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OPINIONS OF INTENSIVE CARE NURSES ON THE WEB-BASED EDUCATION MODEL: A HOSPITAL EXAMPLE  
YOĞUN BAKIM HEMŞİRELERİNİN WEB TABANLI EĞİTİM MODELİNE İLİŞKİN GÖRÜŞLERİ: BİR HASTANE  
ÖRNEĞİ

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**ABSTRACT**

Intensive care nurses provide nursing care to critical patients not only using advanced knowledge and advanced clinical skills but also by racing against time. Therefore, it is vital for intensive care nurses to maintain their professional development and closely follow current trends related to the care process. This study aims to determine the opinions of intensive care nurses about the use of the web-based education method in in-service education. The sample of this study consisted of 62 intensive care nurses working in the adult intensive care unit. All the nurses volunteered to participate in the web-based in-service education program on the "The Effect of Web-Based Education on the Knowledge and Practice of Sedation Management of Intensive Care Nurses." The study data were obtained with the "Nurse Introduction Form" and the "Evaluation Form of the Opinions of Nurses on Web-Based Education". These data were evaluated with the SPSS 22.0 software and descriptive statistics (frequency, percentage, median, and interquartile range). This study found that the rate of agreement on the statements "web-based in-service education activities support nurses in maintaining continuing education/lifelong education after graduation," "web-based in-service education activities can be a solution to the problem that nurses cannot participate in in-service education programs due to working hours," and "web-based in-service education activities facilitate the family life of nurses" was very high. Nurses believe that web-based education is supportive in maintaining continuing professional development and in-service education.

**Keywords:** Continuing nursing education, distance education, intensive care nursing.

**ÖZ**

Yoğun bakım hemşireleri üst düzey bilgi, ileri klinik beceriler kullanarak ve zamana karşı yarışarak kritik hastalara hemşirelik bakımı sunmaktadır. Dolayısıyla yoğun bakım hemşirelerinin mesleki gelişimlerini sürdürmeleri ve bakım süreçlerindeki güncel konuları yakından takip etmeleri önemlidir. Bu araştırma, yoğun bakım hemşirelerinin hizmet içi eğitimde web tabanlı eğitimi yönteminin kullanımına ilişkin görüşlerini belirlemeyi amaçlamaktadır. Araştırmanın örneklemini yetişkin yoğun bakım ünitesinde görev yapmakta olan 62 yoğun bakım hemşiresi oluşturmuştur. Hemşirelerin tamamı "Web Tabanlı Eğitimin Yoğun Bakım Hemşirelerinin Sedasyon Yönetimi Bilgi ve Uygulamalarına Etkisi" konulu web tabanlı hizmet içi eğitim programına katılmayı gönüllü olarak kabul etmiştir. Araştırma verileri; "Hemşire Tanıtım Formu" ve "Hemşirelerin Web Tabanlı Eğitime Yönelik Görüşlerini Değerlendirme Formu" kullanılarak elde edilmiştir. Çalışma verileri SPSS 22.0 programı ile tanımlayıcı istatistikler (sayı, yüzde, medyan ve çeyreklikler arası uzaklık) kullanılarak değerlendirilmiştir. Çalışmada "web tabanlı hizmet içi eğitim etkinliklerinin, yaşam boyu eğitimi sürdürmede hemşireleri destekleyici olduğu", "yüz yüze eğitim programlarına katılmama sorununa çözüm olabileceği" ve "aile hayatını sürdürmede kolaylık sağlayacağı" yönündeki ifadelerle katılım oranlarının oldukça yüksek olduğu belirlenmiştir. Hemşireler sürekli mesleki gelişimi ve hizmet içi eğitimleri sürdürmede web tabanlı eğitimin destekleyici olduğuna inanmaktadır.

**Anahtar kelimeler:** Sürekli hemşirelik eğitimi, uzaktan eğitim, yoğun bakım hemşireliği.

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## INTRODUCTION

Continuing professional development education is one of the most efficient ways for nurses working in these specialized units to meet the care needs of critically ill patients and adapt to advances in science and medical technology during the care processes of patients.<sup>1,2</sup> In many countries, it is considered a professional obligation for every health worker to maintain continuing professional development in increasing the quality of health services. In this sense, nurses should continue learning throughout their careers to improve their professional skills, maintain their clinical competence, and adapt to rapid changes in the working environment.<sup>3,4</sup> However, it may be difficult for intensive care nurses to participate in face-to-face in-service education programs due to the constraints in their professional lives, such as the excessive workload and lack of personnel in the field.<sup>5</sup>

Today, we see that vocational education has recently transformed from traditional education to technology-based education in order to avoid wasting time in terms of the workforce and increasing costs for institutions.<sup>6</sup> One of the current learning models used to ensure the continuing professional development of healthcare professionals is web-based learning in which technology and social networks are used all together.<sup>7,8,9</sup> Web-based learning is considered a more flexible, accessible, convenient, and cost-effective option. Also, it increases learning opportunities and offers nurses a different learning environment than traditional learning methods.<sup>10</sup> This learning method has been applied in nursing, and it has been reported to offer the same learning outcomes and better satisfaction than the traditional one.<sup>11,12</sup> It is possible to consider that web-based learning is an alternative method to bridge the gap between nurses' learning needs and educational services. Assessing their attitudes and needs towards web-based learning will contribute to offering recommendations for the design and delivery of learning programs.<sup>8,13</sup>

Web-based education, particularly for intensive care nurses, has notable advantages such as providing the opportunity to learn regardless of time and place,<sup>11,14</sup> allowing the individual to choose the education time by taking into account their obligations such as domestic and professional responsibilities and providing flexibility<sup>14,15</sup>, providing learning opportunities suitable for individual needs with multimedia opportunities and appealing to more than one sense.<sup>15,16</sup> Gest (2021) reported that because online education provided flexible and optional use, participation and satisfaction rates of intensive care nurses on online education were high, and their knowledge levels increased at the end of the education.<sup>17</sup>

Web-based education models, which offer many advantages compared to traditional teaching in the in-service education, are considered a favorable option, especially for intensive care nurses, because they transfer evidence-based knowledge during patient care, benefit from research and the results, increase their participation in in-service education programs, and fulfill their professional roles and responsibilities. This study aims to reveal the opinions of intensive care nurses regarding the use of the web-based education method in in-service education.

## MATERIALS AND METHODS

**Study Design:** This descriptive study was carried out to determine the opinions of nurses regarding the use of the web-based education method in in-service education.

**Study Setting and Characteristics:** This study was carried out in adult intensive care units of a public hospital between 29 July and 31 August 2019.

**Study Population:** During the study, 62 intensive care nurses were working in the adult intensive care units of the hospital. We aimed to include all nurses without selecting the sample. All the nurses in intensive care units (62 nurses) volunteered to participate in the web-based in-service education program on the "The Effect of Web-Based Education on the Knowledge and Practice of Sedation Management of Intensive Care Nurses."

**Data Collection Tools:** The study data were obtained by applying the Nurse Introduction Form (Annex-1), and the Evaluation Form of the Opinions of Nurses on Web-Based Education (Annex-2).

**Nurse Introduction Form (Annex-1):** This form consisted of 7 questions to determine the sociodemographic characteristics of the nurses, the intensive care unit they work in, their working experience in the intensive care unit, and their working type.

### The Evaluation Form of the Opinions of Nurses on Web-Based Education (Annex-2):

This form was developed by the researchers with the help of the literature review. It consisted of 15 questions to determine the opinions of nurses on the function of online education. The form had three options (Agree, Disagree, Undecided). "Disagree" was given 1 point, "Undecided" was given 2 points, and "Agree" was given 3 points. The data were collected meticulously by determining the most appropriate time for each nurse. Before the application, the researcher explained the study purpose and obtained the informed consent of the participants. The participants were asked to answer all the questions.

For the form to be used, first, the purpose of the form, the number of items, the way of answering, and the target audience were determined, and a question pool was created. For the form prepared in line with the literature information, content validity analysis was performed using the Davis technique. Substances in the Davis technique; Four points are rated as "appropriate", "item should be slightly revised", "item should be seriously reviewed" and "item not suitable". In this technique, the "content validity index (CGI)" for the item is obtained by dividing the number of experts who marked the appropriateness of the items and the options for the item to be slightly revised by the total number of experts. If the CGI index is 0.80 and greater, the item is sufficient for content validity. Substances with low CGI are eliminated (Davis, 1992; Taskın and Akat, 2010).<sup>18,19</sup> The questions in this form used in the research were arranged in accordance with the Davis technique; Opinions of five experts, two of whom are specialists in the field of Intensive Care Nursing and three of them from Internal Medicine Nursing faculty members, were taken. When we evaluated the results for each item, it was determined that the CGI index was greater than 0.80.

**Ethical Considerations:** Ethical approval was obtained for the study from the Sivas Cumhuriyet University Ethics Committee with the decision number 2019-07/13. In

addition, necessary institutional permissions were obtained from the Provincial Health Directorate of the hospital where the study was carried out.

**Statistical Methods:** The study data were evaluated through SPSS 22.0 software. Continuous variables in the study do not conform to normal distribution. Likert-type questions used in the study were accepted as ordinal data, and median and interquartile range values were given as descriptive statistics in the analysis of the data obtained from the questions. Likert-type questions were coded according to the number of options used in the question starting from 1. In this coding, the most negative answer "I disagree" was represented by the lowest number (1), the most positive answer "I agree" was represented by the highest number (3), and "I am undecided" was represented by the number (2).

## RESULTS

Table 1 shows some sociodemographic characteristics of the intensive care nurses participating in the study. Of the nurses participating in the study, 77.4% were women, 59.7% were in the 21-30 age group. 67.7% of the nurses received nursing education at the undergraduate level, 43.5% had been working in the intensive care unit for five years or more, and 71.0% worked the night shift (Table 1).

Table 2 shows the opinions of nurses on web-based education. These results were obtained by averaging each item in the form, thus revealing the participation rates of nurses in the statements. The statements with which the nurses agreed on the highest average were

respectively, "web-based in-service education activities can be a solution to the problem that nurses cannot participate in in-service education programs due to working hours" (100%), "web-based in-service education activities facilitate the family life of nurses" (96.8%), "web-based in-service education activities support nurses in maintaining continuing education/lifelong education after graduation" (93.5%). These statements were followed by "web-based in-service education activities provide a working environment suitable for the individual's learning style and pace," and "the learner can determine the learning hours in web-based in-service education." The averages of other statements had similar values, and nurses agreed with them. The one with the lowest average was the statement, "in web-based in-service education activities, it is possible to access education materials/content whenever needed."

## DISCUSSION

Taking part in in-service education aiming to increase the quality and efficiency of health services is substantially significant in providing the health and other services given in an error-free and perfect manner and ensuring continuing professional development.<sup>20,21</sup> Continuing education has become an essential professional responsibility as well as a professional requirement. Continuing education, particularly for critical patient care practice, is a key element in hospitals since intensive care nursing requires special knowledge and advanced skills and nurses work in units with various

**Table 1.** Sociodemographic Characteristics of Nurses

Characteristics	Number	Percentage (%)
<b>Gender</b>		
Women	48	77.4
Men	14	22.6
<b>Age</b>		
21-30 y/	37	59.7
31-40 y/	21	33.9
41-43 y/	4	6.4
<b>Marital Status</b>		
Married	47	74.6
Single	15	23.8
<b>Education Level</b>		
High School Degree	6	9.7
Associate Degree	10	16.1
Undergraduate Degree	42	67.7
Master's Degree	4	6.5
<b>ICU Department</b>		
Anesthesia ICU-1	20	32.3
Anesthesia ICU-2	19	30.6
Anesthesia ICU-3	23	37.1
<b>Working Experience</b>		
0-6 months	4	6.5
7 months-1 year	17	27.4
2-4 years	14	22.6
5 years and more	27	43.5
<b>Working Type</b>		
Night Shift	44	71.0
Day & Night Shift	18	29.0

**Table 2.** Statements Related to Opinions of Nurses on Web-Based Education

Statements Related to Opinions of Nurses on Web-Based Education	Disagree n %	Undecided n %	Agree n %	Median	Interquartile Range
-The learner can determine the learning hours in web-based in-service education	-	10 16.1	52 83.9	3.00	0.00
-Web-based in-service education activities provide a working environment suitable for the individual's learning style and pace	-	8 12.9	54 87.1	3.00	0.00
-In web-based in-service education activities, it is possible to access education materials/content whenever needed	24 38.7	12 19.4	26 41.9	2.00	2.00
-Web-based in-service education activities support nurses in maintaining continuing education/lifelong education after graduation	-	4 6.5	58 93.5	3.00	0.00
-Web-based in-service education activities allow colleagues/learners in different locations to interact	3 4.8	21 33.3	38 61.3	3.00	1.00
-Web-based in-service education activities can be a solution to the problem that nurses cannot participate in in-service education programs due to working hours (shift work)	-	-	62 100.0	3.00	0.00
-Web-based in-service education activities facilitate the family life of nurses	-	2 3.2	60 96.8	3.00	0.00
-In a web-based in-service education environment, there is a chance to meet with experts and experienced educators in nursing	8 12.9	20 32.3	34 54.8	3.00	1.00
-Web-based in-service education activities are not costly	-	17 27.4	45 72.6	3.00	1.00
-Web-based in-service education activities contribute to efficient learning	7 11.3	11 17.7	44 71.0	3.00	1.00
-Things learned through web-based in-service education activities can be put into practice more easily	22 35.5	9 14.5	31 50.0	2.50	2.00
-Web-based in-service education activities can be limiting/hampering for participants to be active	21 33.9	-	41 66.1	3.00	2.00
-Nursing knowledge and skills can be gained through vision-based activities in web-based educational environments	16 25.8	9 14.5	38 59.7	3.00	2.00
-Nursing knowledge and skills can be gained through listening and vision-based activities in web-based educational environments	12 19.4	10 16.1	40 64.5	3.00	0.50
-Nursing knowledge and skills can be gained in web-based education environments	10 16.1	9 14.5	43 69.4	3.00	2.00

medical and technological developments.<sup>22</sup> However, intensive care nurses face difficulties in terms of cost, the time required for participation, and time and location when all nurses come together during education. In addition, since there are not enough intensive care nurses to replace one another, some situations require urgent intervention, the shift working system or the in-service education activities are considered ineffective and insufficient, continuity of education face several difficulties.<sup>16,23,24</sup>

Our study suggests that the rate of participation in web-based education can be a solution to the problem of not

being able to participate in in-service education programs due to the shift work of intensive care nurses is notably high. A study conducted in Taiwan to determine nurses' perceptions of web-based learning indicated that the professional development of nurses who could not attend in-service education due to time and space limitations could be achieved with web-based courses.<sup>24</sup> Shahhosseini and Hamzehgardeshi (2015) stated that shift working of nurses might prevent them from participating in continuing education programs; therefore, web-based education could be a practical method to meet the educational needs of nurses within the con-

straints of their busy professional lives.<sup>24</sup>

It is more challenging for women to participate in education, given their domestic and professional obligations, especially their responsibilities that require more effort and time, such as the role of motherhood. Some studies, including our study, reported that findings supported that web-based education would provide convenience for nurses to maintain their family life.<sup>14,25,26</sup>

Our study found that the rate of agreement of intensive care nurses on "web-based in-service education activities support nurses in maintaining continuing education/lifelong education after graduation" regarding the function of web-based education was high. Continuing education is of great importance for nurses working in intensive care units in order to adapt to constantly changing and developing technology and treatment methods to meet the care needs of critical patients and to meet their critical thinking skills. Tung et al., (2014) found that nurses could not attend the education due to workload and lack of personnel in the field; therefore, web-based education was a more suitable option compared to others in offering in-service education and continuing professional development.<sup>8</sup> Boz-Yuksekdag (2015) stated that distance-learning might be ideal for individuals who were motivated, needed flexibility, and wanted to maintain their professional responsibility through continuing education.<sup>27</sup>

Web-based learning offers a suitable working environment according to the individual's learning style and pace. Our study determined that the rate of agreement of the nurses on the statement about this advantage was high. Lera et al., (2020) suggested that distance learning was a flexible, accessible, and effective method in allowing participants to learn at their desired pace and place.<sup>14</sup>

In our study, it is notable that 50% of the nurses agreed with the statement "things learned through web-based in-service education activities can be put into practice more easily." After conducting a web-based education activity for intensive care nurses, Gest (2021) determined that most of the nurses stated that they would use the information learned in the education activity in practice.<sup>17</sup> Chuang and Tsao (2013) reported that web-based learning could effectively shorten learning hours and improve knowledge and skills.<sup>11</sup> In the study conducted to determine the effectiveness of the web-based learning module, Vaona et al. (2009) maintained that after the web-based education, nurses' knowledge increased significantly, and this type of teaching strategy could help overcome the barriers associated with traditional education.<sup>28</sup>

## CONCLUSION

There is a need for continuity of in-service education to maintain the qualifications and competencies of health care professionals. Web-based learning is a significant option for increasing the accessibility and flexibility of continuing education, particularly for intensive care nurses in their professional businesses. This study shows that the opinions of intensive care nurses about web-based distance learning methods are affirmative. However, the development of web-based learning programs by nursing service managers and educators, encouraging their participation in these programs and

providing appropriate help to meet their learning needs, and their more patient-centered work will eventually lead to positive results, such as being more collaborative and supportive.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the Sivas Cumhuriyet University Non-Interventional Clinical Research Ethics Committee (Karar No: 2019-07/13 Tarih: 04/07/2019).

**Informed Consent:** Written informed consent was obtained from all participants who participated in this study.

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