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## Nursing Students' Attitudes to the Recording and Protection of Patients' Health Data: A Cross-Sectional Study

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# Nursing Students' Attitudes to the Recording and Protection of Patients' Health Data: A Cross-Sectional Study

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## Abstract

**Background:** Understanding nursing students' attitudes toward patient data protection is crucial, as it can affect their future practice and adherence to legal and ethical standards. The primary aim of this study was to assess nursing students' attitudes toward the recording and protection of patients' health data.

**Methods:** In this descriptive and cross-sectional study, 460 students were selected using the convenience sampling method. The intention was to contact the whole research population; however, data were collected from those who agreed to participate in the study and who completed the data collection form, which accounted for 70% of the population. For data collection, a five-question student description form and the personal health data recording and protection attitude form for nursing students, consisting of 31 questions checked for language validity, were used. The independent samples t-test and one-way variance analysis were used in independent groups.

**Results:** The students' mean score on the personal health data recording and protection attitude form for nursing students total was  $3.96 \pm 0.56$ . The attitudes to the recording and protection of patients' health data of female students, in their second-year of study, who had knowledge concerning personal data and health data, who desired to work in fields of practice related to their studies, and whose levels of communication with patients in their fields of practice were significantly better than those of other students ( $p = 0.001$ ,  $p = 0.001$ ,  $p = 0.000$ ,  $p = 0.000$ ,  $p = 0.001$ , respectively).

**Conclusions:** Nursing students demonstrated positive attitudes to the recording and protection of patients' data, and certain independent variables affect this. The results of the study may provide nursing educators with an opportunity to carry out interventions relating to factors that affect the attitudes of nursing students to the recording and protection of patients' health data. Qualitative and interventional studies on the research topic with larger samples are warranted.

**Keywords:** medical records, nursing students, records, Turkey

## INTRODUCTION

Personal data include sensitive topics such as ethnical issues, genetic or mental health, substance dependence, sexually transmitted diseases, data relating to children and young people, disabilities, reproductive health, palliative care, sex life, behavior profiles, violence within the family, geographic location, and finance.<sup>1,2</sup> At present, the increasing digitalization of health records has raised concerns about the security of patients' health data.<sup>3-5</sup> Between 2005 and 2019, 249.09 million people were affected by breaches in health service data security.<sup>6</sup>

The rapid global development in information technologies and the electronic recording of health data raise questions about its protection and privacy.<sup>7</sup> In health service, data sharing violations may cause concerns about patient privacy and problems of trust in health workers.

This concern may prevent the establishment of effective communication between patients and health professionals and thereby negatively affect care.<sup>8</sup> Shen *et al.*<sup>9</sup> reported that 42% of patients were worried about sharing their medical information outside their control. In another study, the possibility of access to health data and its misuse by unauthorized third parties using health systems worried 48.8% of the patients.<sup>10</sup>

In health services, patients seeking health care will share information, including their most private data, with the health care team. Accordingly, nurses who are with the patients 24 hours a day and are responsible for their care have access to patients' physical, social, cultural, economic, and psychological data. Respect for the privacy of patients is a professional responsibility of all healthcare professionals, particularly nurses.<sup>11</sup> Therefore, nurses must protect the confidentiality of patients' health data.<sup>12</sup>

Conversely, nursing students play an important role in patient care. For their professional development, students immerse in various fields of clinical practice. In this process, students attend to people who come for health services, so they have access to their health data.<sup>13</sup> In clinical practice, nursing students participate in various

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care procedures that may involve privacy issues, such as the exposure of a patient's body during a physical examination. For this reason, they have important responsibilities in processing patients' data.<sup>4</sup>

In nursing education, courses aimed to create awareness among students about the use of patient data within acceptable boundaries and the protection of its confidentiality.<sup>14</sup> Nursing students must have competencies such as acting in accordance with professional ethical principles and values and taking into account relevant laws and regulations when making use of information and care technologies in their work.<sup>2</sup> When the nursing curriculum incorporates awareness of such topics, students may have a lower chance of encountering problems relating to professional and legal responsibilities in their professional lives.

Few descriptive studies have examined nursing students' attitudes to recording and protecting patients' health data.<sup>2,4,5</sup> Therefore, this study aimed to determine nursing students' attitudes to recording and protecting the health data of patients and examine influencing variables. The study findings may contribute to the literature and help determine nursing students' attitudes to recording and protecting patients' health data, increasing the chance for interventions. Moreover, the results will provide valuable information and guide the development of interventions relating to nursing students' recording and protection of patients' health data. In addition, such interventions may help nursing educators develop students' practice strategies before they begin clinical practice. The findings will also contribute to the limited literature available.

The study aimed to determine the attitude levels of nursing students towards the recording and protection of patients' health data as well as whether nursing students' independent variables affect their attitudes to the recording and protection of patients' health data.

## METHODS

Ethics committee permission (No. 2023-07 dated 27 September 2023) was obtained from Bursa Uludağ University Health Sciences Research and Publication Ethics Committee. Before commencing the questionnaire survey, in accordance with the Declaration of Helsinki, necessary approvals were obtained online from the participants indicating that their participation was voluntary.

This descriptive and cross-sectional study aimed to determine nursing students' attitudes to the recording and protection of patients' health data and the influencing variables. The study, which was conducted between September and December 2023, enrolled students in the Nursing Department of the Health Sciences Faculty of a government university in the Marmara region of Turkey.

The cross-sectional and descriptive design was chosen to address its aim of determining the attitudes to the recording and protection of patients' health data of nursing students studying at a particular period in a single university. In addition, with its descriptive design, a scale was used as a data collection tool, which had been tested for language validity and reliability.

Second-, third-, or fourth-year nursing students who can speak and understand Turkish and participated voluntarily in the study were included. First-year nursing students and those who declined participation in the study were excluded. The study population consisted of second-, third-, and fourth-year students of the nursing department of a state university in the Marmara region of Turkey. First-year students were not included in the study because they lacked clinical experience. During the study period, 460 second-, third-, and fourth-year nursing students were recruited using the convenience sampling method. The intention was to contact the whole study population; however, data were collected from 322 students who agreed to participate in the study and who completed the data collection forms, which accounted for 70% of the study population. A sociodemographic information form and the Personal Health Data Recording and Protection Attitude Form (PHDRPAF) for nursing students were used to collect research data.

The sociodemographic information form was created by the researchers according to the literature<sup>2,5,15</sup> and included questions on students' age, sex, year of study, knowledge concerning personal data and health data, liking to work in fields of practice related to their classes, and the description of their levels of communication with patients in their fields of practice.

The PHDRPAF scale was developed, and its validity and reliability were tested by Gözmen *et al.*<sup>16</sup> It consists of 31 items in five subscales: health data knowledge, legal information, legal data sharing, health data sharing, and health data recording. A five-point Likert-type scale was used: 1 = I definitely disagree, 2 = I disagree, 3 = I have no opinion, 4 = I agree, and 5 = I definitely agree, and no items are scored in reverse. The mid-point of this five-point Likert-type scale was reported to be 3.<sup>16</sup> The calculation and evaluation of the total scale score were performed in the same way for all subscales. The scale was evaluated according to the item-order average.<sup>16</sup> Students who scored <3 points on the scale were evaluated as having negative attitudes to data recording and protection, and those scoring ≥3 as having positive attitudes to it. A negative attitude indicated students' low awareness concerning personal data recording and protection, whereas a positive attitude indicated high awareness. The Cronbach alpha reliability coefficient of the scale was 0.94.<sup>16</sup> In this study, the Cronbach alpha value of the scale was 0.95.

The consent form, student description form, and PHDRPAF were put online using Google Forms. The link to these data collection instruments was sent to the students' email addresses. After all necessary legal permissions were obtained, the students' e-mail addresses were obtained through the coordinator instructors of each class. All research information was sent to the students by email. Before filling out the data collection forms, they were assured that all their data would be used for scientific study and that their responses would in no way affect their grades. Information about the study and an informed consent form were added to the head of the online data collection form. After providing approval through the consent form, they responded to the questions on the data collection form. Research data were collected from students who agreed to participate in the research online and who completed all forms.

Because the PHDRPAF used in previous studies on topics similar to those in the present study<sup>2,4,5,16</sup> had been tested for Turkish validity and reliability, it was thought to be appropriate for use in this study. In studies that had previously used this scale, the Cronbach alpha reliability coefficient was >0.85.<sup>2,4,5,16</sup> Before the PHDRPAF was used in the study, written permission was obtained by email from the authors who conducted the Turkish validity and reliability testing of the scale.

Data obtained were evaluated using IBM SPSS Statistics for Windows version 28.0 (IBM Corp., Armonk, NY, USA). The conformity of data to normal distribution was examined with the Kolmogorov-Smirnov test, which revealed the normal distribution of data ( $p > 0.05$ ). Descriptive statistics for quantitative data were expressed as means and standard deviations and qualitative data as frequencies and percentages. When comparing variables such as sexuality, knowledge about personal data and health data, and liking to work in fields of practice related to their classes, an independent samples t-test was used. When comparing the variables of the year of study and description of the level of communication with patients in practice fields, the one-way analysis of variance was used. Within-group difference was examined by the one-way analysis of variance, and the Tukey test was used as the post hoc test. The 95% confidence interval of the results was calculated, and  $p < 0.05$  were accepted as significant.

**RESULTS**

Table 1 shows the descriptive characteristics of the study participants. The mean age of the students was  $21.18 \pm 2.00$  years; 75.8% (N = 244) were female, and 36.6% (N = 118) were in their second year. In addition, 65.2% (N = 210) of the students stated that they knew about personal data and health data of the patients, 86% (N = 277) liked to work in fields of practice related to their classes, and 51.2% (N = 165) described having a good level of

communication with the patients in their fields of practice (Table 1).

The total score mean on the PHDRPAF was  $3.96 \pm 0.56$ . On the PHDRPAF subscales, the mean scores were  $3.95 \pm 0.60$  on health data knowledge,  $4.16 \pm 0.63$  on legal information,  $4.16 \pm 0.59$  on legal data sharing,  $3.84 \pm 0.72$  on health data sharing, and  $3.71 \pm 0.72$  on health data recording (Table 2).

Table 3 shows the distribution of students' total PHDRPAF score means according to their descriptive characteristics. A significant difference was found between the PHDRPAF total score and variables of sex, year of study, knowledge about personal data and health data, liking to work in fields of practice related to their classes, and description of level of communication with patients in their fields of practice ( $p < 0.05$ , Table 3). The Tukey test was applied to determine the group showing a difference between the scale score and the variables of the year of study and description of their level of communication with the patients in their fields of practice. The results showed that

**TABLE 1.** Descriptive information of nursing students

Variables	N	%
<b>Sex</b>		
Female	244	75.8
Male	78	24.2
<b>Year of study</b>		
Second	118	36.6
Third	103	32.0
Fourth	101	31.4
<b>Knowledge about personal data and health data</b>		
Yes	210	65.2
No	112	34.8
<b>Liking to work in fields of practice related to their classes</b>		
Yes	277	86.0
No	45	14.0
<b>Description of the level of communication with patients in practice fields</b>		
Poor	6	1.9
Medium	104	32.3
Good	165	51.2
Very good	47	14.6

**TABLE 2.** Total and mean subdimension scores in the personal health data recording and protection attitude form for nursing students

Scales and subdimensions	Mean $\pm$ SD	Min-Max score
Health data knowledge	$3.95 \pm 0.60$	1-5
Legal information	$4.16 \pm 0.63$	1-5
Legal data sharing	$4.16 \pm 0.59$	1-5
Health data sharing	$3.84 \pm 0.72$	1-5
Health data recording	$3.71 \pm 0.72$	1-5
Total	$3.96 \pm 0.56$	1-5

**TABLE 3.** Distribution of PHDRPAF mean scores according to students' descriptive information

Variable	Personal health data knowledge	Legal information	Legal data sharing	Personal health data sharing	Personal health data recording	Total PHDRPAF
<b>Sex</b>						
Female	4.00 ± 0.57	4.25 ± 0.59	4.20 ± 0.55	3.89 ± 0.70	3.78 ± 0.68	4.02 ± 0.52
Male	3.80 ± 0.67	3.87 ± 0.68	4.03 ± 0.70	3.71 ± 0.74	3.51 ± 0.78	3.79 ± 0.62
<i>p</i>	0.010*	0.001**	0.031*	0.055	0.005*	0.001
<b>Year of study</b>						
Second <sup>a</sup>	4.14 ± 0.53	4.40 ± 0.49	4.35 ± 0.44	4.02 ± 0.68	3.88 ± 0.65	4.16 ± 0.61
Third <sup>b</sup>	3.80 ± 0.63	3.97 ± 0.68	4.01 ± 0.67	3.71 ± 0.78	3.55 ± 0.77	3.81 ± 0.56
Fourth <sup>c</sup>	3.90 ± 0.59	4.06 ± 0.64	4.09 ± 0.60	3.77 ± 0.65	3.67 ± 0.69	3.90 ± 0.56
<i>p</i>	0.001** (a > b, c)	0.001** (a > b, c)	0.001** (a > b, c)	0.002** (a > b, c)	0.002** (a > b, c)	0.001** (a > b, c)
<b>Knowledge about personal data and health data</b>						
Yes	4.05 ± 0.59	4.26 ± 0.60	4.26 ± 0.56	3.87 ± 0.75	3.80 ± 0.73	4.05 ± 0.54
No	3.78 ± 0.58	3.96 ± 0.64	3.96 ± 0.60	3.79 ± 0.65	3.55 ± 0.67	3.81 ± 0.55
<i>p</i>	0.000**	0.000**	0.000**	0.314	0.004*	0.000**
<b>Liking to work in fields of practice related to their classes</b>						
Yes	4.01 ± 0.55	4.23 ± 0.57	4.21 ± 0.54	3.87 ± 0.70	3.77 ± 0.68	4.02 ± 0.50
No	3.61 ± 0.76	3.72 ± 0.81	3.82 ± 0.77	3.65 ± 0.78	3.37 ± 0.83	3.63 ± 0.74
<i>p</i>	0.000**	0.000**	0.000**	0.053	0.000**	0.000**
<b>Description of the level of communication with patients in practice fields</b>						
Poor <sup>d</sup>	3.11 ± 1.45	3.28 ± 1.56	3.16 ± 1.55	2.82 ± 1.31	2.33 ± 0.91	2.94 ± 1.33
Medium <sup>e</sup>	3.84 ± 0.60	4.08 ± 0.64	4.08 ± 0.54	3.83 ± 0.69	3.66 ± 0.76	3.91 ± 0.55
Good <sup>f</sup>	4.01 ± 0.52	4.19 ± 0.56	4.18 ± 0.52	3.88 ± 0.64	3.73 ± 0.64	3.99 ± 0.48
Very good <sup>g</sup>	4.12 ± 0.60	4.31 ± 0.59	4.39 ± 0.61	3.96 ± 0.84	3.94 ± 0.66	4.14 ± 0.55
<i>p</i>	0.000** (f, g > d, e)	0.000** (f, g > d, e)	0.001** (f, g > d, e)	0.003* (f, g > d, e)	0.001** (f, g > d, e)	0.001** (f, g > d, e)

independent t-test and ANOVA test were used accordingly (\* $p < 0.05$ , \*\* $p < 0.001$ )

PHDRPAF: Personal Health Data Recording and Protection Attitude Form for nursing students

the levels of attitudes concerning the recording and protection of patients' health data were significantly higher in female students who were in their second year, had knowledge about personal data and health data, liked to work in fields of practice related with their classes, and had good or very good communication level with patients in fields of practice ( $p < 0.05$ , Table 3).

## DISCUSSION

Awareness of personal data protection is an important topic both for the health team and nursing students, who are at the stage of learning the profession and its responsibilities.<sup>4,17</sup> In this study, an answer was first sought regarding nursing students' attitudes to the recording and protection of patients' health data and its level. In this regard, the students' total score mean was  $3.96 \pm 0.56$ , which indicates that the nursing students' demonstrated positive attitudes to the recording and protection of patients' health data. Among similar studies conducted in Turkey, Eskimez and Tosunöz<sup>4</sup> determined that the attitudes of nursing students to the recording and protection of health data were indicated by the total score mean of 4.20. Other studies with nursing students reported that the students demonstrated positive attitudes to the topic.<sup>2,5,14</sup> In studies conducted in other countries, Park and Woo found a positive correlation between the practices of nursing students relating to the

protection of medical data and their perceptions of the importance of medical data protection in South Korea.<sup>17</sup> The results of the present study support those of other studies. Altogether, the study findings revealed that nursing students demonstrated positive attitudes to the recording and protection of patients' health data. Ethics lessons to students and emphasis on the topics of patient privacy and respect for personal values may have positively affected the students' attitudes to the protection of personal data. In a study in Iran with medical faculty students, students' knowledge and attitudes concerning confidentiality and sharing of patient data were low.<sup>18</sup> The difference between the findings of this study and the present study arises from the variables analyzed such as the faculty where the study was conducted, country, culture, measurement instruments, or way of education. The study participants had a high awareness of protecting and not sharing patients' health data, which is accepted to be sensitive. Nursing students demonstrating a positive attitude on this topic is a pleasing finding.

Easy access by nursing students during their education to patients' health data and the inappropriate use of these data put the students at risk of breaking the law.<sup>15</sup> Moreover, the misuse of data of patients receiving health services gives rise to ethical problems.<sup>6</sup> Thus, nurses and potential nurses should handle patients' health data more

carefully than other health professionals.<sup>19</sup> According to the International Council of Nurses' (ICN) Code of Ethics for Nurses, nurses should hold all personal information obtained in a professional capacity in confidence.<sup>20</sup> In addition, this study sought to answer the question of whether nursing students' independent variables affected their attitudes to the recording and protection of patients' health data. The results revealed that students who stated that they had knowledge about patients' health data demonstrated good attitudes to the topic. In a study by Bani Issa *et al.*, nurses reported worries about the security of electronic health records because of the inadequacy of education on administrative security measures and access by unauthorized users.<sup>21</sup> Thus, high awareness and good attitudes on this topic by nursing students who stated that they have knowledge of patients' health data is an expected finding. Bae and Lee found that as students' knowledge levels increased, their perceptions concerning the protection and confidentiality of personal data also improved.<sup>22</sup> Maraş and Ceyhan found that students who knew about the protection of personal data had good attitudes on the topic.<sup>5</sup> Çetin and Çevik reported that students who stated that they had previously heard of the concepts of personal data and health data had significantly high scores on the subscale on health data sharing.<sup>15</sup> The results of the present study are similar to those in the literature. Only students with clinical practice experience were included in this study. A study conducted with nursing students found a positive correlation between having clinical practice experience and the development of students' professional values.<sup>23</sup> Thus, the education given to students by teachers and nurses in clinical practice areas and students' experiences in this regard may have affected students' professional values and their attitudes to the recording and protection of patients' health data. This concept implies that students with knowledge and experience of the topic would have high levels of attitude.

The knowledge level score means on the subdimension of legal data sharing or patient rights of students in the literature differed by sex, with female students having higher score means than male students.<sup>24</sup> In the present study, female students demonstrated higher attitudes regarding the recording and protection of patients' health data than male students. In some studies, female students had better attitudes to the recording and protection of patients' health data,<sup>2,19</sup> whereas others reported that sex did not affect this level.<sup>2,5,14,15</sup> Moreover, differences were between the studies, which may arise from the differences in the numbers of female students participating in the study and city, faculty, or field of clinical practice of the students. In some studies,<sup>2,4,24</sup> female students expressed higher levels of attitudes to the recording and protection of patients' health data than male students, similar to the findings of the present study. These findings indicate that female students may be more sensitive on this topic than male students. It may be

difficult to explain the reasons in detail. The findings may have been affected by factors such as culture, personal values, or sensitivity to health data. To clarify this, qualitative studies that take into account sex as a factor affecting nursing students' attitudes to the recording and preservation of patients' health data are needed.

In this study, second-year nursing students had significantly better attitudes to the recording and protection of patients' health data than third- and fourth-year students. Eskimez and Tosunöz, Maraş and Ceyhan, and Olğun and Adıbelli reported that fourth-year students had better attitudes to the topic than lower-year students.<sup>4,5,14</sup> Hosseini-Ghavam-Abad *et al.* and Al Anazi *et al.* reported that fourth-year students had the highest level of knowledge about patients' rights.<sup>18,25</sup> These results may show that a higher-year of study and an increase in theoretical knowledge and clinical experience are reasons why higher-year students have better attitudes than students in lower years. Conversely, Çetin and Çevik found that third-year students had better attitudes than those in other years to the recording and protection of patients' health data.<sup>15</sup> Our results do not agree on those of similar studies. As mentioned, previous studies found that higher-year students demonstrated better attitudes, whereas in the present study, second-year students demonstrated higher attitude levels. This difference indicates that second-year students developed a greater awareness of the topic in their clinical fields.

The results revealed that the study participants who liked to work in fields of clinical practice related to their classes and those who described their level of communication as very good had significantly better attitudes to the topic than other students. Çetin and Çevik reported similar results, although their results were not significant.<sup>15</sup> Expectedly, students who liked to work in their clinical practice fields and those who described their communication as very good would have high awareness of the recording and protection of patients' health data. In addition to developing their psychomotor skills, they also harness their affective skills such as comprehending the philosophy of the profession and respecting and defending patients' rights in the clinical environment.<sup>15</sup> This awareness of student nurses is seen as something positive for the nursing profession. In solving students' ethical dilemma that patients' data in the clinical field must both be protected and kept hidden from the patient, ethics lessons given using scenarios may be effective in increasing awareness. The results of the study may provide nursing educators with an opportunity to perform interventions relate to factors that affect the attitudes of nursing students to the recording and protection of patients' health data.

The study has some limitations. First, this study was conducted in the nursing department of a single government hospital; thus, the conclusions can only be

applied to the study population. To increase the generalizability of the results, replication studies with a larger sample and wider-ranging research of students with different sociodemographic characteristics are needed. Second, because many factors can affect the concept of the recording and preservation of health data, qualitative studies are needed to facilitate an in-depth investigation of the topic. Third, even though the students were given information on the topic and the importance of the research before the study, their responses to the questionnaires depended on self-reporting. Because students' responses depended only on quantitative data, understanding the depth to which the students' attitudes and the reasons behind them may be limited. This may result in prejudice regarding objective attitudes to the recording and protection of patients' health data. Thus, in-depth interviews with nursing students and qualitative research methods are warranted, and the effectiveness of education programs aimed at encouraging awareness of the topic in students must be evaluated.

## CONCLUSIONS

In this study, nursing students demonstrated positive attitudes to the recording and protection of patients' health data, and certain independent variables affected these attitudes. Thus, preclinical practice orientation programs must allocate time to informing nursing students on the recording and preservation of patients' health data. In addition, the nursing curriculum should be reviewed with regard to classes supporting positive attitudes and awareness concerning the protection of health data. In this regard, practical lessons on the importance of the preservation of health data and patients' privacy should be presented as simulations and scenarios. Finally, quantitative and qualitative studies on the topic with a broader sample are warranted.

## CONFLICT OF INTEREST

None declared.

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