




Knowledge, Attitude, and Behaviors of Nursing Students on Evidence-Based Nursing*

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Abstract

Background: Training nurses with the knowledge and skills required by evidence-based nursing practices is one of the main objectives of undergraduate education. It is therefore necessary to determine the knowledge, skills, and behaviors of nursing students on evidence-based nursing and to create appropriate educational strategies.

Aim: The aim of this study was to evaluate the knowledge, attitude, and behaviors of nursing students on evidence-based nursing.

Methods: This descriptive study was conducted at a nursing faculty in Ankara between May and June 2018. The study sample consisted of 212 students continuing undergraduate education at the time of the study who volunteered to participate in the study. The data were collected by the researchers with the "Socio-Demographic Information Form" and "Knowledge, Attitude, and Behaviors of Nursing Students Towards Evidence-Based Nursing Scale." Data were presented as mean, standard deviation, median, and minimum-maximum values for continuous variables and as number and percentage values for categorical variables. Conformity of the data to normal distribution was analyzed by "Kolmogorov-Smirnov" and "Shapiro-Wilk" tests. "Mann-Whitney *U*" test was used to compare variables that did not show normal distribution. $P < .05$ was accepted as statistically significant in all analyses.

Results: Of the students, 94.8% were female, and the mean age was 22.51 ± 0.52 years. Majority of the students had mobile phones (99%) and internet access at home or in the dormitory (93.9%). In addition, it was determined that the students used the internet (87.7%, 112 ± 0.32 minutes per day), books (79.7%), library (48.6%), and journals (19.8%) to obtain medical information. When the sub-dimension scores of "Knowledge, Attitude, and Behaviors of Nursing Students Towards Evidence-Based Nursing Scale" were examined, sub-dimensions with scores in descending order were knowledge (5.27 ± 0.69), future use (4.86 ± 0.63), attitude (2.66 ± 0.99), and practice (2.59 ± 0.84).

Conclusion: Based on the results of this study, it was found that nursing students understood the knowledge they gained about evidence-based nursing and had the tendency to use this approach in their professional lives, but they were lacking in developing attitudes toward evidence-based nursing and accessing medical/nursing evidence. Therefore, it will be highly beneficial to plan trainings and provide clinical guidance for students to access evidence-based nursing practices and transfer these to their respective field of practice.

Keywords: Evidence-based nursing, knowledge, attitude, behavior

Introduction

While the cost of health care and the burden of care increase with increasing life expectancy around the world, effective use of resources and increasing the quality of care are only possible through the use of evidence-based practices.¹ Evidence-based practices are defined as practices that combine the best evidence from systematic research with clinical expertise and are based on research findings.² However, evidence-based practice and using research findings are not necessarily the same thing. Using part of research in clinical settings is an example of using research findings, while evidence-based practice combines various concepts like theory, clinical decision-making, reasoning, scientific knowledge, and research to evaluate evidence.³

The intended effect of evidence-based practice is to standardize health practices based on science and the best evidence. Knowledge of evidence-based practice and related skills is essential for nurses at all levels to ensure safe and quality patient care.

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Evidence-based nursing, in its most comprehensive form, is defined as an approach to be used in nursing care by combining the best evidence obtained with the scientific method, experiences, and patient preferences in patient care decisions in order to provide the best care to patients.⁴ The International Council of Nurses has determined the theme for 2012 as “Filling the Gap: From Evidence to Action” to enable nurses to participate actively in research and to draw attention to evidence-based nursing practices.^{5,6} In the Nursing Regulation, in which the duties, authorities, and responsibilities of nurses are determined by the Turkish Ministry of Health, the necessity of planning, implementing, evaluating, and supervising nursing care based on scientific evidence has been emphasized.^{7,8}

In order for evidence-based nursing to be put into practice, it is necessary to develop the necessary skills in nurses to critically evaluate research findings and to create a culture of basing their practices on scientific knowledge.⁶ Due to the increasing importance given to research and evidence-based nursing practices in health care services, it is increasingly important for nurses and nursing students to have skills to conduct research and review basic literature in order to access information during the clinical decision-making process.

Nursing students' gaining the necessary competencies related to evidence-based nursing such as literature review, analyzing research, transferring research findings to clinical practice, and evaluating evidence will be the driving force for them to perform these practices in their future professional lives.⁹ Training nurses with the knowledge and skills required by evidence-based nursing practices is one of the main goals of undergraduate education. Improving the awareness of future nurses and providing them with knowledge about evidence-based nursing practices during school years will directly affect the quality of nursing care they will provide to society.¹⁰ For this, nursing students should learn the principles and approaches related to evidence-based nursing practices.^{9,11} It is important and necessary to create strategies that improve the knowledge, skills, and behaviors of nursing students on evidence-based nursing practices. There are limited studies in the literature evaluating the knowledge, attitudes, future use, and practices of nursing students about evidence-based nursing.^{8,12,13} In their study, Akutay et al¹³ reported that although the knowledge of nursing students about evidence-based nursing was high, the attitude and practice scores were moderate. Aba et al¹² determined that although more than half of the students who participated in the study had received evidence-based medical education, the mean scores of knowledge, attitude, future use, and practice sub-dimensions for evidence-based nursing were low, and the authors recommended that students be given evidence-based nursing courses during their undergraduate education. Brown et al¹⁴ found that nursing students receiving better education related to evidence-based nursing practices had higher knowledge, attitudes, and future use scores with respect to academic years. Studies in the literature show that even though nursing students have sufficient knowledge about evidence-based practice, attitudes, future use, and practices vary. Further studies aimed at identifying the factors affecting evidence-based nursing practices are needed in order to develop a culture among nursing students where nursing care is based on evidence-based practices. In the present study, factors such as the knowledge, attitudes, and behaviors of nursing students toward evidence-based nursing practices, which resources they use to access scientific information, and their opportunities to access this information

were examined and areas requiring further support were identified. Nursing students receiving support during their education and having the necessary knowledge, skills, and experience about evidence-based nursing practices and developing a culture of basing nursing practice on scientific knowledge will further advance the nursing profession and increase the quality of care.

Aim

This study was conducted to evaluate the knowledge, attitude, future use, and practice sub-dimensions of evidence-based nursing practices among nursing students and the affecting factors.

Study Questions

- Which sources do nursing students most often use to access scientific information?
- To what extent nursing students know the definition of evidence-based nursing?
- What is the knowledge, attitudes, and behaviors of nursing students about evidence-based nursing practices?
- Do the socio-demographic characteristics of nursing students affect their knowledge, attitudes, and behaviors about evidence-based nursing?

Methods

Study Design

This study was designed as a descriptive study.

Place and Time of Study

The study was conducted at a nursing faculty in Ankara between May and June 2018.

Population and Sample

The research was carried out with third- and fourth-year nursing students enrolled at the nursing faculty in the 2017-2018 academic year. First-year students were excluded from the study as they were still adapting to college, and there were no second-year students registered at the faculty. Research population consisted of 249 third- and fourth-year students enrolled at the faculty. Study sample consisted of 212 students who volunteered to participate in the study. The students participating in the study represent 85% of the population.

Data Collection Tools

In this study, the socio-demographic questionnaire developed by the researchers and the “Knowledge, Attitude, and Behaviors of Nursing Students Towards Evidence-Based Nursing Scale” were used as data collection tools.

Socio-Demographic Information Form

The socio-demographic question form prepared by the researchers contains 10 questions on gender, date of birth, academic year of study, internet access from mobile phone, home, or dormitory, whether they use the internet daily to access medical information, daily internet use, the resources they use outside the internet to access scientific information, whether evidence-based practice/nursing topics are included in their courses, and whether they know the definition of evidence-based nursing.

Knowledge, Attitude, and Behaviors of Nursing Students Toward Evidence-Based Nursing Scale

The scale was developed by Johnston et al¹⁵ to examine the knowledge, attitudes, and behaviors of students studying at the University of Hong Kong School of Medicine about evidence-based practice. The scale was later adapted by Brown et al¹⁴ for nursing students. The Turkish validity and reliability study of the scale was conducted by Muslu et al⁹ in 2015. This Likert type scale consists of 26 items and 4 sub-dimensions: “knowledge,” “attitude,” “future use,” and “practice.” Each sub-dimension is designed to be measured individually; therefore, the reliability coefficients and sub-dimension scores of the scale are calculated separately.¹⁶

The “knowledge” sub-dimension of the scale (5 items=1-5) evaluates whether students understand the theoretical and practical knowledge they have gained in evidence-based nursing. The items in this sub-dimension are scored between completely agree (6) and completely disagree (1). High scores indicate higher knowledge of evidence-based nursing. The “attitude” sub-dimension (6 items=6-11) evaluates students’ thoughts on the concept of evidence-based nursing. Scoring is the same as the knowledge sub-dimension. The “future use” sub-dimension (9 items=12-20) evaluates the tendency of students to use evidence-based nursing in their professional careers. Items 12-13 of this sub-dimension are scored between strongly agree (6) and strongly disagree (1), item 14 is scored between very easy (6) and very difficult (1), items 15-18 are scored between completely (6) and none at all (1), item 19 is scored between very useful (6) and totally useless (1), and Item 20 is scored between Like that very much (6) and Do not like that at all (1). The “practice” sub-dimension (6 items=21-26) evaluates whether the students are able to identify the clinical problem, to search for the best evidence to solve the problem, and to criticize, integrate, and evaluate its effectiveness. This sub-dimension is scored between every day (5) and never (1). The Turkish validity and reliability study was conducted by Muslu et al⁹ and the Cronbach’s alpha coefficients of the sub-dimensions were 0.70 for “knowledge,” 0.60 for “attitude,” 0.80 for “future use,” and 0.60 for “practice” sub-dimensions. In the present study, Cronbach’s alpha coefficients were found to be 0.83, 0.74, 0.83, and 0.85 for the sub-dimensions of “knowledge,” “attitude,” “future use,” and “practice,” respectively.

Data collection forms were filled out by third- and fourth-year nursing students in May-June outside of class hours. It took about 15 minutes to answer the questions.

Ethical Considerations

Necessary permission was obtained from the nursing faculty administration and the responsible authors who conducted the validity and reliability study of the scale in Turkish. Ethical approval was obtained from the Health Sciences University Gülhane Non-Interventional Research Ethics Committee (Date: May 22, 2018, Decision no: 18/137). The students who were included in the study sample were informed about the research. Written informed consent was obtained from all participants.

Statistical Analysis

Statistical analysis of the data was performed using Statistical Package for the Social Sciences Statistics for Windows v.21 (IBM SPSS Corp.; Armonk, NY, USA). Data were presented as mean \pm standard

deviation ($\bar{X} \pm SD$), median, and minimum-maximum (min-max) values for continuous variables and as number (n) and percentage (%) values for categorical variables. Conformity of the data to normal distribution was analyzed by “Kolmogorov-Smirnov” and “Shapiro-Wilk”

Table 1. Socio-Demographic Characteristics of the Students Who Participated in the Study (n=212)

Socio-Demographic Characteristics	n	%
Age ($\bar{X} \pm SD$)	22.51 \pm 0.2	
Gender		
Female	201	94.8
Male	11	5.2
Grade		
Third grade	116	54.7
Fourth grade	96	45.3
Do you have internet access on your mobile phone?		
Yes	210	99.1
No	2	0.9
Do you have internet access on your mobile phone at home or dormitory?		
Yes	199	93.9
No	13	6.1
Do you use the internet daily to get medical information?		
Yes	186	87.7
No	26	12.3
Time of daily use of the internet to obtain medical information ($\bar{X} \pm SD$)	110 minute \pm 0.32	
What are the sources you use other than the internet to access scientific information?		
Book		
Yes	169	79.7
No	43	20.3
Journal		
Yes	42	19.8
No	170	80.2
Library		
Yes	103	48.6
No	109	51.4
Do your lessons include evidence-based practice/nursing topics?		
Yes	209	98.6
No	3	1.4

\bar{X} , Mean; SD, standard deviation.

Which of the following do you think is the definition of evidence-based nursing?	n	%
It is the approach to use in nursing care by combining the best evidence obtained with the scientific method in decisions about patient care to be able to provide the best care to patients.	194	91.5
It is the use of scientific data in practice in a way that will benefit patients the most.	7	3.3
It is systematic review of scientific research.	3	1.4
It is the use of competence gained through professional training and clinical expertise in patient care.	8	3.8

tests. "Mann-Whitney *U*" test was used to compare variables that did not show normal distribution. *P* < .05 was accepted as statistically significant in all analyses.

Results

Of the participants, 54.7% were third-year and 45.3% were fourth-year nursing students. The mean age of the students was 22.51 ± 0.2 years, and the majority of them were female (94.8%). Almost all of the students had mobile phones (99.1%) with internet access at home or from the dormitory (93.9%). The vast majority (87.7%) of the students used the internet for an average of 110 ± 0.32 minutes on a daily basis to obtain medical information. Books (79.7%) and, to a lesser extent, scientific journals (19.8%) were also used in order to access scientific information. Almost all of the students reported that the topics of evidence-based practice/evidence-based nursing were included in their courses (98.6%) (Table 1).

When the responses of nursing students regarding the definition of evidence-based nursing were examined, it was determined that 91.5% of the students answered correctly (Table 2).

Table 3 shows the sub-dimension scores of the Knowledge, Attitude and Behaviors of Nursing Students Towards Evidence-Based Nursing Scale. As shown in Table 3, the highest score was obtained in the "knowledge" sub-dimension (5.27 ± 0.69) and the lowest score was obtained in the "practice" sub-dimension (2.59 ± 0.84).

Table 4 shows the difference between the socio-demographic characteristics of the students and their knowledge, attitude, and behaviors in evidence-based nursing. It was found that "future use" and "practice" sub-dimensions of Knowledge, Attitude and Behaviors of Nursing Students Towards Evidence-Based Nursing Scale were significantly higher in students who used journals to access scientific information [5.27 (4.66-55) and [3.00 (2.16-3.37),

respectively] compared to students who did not use journals to access scientific information [4.83 (4.33-5.33) and 2.33 (1.83-3.00), respectively] (*P* < .05). The "practice" sub-dimension score of the scale was significantly higher among the fourth-year students [2.66 (2.00-3.16)] compared to the third-year students [2.33 (1.83-3.12)] (*P* < .05). There was no statistically significant difference between the "knowledge" and "attitude" sub-dimensions of the scale with respect to the socio-demographic characteristics of nursing students (*P* > .05).

Discussion

In order to advance the nursing profession and increase the quality of care, undergraduate education plays an important role in the training of nurses who have positive attitudes and behaviors toward evidence-based nursing practices. In the process of evidence-based nursing, it is necessary to investigate the difficulties experienced by nursing students in searching for evidence and accessing the sources and appropriate evidence, and to determine their knowledge, attitudes, and behaviors related to the subject of evidence-based nursing.^{8,17}

Since the sub-dimensions of Knowledge, Attitude, and Behaviors of Nursing Students Towards Evidence-Based Nursing Scale were designed to be measured independently, the mean sub-dimension scores were calculated separately. When the results were examined, it was determined that the highest score was obtained in the "knowledge" sub-dimension (Table 3). Akutay et al¹³ obtained similar results regarding the "knowledge" sub-dimension in their research. In previous studies, it was reported that the knowledge, skills, and attitudes of nursing students who received training on evidence-based practice during their undergraduate education^{11,18-20} and students who took part in clinical research projects and followed up-to-date journals²¹ were affected positively and improved. In the present study, almost all of the nursing students stated that evidence-based practice/evidence-based nursing topics were included in their courses (Table 1). In addition, it was determined that the majority of students knew the definition of evidence-based nursing (Table 2). The high scores obtained in the "knowledge" sub-dimension are most likely due to the fact that evidence-based nursing practices are adequately covered in undergraduate nursing curricula.

In the present study, it was determined that nursing students most commonly use the internet as a source for accessing scientific information to access textbooks and electronic information sources (e-books, journals, theses, etc.) (Table 1). These findings are consistent with similar research results.^{10,13,22,23} With technological developments, access to the internet is getting widespread, access to electronic information sources is getting faster and easier,

Sub-dimensions of the Scale	Number of Items in the Scale	Min-Max Value Taken from the Scale	$\bar{X} \pm SD$	Min- Max Value Taken from the Scale
Knowledge	5	1-6	5.27 ± 0.69	2.80-6.00
Future use	9	1-6	4.86 ± 0.63	3.33-6.00
Attitude	6	1-6	2.66 ± 0.99	1.00-5.67
Practice	6	1-5	2.59 ± 0.84	1.00-5.00

Min, the lowest score; max, the highest score; \bar{X} , mean; SD, standard deviation.

Table 4. Socio-Demographical Characteristics of Students and Evidence-Based Nursing Examining the Difference Between Knowledge, Attitudes, and Behaviors (n=212)

Socio-Demographic Characteristics	Information	Attitude	Future Use	Practice
	Median (25%-75%)	Median (25%-75%)	Median (25%-75%)	Median (25%-75%)
Grade				
Third grade	5.20 (4.80-6.00)	2.66 (2.00-3.33)	4.77 (4.44-5.33)	2.33 (1.83-3.12)
Fourth grade	5.60 (5.00-6.00)	2.33 (1.83-3.16)	5.11 (4.55-5.44)	2.66 (2.00-3.16)
<i>P</i> *	.184	.162	.088	.019
Do you have internet access on your phone at home or dormitory?				
Yes	5.40 (5.00-6.00)	2.66 (2.00-3.16)	4.88 (4.44-5.33)	2.50 (2.00-3.16)
No	5.20 (4.70-5.80)	2.00 (1.66-3.83)	5.11 (4.11-5.38)	2.83 (2.25-3.58)
<i>P</i> *	.569	.808	.841	.230
Do you use the internet daily to get medical information?				
Yes	5.40 (5.00-6.00)	2.50 (1.83-3.16)	5.00 (4.44-5.36)	2.50 (2.00-3.16)
No	5.20 (4.55-5.80)	2.75 (1.95-3.25)	4.66 (4.33-5.33)	2.08 (1.62-3.25)
<i>P</i> *	.209	.680	.155	.071
What are the sources you use other than the internet to access scientific information?				
Book				
Yes	5.40 (4.80-6.00)	2.50 (1.83-3.16)	4.88 (4.44-5.33)	2.33 (2.00-3.08)
No	5.40 (5.00-6.00)	2.66 (2.00-3.33)	4.88 (4.44-5.44)	2.83 (1.83-3.33)
<i>P</i> *	.488	.701	.923	.424
Journal				
Yes	5.60 (5.20-6.00)	2.16 (1.83-3.04)	5.27 (4.66-5.55)	3.00 (2.16-3.37)
No	5.20 (4.80-5.80)	2.66 (1.95-3.33)	4.83 (4.33-5.33)	2.33 (1.83-3.00)
<i>P</i> *	.050	.236	.001	.006
Library				
Yes	5.60 (5.00-6.00)	2.50 (2.00-3.33)	5.11 (4.56-5.44)	2.66 (2.00-3.33)
No	5.20 (4.80-5.90)	2.66 (1.83-3.17)	4.77 (4.39-5.33)	2.33 (2.00-3.00)
<i>P</i> *	.403	.767	.101	.210

*Mann-Whitney *U* test.

and time and space limitations are being eliminated. For these reasons, students are mostly using the internet for accessing scientific information.

In the present study, the rate of using printed journals used as a source accessing scientific information was low (Table 1), and this finding was consistent with other studies conducted in recent years.^{5,24,25} When the literature is examined, it is seen that the rate of using printed journals as a source of information was more than 70% in some studies conducted in the early 2000s.^{21,26,27} Today, with the increase in the use of the internet and ease of access, students can access scientific information digitally (online journals, articles, books,

etc.) and also face more difficulties accessing printed journals due to lack of subscriptions, lack of information, or economic problems.

In the present study, it was found that nursing students' attitudes toward evidence-based nursing practices were at a moderate level (Table 3). In contrast to the present study, there are also studies in which students' attitudes toward evidence-based nursing are high.^{6,28,29} In other studies, it was seen that nursing students who received training on evidence-based nursing practices took part in clinical research processes,^{14,26,30} attended courses,³¹ followed professional journals,^{6,32} thought of conducting scientific research after graduation,⁶ and participated in scientific activities and

studies^{6,28} exhibited positive attitudes toward evidence-based nursing practices. In addition, Oh et al³³ found that students who read journals daily and regularly accessed databases available on the internet had higher knowledge and attitude levels toward evidence-based practice. Attitudes are tendencies acquired through learning. In the present study, the fact that the knowledge score of the students toward evidence-based practices was high and their attitudes were at a moderate level shows that their thoughts and opinions on evidence-based nursing practices need to be improved. When the findings in the literature are evaluated in conjunction with the results of the present study, it will be beneficial to encourage and support students to participate in scientific activities.

In the present study, the mean score of the “future use” sub-dimension was found to be high (Table 3). This finding is consistent with the literature.^{13,28,32} The findings and literature results suggest that student nurses attach importance to evidence-based nursing practices in order to provide quality and safe nursing care to patients during their professional careers. Forsman et al³⁴ reported that the intention of nursing students to use research evidence had a direct impact on their research use behavior. However, in the present study, while the tendency of students to use evidence-based practices in the future was found to be high, mean score of the “practice” sub-dimension was at a moderate level (Table 3). In the literature, it has been reported that nursing students have deficiencies in knowledge and skills,^{13,20,35} as well as in literature review and access to current researches, related to the sub-dimension of practice.^{12,28} In their studies, Kurt and Zaybak³⁶ stated that the deficiencies in analysis of scientific articles may be due to lack of knowledge about the types of evidence. Guerra-Martín et al³⁵ reported that the training given to students on how to access scientific information is effective in the correct search and examination of scientific articles. Dee and Stanley²² found that students were more likely than nurses to use online databases, including CINAHL and PubMed, to access medical information. It is important that nursing students have the competence to scan the literature in order to access and evaluate nursing practices with high evidence levels. It is thought that students who gain competence in this field with theoretical and practical trainings will give more importance to evidence-based nursing practices, which will in turn increase the quality of care they will provide.

In the present study, when the effect of socio-demographic variables on scale sub-dimensions was examined, it was found that students who used journals to access scientific information had higher “future use” and “practice” sub-dimension scores compared to students who did not use journals (Table 4). Karaahmetoğlu and Softa³² stated that students who follow professional and scientific developments can perform their profession in the best way by using the new knowledge in nursing practices. These results suggest that students who follow professional scientific publications and activities will exhibit positive behaviors in utilizing research evidence in their future professional lives.

In the present study, another socio-demographic variable affecting the “practice” sub-dimension was found to be the academic year of study, and the mean practice score of the fourth-year students was higher compared to third-year students. Similar to the results of the present study, literature evidence showed that the basis of evidence-based practices was primarily to access evidence-based research and that students who gained academic experience were

more successful in accessing information about evidence-based nursing practices and had higher knowledge levels increased.^{6,37} In light of these results, knowledge, skills, and attitudes of students on evidence-based nursing practices and accessing evidence-based research will improve with academic progress and as students receive more education on the subject.

Limitations of Research

This research is limited to third- and fourth-year students with clinical practice and experience in a nursing faculty in Ankara. Therefore, the results cannot be generalized to all nursing students. Furthermore, the findings of the research are based on the statements of the students.

Conclusion

Based on the results of the present study, it was determined that nursing students knew the definition of evidence-based nursing, most commonly used internet and books to reach scientific information, and preferred to use journals to a lesser extent. In addition, it was determined that the socio-demographic characteristics affecting the knowledge, attitudes, and behaviors of nursing students on evidence-based nursing were academic year of study and using journals to access scientific information. The results also indicate that nursing students have the tendency to use this approach they acquire during undergraduate education in their future professional lives, but they are lacking in developing attitudes toward evidence-based nursing and accessing and using nursing evidence. Although students often access scientific information from textbooks and electronic sources, their competencies in reading and accessing scientific research and findings, as well as evaluating and applying these findings, should be further improved and supported, which will positively affect their attitudes toward evidence-based nursing practices.

In line with these results, the following recommendations can be made:

- Students should gain the habit of following professional journals.
- Theoretical and practical courses aimed at increasing the literature review and research skills of nursing students should be increased in undergraduate education.
- Students should receive guidance to access evidence-based nursing practices.
- Students should be included in scientific studies and projects.

Lastly, further studies should be conducted to determine and support issues such as whether students use the internet correctly, which resources they use, their level of internet literacy, and their competency in accessing reliable databases and resources.

Ethics Committee Approval: Ethics committee approval was received for this study from Health Sciences University Gülhane Non-Interventional Research Ethics Committee (date and number: May 22, 2018 and 18/137).

Informed Consent: Written informed consent was obtained from nursing students who participated in the study.

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