\*Last one-year period had been evaluated

**Table 3.** Comparison of pre-test/post-test scores of barriers to research utilization scale and the scale of attitudes towards scientific research

Scales	Pre-test			Post-test			p*
	Mean±SD	Median	IQR**	Mean±SD	Median	IQR**	
Subscales of Barriers to Research Utilization Scale							
Presentation	16.98±3.67	17.00	4.00	17.34±4.14	18.00	5.00	0.261
Nurse	26.35±4.50	27.00	6.00	25.88±5.51	27.00	7.75	0.560
Subscales of Attitudes towards Scientific Research Scale							
Reluctance to help researchers	18.70±6.21	18.00	7.75	17.27±5.95	17.00	9.75	<b>0.004</b>
Negative attitude towards research	19.07±6.08	19.00	7.00	17.63±5.68	18.00	6.00	<b>0.002</b>
Positive attitude towards research	26.61±4.95	27.00	4.75	26.78±4.94	27.00	4.75	0.180
Positive attitude towards researchers	24.26±4.64	24.00	4.75	25.15±3.82	24.00	5.00	<b>0.035</b>

\*Wilcoxon Signed Ranks Test; \*\*IQR: Interquartile Range; SD: Standard deviation

written consent was obtained from participants who volunteered to participate in this study. In addition, official permission was obtained from the hospitals where this research was conducted.

### Statistical Analysis

For data analysis, statistical software SPSS, version 21, was used (IBM SPSS Statistics for Windows, Armonk, NY: IBM Corp.). For statistical significance, a probability level of 5% ( $p < 0.05$ ) was required. The Wilcoxon signed-rank test was used to analyze pre-test and post-test differences between the main variables. The Kolmogorov–Smirnov test was used to determine the distribution of the data and non-parametric tests were used since the data did not show normal distribution ( $p < 0.05$ ).

### RESULTS

The mean age of the nurses was  $34.15 \pm 8.41$ . The majority of them were females (85.8%). Of the nurses, 65.1% were married, 63.2% had 136 months or less working experience, 79.2% were working shifts, 66.0% were a clinical nurse. Most of the nurses stated that they did not attend scientific congresses (70.8%) and did not listen to a research presentation about nursing (71.7%) last year. Of the nurses, 55.7% had never read nursing research before, 87.7% had not attended a nursing course after graduation, 96.2% had not subscribed to a nursing journal, and 67.9% were not members of an occupational association. The majority of the participants (97.2%) stated that nursing practices should be based on research (Table 2).

The test results indicated a statistically significant difference between the pre-test and post-test scores of the reluctance to help researchers ( $p = 0.004$ ), negative attitude towards research ( $p = 0.002$ ) and positive attitude towards researchers ( $p = 0.035$ ) subscales. After the education program, nurses' reluctance to help researchers and the negative attitudes towards the research decreased, while the positive attitudes towards the researchers increased. There was no significant difference between the pre-test and post-test scores of the presentation ( $p = 0.261$ ) and nurse ( $p = 0.560$ ) subscales of barriers to research utilization scale and positive attitude towards research ( $p = 0.180$ ) subscale of the scale of attitudes towards scientific research (Table 3).

### DISCUSSION

In the present study, we evaluated the effects of an education program provided to nurses on their perceived obstacles to conducting scientific research and attitude for scientific research. The findings suggest that education for nurses had significant impacts, especially on their attitude for scientific research. Thus, in this study, scientific research skills education played an important role in empowering nurses to conduct scientific research and develop a positive attitude towards scientific research.

In this study, it was found that the majority of participants did not attend scientific congresses, did not listen to a research presentation about nursing, did not read nursing research and did not conduct research after graduation. Both this study and different studies in the literature have shown that the participation rate of nurses in scientific activities is very low (15–17). Scientific activities are one of the ways to provide nurses to use the results of scientific research, which constantly renews and adds dynamism to the content and quality of nursing care. These results of the studies suggest that nurses are not interested in or unable to interested in scientific research sufficiently. In a study conducted by Aydın et al. (15) (2015) to investigate the attitudes of midwives and nurses about the research and their participation in the research, it has found that the participants were not willing to participate in the research due to various reasons, such as lack of time, lack of motivating environment and inappropriate working environment.

In this study, no significant difference was seen between the pre-test and post-test scores of the presentation and nurse subscales of barriers to research utilization scale. Similar to this study, Cline et al. (18) (2019) and O'Nan (19) (2011) have not detected any significant difference between the pre-test and post-test scores of the presentation and nurse subscales of barriers to research utilization scale. This result suggests that nurses' research utilization barriers arise from the cultural structure of the health system rather than the lack of scientific research knowledge. Within the cultural structure of the health system, it is seen that the duties of nursing profession members are still only giving nursing care, and scientific research knowledge is not given enough importance (20). In another study conducted by Nashwan et al. (21) (2016), it has reported that work overload, the lack of support of other health



care workers and the lack of sufficient power of nurses among the barriers to research utilization of nurses. All these findings suggest that barriers to research utilization of nurses should be addressed in a comprehensive and systematic way.

Although there was no significant difference between the pre-test and post-test scores of the positive attitude subscale towards research, there was a significant difference between the pre-test and post-test scores of the reluctance to help researchers, negative attitude towards research and positive attitude towards researchers subscales. Hickma et al. (22) (2018) suggested that education is necessary to change the attitude towards research and to establish a research culture in the clinical field. Silka et al. (23) (2012) conducted a six-month training program to improve the research capacity of nurses and reported that training and support initiatives improve nursing knowledge and attitudes towards research. Spiva et al. (24) (2017) conducted a mentor training program to assess nurses' attitude, knowledge and skill change in evidence-based practice and stated that structured education and intervention programs are effective for nurses to conduct research and participate in the research. Significant changes in the scores of nurses both in this study and the other studies indicate that nurses who attended the scientific research education process are more likely to achieve positive attitude changes towards scientific research.

### Limitations

To our knowledge, no analyses were carried out regarding the methodological validity of the education program, and the education program was not conducted based on the framework of a specific education model. In addition, conducting this research in a small sample group creates a limitation concerning the representation power of the universe.

### CONCLUSION

After the educational program, it was determined that the participants' reluctance to help the researchers and their negative attitudes towards research decreased and a positive attitude towards researchers increased. In line with these findings, it can be proposed to encouraging nurses to increase their participation in scientific activities and provide to take part in the process of scientific research through academic-clinical partnerships. Such educational partnerships will have positive effects on nurses' attitude towards scientific research and perceptions of obstacles, and will also contribute to the development of a research culture in the hospitals where these educations are conducted regularly.

Although these results provide insights regarding barriers to research utilization of nurses and attitudes towards research, these may be affected by many factors. Therefore, this issue should be handled in a multi-faceted way.

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**Ethics Committee Approval:** The necessary ethical permission was obtained from Manisa Celal Bayar University Ethics Committee (date: February 14, 2018, number: 20478486).

**Informed Consent:** Informed written consent was obtained from participants who volunteered to participate in this study.

**Peer-review:** Externally peer-reviewed.

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**Conflict of Interest:** The authors have no conflict of interest to declare.

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