

Innovation Characteristics of Nurses and Their Attitudes Toward Evidence-Based Nursing

Abstract

Aim: The aim of this descriptive study was to determine the innovation characteristics of nurses and their attitudes toward evidence-based nursing.

Methods: The study was conducted with 237 nurses who worked at a university hospital and volunteered to participate in the study between January and March 2018. Data were collected with the "Personal Information Form," "Individual Innovativeness Scale," and "Evidence-Based Nursing Attitude Questionnaire." Number, percentage, mean, and standard deviation were used as descriptive statistical methods in the evaluation of the data. The distribution of the data was evaluated with the Kolmogorov-Smirnov test. Mann-Whitney *U* test, Kruskal-Wallis test, and Spearman's correlation analysis were used to evaluate non-parametric data.

Results: The mean age of the nurses was 34.31 ± 7.08 years. It was found that 86.9% were females, 63.7% were married, 55.7% had a child, and 67.1% had a bachelor degree. According to their innovation characteristics, 43% of the nurses were found as early majority. The mean score of Individual Innovativeness Scale total was 65.85 ± 7.56 and Evidence-Based Nursing Attitude Questionnaire total was 59.00 ± 9.49 . A positive correlation was found between the total scores of Individual Innovativeness Scale and Evidence-Based Nursing Attitude Questionnaire. Nurses who did a scientific research, wrote a manuscript, and participated scientific conferences had higher total scores of Individual Innovativeness Scale and Evidence-Based Nursing Attitude Questionnaire than those who did not carry out these activities ($P < .05$). The total score of Individual Innovativeness Scale were higher in nurses who were satisfied with their job ($P < .05$). No difference was found between job satisfaction and Evidence-Based Nursing Attitude Questionnaire total score.

Conclusion: This study revealed that nurses who participated in scientific activities had better innovation characteristics and attitudes toward evidence-based nursing. Nurses whose individual innovativeness was higher also had positive attitudes toward evidence-based nursing. It was determined that as the individual innovativeness of nurses increased, their attitudes toward evidence-based nursing also increased positively.

Keywords: Attitude, evidence-based nursing, innovation

Özgül Erol¹, Serap Ünsar¹,
Lale Yacan¹, Ayfer Güneş²

¹Department of Nursing, Trakya University Faculty of Health Sciences, Edirne, Turkey

²Trakya University, Health Center for Medical Research and Practice, Edirne, Turkey

Introduction

Innovation is derived from the Latin word "innovates" and is expressed in Turkish with the meaning of "innovation, renewal, innovation."¹ Innovativeness, another meaning of which is to create new and useful applications, presents the truth regarding the necessity of reflecting the rapidly increasing scientific knowledge, especially in the field of health practices.^{2,3} Innovation in nursing is not only a concept that has emerged today but has also been used by Florence Nightingale, the founder of modern nursing. With the increase in technological developments, the concept of innovation and the widespread use of innovation are increasing day by day.⁴ In 2016, the "Innovative Nursing Association" was established in Istanbul to support nurses in the field of innovation, and congresses titled "Innovation in Nursing" were organized and efforts were accelerated to realize the innovative characteristics of nurses and to reveal their potential.⁵

Innovations and changes in the field of health have revealed the importance of using evidence-based practices in treatment and care practices. Evidence-based practices are defined as the process of collecting data, interpreting, evaluating, and performing evidence-based practices.⁶ These applications can improve clinical logic, guide clinical decision-making, and offer practical solutions to clinical problems.⁷ With the use

This study was presented as an oral presentation at the second International Health Sciences Congress between 15 and 17 November 2018, held in Tekirdağ.

Cite this article as: Erol Ö, Ünsar S, Yacan L, Güneş A. Innovation characteristics of nurses and their attitudes toward evidence-based nursing. *J Educ Res Nurs*. 2022;19(1):33-39.

Corresponding author: Özgül Erol
E-mail: ozgulerol@trakya.edu.tr

Received: December 31, 2019
Accepted: June 29, 2020



Copyright@Author(s) - Available online at
www.jer-nursing.org
Content of this journal is licensed under a
Creative Commons Attribution-NonCommercial
4.0 International License.

of evidence-based practices, innovations and developments in the treatment and care processes of patients can be provided, and they can be provided with higher-quality health care services.⁶ These practices also contribute to the establishment and development of standards that should be in health services, as they include the best research results, clinical information, and patient opinions.⁷

As in every field of health, the rapidly increasing scientific knowledge in nursing has brought the use of evidence-based practices to the agenda nowadays. Evidence-based practices include using research results in nursing practices, providing better results by using existing knowledge, and comparing and evaluating the research results.⁸ Evidence-based nursing practices improve the health of patients, support nurses to provide quality care, and are very effective and helpful in ensuring patient safety.⁸⁻¹⁰ Nurses have a key role in adopting innovative and evidence-based practices and using them in care processes via their role as change agents. Innovative and evidence-based practices make a great contribution to the development and maintenance of nursing care quality. Through the use of these practices, patients take better quality care and it also becomes possible to shorten their hospital stay.¹¹ In order to replace the innovative and evidence-based practices with long-established and traditional practices in clinics, it is necessary to train nurses with innovative features, renew and strengthen the curriculums with innovative approaches.^{12,13} In a study by Stokke et al¹⁴, in which nurses' beliefs toward evidence-based practices and their use of these practices were evaluated, the majority of nurses (82.2%) had knowledge about evidence-based practices, but only 10.8% of them developed evidence-based practice guidelines, protocols, and patient information and wrote scientific articles by using evidence-based nursing practices and also included in the evidence-based nursing study groups.¹⁴ It is very important for nurses to be open to new information, think critically, closely follow developments in health sciences, and to contribute to the improvement and development of patients' health by integrating existing and new information into patient care.^{12,13}

Aim of the Study

This study was conducted as a descriptive study in order to evaluate the innovativeness of nurses and their attitudes toward evidence-based nursing.

Material and Methods

Place and Time of Study

The study was conducted with nurses who volunteered to participate in the study and working in a university medical faculty hospital between January and March 2018.

Population and Sample of the Study

The study population consisted of all nurses (N=350) working in a medical faculty hospital of a university. It was aimed to reach the whole universe. The study was completed with a total of 237 (82.9%) nurses, as 43 of the nurses included in the study did not volunteer to participate, 62 of them could not be reached due to reasons such as maternity leave, on/off report, and 8 of them filled in the forms incompletely.

Data Collection Tools

In the research, "Personal Information Form," "Individual Innovativeness Scale (IIS)," and "Evidence-Based Nursing Attitude Questionnaire (EBNAQ)" were used as data collection tools.

Personal Information Form

Personal Information Form consists of 20 questions, including the sociodemographic characteristics (age, gender, marital status, educational status, etc.), professional status (working position, working style, number of patients cared for, etc.), and scientific characteristics (carrying out scientific research activities, participating in scientific meetings, oral presenting/presenting at congresses, following professional publications, etc.) of nurses.

Individual Innovativeness Scale

The original form of the scale was developed by Hurt, Joseph and Cook in 1977 in order to evaluate the innovativeness of individuals in general.¹⁵ The validity and reliability of the scale in Turkey were made by Sarioğlu and Altuntaş.¹⁶ The scale consists of a total of 18 items and 3 sub-dimensions. Sub-dimensions are thought leadership, resistance to change, and risk taking. Sub-dimensions and total score of scale values are obtained by summing the scores obtained from each item. A total of minimum 18 and maximum 90 points are obtained from the scale. According to the scores calculated on the scale, individuals are classified according to their innovativeness. Accordingly, if the calculated score is above 80, it is considered as "innovators," between 69 and 80 as "early adopters," between 57 and 68 as "early majority," between 46 and 56 as "late majority," and below 46 points as "laggards." The Cronbach alpha value of the original scale was determined as 0.89.¹⁶ Cronbach alpha value of the scale was found to be 0.81 in this study.

Evidence-Based Nursing Attitude Questionnaire

The original form of the scale was developed by Ruzafa-Martinez et al.¹⁷ Turkish validity and reliability study was conducted by Ayhan et al.¹⁸ The scale consists of 15 items and 3 sub-dimensions. The lowest 15 and the highest 75 points are obtained from the scale prepared according to the 5-point Likert type. The scale does not have a cut-off point, a high score indicates that the attitude toward evidence-based nursing is positive. The Cronbach alpha value of the original scale was determined as 0.90.¹⁸ Cronbach alpha value of the scale was found as 0.91 in this study.

Evaluation of Data

The data obtained from the research were analyzed using the IBM Statistical Package for Social Sciences for Windows 20.0 package program (IBM SPSS Corp.; Armonk, NY, USA).¹⁹ Number, percentage, mean, and standard deviation were used as descriptive statistical methods. The distribution of the data was evaluated with the Kolmogorov-Smirnov test. Mann-Whitney *U* test, Kruskal-Wallis test, and Spearman correlation analysis were used to evaluate non-parametric data. $P < .05$ was accepted as statistically significant.

Ethical Permissions

In order to conduct the study, written permission was obtained from Trakya University Faculty of Medicine Ethics Committee of Scientific Research (TUTF-BAEK 2017/328). Written consent was obtained from the institution where the study was conducted, and verbal consent was obtained from the nurses participating in the study.

Results

The mean age of the nurses was 34.31 ± 7.08 years, 86.9% of them were women, 67.1% of them had bachelor's degree, and 78.9% of them chose the nursing profession willingly (Table 1). It was determined

Table 1. Comparison of the Individual Characteristics of Nurses with the Total Mean Scores of the Individual Innovativeness Scale and Evidence-Based Nursing Attitude Questionnaire

Characteristics	n (%)	IIS, $\bar{x} \pm SD$	Statistics	EBNAQ, $\bar{x} \pm SD$	Statistics
Gender					
Women	206 (86.9)	65.72 \pm 7.40	Z: -0.754; P=.45	59.32 \pm 9.14	Z: -1.200; P = .23
Men	31 (13.1)	66.70 \pm 8.63		56.87 \pm 11.49	
Educational status					
Health vocational high school	16 (6.8)	63.31 \pm 9.32 ¹	χ^2_{KW} : 12.571; P = .01; ¹⁻² P = .41; ¹⁻⁴ P = .01; ²⁻⁴ P = .01; ³⁻⁴ P < .001	55.75 \pm 8.40	χ^2_{KW} : 19.704; P < .001; ¹⁻⁴ P = .001; ²⁻⁴ P < .001; ³⁻⁴ P < .001
Associate degree	35 (14.8)	65.14 \pm 7.97 ²		58.17 \pm 7.14	
Bachelor degree	159 (67.1)	65.42 \pm 7.09 ³		58.47 \pm 9.27	
Postgraduate	27 (11.4)	70.77 \pm 6.96 ⁴		65.14 \pm 11.82	
Willingly choose the nursing profession					
Yes	187 (78.9)	65.77 \pm 7.57	Z: -0.328; P = .74	58.64 \pm 9.43	Z: -1.160; P = .24
No	50 (21.1)	66.14 \pm 7.58		60.34 \pm 9.70	

Z: Mann-Whitney U; χ^2_{KW} : Kruskal-Wallis test; IIS: Individual Innovativeness Scale; EBNAQ: Evidence-Based Nursing Attitude Questionnaire.

that 72.6% of the nurses were clinical nurses, 61.6% were working in shifts, and half of them were partially satisfied with their profession (Table 2).

It was determined that the total mean scores of IIS and EBNAQ of the nurses doing postgraduate education were statistically significantly higher than those of bachelor, associate degree, and vocational health high school graduates ($P < .05$). While there was a statistically significant difference between the position (clinical nurse, chief nurse of clinics, training nurse, etc.) and the type of working (shift, continuous, daytime, etc.) of nurses and the total mean scores of IIS ($P < .05$), no statistically significant difference was found between the total mean scores of EBNAQ ($P > .05$) (Table 2).

While the mean total score of IIS of those who were satisfied with their profession was found to be higher than those who were dissatisfied and partially satisfied ($P < .05$); there was no statistically significant difference between the total mean scores of EBNAQ ($P > .05$) (Table 2).

It was determined that the individual innovative characteristics and attitudes toward evidence-based nursing were higher in nurses who were carrying out scientific research activities, wrote scientific articles, participated in scientific meetings, presented oral presentations in congresses, presented poster presentations in congresses, and followed professional publications ($P < .05$) (Table 2).

The total and sub-dimension mean scores of the nurses' IIS and EBNAQ were given in Table 3. It was determined that 43% of the nurses were early majority, 34.2% were late majority, 12.7% were laggards, 7.6% were early adopters and 2.5% were innovators in the study (Table 4).

No correlation was found between the age and working time of the nurses and the total mean scores of the scales ($P > .05$). It was determined that as the total mean score of the individual

innovativeness scale increased, the mean total score of the evidence-based nursing attitude questionnaire also increased ($P < .001$) (Table 5).

Discussion

Evidence-based nursing is defined as the process of asking questions to search for research evidence, obtaining evidence by using various information sources, critically evaluating and comparing the evidences in line with the results of research and using this evidence in nursing practice.⁸ Through the use of evidence-based nursing in the last decade, changes in health services and nursing practices have given a great acceleration in improving the patient care quality.^{10,20} The use of evidence-based nursing practices allows patients to access the treatment and care they need and to have sufficient information about their situation, while enabling nurses to use evidence-based information and decision-making mechanisms, to constantly update themselves, to become professional, and also to improve their positions in the team. It enables health care systems to become more efficient and less costly with the help of correct and effective decision-making mechanisms for treatment and care.²¹ Despite the advantages of using evidence-based practices, unfortunately, studies conducted in the world and in our country revealed that most of the nurses continued the practices with the knowledge they learned in the master-apprentice relationship and during the basic nursing education, while those who used evidence-based practices could not put them into clinical practice in an adequate and effective way.²²⁻²⁵ Although there are various factors that cause this situation, one of the factors that affect is having innovative characteristics. In order to practice evidence-based nursing, nurses must first have innovative characteristics, be open to new ideas, follow technological developments and adapt easily to changes, and be able to use their innovative roles effectively with features such as the desire to learn and apply new information.¹³ We can say that innovation and evidence-based nursing are concepts that interact with each other.

Table 2. Comparison of the Professional Characteristics of Nurses with the Total Mean Scores of the Individual Innovativeness Scale and Evidence-Based Nursing Attitude Questionnaire

Characteristics	n (%)	IIS, $\bar{x} \pm SD$	Statistics	EBNAQ, $\bar{x} \pm SD$	Statistics
Working position					
Clinical nurse	172 (72.6)	65.12 \pm 7.80	$X_{KW}: 10.757; P = .02;^{1,2} P = .01;^{1,4} P = .04$	58.20 \pm 9.92	$X_{KW}: 7.379; P = .11$
Clinical chief nurse	34 (14.3)	68.05 \pm 6.85		61.20 \pm 7.10	
Training nurse	4 (1.7)	63.00 \pm 5.29		54.50 \pm 4.43	
Outpatient nurse	26 (11.0)	67.92 \pm 6.31		61.84 \pm 9.14	
Operating room nurse	1 (0.4)	73.00 \pm 1.00		66.00 \pm 1.00	
Working style					
Continuous daytime	89 (37.6)	67.21 \pm 7.98	$X_{KW}: 7.532; P = .02;^{1,3} P = .01$	60.78 \pm 9.38	$X_{KW}: 4.703; P = .09$
Continuous night	2 (0.8)	68.50 \pm 4.94		59.00 \pm 1.41	
Shift	146 (61.6)	64.98 \pm 7.22		57.91 \pm 9.49	
Satisfaction with continuing the nursing profession					
Satisfied	102 (43.0)	67.59 \pm 8.45 ¹	$X_{KW}: 6.574; P = .03;^{1,2} P = .01$	60.45 \pm 10.24	$X_{KW}: 5.958; P = .05$
Partially satisfied	120 (50.6)	64.58 \pm 6.48 ²		58.02 \pm 8.84	
Not satisfied	15 (6.3)	64.13 \pm 7.15 ³		57.00 \pm 8.40	
Carrying out scientific research activities					
Yes	79 (33.3)	69.12 \pm 6.98	$Z: -4.959; P < .001$	62.64 \pm 10.22	$Z: -4.488; P < .001$
No	158 (66.7)	64.21 \pm 7.32		57.18 \pm 8.57	
Carrying out write scientific articles					
Yes	35 (14.8)	68.37 \pm 7.45	$Z: -2.470; P = .010$	65.88 \pm 8.96	$Z: -4.859; P < .001$
No	202 (85.2)	65.41 \pm 7.51		57.81 \pm 9.08	
Participating in scientific meetings					
Yes	169 (71.3)	66.62 \pm 7.44	$Z: -2.952; P < .001$	60.44 \pm 9.23	$Z: -3.703; P < .001$
No	68 (28.7)	63.92 \pm 7.54		55.41 \pm 9.24	
Presenting oral presentations in congresses					
Yes	30 (12.7)	70.26 \pm 7.28	$Z: -3.670; P < .001$	67.13 \pm 7.26	$Z: -5.278; P < .001$
No	207 (87.3)	65.21 \pm 7.40		57.82 \pm 9.21	
Presenting poster presentations in congresses					
Yes	39 (16.5)	69.25 \pm 6.07	$Z: -3.640; P < .001$	65.46 \pm 8.97	$Z: -4.831; P < .001$
No	198 (83.5)	65.18 \pm 7.65		57.73 \pm 9.08	
Following professional publications					
Yes	43 (18.1)	68.83 \pm 7.10 ¹	$X_{KW}: 17.955; P < .001;^{1,2} P = .02;^{1,3} P < .001;^{2,3} P < .001$	61.88 \pm 11.03	$X_{KW}: 18.143; P < .001;^{1,2} P = .036;^{1,3} P < .001;^{2,3} P = .002$
Partially	140 (59.1)	66.22 \pm 7.35 ²		59.60 \pm 8.96	
No	54 (22.8)	62.50 \pm 7.32 ³		55.16 \pm 8.45	

Z: Mann-Whitney U; X_{KW} : Kruskal-Wallis test; IIS: Individual Innovativeness Scale; EBNAQ: Evidence-Based Nursing Attitude Questionnaire.

Table 3. Distribution of Nurses' Total and Sub-dimensional Mean Scores on the Individual Innovativeness Scale and Evidence-Based Nursing Attitude Questionnaire (n=237)

Nurses' Total and Sub-dimensional Mean Scores of IIS	$\bar{x} \pm SD$
Thought leadership	25.59 \pm 3.83
Resistance to change	24.04 \pm 4.57
Risk taking	16.21 \pm 2.08
Total mean scores of IIS	65.85 \pm 7.56
Nurses' total and sub-dimensional mean scores of EBNAQ	$\bar{x} \pm SS$
Beliefs and expectations towards evidence-based nursing	27.73 \pm 4.97
Evidence-based practice intent	15.24 \pm 2.73
Feelings about evidence-based nursing	16.02 \pm 3.00
Total mean scores of EBNAQ	59.00 \pm 9.49

IIS: Individual Innovativeness Scale; EBNAQ: Evidence-Based Nursing Attitude Questionnaire.

Table 4. Distribution of Nurses' Individual Innovation Characteristics (n=237)

Innovation Characteristics According to IIS	n	%
Laggards	30	12.7
Late majority	81	34.2
Early majority	102	43.0
Early adopters	18	7.6
Innovators	6	2.5

IIS: Individual Innovativeness Scale.

In this study, it was determined that the individual innovativeness characteristics and attitudes toward evidence-based nursing of postgraduate nurses were higher than those of bachelor, associate, and vocational health high school graduates. Similarly, in another study, it was determined that the attitudes of nurses with a master's degree toward evidence-based nursing were higher than those of other groups.²⁶ In the study by Eizenberg²¹ examining the personal and professional factors affecting the use of evidence-based practices by nurses, it was reported that as the education level

Table 5. Investigation of the Relationship Between Some Characteristics of Nurses and Scale Scores (n=237)

Some Characteristics	IIS		EBNAQ	
	r_s	P	r_s	P
Age	0.117	.07	0.083	.20
Duration of working	0.126	.05	0.105	.10
IIS	-		0.454	$P < .001$

r_s : Spearman correlation analysis; IIS: Individual Innovativeness Scale; EBNAQ: Evidence-Based Nursing Attitude Questionnaire.

increased, professional behaviors toward evidence-based practices also increased.²¹ In a qualitative study planned by Sönmez and Yıldırım,²⁷ to determine nurses' innovative behaviors and their views on the factors affecting their innovative behaviors, a nurse said, "Education is an important factor in innovative behavior. I see it as an important factor to have a high-level education and graduate education. I think that as the level of education increases, the desire to look and seek, to reach innovation, to create change and to apply the truth increases." He emphasized that education and innovative characteristics were related with each other and stated that education affected innovative characteristics positively.²⁷ It is known that as the education level of nurses increases, they make more efforts to improve themselves by following up-to-date scientific publications, regularly reading articles, and participating in events such as courses, congresses, and symposiums.

In this study, it was determined that the individual innovativeness characteristics of nurses working as clinical chief nurses and outpatient nurses were higher than those working as clinical nurses, while no significant difference was found between their attitudes toward evidence-based nursing. In Başoğlu and Edeer's²⁸ (2017) study, which investigated the individual innovativeness characteristics of nurses in X and Y generations, it was found that the clinics where the nurses worked did not affect their individual innovativeness characteristics.²⁸ In the study conducted by Daştan and Hintistan²⁹, no significant difference was found between service nurses and responsible nurses in terms of attitudes toward evidence-based nursing.²⁹ In a study conducted by Yılmaz et al.²⁶ it was determined that the attitudes of nurses working in surgical intensive care units toward evidence-based nursing were higher than those working in the surgical service and operating room.²⁶ In another study, it was reported that the clinic in which the nurses worked, did not affect their attitudes towards evidence-based nursing.³⁰ The study results demonstrated that nurses' innovative characteristics and attitudes toward evidence-based nursing differ in terms of their positions and clinics.

In this study, while it was determined that the nurses who worked continuously during the day had higher individual innovative characteristics than the nurses who worked in shifts, no difference was found between their attitudes toward evidence-based nursing. In a qualitative study investigating the innovativeness of nurses, a nurse who has been working for 3.5 years said, "... I think that some negative working conditions, such as working on shifts, create intimidation and boredom in nurses and blunt nurses in terms of being open to so much development and change" stating the fact that working conditions and the shift working system had negative effects on innovative behaviors of the nurses.²⁷ It is actual that the daily routines of the nurses who work constantly during the day are more specific, and it is more easier for them to plan a work and maintain it regularly than the nurses who work in shifts. In addition, the fact that nurses who work constantly during the day have a more organized lifestyle allows them to use time more effectively and facilitates their participation in training activities such as courses to improve themselves.

In this study, individual innovativeness characteristics of nurses who were satisfied with their profession were found to be higher than those of nurses who were not satisfied and partially satisfied with their profession, but the satisfaction derived from profession did not affect their attitudes toward evidence-based nursing. In the study by Kahraman et al.³¹ (2011) conducted with intensive care nurses,

it was determined that nurses who chose their profession voluntarily had higher job satisfaction than nurses who chose their profession unwillingly.³¹ In a study, 69% of nurses were satisfied with nursing, 72% were satisfied with the nursing care they provided, and 54% found the quality of the care they provided was sufficient.³² In the same study, it was determined that nurses who were willingly doing their job had higher job satisfaction than those who were not willingly doing.³² In a study by Tambağ et al³³ investigating the effect of nurses' work environment on job satisfaction, it was determined that those who were satisfied with the clinic they worked had higher job satisfaction than those who were not.³³ This situation can be explained by the fact that nurses doing their profession willingly do not see it just as a job that needs to be done, they like to do this, and increase in work willingness increases their job satisfaction. Therefore, they closely follow new information and practices in order to improve themselves and their profession.

It was determined that the individual innovative characteristics and attitudes toward evidence-based nursing were higher in nurses who were engaged in scientific research activities and wrote scientific articles. In the study of Yılmaz et al²⁶, it was determined that nurses who conducted scientific research had higher attitudes toward evidence-based nursing.²⁶ In the study conducted by Arslan and Çelen³⁴, in which the attitudes of nursing students toward evidence-based nursing were determined, it was found that students who wanted to conduct scientific research about their profession after graduation had higher attitudes toward evidence-based nursing.³⁴

This study found that individual innovative characteristics and attitudes toward evidence-based nursing were higher among nurses who participated in scientific meetings. In the study of Baçoğlu and Edeer,²⁸ in which X and Y generation nurses' and nursing students' individual innovativeness awareness was evaluated, it was determined that the innovativeness characteristics of nurses and nursing senior students who participated in scientific meetings were higher than those who did not.²⁸ In the study conducted by Yılmaz et al²⁶, it was found that nurses who had participated in scientific activities had higher attitudes toward evidence-based nursing.²⁶ In the study conducted by Arslan and Çelen³⁴, it was found that students who attended scientific meetings had higher positive attitudes toward evidence-based nursing.³⁴ It is very useful to attend scientific meetings to follow up-to-date professional knowledge and practices and interact with members of the profession. Therefore, it is a desired and expected result that nurses attending such meetings should have more innovative characteristics and positive attitudes towards evidence-based nursing.

In this study, it was determined that nurses who presented oral and poster presentations in congresses had higher individual innovativeness characteristics and attitudes toward evidence-based nursing. In order to present an oral or poster papers in congresses, it is necessary to plan a research and take part in a research process. The nurses who had a research experience had some forefront characteristics such as producing new information, being open to innovations, and being willing to use new information in clinical practices.

It was determined that nurses following professional publications had higher individual innovativeness characteristics and attitudes toward evidence-based nursing. In the study conducted by Arslan

and Çelen³⁴, it was found that students who read journals about the nursing profession had higher attitudes toward evidence-based nursing.³⁴ Another study conducted by Yılmaz et al²⁵ determined that nurses who regularly followed the publications had higher attitudes toward evidence-based nursing.²⁵ It is very important to follow the current literature, to be aware of the latest professional publications and developments. This allows nurses and nursing students to access new information and gain innovative approaches.

Nearly half of the nurses in this study had early majority character. Similarly, in a study, it was determined that half of the students had early majority character.³⁵ In 2 studies in which the innovativeness of nursing students was determined, it was found that the students was late majority.^{36,37} In the study of Utli and Dođru¹² (2018), more than half of the nursing students were categorized as laggards.¹² Science is born out of doubt. Today, rapidly developing medicine and technology cause information to change constantly and rapidly. There is a need for the implementation of education and training programs for the development of innovative and creative features, critical thinking, and problem-solving abilities of nursing students, starting from the first days of their basic professional education.

It was determined that the age and total working time of the nurses did not have an effect on their individual innovativeness characteristics and their attitudes toward evidence-based nursing. In the study by Yılmaz et al³⁸ (2014), in which the head nurses' innovativeness and risk-taking behaviors were investigated, it was found that the duration of working in the profession did not affect their innovative and risk-taking behaviors.³⁸ In the study conducted by Yılmaz et al²⁵ (2019), it was found that the attitudes of nurses towards evidence-based nursing did not change with age and the length of time they worked in the profession.²⁵ In the study of Yılmaz et al²⁶ (2018), it was stated that nurses aged 40 and older had lower attitudes towards evidence-based nursing.²⁶ In the same study, it was found that nurses with less than ten years of employment had higher attitudes towards evidence-based nursing.²⁶

Conclusion and Recommendations

In conclusion, this study revealed that as the individual innovativeness of nurses increased, their attitudes toward evidence-based nursing also increased positively. It was also determined that the innovativeness was higher and the attitudes toward evidence-based nursing were positive of the nurses who had postgraduate education and were engaged in scientific research and writing activities. In order to increase the number of nurses who had positive attitudes toward innovative and evidence-based practices, it is thought that practices such as providing necessary permissions, arranging shifts, providing financial support for participation in scientific activities, and support of managers for attending a postgraduate education, conducting scientific research, and activities will be beneficial. Motivating and supporting nursing students in participating in scientific activities, presenting oral or poster presentations during their undergraduate education will have positive contributions to their professional lives being more innovative and having positive attitude toward evidence-based nursing.

Ethics Committee Approval: Ethics committee approval was received for this study from Trakya University Faculty of Medicine Ethics Committee of Scientific Research (Date: 08 January 2018, Number: TUTF-BAEK 2017/328).

Informed Consent: Verbal permission was obtained from the nurses participating in the study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – Ö.E.; Design – Ö.E., S.Ü., L.Y.; Supervision – Ö.E., S.Ü.; Resources – Ö.E., L.Y.; Materials – Ö.E.; Data Collection and/or Processing – L.Y., A.G.; Analysis and/or Interpretation – Ö.E., S.Ü., L.Y., A.G.; Literature Search – L.Y., A.G.; Writing Manuscript – Ö.E., L.Y.; Critical Review – Ö.E., S.Ü., L.Y.

Declaration of Interests: The authors have no conflict of interest to declare.

Funding: The authors declared that this study has received no financial support.

References

- Elçi Ş. İnovasyon Kalkınmanın ve Rekabetin Anahtarı. 7th ed. Nova Yayınları; 2006.
- Dil S, Uzun M, Aykanat B. Hemşirelik eğitiminde inovasyon. *International Journal of Human Sciences [Online]*. 2012;9(2):1217-1228.
- Kara D. Innovation in nursing practices. *GJPAAS*. 2015;7(7):170-174. [CrossRef]
- Özbey H, Başdaş Ö. Hemşirelikte İnovasyon. *ERÜ Sağlık Bilimleri Fakültesi Dergisi*. 2018;5(1-2):1-7.
- İnovatif Hemşirelik Derneği. Tarihçe. İnovatif Hemşirelik Derneği website. Accessed November 10, 2019. <https://inovatifhemsirelikdernegi.com/tarihce/>.
- Cheng L, Feng S, Hu Y. Evidence-based nursing implementation in Mainland China: a scoping review. *Nurs Outlook*. 2017;65(1):27-35. [CrossRef]
- Yue L, Fan X, Peng H. Abilities and barriers to practicing evidence-based nursing for burn specialist nurses. *Burns*. 2018;44(2):397-404. [CrossRef]
- Kang Y, Yang IS. Evidence-based nursing practice and its correlates among Korean nurses. *Appl Nurs Res*. 2016;31:46-51. [CrossRef]
- Keib CN, Cailor SM, Kiersma ME, Chen AMH. Changes in nursing students' perceptions of research and evidence-based practice after completing a research course. *Nurse Educ Today*. 2017;54:37-43. [CrossRef]
- Rojanasrirat W, Rice J. Evidence-based practice knowledge, attitudes, and practice of online graduate nursing students. *Nurse Educ Today*. 2017;53:48-53. [CrossRef]
- Kartal H, Kantek F. Hemşirelikte inovasyon örnekleri. *Sağlık Hemşirelik Yönetimi Derg*. 2018;1(5):57-63. [CrossRef]
- Utlü H, Vural Doğru B. Hemşirelik ve ebelik öğrencilerinin bireysel yenilikçilik özelliklerinin değerlendirilmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*. 2018;7(3):23-32.
- Ertuğ N, Kaya H. Hemşirelik öğrencilerinin bireysel yenilikçilik profilleri ve yenilikçiliğin önündeki engellerin incelenmesi. *Hemşirelikte Eğitim Araştırma Derg*. 2017;14(3):192-197. [CrossRef]
- Stokke K, Olsen NR, Espehaug B, Nortvedt MW. Evidence based practice beliefs and implementation among nurses: a cross-sectional study. *BMC Nurs*. 2014;13(1):8. [CrossRef]
- Hurt HT, Joseph K, Cook CD. Scales for the measurement of innovativeness. *Hum Commun Res*. 1977;4(1):58-65. [CrossRef]
- Sarioğlu Kemer AS, Altuntaş S. Adaptation of the individual innovativeness scale in nursing profession: Turkish validity-reliability study. *Hemşirelikte Eğitim Araştırma Derg*. 2017;14(1):52-61. [CrossRef]
- Ruzafa-Martínez M, López-Iborra L, Madrigal-Torres M. Attitude towards evidence-based nursing questionnaire: development and psychometric testing in Spanish community nurses. *J Eval Clin Pract*. 2011;17(4):664-670. [CrossRef]
- Ayhan Y, Kocaman G, Bektaş M. Kanıt dayalı hemşireliğe yönelik tutum ölçeği'nin Türkçe'ye uyarlanması: geçerlik ve güvenilirlik çalışması. *Hemarg*. 2015;17(2-3):21-35.
- IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.
- Oh EG, Yang YL. Evidence-based nursing education for undergraduate students: a preliminary experimental study. *Nurse Educ Pract*. 2019;38:45-51. [CrossRef]
- Eizenberg MM. Implementation of evidence-based nursing practice: nurses' personal and professional factors? *J Adv Nurs*. 2011;67(1):33-42. [CrossRef]
- Estabrooks CA. The conceptual structure of research utilization. *Res Nurs Health*. 1999;22(3):203-216. [CrossRef]
- Egerod I, Hansen GM. Evidence based practice among Danish cardiac nurses: a national survey. *J Adv Nurs*. 2005;51(5):465-473. [CrossRef]
- Merih YD, Potur DÇ, Esencan TY. Doğum sonu kliniklerinde çalışan ebe ve hemşireler kanıt dayalı uygulamaların neresinde? *Sağlık Hemşirelik Yönetimi Derg*. 2017;1(4):8-14. [CrossRef]
- Düzzgün F, Dikmen Y, Yılmaz D. Hemşirelerin kanıt dayalı hemşireliğe yönelik tutumlarının incelenmesi. *Acıbadem Univ Sağlık Bilimleri Derg*. 2019;10(4):713-719. [CrossRef]
- Yılmaz E, Çeçen D, Aslan A, Kara H, Toğaç HK, Mutlu S. Cerrahi kliniklerde çalışan hemşirelerin kanıt dayalı hemşireliğe yönelik tutumları ve araştırma kullanımında algıladıkları engeller. *HEAD*. 2018;15(4):235-241. [CrossRef]
- Sönmez B, Yıldırım A. Bir üniversite hastanesinde çalışan hemşirelerin yenilikçi davranışları ve yenilikçi davranışlarını etkileyen faktörlere ilişkin görüşlerinin belirlenmesi: Niteliksel bir çalışma. *Sağlık Hemşirelik Yönetimi Derg*. 2014;1(2):49-59. [CrossRef]
- Başoğlu M, Durmaz Edeer A. X ve Y kuşağındaki hemşirelerin ve hemşirelik öğrencilerinin bireysel yenilikçilik farkındalıklarının karşılaştırılması. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*. 2017;6(4):77-84.
- Daştan B, Hintistan S. Dahiliye kliniklerinde çalışan hemşirelerin kanıt dayalı hemşireliğe yönelik tutumlarının belirlenmesi: Kırşal bölge örneği. *Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi*. 2018;1(1):1-9. Retrieved from <https://dergipark.org.tr/tr/pub/ouhcd/issue/41738/462463>
- Durmuş M, Gerçek A, Çiftçi N. Sağlık çalışanlarının problem çözme becerilerinin kanıt dayalı tutum algıları üzerindeki etkisi. *Journal of Academic Social Sciences*. 2017;53:648-666.
- Kahraman G, Engin E, Dülgerler Ş, Öztürk E. Yoğun bakım hemşirelerinin iş doyumları ve etkileyen faktörler. *DEUHYO ED*. 2011;4(1):12-18.
- Öztürk H, Kasım S, Kavgacı A, Kaptan D, İnce G. Bir üniversite hastanesinde çalışan hemşirelerin iş doyum düzeyleri. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*. 2015;18(1):17-25.
- Tambağ H, Can R, Kahraman Y, Şahpolat M. Hemşirelerin çalışma ortamlarının iş doyumuna etkisi. *Bakırköy Tıp Dergisi*. 2015;11(4):143-149.
- Çelen R. Hemşirelik öğrencilerinin kanıt dayalı hemşireliğe yönelik tutumlarının belirlenmesi. *Sted*. 2018;27(2):99-106.
- Bodur G. Hemşirelik öğrencilerinin bireysel yenilikçilik (İnovasyon) düzeyleri ile girişimcilik eğilimleri arasındaki ilişki. *HSP*. 2018;5(2):139-148. [CrossRef]
- Tarhan M, Doğan P. Hemşirelik öğrencilerinin bireysel yenilikçilik davranışları ile otonomi düzeyleri arasındaki ilişki. *HSP*. 2018;5(1):51-58. [CrossRef]
- Erol Ö, Yacan L, Hayta R, Şahin İ, Yağcı M. Hemşirelik öğrencilerinin yenilikçilik özellikleri ve etkileyen faktörler. *HEAD*. 2018;15(3):142-146. [CrossRef]
- Yılmaz FT, Şen HT, Demirkaya F. Başhemşirelerin yenilikçilik ve risk alma davranışlarının belirlenmesi. *Balikesir Sağlık Bilimleri Derg*. 2014;3(3):147-154. [CrossRef]