# Perceptions of Nurses Using Electronic Health Record Systems Towards Information Technologies and Its Effect on Their Work Productivity: A Cross-Sectional Study

## Elektronik Sağlık Kayıt Sistemlerini Kullanan Hemşirelerin Bilişim Teknolojilerine Yönelik Algıları ve İş Verimliliklerine Etkisi: Kesitsel Bir Çalışma

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## Abstract

Electronic health records are a significant achievement in health information technology and an essential managerial tool for improving the quality and efficiency of patient care. This study aimed to determine nurses' level of use of electronic health records, their perceptions of information technologies, and their effects on their productivity. This study was a descriptive, cross-sectional, and correlational survey of 120 nurses working at a state hospital. The data was collected by the Personal Information Technologies Applications Evaluation Form, Electronic Health/Patient Record Scale, and Attitude Scale for Efficiency in Nursing. Descriptive statistics, t-test, ANOVA, and Pearson correlation were used in the analysis of the data. It was determined that all of the nurses used computers in the clinic, and 35.5% of them used them for nursing records. It was determined that nurses' knowledge and attitudes towards electronic health records were at a high level, and they had positive attitudes towards productivity. While there was a positive and moderate relationship (r=0.482) between the use of electronic health/patient record systems and the attitudes towards information technology applications in nurses, there was no correlation between the use of information technologies and their productivity (r=0.046). It can be used more efficiently in nursing processes by increasing the positive perceptions of nurses towards informatics applications.

**Keywords:** Efficiency, nurses, nursing informatics

## Özet

Elektronik sağlık kayıtları, sağlık bilgi teknolojisinde büyük bir başarı olmasının yanı sıra hasta bakımında kalite ve etkililiği geliştirmek için de önemli bir yönetsel araçtır. Bu çalışmanın amacı hemşirelerin elektronik sağlık kayıtlarını kullanma düzeylerini, bilişim teknolojilerine yönelik algılarını ve verimlilikleri üzerindeki etkisini belirlemektir. Bu çalışma Urla Devlet Hastanesi'nde çalışan 120 hemşire ile tanımlayıcı, kesitsel ve ilişkisel tiptedir. Verilerin toplanmasında Kişisel Bilgi Formu, Bilgi Teknolojileri Uygulamaları Değerlendirme Formu, Elektronik Sağlık/Hasta Kayıt Ölçeği ve Hemşirelikte Verimliliğe İlişkin Tutum Ölçeği kullanıldı. Verilerin analizinde tanımlayıcı istatistikler, t-testi, ANOVA ve Pearson korelasyonu kullanıldı. Hemşirelerin tamamının klinikte bilgisayar kullandığı ve %35,5'inin bilgisayarı hemşirelik kayıtları için kullandığı belirlendi. Hemşirelerin elektronik sağlık kayıtlarına yönelik bilgi ve tutumlarının yüksek düzeyde olduğu ve verimliliğe yönelik olumlu tutumlara sahip oldukları belirlendi. Hemşirelerin elektronik sağlık/hasta kayıt sistemlerini kullanma durumları ile bilgi teknolojileri uygulamalarına yönelik tutumları arasında pozitif ve orta düzeyde bir ilişki (r=0.482) bulunurken, bilgi teknolojilerini kullanma durumları ile verimlilikleri arasında bir ilişki saptanmadı (r=0.046). Hemşirelerin bilişim uygulamalarına yönelik olumlu algılarının artırılarak hemşirelik süreçlerinde daha verimli kullanımı sağlanabilir.

## 1. Introduction

The development of science and technology in the information age has accelerated the application of information and communication technologies in the field of health and brought nursing informatics and hospital information management systems to the agenda. Nurses use computer-based care process in planning and implementing care. Computers and different software systems are used in the electronic and smartphones are used by medical record system in all units in the health system, and technological devices such as computers nurses to access information and ensure communication between teams (Konukbay et al., 2020).

Nursing informatics and hospital information management systems enable care plan implementation and evaluation, patient education records and follow-up, patient transportation, patient vital signs, drug orders and drug applications. Nurses use a wide variety of health information technology (HIT) in healthcare delivery, including electronic health records (EHR), computerized provider order entry (CPOE), and barcode medication management (BCMA) (Göktuna et al., 2020). Through these systems, many nursing practices such as collecting the patient's data, determining the needs, diagnosing nursing, care planning, implementation, and evaluation, including all stages of nursing care, patient nutrition, patient education, vital signs, medication request, drug applications, patient transfer, hospital information transferred to the management system and can be tracked (Arshad et al., 2016).

Electronic health records (EHR) are a great achievement in health information technology, as well as an important managerial tool for improving quality and effectiveness in patient care (Shahmoradi et al., 2017). While reducing the time spent on documentation, increasing the productivity of nurses, reducing the cost of paperwork, and minimizing or preventing data loss by minimizing the errors that may occur due to registration are the advantages of successful EHR use (Gürkan et al., 2023) negative attitudes towards the use of information technology affect nursing care (Hyppönen et al., 2018; Rouleau et al., 2017). In addition, the availability of EHR can have an impact on nurses' workflow, and this may differ significantly between different systems (Ülke & Atilla, 2020) because the possible effects on nursing interventions were not considered during the design process of EHRs (Tiryaki et al., 2018). Therefore, it is necessary to determine the effect of nurses who use this system the most on work productivity, attitudes, and effective use. When the literature is examined, it is seen that studies have been conducted on issues such as nurses' use of electronic health records, use of electronic care plans, their thoughts about electronic care plans, the effect of electronic care plan use on time and patient care practices, and nurses' readiness to use information technologies (Adereti &

Olaogun, 2019; Gürkan et al., 2023; Lee & Lee, 2021; Öztürk et al., 2022). To the best of our knowledge, this is the first study to investigate the relationship between nurses' level of use of electronic health records, their perceptions of information technologies, and their productivity.

## 2. Method

This study used a descriptive, cross-sectional, and correlational design to determine the level of use of electronic health records by nurses working in level 6 digital hospitals, also referred to as paperless hospitals in the classification of digital hospitals according to the Electronic Medical Record Adoption Model (EMRAM), their perceptions of information technologies and their impact on their productivity. The study was conducted on nurses working between August and October 2022 at Urla State Hospital in Turkey, which consists of four blocks with 160 beds, 40 outpatient clinics, 6 operating rooms, dialysis with 17 beds, three intensive care units with a total of 25 beds, a delivery room with 6 beds, and also includes orthopedics/urology, gynecology/obstetrics/children, general surgery/ ENT/eye, cardiology, internal medicine/infection, physical therapy, palliative inpatient services.

### 2.1. Aim

This study aimed to determine nurses' level of use of electronic health records, their perceptions of information technologies, and their effects on their productivity.

### 2.2. The research questions

- What is the level of nurses' use of information technologies?

- What are the nurses' knowledge and attitudes towards electronic health records?

- What is the level of nurses' use of electronic health records, their perceptions of information technologies and the effect on their productivity?

### 2.3. Participants and setting

Turkey has 62 level 6 digital hospitals (HIMSS, 2021). Urla State Hospital (Bozdoğan, 2022), one of these hospitals, was selected as the study population. The sample consisted of nurses working in the digital hospital and using the hospital's electronic recording system. Considering the inclusion criteria of the nurses working in Urla State Hospital (N: 188), it was aimed to reach 118 nurses by "sample calculation method from the known population." Finally, 120 clinical nurses were included in the study (significance level 5%, $\alpha=0.05$, $d=0.04$ according to the pre-study pilot).

### 2.4. Data collection and instruments

The nurses were informed about the purpose of the study, and were asked to fill in the socio-demographic form, Information Technology Applications Evaluation Form, Electronic Health/Patient Record Scale and Attitude Scale on Productivity in Nursing. All data were collected face-to-face so as not to interfere with the workflow of the nurses.

Sociodemographic characteristics form; The sociodemographic form was developed by the researchers in line with the literature and consisted of seven questions about the nurses' gender, age, educational level, professional experience and liking for their profession.

Information technology applications evaluation form; was developed by Çakırlar and Mendi (2016) determines the knowledge and attitudes of nurses towards the application of information technologies. There are eight multiple-choice questions to determine nurses' practices in informatics, and thirteen 5-point Likert-type questions to determine their knowledge and attitudes towards information technologies and applications. The Cronbach α reliability coefficient of the evaluation form was 0.739. The Cronbach Alpha value for this study was 0.707.

Electronic Health/Patient Record Scale; was developed by de Veer and Francke in 2010, was adapted into Turkish by Çakırlar and Mendi (2016). The scale includes a multiple-choice question about the experience of using electronic health records, 5-point Likert-type ten questions to measure the usefulness of electronic health records and a multiple-choice question about the necessity of electronic medical records in the health sector. In this study, Cronbach's Alpha value was determined as 0.914.

Attitude Scale on Productivity in Nursing; was developed by Göktepe and Baykal (2012) consists of 39 questions and 5 sub-dimensions (commitment to the profession, working conditions, job demands, teamwork, and rewards). The answers to the scale questions are on a 5-point Likert scale ranging from strongly agree to strongly disagree. In the evaluation of the scale, an increase in the mean score (approaching 100) indicates a positive attitude, while a decrease (approaching 0) indicates a negative attitude. In this study, the Cronbach alpha reliability coefficient of the scale was 0.66.

### 2.5. Ethical considerations

Research ethics committee approval was obtained from the Ethics Committee of a university with a meeting decision dated 15.06.2022 and meeting number 156. In addition, written institutional permission was obtained from the health institution where the research was conducted. The study was carried out with nurses who preferred to participate in the research, taking into account the principle of voluntariness. They were also informed that they had the right to withdraw from the study at any time. The study was carried out in accordance with the principles of the Declaration of Helsinki.

### 2.6. Limitations

The findings of this study identified several variables associated with EHR of nurses in a state hospital in Izmir, Turkey. Recognizing these challenges allows for activities to facilitate nurses' use of EHR. The fact that the majority of the sample consists of women might be the limitation of this study. The fact that this study was conducted at a state hospital in Izmir, Turkey, may be a limitation of this study.

### 2.7. Data Analysis

The data were analyzed using SPSS 26 (Statistical Package for Social Sciences) programs. In the study, Cronbach's alpha values were determined within the scope of reliability analysis of all scales. Descriptive analyses of the forms and scales used in the study were performed. Frequency analysis of the electronic health/patient registry scale and difference analyses of the productivity attitude scale was examined. Within the scope of difference analysis, the Independent Sample t-Test and One way ANOVA Tests were performed. Bonferroni analysis was used to investigate the source of the

difference in the attitude scale toward productivity. Pearson Correlation was used in the correlation analysis. The findings were evaluated at a 95% confidence interval and 5% significance level.

## 3. Results

Table 1 shows the socio-demographic characteristics of nurses and the distribution of questions about the nursing profession. The mean age of the nurses was 40.43±8.79 years, the majority of them were female (90.8%) and had a bachelor's degree (67.5%). It was determined that 53.3% of the nurses had been doing the nursing profession for 21 years or more and 66.7% of them liked the nursing profession.

**Table 1.** Distribution of demographic characteristics of nurses (n=120)

| Characteristics | n | % |
|---|---|---|
| Gender | | |
| Female | 109 | 90.8 |
| Male | 11 | 9.2 |
| Age (year) | | |
| 23-33 | 30 | 25.0 |
| 34-44 | 46 | 38.3 |
| ≥44 | 44 | 36.7 |
| Marital status | | |
| Single | 32 | 26.7 |
| Married | 88 | 73.3 |
| Education | | |
| High School | 10 | 8.3 |
| Associate degree | 15 | 12.5 |
| Bachelor's degree | 81 | 67.5 |
| Master's Degree | 14 | 11.6 |
| Nursing Experience (year) | | |
| <10 | 27 | 22.5 |
| 11-20 | 29 | 24.2 |
| >21 | 64 | 53.3 |
| Worked Unit | | |
| Internal Medicine Department Services (Internal Medicine/Cardiology/Infection) | 23 | 19.2 |
| Surgical Department Services (Orthopedics/Urology/Surgery/Ocular) | 23 | 19.2 |
| Palliative Care Service | 8 | 6.7 |
| Emergency Service | 23 | 19.2 |
| Operating/Delivery Room | 20 | 16.7 |
| Intensive Care | 10 | 8.3 |
| Dialysis and Outpatient Clinic | 3 | 2.5 |
| Day Service Units | 10 | 8.3 |
| Like for the Profession | | |
| Yes | 80 | 66.7 |
| No | 40 | 33.3 |

*n= number, %= percentage*

It was seen that 45% of the nurses stated the level of use of information technologies as 'good'. It was determined that a significant majority of the nurses (64.5%) learned to use computers with their efforts.

While all of the nurses stated that they used computers in the clinic, it was found that this use was for nursing records with a rate of 35.5%, and for service records with a rate of 28.6%. It was observed that 98.3% of the nurses used an electronic health record in the last 3 years and 80.8% found electronic records necessary in the health sector (Table 2).

**Table 2.** Level of information technology applications of nurses

| Variables | n | % |
|---|---|---|
| Level of computer and mobile technology use | | |
| Very good | 17 | 14.2 |
| Good | 54 | 45.0 |
| Middle | 45 | 37.5 |
| Bad | 4 | 3.3 |
| Where you learned to use a computer | | |
| School | 25 | 18.1 |
| Computer course | 16 | 11.6 |
| Through their own efforts | 89 | 64.5 |
| Other | 8 | 5.8 |
| Using computer in clinic | | |
| Yes | 120 | 100.0 |
| No | 0 | 0 |
| Purpose of using computer in clinic | | |
| Service records | 78 | 28.6 |
| Nursing records | 97 | 35.5 |
| Information scanning | 43 | 15.8 |
| Receiving laboratory results | 48 | 17.6 |
| Other | 7 | 2.6 |
| Using an electronic health record in the last 3 years | | |
| Yes | 118 | 98.3 |
| No; but it is used in other units in the organization | 2 | 1.7 |
| Finding electronic records necessary in the health sector | | |
| Yes, required | 97 | 80.8 |
| No, not a basic need but usable | 20 | 16.7 |
| Undecided | 3 | 2.5 |

*n= number, %= percentage*

Nurses indicated that information technologies have a positive impact on the nursing profession ($\bar{x}$=4.02±0.93) and are considered necessary ($\bar{x}$=1.83±0.83). When the answers of the nurses to the questions about the EHR and paper-based health records are examined, the EHR indicates the reliability of the care received by the patient ($\bar{x}$=0.64±1.12), the quality of care provided ($\bar{x}$=0.46±1.27), and the support given to the patient ($\bar{x}$=0.38±1,16). (Table 3).

**Table 3.** Item means of nurses' electronic health/patient record scale

| No | Using Electronic Recording | n | Min. | Max. | Mean (SD) |
|---|---|---|---|---|---|
| 1 | Improves the quality of care provided | 120 | -2 | 2 | 0.46 (1.27) |
| 2 | Patients' quality of life improves | 120 | -2 | 2 | 0.21 (1.22) |
| 3 | Increased support for the patient | 120 | -2 | 2 | 0.38 (1.16) |

**Table 3.** Item means of nurses' electronic health/patient record scale (Continued)

| | | | | | |
|---|---|---|---|---|---|
| 4 | Increased reliability of the care patients receive | 120 | -2 | 2 | 0.64 (1.12) |
| 5 | Reduced cost of care | 120 | -2 | 2 | -0.01 (1.11) |
| 6 | Number of patients cared for increases | 120 | -2 | 2 | 0.02 (1.11) |
| 7 | Reduced physical workload | 120 | -2 | 2 | 0.08 (1.27) |
| 8 | Reduced overall workload | 120 | -2 | 2 | 0.03 (1.28) |
| 9 | The preferability of the work increases | 120 | -2 | 2 | 0.17 (1.11) |
| 10 | Reduced administrative burden on nurses | 120 | -2 | 2 | -0.01 (1.22) |

*n= number, Min= Minimum, Max= Maximum, SD= Standart deviation*

The nurses' electronic health/patient record scale scores were determined by gender (p=0.156), marital status (p=0.899), liking the profession (p=0.342), age (p=0.073), educational status (p=0.084), professional experience (p=0.310), no statistically significant difference was found according to the unit studied (p=0.637). A statistically significant difference was found in the sub-dimension of commitment to the profession when their liking for the nursing profession and their attitudes towards productivity were examined (p=0.021). (Table 4).

It was observed that nurses who expressed liking for their profession had a higher level of professional commitment ($\bar{x}$=29.98±4.72). When the relationship between nurses' job demands and their liking for the nursing profession was examined, a statistically significant difference was found (p=0.028), and it was found that the average scores of nurses who did not like their profession were higher ($\bar{x}$=20.55±4.40). When nurses' attitudes towards productivity were compared with their ages, it was seen that the mean productivity of individuals aged 45 years and over was higher than that of other age groups ($\bar{x}$=47.23±9.06) and there was a statistically significant difference (p=0.037).

No significant difference was found in nurses' attitudes towards productivity according to their educational status. A statistically significant difference was found in terms of attitude toward productivity according to professional experience (p=0.028), and it was observed that individuals with 21 years and above experience had higher response means ($\bar{x}$=46.39±9.70). When the attitudes of nurses regarding productivity were examined according to the units they worked in, a statistically significant difference was found in the teamwork sub-dimension according to the units they worked in (p=0.042) and it was found that nurses working in the dialysis service and outpatient clinic had a higher predisposition to teamwork ($\bar{x}$=30.50±7.77) (Table 4).

**Table 4.** Comparison of nurses' sociodemographic characteristics and mean scores of the productivity attitude scale

| Variables | Attitude Scale on Productivity Mean (SD) | Professional Commitment Mean (SD) | Working conditions Mean (SD) | Job Demands Mean (SD) | Teamwork Mean (SD) | Rewarding Mean (SD) | Electronic Patient/Record Scale Mean (SD) |
|---|---|---|---|---|---|---|---|
| Gender | | | | | | | |
| Female | 45.47 (9.95) | 30.00 (4.54) | 23.64 (6.41) | 19.73 (4.66) | 27.82 (4.64) | 8.74 (3.27) | 45.30 (4.93) |
| Male | 46.21 (11.41) | 29.55 (5.37) | 22.55 (5.46) | 21.45 (5.85) | 28.36 (4.13) | 9.18 (3.54) | 40.82 (9.61) |
| Test and p value | t=-0.232 | t=0.311 | t=0.547 | t=-1.139 | t=-0. .375 | t=-0.420 | t=1.527 |
| | p=0. 817 | p=0.024* | p=0.586 | p=0.257 | p=0.708 | p=0.675 | p=0.156 |

**Table 4.** Comparison of nurses' sociodemographic characteristics and mean scores of the productivity attitude scale (Continued)

| Marital Status | | | | | | | |
|---|---|---|---|---|---|---|---|
| Single | 45.03 (9.35) | 29.97 (4.56) | 23.78 (5.01) | 19.59 (4.73) | 26.75 (4.61) | 9.16 (3.56) | 45.00 (4.29) |
| Married | 45.72 (10.33) | 29.95 (4.63) | 23.45 (6.75) | 20.00 (4.82) | 28.27 (4.54) | 8.65 (3.19) | 44.85 (6.04) |
| Test and p value | t=-0.332 | t=0. 015 | t=0. 286 | t=-0.410 | t=-1.618 | t=0.748 | t=0.127 |
| | p=0. 740 | p=0. 988 | p=0. 776 | p=0.682 | p=0. 108 | p=0.456 | p=0.899 |
| Like for the Profession | | | | | | | |
| Yes | 44.57 (10.18) | 29.98 (4.72) | 22.78 (6.58) | 19.56 (4.95) | 27.54 (4.51) | 8.68 (3.14) | 45.24 (5.07) |
| No | 47.48 (9.58) | 29.93 (4.39) | 25.08 (5.51) | 20.55 (4.40) | 28.53 (4.72) | 9.00 (3.59) | 44.20 (6.58) |
| Test and p value | t=-1.507 | t=0.056 | t=-1.899 | t=-1.067 | t=-1.112 | t=1.112 | t=0.954 |
| | p=0.134 | p=0.021* | p=0.06* | p=0.028* | p=0.268 | p=0.612 | p=0.342 |
| Age | | | | | | | |
| 23-33 | 45.47 (9.65) | 29.60 (4.46) | 25.07 (6.19) | 19.93 (4.37) | 26.67 (4.72) | 8.67 (3.29) | 46.47 (5.99) |
| 34-44 | 43.96 (11.08) | 29.61 (5.14) | 21.93 (6.53) | 18.93 (5.59) | 28.74 (4.80) | 8.37 (3.19) | 45.20 (5.79) |
| ≥44 | 47.23 (9.06) | 30.57 (4.09) | 24.18 (5.93) | 20.86 (3.96) | 27.77 (4.14) | 9.30 (3.38) | 43.50 (4.89) |
| Test and p value | F=1.194 | F=0.607 | F=2.656 | F=1.857 | F=1.893 | F=0. 916 | F=2.674 |
| | p=0.037* | p=0.547 | p=0. 074 | p=0.047 | p=0.155 | p=0.403 | p=0.073 |
| Education | | | | | | | |
| High school | 46.41 (8.04) | 29.10 (3.38) | 25.20 (6.42) | 19.50 (4.55) | 27.70 (3.12) | 9.90 (2.28) | 42.70 (9.40) |
| Associate degree | 45.59 (10.77) | 28.60 (4.86) | 25.07 (6.45) | 22.07 (5.67) | 26.60 (4.17) | 7.80 (2.67) | 42.20 (6.97) |
| Bachelor's degree | 45.94 (10.30) | 30.41 (4.48) | 23.59 (6.46) | 19.65 (4.56) | 28.21 (4.93) | 8.80 (3.31) | 45.41 (4.64) |
| Master's degree | 41.76 (9.39) | 29.31 (5.90) | 19.92 (4.17) | 19.38 (5.23) | 26.92 (3.57) | 8.62 (4.25) | 46.36 (5.10) |
| Test and p value | F=0.624 | F=0.678 | F=1.560 | F=0.969 | F=0.848 | F=1.046 | F=2.275 |
| | p=0.646 | p=0.609 | p=0.190 | p=0.427 | p=0.498 | p=0.387 | p=0.084 |
| Experience | | | | | | | |
| <10 | 45.82 (9.88) | 29.81 (3.99) | 25.11 (5.93) | 20.07 (4.72) | 27.00 (4.54) | 8.48 (3.36) | 45.78 (5.36) |
| 11-20 | 43.39 (10.95) | 28.38 (5.30) | 22.17 (6.21) | 19.24 (4.59) | 28.31 (5.17) | 8.59 (3.67) | 45.69 (7.62) |
| >21 | 46.39 (9.70) | 30.73 (4.37) | 23.50 (6.47) | 20.11 (4.93) | 28.03 (4.35) | 9.00 (3.10) | 44.16 (4.54) |
| Test and p value | F=0.904 | F=2.709 | F=1.527 | F=0.350 | F=0.654 | F=0.301 | F=1.182 |
| | p=0.028* | p=0.071* | p=0.221 | p=0.035* | p=0.522 | p=0.740 | p=0.310 |
| Worked Unit | | | | | | | |
| Internal Medicine | 44.78 (10.87) | 28.78 (4.66) | 24.35 (6.42) | 20.91 (4.62) | 26.78 (4.37) | 8.04 (2.20) | 45.96 (5.00) |
| Surgery | 44.03 (8.75) | 30.30 (4.39) | 22.39 (6.90) | 19.83 (4.58) | 27.17 (3.56) | 8.00 (3.07) | 43.43 (4.24) |
| Palliative Care | 43.58 (11.13) | 29.38 (3.66) | 23.13 (8.77) | 17.75 (5.23) | 27.75 (5.41) | 9.00 (2.33) | 43.63 (2.44) |
| Emergency Service | 46.90 (7.26) | 29.22 (3.93) | 25.83 (4.81) | 19.61 (4.05) | 27.78 (3.88) | 9.74 (3.64) | 44.96 (8.65) |
| Operating/ Delivery | 50.25 (10.75) | 31.60 (5.33) | 23.95 (5.53) | 21.50 (4.39) | 29.80 (5.03) | 10.55 (4.04) | 44.20 (4.86) |
| Intensive Care | 38.46 (12.91) | 28.30 (4.47) | 19.50 (6.75) | 16.10 (5.06) | 27.50 (6.53) | 7.60 (3.43) | 47.00 (6.51) |
| Dialysis/ Outpatient | 45.19 (4.08) | 30.50 (4.95) | 25.00 (9.89) | 15.50 (2.12) | 30.50 (7.77) | 8.00 (5.65) | 43.67 (4.93) |
| Day Service Units | 46.02 (9.56) | 30.00 (5.25) | 34.00 (4.24) | 23.00 (5.86) | 28.00 (4.83) | 8.00 (2.40) | 46.30 (2.75) |
| Test and p value | F=1.478 | F=1.112 | F=1.621 | F=1.872 | F=0. 777 | F=1.689 | F=0.742 |
| | p=0.173 | p=0.361 | p=0.127 | p=0.071 | p=0.042* | p=0.109 | p=0.637 |

*SD=Standard deviation, F= ANOVA, t=Independent sample t-test, *p ≤0.05*

According to the correlation analysis results for the scales used in the study. no relationship was found between the electronic health/patient record scale and the productivity attitude scale. while a positively moderate relationship was found between the information technology scale (r=0.48).

## 4. Discussion

When the literature is reviewed, it is observed that the results of studies on the workload and productivity of nurses with EHR are different (Boonstra et al., 2014). Some studies show that it decreases the work productivity of nurses (Gephart et al., 2015) some show that it increases (Seto et al., 2014), and some show that it has no effect (Hakes & Whittington, 2008). In this study, which was aimed to determine the level of EHR use of nurses working in hospitals, their perceptions towards information technologies, and its effect on their productivity, it was determined that nurses' knowledge and attitudes towards electronic health records were at a high level, electronic health records positively affected the development of the nursing profession but did not affect their productivity

Nurses' attitudes toward information technologies are generally positive. It is stated that information technologies facilitate the nursing processes of data collection, diagnosis, planning, application, and evaluation from the patient and reduce the nursing workload (ANA, 2015). The knowledge, skills, and competencies of nurses will facilitate the use of information technologies and thus EHR. The low level of nurses' application of information technologies also negatively affects their use of EHR (O'Connor & LaRue, 2021). In this study, it was found that nurses have a positive attitude towards information technologies and a good level of usage, and they express those information technologies have a positive impact on the nursing profession, are necessary, and have a positive impact on the nursing profession.

It is stated that due to the need for a considerable amount of time and the high risk of errors associated with paper-based health records, high-quality documentation services cannot be provided and the communication needs among healthcare personnel cannot be met (Yu et al., 2013). EHR increases the productivity of nurses by reducing the time allocated for recording, prevents data loss by minimizing or preventing errors that may occur due to recording, and ensures the continuity of communication between nurses (Gürkan et al., 2023; Öztürk et al., 2022). Lee & Lee (2021) conducted a study that showed transferring paper-based nursing records to digital format improves the quality of documentation, standardizes nursing documentation, ensures information privacy, reduces information gaps, develops patient-specific applications, increases the use of the nursing process, reduces the risk of misinterpretation, and enhances accessibility to nursing data. When the literature is examined, it is seen that nurses are generally satisfied with the use of EHR instead of paper-based health records (Gephart et al., 2015; Higgins et al., 2017; McBride et al., 2017) and electronic patient care plans affect patient care quality (Tsai et al., 2020). However, nurses in Texas and Norway were found to have low satisfaction with their EHRs (Mcbride et al., 2017). This study reported that the use of EMR instead of paper-based health records increased the reliability of the care provided to the patient, the quality of care, and the support given to the patient.

In the study, nurses' knowledge and attitudes towards electronic health records were at a high level and they had positive attitudes towards productivity. It was found that the mean scores of women were statistically higher than men in the sub-dimension of commitment to the profession, and the mean scores of those who liked their profession were statistically higher than those who did not like their

profession in the sub-dimension of job demands. A significant difference was found in the attitudes of nurses with 21 years of experience or more toward productivity. Nurses working in dialysis services and outpatient clinics had higher mean scores on the attitude scale related to productivity compared to other nurses. By integrating technology into the nursing profession, both the quality of care given to patients and professional satisfaction can be increased by reducing workload.

## 5. Conclusion

It is seen that the use of EHR by nurses, who provide direct care to the patient and are important members of the health care team, contributes to the nursing process by increasing the visibility of nursing, facilitating the measurability of the interventions, the development of standardized documents and the re-evaluation of the data of care practices in the health record system. It is thought that nurses' informatics competencies should be increased for successful EHR use and it is important to develop a positive attitude. It may be recommended to assign informatics nurses in hospitals to ensure more effective use of EHR by nurses, to work integrated with hospital information systems in terms of possible disruptions or system development, to guide other nurses, and to provide regular training to improve patient care quality and data security. Many new graduate nurses may not be competent in information technologies (Brooks & Erickson, 2012), therefore it may be recommended to provide courses on information technologies in nursing curricula. It can be ensured that nurses who are trained in information systems and technologies have analytical and critical thinking skills when graduate.

### Description

This study is derived from the thesis.

### Conflict of interest

No conflict of interest has been declared by the authors.

### Contributors

Study conception/design: GBE and OK. Data collection and analysis: GBE Statistical expertise: OK. Drafting of the manuscript: OK. Administrative/ technical/ material support: GBE and OK. Supervision: OK.

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