IJMS
Vol 49, No 9, September 2024

Original Article

Study of Patients' Privacy during the COVID-19 Pandemic in Iranian Health Care Settings

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Received: 02 May 2023
Revised: 04 September 2023
Accepted: 28 October 2023

What's Known

- Protecting patient's privacy is a challenging ethical issue for healthcare providers.
- Using valid data during a pandemic can reduce the number of hazards and damages due to restrictions on human data access.

What's New

- Despite some contrary beliefs, patients and physicians are relatively well aware of the privacy issues.
- There is a need to sensitize healthcare providers to manage the ethical challenges under complicated urgent situations, such as the COVID-19 pandemic.

Abstract

Background: Patient's privacy protection is a challenging ethical issue. The complex situation of the COVID-19 pandemic was a probable predictor of breaching confidentiality. This study aimed to assess the viewpoints of COVID-19-confirmed patients, who were hospitalized, and their healthcare providers about the compliance of different aspects of patient's privacy.

Methods: This cross-sectional study included 3433 COVID-19-confirmed patients who were hospitalized in Kerman, between 2020 and 2021, and about 1228 related physicians, nurses, and paraclinical staff. Two separate validated researcher-made questionnaires were developed, each including subscales for physical, informational, and spatial privacy, as well as a satisfaction rate of privacy protection. The data were analyzed using SPSS software version 26, with independent samples *t* test, Mann-Whitney-U, Kruskal Wallis, and Multiple Linear Regression tests at a 95% confidence interval.

Results: The mean percentages of the patients' privacy scores in physical, spatial, and informational areas were significantly lower ($P<0.001$) than the average of the medical staff's scores in all three areas (Difference: 10.27%, 14.83%, and 4.91%, respectively). Physical and spatial privacy scores could be predicted based on the participants' classification, patients or medical staff, and sex. The mean patients' satisfaction score was 9.25% lower than the medical staff's ($P<0.001$). Moreover, only academic hospitals showed a statistically significant difference between the patient's satisfaction with privacy protection and medical staff's viewpoints ($P<0.001$).

Conclusion: Although this study indicated the benefits of protecting patients' privacy in the healthcare setting, patients' privacy scores and satisfaction were lower than their healthcare providers. The pandemic conditions might have been an obstacle to preserving patients' rights. These findings demonstrated the importance of sensitizing healthcare providers to manage these ethical challenges in a complicated critical state such as the COVID-19 pandemic.

Please cite this article as: Mobasher M, Samzadeh Kermani HR, Eslami Shahrbabaki M, Sarafinejad A. Study of Patients' Privacy during the COVID-19 Pandemic in Iranian Health Care Settings. Iran J Med Sci. 2024;49(9):580-589. doi: 10.30476/ijms.2023.97795.3070.

Keywords ● Ethics ● Privacy ● Health personnel ● Clinical informatics ● Health information management ● COVID-19

Introduction

The protection and preservation of patient's privacy are crucial in building confidence between patients and physicians. The Encyclopedia of Bioethics defines privacy as the absence of

aggression or disruption to one's physical life.[1] It includes the right of individuals, groups, and institutions to regulate the accessibility of their information. Privacy has multiple dimensions, including physical, informational, communicational, and spatial aspects.[2] In today's technologically advanced era, the importance of patient's privacy is increased due to technological advances and the widespread use of patient information for therapeutic and other purposes.

A number of regulations and guidelines around the world emphasize the protection of patients' privacy in healthcare settings. The Iranian Patient's Rights Charter, for instance, dedicates its fourth pillar to this issue.[3] The Professional Ethics Guideline for Medical Practitioners, approved by the Iranian Medical Council, in Articles 80 and 89 underscores the importance of respecting patient privacy, as well as samples related to the patient's body, such as radiograph images, blood, and tissue samples.[4]

Healthcare providers must take into consideration the individuals' perceptions of physical and spatial intimacy, as well as their beliefs, religions, and cultures. Maintaining patient's privacy is crucial to patient-centered care because it encourages open communication between patients and healthcare providers. Instances where patients avoid physical examinations or fear breaching confidentiality during medical history-taking stem from privacy violations. Furthermore, the lack of intimacy can result in anxiety, stress, and violent conduct.[5] In hospital settings, patients may face challenges in controlling their privacy, which makes it even more important. Numerous studies indicated that patients' privacy persisted over time.[6-8]

Confidentiality and patient privacy breaches occur frequently in emergency departments, affecting a large number of patients. A study in Iranian hospital emergency departments revealed low levels of physical and informational privacy, as well as dissatisfaction with privacy adherence.[8] Across various healthcare settings, studies highlighted privacy violations, such as exposing patients' bodies and inadvertent disclosure of private information during history-taking or room entry, particularly in emergency departments.[8-10] Interventions such as implementing compartmentalized cabins were found to enhance patients' perceptions of privacy in emergency obstetric and gynecologic services.[11] Another study evaluated privacy from 370 patients' perspectives and emphasized the need for healthcare provider education to uphold patient's privacy across physical, mental, and informational dimensions.[12]

The challenges of protecting patient privacy during critical emergencies, such as the COVID-19 pandemic, are becoming more apparent. Healthcare providers must exercise greater sensitivity in preserving patient privacy and employ effective strategies to ensure the required level of confidentiality. Privacy breaches could exacerbate the mental and physical effects of the pandemic or similar situations. In the context of the global dominance of COVID-19, disseminating data and information was crucial for physicians and patients. Utilizing mobile applications, news outlets, databases, cyberspace, and various media channels became essential. Given that some of this information was patient-related, it became imperative to prioritize and enhance privacy protection measures. Despite numerous studies on data sharing, access, and transformation during COVID-19,[6, 7, 13, 14] there was a scarcity of research discussing COVID-19 patients' privacy in healthcare settings, particularly in Iran. Consequently, this study aimed to explore the perspectives of COVID-19 patients and their medical staff on privacy preservation and satisfaction in various referral healthcare centers in Iran during the COVID-19 pandemic.

Patients and Methods

Ethical Consideration

On the first page of the online questionnaire, it was announced that participants' identities would remain confidential, and it was notified that responding to the questionnaire was not obligated. The team used the participant's mobile numbers without their names only for research purposes and won't be given to a third party. The Research Ethics Committee of Kerman University of Medical Sciences approved this study (code: IR.KMU.AH.REC.1399.088).

Participants and Recruitment

A descriptive and analytical cross-sectional approach was used to study the COVID-19 patients' privacy at Afzalipour School of Medicine, Kerman University of Medical Sciences (Kerman, Iran) in 2020 and 2021. The study population included COVID-19-confirmed patients who were identified, hospitalized, and discharged following recovery, and all related medical staff. The research team was blinded to the demographic information of the recruited patients. As part of the informed consent procedure, the individuals in both groups were asked to participate in the study if they were willing to participate, and they were not obligated to fill out the questionnaire. It should be noted that

the patients who participated in this study, were admitted and treated between September 2020 to January 2021, in one of the three academic and/or four non-academic hospitals in Kerman, which were coronavirus treatment centers. The medical staff members included physicians and nurses and some of the staff in the fields of imaging, laboratory, and medical wards of the mentioned hospitals. Without any further information, the participants' mobile numbers, including 1228 medical staff and 3433 patients, were obtained by official correspondence from the Centre for Disease Control. Two separate online questionnaires were applied, and all questions appeared on a single page in each questionnaire. Samples were collected using a census approach for all participants in this study. Between June 10 and 29, 2021, data were collected by sending short text messages (SMS) including the questionnaire link, and a week later, the process was repeated three times to receive additional responses. All questionnaires were completed anonymously.

Instrument Development

Two questionnaires were developed by the research team using similar literature research and analysis.[8-10] Based on the previously mentioned references, these instruments were constructed in three areas of privacy, including physical, informational, and spatial. Five revisions were made by the research team in the think tank and online collaborative sessions to finalize the questionnaires. The final instrument was developed in three sections, including demographic variables (age, sex, work experience, and occupation); the second part consisted of 44 questions in three categories, physical (6 questions), informational (22 questions), and spatial (5 questions) privacy; and the third part included satisfaction items for privacy observation (11 questions).

Instrument Validation

The questionnaires' construct, content, and face validity procedures were followed in standard ways. A five-point Likert scale for each question in the main sections was used. The score for each area was determined by adding the scores of its components and reported as the area subscale score. Due to the different number of items in each area, the scores of all areas were converted to percentages for better comprehension and comparison. The final version of the questionnaire was completed by twenty persons in two groups of participants, and its internal consistency was assessed. For the reliability analysis, Cronbach's alpha coefficient was 0.924 for the medical staff questionnaire and 0.918 for the patients' questionnaire. Based on similar studies, an exploratory factor analysis, using the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test using IBM SPSS Statistics software (version 26), was performed to assess the construct validity of the questionnaires.

Instrument Preparation

Finally, 44 items were deemed appropriate and assessed by another expert from the research team to ensure face validity using the spelling and writing principles. The final versions of both questionnaires were prepared using "Porsline®" platform (an Iranian online questionnaire design platform). At the beginning of the questionnaire, there was a welcome page announcing the title and purpose of the research project, informed-consent statements for the participants, and a declaration phrase that everyone could refuse to answer the questions without any debate. It was also announced that the identification of participants would remain confidential, and their mobile numbers would also remain anonymous to be used by only one of the team members, just for research purposes, and not to be shared with a third party.

Statistical Analysis

Data were analyzed using SPSS software version 26 (IBM®, USA). An independent samples *t* test, and the Mann-Whitney-U test were used to compare the means score of patient and medical staff based on their characteristics. The Kruskal-Wallis test was used to compare the agreement between medical staff and patients in some questionnaire items. Moreover, multiple linear regression analysis was employed to determine the predictors of the scores in different domains. $P<0.05$ was considered statistically significant.

Results

General Considerations

According to the specification of the questionnaires and the large amount of descriptive and analytical data, the researchers decided to only provide the most important findings. Moreover, some of the demographic variables had little effect on responses to different questions, while others had important roles in making differences between respondents. The following sections were continuously organized to make the most important findings more comprehensible.

Measuring Instrument

As mentioned above, the results of the

questionnaire analysis were appropriate and acceptable. The KMO values for patients and medical staff were 0.870 and 0.863, respectively. The Bartlett's test of sphericity was statistically significant (P<0.001). The Cronbach's alpha coefficients of the four sections of the patient's questionnaire were 0.62, 0.78, 0.92, and 0.94, respectively; and the medical staff's questionnaire had coefficients of 0.87, 0.85, 0.93, and 0.93, respectively. To assess the content validity of the questionnaire, 12 specialists in medicine, medical ethics, and medical informatics evaluated and scored all items for applicability, clarity, simplicity, and necessity. The Content Validity Ratio (CVR), and the Content Validity Index (CVI) coefficients were computed for both questionnaires. The patient's questionnaire had a CVR of 0.73 and a CVI of 0.87, whereas the medical staff's questionnaire had a CVR of 0.78 and a CVI of 0.91.

Participants Characteristics

Out of 3433 patients, who were invited to participate in the study, 965 views of the link were recorded. However, only 205 (5.9%) of them submitted the completed form. Out of 1228 medical personnel, 570 opened the questionnaire link, but only 157 (12.7%) forms were returned to us. Although the response rate was low, there were several significant findings to be discussed. After checking the integrity and correctness of the results, 192 patients and 150 medical staff were included. The demographic characteristics of the participants are represented in table 1. About 90.7% of the medical staff, who responded to the survey, were employed in academic hospitals, which were the primary admission centers for COVID-19 patients.

Areas of Patients' Privacy

As previously stated, all scores were reported in percentages. The mean patient's confidentiality scores in all areas were significantly lower (P<0.001) than the medical staff's scores. Female patients had significantly higher mean scores for patients' privacy in all area subscales than males. In males, the mean scores for physical, spatial, informational, and satisfaction were 54, 56, 54, and 66.8, respectively, in females, 60, 59.6, 61, and 72, (P<0.001, P=0.01, P<0.001, and P<0.001, respectively) (table 2). The results showed no statistically significant difference in patients' satisfaction with protecting patients' privacy in academic and non-academic hospitals (P=0.2).

Physical Privacy Subscale

The results showed that 94% of the patients and 77.5% of the medical staff stated that curtains or paravanes were used during a physical examination. The mean score of the patient privacy in the physical area subscale was significantly (P<0.001) higher in non-academic hospitals from patients' viewpoints.

Table 1: Demographic Characteristics of Patients and Medical Staff

Patients (N=192)			Medical Staff (N=150)		
Items		**Mean±SD**	**Items**		**Mean±SD**
Age (Years)		45.8±1.067	Age (Years)		39.15±12.33
Hospital staying (Days)		7.78±0.461	Hospital Experience (Years)		10.57±0.739
Sex, n (%)	Female	81 (42.2)	Sex, n (%)	Female	114 (76.0)
	Male	111 (57.8)		Male	36 (24.0)
Job Title	Freelancer Job	25 (13.0)	Job Group	Physician	49 (32.7)
	Worker	10 (5.2)		Nurse	81 (54.0)
	Housekeeper	40 (20.8)		Paraclinical personnel	6 (4.0)
	Student	5 (2.6)		Others	14 (9.3)
	Government employee	27 (14.1)	Education Level	Diploma/Associate Degree	15 (10.0)
	Private sector	15 (7.8)		BSc	80 (53.3)
	Health organization	27 (14.1)		MSc	5 (3.3)
	Religious/Cultural	4 (2.1)		PhD/ MD	1 (0.7)
	Military organization	10 (5.2)		Specialist	30 (20.0)
	Agriculture	2 (1.0)		Subspecialty/Fellowship	19 (12.7)
	Retired	22 (11.5)	Academic Member	No	120 (80.0)
	No Job	5 (2.6)		Yes	30 (20.0)
Education Level	Primary school	31 (16.1)	Type of Hospital	Educational	136 (90.7)
	High school	51 (26.6)		Non-Educational	14 (9.3)
	Associate Degree	23 (12.0)			
	BSc	54 (28.1)			
	MSc	26 (13.5)			
	Doctorate	1 (0.5)			
	PhD/Higher	6 (3.1)			

Table 2: The comparison between patients and medical staff in the main areas of privacy and satisfaction

Privacy Area	Sex	Female		Male		P value	Total		
	Group	N	Mean±SD	N	Mean±SD		N	Mean±SD	P value
Physical	Staff	114	76±14.87	36	74.33±16.71	0.57	150	75.6±15.29	<0.001**
	Patients	81	68.07±13.91	111	63.33±11.94	0.01*	192	65.33±12.99	
	Total	195	72.7±14.97	147	66.03±14.03	<0.001**	342	69.83±14.92	
Spatial	Staff	114	81.09±14.62	36	79±17.06	0.47	150	80.59±15.21	<0.001**
	Patients	81	69.09±16.01	111	63.32±14.98	0.01*	192	65.75±15.64	
	Total	195	76.1±16.29	147	67.16±16.87	<0.001**	342	72.26±17.1	
Informational	Staff	114	70.49±9.93	36	71.72±10.08	0.52	150	70.78±9.94	<0.001**
	Patients	81	67.73±10.57	111	64.51±11.1	0.04*	192	65.87±10.97	
	Total	195	69.34±10.26	147	66.28±11.26	<0.001**	342	68.02±10.79	
Satisfaction	Staff	114	83.6±13.37	36	80.6±14.47	0.25	150	82.88±13.65	<0.001**
	Patients	81	76.34±17.28	111	71.65±17.43	0.06	192	73.63±17.48	
	Total	195	80.58±15.49	147	73.84±17.15	<0.001**	342	77.68±16.54	

P<0.05 was considered statistically significant using the Independent Samples *t* test in each row between groups, between sexes, and in total. *P<0.05 and **P<0.001

The group, including both the patients and the medical staff, and sex could significantly predict physical privacy scores using multiple linear regression. Furthermore, the physical privacy score was 10.27% lower in patients than in medical staff (P<0.001). Furthermore, this score was 4.73% lower in male patients than in females (P=0.02). However, there was no sex difference according to the medical staff's responses (P=0.4) in this context.

Spatial Privacy Subscale

The group (patients and medical staff) and sex could significantly predict spatial privacy scores. Furthermore, the patients' spatial privacy score was 14.83% lower than the medical staff's (P<0.001). Moreover, this score was 5.77% lower in male patients than in females (P=0.05), which was critically concerning. The hospital type (academic or non-academic) could predict spatial privacy scores. This score was 7.02% lower in non-academic hospitals than the academic hospitals (P<0.001). There were other points in the results of this section, which were not included in detail due to constraints on word count.

Informational Privacy Subscale

About 70.8 % of patients disagreed that physicians discussed their illnesses with non-staff members or shared their radiographs and tests with others. About 67-70% of patients and 46%-57% of the medical staff disagreed with the statement that assistants, medical students, nurses, or nursing students interacted with non-healthcare professionals about their patients. 76% of medical staff disagreed with giving patient's test results to non-medical staff. Additionally, the grouping variable significantly predicted informational privacy scores in such a way that this score was 4.91% lower in patients than in medical staff (P<0.001). Table 3 compares the agreement between medical staff and patients in several questionnaire items.

Satisfaction with Patients' Privacy

Table 2 shows that 59% to 74% of patients and 85% to 90% of the medical team agreed with their satisfaction issues concerning patients' privacy in the hospital. The group (patients and medical staff) and sex had a significant impact on the satisfaction score. The patients' satisfaction score was 9.25% lower than the medical staff's (P<0.001). Furthermore, this score in males was 6.74% less than in females (P=0.02). In academic hospitals, the patient's satisfaction score was 9.44% lower than the medical staff's (P<0.001). However, there was no difference between the viewpoints of patients and medical staff about patients' satisfaction in non-academic hospitals (P=0.2).

Discussion

In this study, a survey on the viewpoints of patients and medical personnel was conducted, and the results showed some concerns about the privacy of the COVID-19 patients who were hospitalized in Kerman, Iran. According to the findings, there was a lower score for physical, spatial, and informational areas of privacy. Moreover, the patient's satisfaction score was lower than that of the medical staff.

There was a paucity of research on the significance of treatment staff privacy protection and their level of satisfaction during the COVID-19 pandemic. To the best of our knowledge, this study was the first or perhaps the only of its kind to discuss preservation of the privacy of COVID-19 patients hospitalized in medical facilities across the country.

Table 3: Comparing the response percentage to some questionnaire items by patients and medical staff

Items	Patient or Staff	Fully Disagree	Disagree	No Idea	Agree	Fully Agree	P value
Absence of seeing parts of the patient's body during the physical examination	Pt.	22.9*	29.7	24.5	13.5	9.4	<0.001
	St.	0.7	14.7	9.3	33.3	42	
Absence of students in the physical examination room	Pt.	23.4	24.5	14.6	22.9	14.6	<0.001
	St.	2	32	26	24.7	15.3	
Knocking on the door by the medical staff when they enter the room	Pt.	21.9	30.2	16.1	16.7	15.1	<0.001
	St.	2.7	12.7	11.3	38	35.3	
Closing the door of the room during the physical examination	Pt.	17.2	26.6	17.2	23.4	15.6	<0.001
	St.	1.3	10.7	12.7	36.7	38.7	
Physical examination by the same-sex staff	Pt.	4.7	12	11.5	40.1	31.8	0.67
	St.	3.3	17.3	12	38	29.3	
Not moving people other than the medical staff to the patient's room	Pt.	24	37	13	18.2	7.8	<0.001
	St.	2	16	14	28.7	39.3	
Using the medical record in case of patient death by researchers	Pt.	13	16.1	23.4	24.5	22.9	0.02
	St.	16.7	14	34.7	30	14.7	
Getting permission from the patient to record information on the computer	Pt.	15.6	26.6	25.5	18.8	13.5	<0.001
	St.	2.7	24	32.7	28.7	12	
Explanation to the patient about the registration of information in an electronic system	Pt.	18.7	26.6	17.2	20.3	17.2	<0.001
	St.	2.7	17.3	23.3	38.7	18	
Explanation to the patient about proper information security	Pt.	17.7	25.5	19.8	19.3	17.7	<0.001
	St.	2.7	17.3	18	40.7	21.3	
Explanation to the patient about the access of competent people to their information	Pt.	17.7	22.9	23.4	18.2	17.7	<0.001
	St.	2	13.3	16.7	44.7	23.3	
Not seeing their information on the computer by anyone	Pt.	19.3	22.4	28.6	13	16.7	<0.001
	St.	2.7	12.7	22.7	38.7	23.3	
Not using patients' information without their consent	Pt.	23.4	21.9	25.5	16.7	12.5	<0.001
	St.	2.7	15.3	2.7	34	25.3	
Explanation about the use of patients' records in research only if necessary	Pt.	20.8	23.4	21.4	17.7	16.7	<0.001
	St.	2.7	14	24	37.3	22	
Not disclosing patients' identities to people outside the research team	Pt.	21.4	25	23.4	14.6	15.6	<0.001
	St.	1.3	11.3	20.7	40	26.7	
Maintaining patient information security optimally	Pt.	7.8	7.8	30.7	30.2	23.4	<0.001
	St.	0.7	4	9.3	43.3	42.7	

*All numbers are presented in percentages. Pt: Patients; St: Staff; P<0.05 was considered statistically significant using the Chi square test.

There were no comparable studies conducted in other countries during the pandemic. Therefore, comparing and assessing the results with other studies on patient privacy during the COVID-19 pandemic was only possible in a few ways. The studies in the country were established in the conditions before the COVID-19 pandemic, and since they were conducted in emergency departments in certain cases, they might be comparable to the present study.[15, 16]

According to the official national statistics of COVID-19 for Iran, there were more than 6,000,000 reported infections until this project (June-July 2021) (https://covid19.who.int/region/emro/country/ir). Kerman's prevalence was around 5 per 10,000 patients, and only the responses of about 6% of the target population of Kerman were analyzed in this research. Although the findings of this research might not be generalizable to a large population due to its limitations, some points were of high importance, worth pondering, and can never be ignored in scientific discussions related to medical ethics and health information management.

In this study, the average score of the areas of privacy compliance and satisfaction with privacy compliance indicated a significant difference in the opinions of patients with COVID-19 compared to their responsible medical staff, with patients giving lower scores in each case. In terms of physical privacy, the findings showed an agreement between the patients and the treatment staff regarding obtaining permission, not seeing parts of the patient's body during the physical examination, as well as providing care to the patient by non-same-sex medical staff. A previous study reported that 42.2% of participants received treatment from same-sex medical staff, which was lower than that reported in the present study.[17] In fact, it was a sign that patients were aware of their privacy rights. However, patients' differing perspectives

on their treatment staff might be attributable to their expectations and understanding of privacy, which was influenced by their beliefs, values, cultures, and social statuses. The reason could be that the treatment staff is less attentive to this issue and handle it as a routine matter. There was a clear relationship between patients' perception of privacy and their satisfaction with healthcare services in some studies.[17, 18]

In addition, healthcare providers might self-evaluate their practices and quality of care in an emergency situation, appropriately. Besides, another study in the emergency departments of Iranian hospitals found that most patients believed in the provision of services by same-sex medical staff.[8] This issue was consistent with the findings of the present study. As previously stated, the importance of this issue must be addressed during the training period for all the students.

An investigation in one of Iran's medical centers revealed that the patient's attitude towards privacy and maintaining the privacy of patients regarding confidentiality, information, and physical privacy during care was desirable.[18] According to studies conducted in Iran at various healthcare centers, 49.2%[19] and 28%[20] of patients had a strong belief in maintaining their physical privacy. These results were lower than those reported in the present study. In another study, 70.3% of participants reported that patients' bodies were examined in the presence of other people.[18] Moreover, an Australian study found that the absence of walled rooms contributed to patient privacy violations in emergency departments.[21] Some studies reported that patient perceptions of privacy were associated with the use of curtains or cubicles to protect privacy.[11, 22] Other studies underlined the importance of these private facilities in obstetrics and gynecology emergency departments for pregnant women's privacy to improve their experience.[11]

Considering spatial privacy, the opinions of the patients and the treatment staff were not similar regarding these issues: using a curtain or a wall-mounted chamber during the examination; knocking on the door when entering the room; closing the door; and not sitting on the patient's bed during the physical examination. According to a part of our findings that is not reported in tables, the patients and their medical staff agreed that health care providers should not use the patient's bed during the physical examination. This issue is an accepted norm among patients and their medical staff. In another study in Iran, most participants stated that the medical staff never sat on their beds,[19] which was consistent with this research findings. Another difficulty was the flow of individuals entering and exiting the patient's room. The majority of the medical staff (68%) acknowledged the movement of non-staff people to the patient's rooms, which was higher than the patients' positive responses (39%). It could be due to the inability of the patients to distinguish between non-related people and the healthcare staff.

As a fact, valid information is valuable for correct decision-making.[23] Therefore, it is important to share some vital clinical information among all medical staff, particularly critical patients, to provide better clinical care. Another area that was covered in the present study was informational privacy, and our findings showed some concerns about it. Based on the provided findings, the majority of the patients (70.8%) did not agree to share their information with non-medical professionals. Nonetheless, the majority of their medical staff (52%) confirmed that it was done correctly. This issue could be the outcome of the pandemic's severe conditions. The medical staff shared patients' information with their families to control their anxiety or consult with other professionals.

Moreover, when it comes to conveying information from assistants, medical students, nurses, or nursing students to non-healthcare professionals, patients (67-70%) opposed this issue more than medical staff (48%). This issue could imply that patients did not know how the healthcare providers would share information with other medical professionals. In the present healthcare setting, electronic medical records are a new opportunity to improve healthcare. Meanwhile, in the COVID-19 situation, using electronic medical records and other technologies such as email, visual communication, and social media played a crucial role in promoting transferring news to other settings or patients' relatives. In contrast, patient informational privacy violation was a serious risk in using these communications.[24]

A previous study, which was conducted in emergency departments of hospitals in Tehran, reported that compliance with patient informational privacy was higher than in those of the present research.[8] In another study, the researchers considered privacy respect from hospitalized patients' viewpoints and reported protection of the informational privacy of most patients.[12] The other studies also found that informational privacy was optimal.[17, 25] However, these findings were not consistent with the present research, which was justified according to the pandemic conditions and the need to inform the patient's relatives or the general

public.

Similar studies were conducted in Iran during the pre-pandemic, but mainly in emergency departments,[6, 13] and may not be exactly comparable to this study. Therefore, it was preferable to compare and assess the findings with other studies only in the general aspects of patient privacy, rather than specifically in the context of COVID-19. The main focus of most previous studies in other countries was on patient privacy in information transfer, such as contact tracing systems in Korea during the COVID-19 pandemic.[13] Therefore, it is significant to transfer information to control the pandemic, and it is necessary to consider and be careful to minimize the risk and complications of violating the patient's privacy.

In the field of information privacy, other studies reported similar findings comparable to ours. In a study, COVID-19 patients in academic hospitals were asked about their privacy and information security. According to this study, most inpatients were worried about those who could have access to their medical information, which influenced their disclosure behavior.[14] Another study found that monitoring patient behavioral characteristics while providing information was critical in obtaining accurate information from them to provide better-qualified services.[26] The confidentiality of patients' information is important, and paying attention to it could positively impact their behavior and satisfaction with treatment. Apparently, in Kerman academic hospitals, where skilled medical staff (doctors and nurses) were present, patients were more willing to be admitted and treated during the COVID-19 era.

Based on the results of this study, the mean privacy satisfaction score for medical staff (mean=79) was higher than that of patients (mean=69). This issue demonstrated that although the medical staff were aware of patients' rights and try to protect their privacy, the patients might not be enough satisfied and perceive their privacy as being violated.

As a review of the most concerning concepts in this study, some of the findings can be discussed. Several studies showed a relatively appropriate level of privacy protection for the patients, and they were somehow consistent with a part of our findings.

It should be highlighted that women emphasized their privacy more than men, which was not statistically significant.[18, 20] However, the men experienced more physical privacy violations than women, in the present study. It was a mistake and negligence that one think protecting physical privacy for male patients was less important than for females since it might lead to their great discomfort. Although this issue could be related to the perception of privacy in our society,[8, 12] it seems necessary and legal to pay more attention to training all levels of healthcare staff about protecting and respecting the privacy of all patients.[3]

This study was conducted in a few hospitals in Kerman, Iran. Similar studies in the COVID-19 context with the physical, informational, and spatial areas of privacy were also limited in Iran and other countries. Therefore, the findings of the present study were comparable in a few aspects. The initial coverage of the invited medical staff to participate was less than 80% because all staff phone numbers were not accessible. Unfortunately, despite the great effort to collect the information, the low response rate might be related to the situation of the pandemic itself. Perhaps some patients, after getting rid of their illness, no longer cared about participating in such projects and recalling the unpleasant recollections of the hospital.

Conclusion

The present study suggested that protecting patients' privacy might be beneficial. However, the given scores for privacy by patients and the satisfaction scores were lower than their healthcare providers. Although the patients and their medical staff were familiar with the different aspects of observing patients' privacy, the pandemic conditions might have been an obstacle to protecting patients' rights. Moreover, it seemed that healthcare providers were unable to promise their patients to protect their privacy. On the other hand, the patients of the present study might have lowered their standards considering the dire pandemic conditions and compromise with the existing situation, which might have influenced their responses. These findings showed the necessity to sensitize healthcare providers who could manage these ethical challenges in a complex critical state such as the COVID-19 pandemic.

Acknowledgment

The authors would like to express their deepest gratitude and warmest appreciation to all participants who contributed to the overall success of this project.

Authors' Contribution

The study concept and design were performed by M.M. Acquisition of data, statistical analysis, interpretation of data, and writing of the

manuscript were done by A.S.N, M.E.Sh, H.S.K, and M.M. Study supervision was performed by M.M. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Conflict of Interest: None declared.

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