

# What do patients know about healthcare-associated infections? What do they want to know? Ethical evaluation

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## SUMMARY

**INTRODUCTION:** Patients hospitalized for treatment may be exposed to healthcare-associated infections, and these infections can affect patients seriously.

**OBJECTIVE:** This research was conducted to determine what hospitalized patients know and what they want to know about healthcare-associated infections.

**METHODS:** This is a full-text original research article. The study was conducted between July and September 2022 with inpatients in all clinics of Kocaeli University Hospital in Turkey. A total of 310 patients participated in this cross-sectional study. The questions were asked by the researcher and the answers were recorded.

**RESULTS:** Almost all (92.8%) the patients who stated that they knew what healthcare-associated infection was evaluated their knowledge as insufficient. Patients with higher educational levels have more information ( $p=0.000$ ) about healthcare-associated infections. Young ( $p=0.000$ ) and highly educated patients ( $p=0.000$ ) stated that the infection rate of the hospital would affect the choice of hospital.

**CONCLUSION:** Patients want to learn about healthcare-associated infections, but most do not know about them. Patients should be informed about healthcare-associated infections during hospitalization planning and hospitalization.

**KEYWORDS:** Patient. Safety. Healthcare associated infection. Ethics.

## INTRODUCTION

Hundreds of millions of people around the world are affected by healthcare-associated infections (HAIs), many of which are completely preventable. It has even been stated that there is no country where HAIs are not seen. It has been determined that the incidence of HAIs in the world is 7% in high-income countries and 15% in low- or middle-income countries<sup>1</sup>. In Turkey, 61,745 HAIs were reported within the scope of surveillance in 2017<sup>2</sup>. HAIs depend on the hospital's infection control practices, the patient's immune status, and the prevalence of pathogens. HAIs can be seen in all clinics, mostly in intensive care units. When HAIs are seen, the hospitalization period of the patients is prolonged, and drug use, treatment cost, mortality rate, complications increase, and long-term disabilities are observed. Patients need to protect themselves and their families from germs that can cause infections<sup>3</sup>. It was determined that patients wanted to learn about HAIs, which has negative results; however, most of them were not informed<sup>4</sup>. In fact, it has been claimed that the diagnosis was not disclosed to the patients with the infection, they were not informed about their treatment, and the physicians made unilateral decisions about the treatment<sup>5</sup>.

It is important to inform patients about their diagnosis and treatment options. Thus, patients' autonomy and dignity are respected, their awareness of the risks of cross-contamination of infections is increased, and they could get their own infection under control<sup>6</sup>. The first condition for patients' participation in decisions about HAIs is the appropriate disclosure of relevant information. However, studies have shown that a significant portion of patients are not informed about HAIs, and especially information about preventive measures is rarely explained accurately<sup>5,7</sup>.

Nurses have important roles in HAIs. For example, nurses can teach patients with respiratory disease not to cough into a tissue, patients with bowel disease to wash their hands thoroughly before and after using the toilet, and a patient with a wound to keep their wound clean and dry. They can provide counseling on what patients should pay attention to when determining the hospital where they will be treated. They may advocate that patients exposed to infection make autonomous decisions to seek treatment<sup>8</sup>.

There are very few studies that determine the level of knowledge of patients about HAIs<sup>9,10</sup>. Therefore, this study was conducted to determine what patients know and want to know about HAIs.

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## METHODS

**Type of research:** The research is of cross-sectional type.

**Place and time of research:** The study was conducted between July and September 2022 with inpatients in all clinics of Kocaeli University Hospital in Turkey.

**Population and sample of the research:** The population of the study consisted of inpatients treated in all clinics of a 500-bed Kocaeli University Hospital between July and September 2022. The study was completed with 310 patients.

### Inclusion criteria:

Volunteering to participate in the research  
Being open to communication and cooperation  
Being 18 years or older

### Exclusion criteria:

Being in pain and not being able to answer the questions asked.  
Inability to speak and communicate the same language.

## Data collection forms

**Introductory characteristics form:** This form was prepared by the researchers. It consists of questions about the status of being diagnosed with an HAI at the last hospitalization and the type of infection<sup>4,5</sup>.

**Questionnaire on infections:** A study form consisting of 20 questions was prepared by the researcher. For the preparation of the form, the explanations of the World Health Organization<sup>1</sup> and articles were used<sup>4,5</sup>.

**Data collection:** Data were collected through face-to-face interviews with inpatients in all clinics between July and September 2022.

**Analysis of data:** The collected data were analyzed through SPSS version 20.0. Data were compared using the chi-squared test or Fisher's exact test, as appropriate.

**Ethical aspect of the study:** Ethics Committee approval (Approval No: 2022/176) and official permission were obtained from the hospital before starting the study. The study was conducted in accordance with the Helsinki Declaration Principles, and written permission with the "Informed Voluntary Consent Form" was obtained from all patients.

## RESULTS

In our study, 57.1% of the patients were females. The mean age was  $52.22 \pm 17.328$  years, with the youngest participant being 18 years old and the oldest being 94 years old. At the time of the study, only 15.5% of the patients who participated in the study developed an infection, and all of them were informed by the physicians that they were exposed to the infection (Table 1).

**Table 1.** Distribution of patients' information about healthcare-associated infections.

	n	%
What do you know about HAI? (n=97)*		
It is serious	84	86.2
Other**	13	13.8
Do you find their knowledge about HAI sufficient? (n=97)*		
Yes	7	7.2
No	90	92.8
What do you want to know about HAI?***		
Reason of HAI	266	85.8
Signs and symptoms of HAI	265	85.5
Whether they are at risk	262	84.5
How to prevented	262	84.5
Risks and complications	242	78.1
Treatment and cost	224	72.3
Do you think HAI can be prevented?		
Yes	262	84.5
No	48	15.5
Where did you learn about HAI? (n=95)		
From persons with hospital infections	35	36.1
From the healthcare worker	29	32.0
From the Internet	23	23.7
From previous HAI experience	8	8.2
Were patients exposed to HAI while they were hospitalized? (n=310)		
Yes	49	15.5
No	261	84.5
Types of HAI (n=49)		
Surgical site infections	20	40.8
Urinary tract infection	11	22.4
Pneumonia	11	22.4
Bloodstream infections	7	14.3
Do you want to be told if you are exposed to HAI?		
Yes	293	94.5
No	17	5.5
Why do you want to know if you develop HAI?***		
Being aware of what happened to me	276	89.0
Consciously participating in treatment	156	50.3
Protecting other patients from infection	122	39.4
What are their roles and responsibilities in the prevention of HAIs?***		
Washing hands and paying attention to personal hygiene	301	97.1
Not going to other patients' rooms	78	25.2
Notifying the healthcare worker when I realize that I have a problem myself	74	23.9

\*Patients answered the relevant question. \*\*HAI develops in every hospitalized patient, treatment of HAI is difficult and expensive, HAI develops in patients hospitalized in intensive care, HAI passes through operating rooms, and HAI passes through the hospital environment. \*\*\*Patients reported more than one opinion.

Almost all the patients (92.8%) evaluated their knowledge about HAIs as insufficient. A total of 59.8% of the patients learned about HAIs from people who had been exposed to infection before and from the Internet. Patients wanted to be informed if infection developed.

Most of the male participants ( $p=0.043$ ) wanted to know the incidence of HAIs in the hospital to which they applied. Those in the 18–37 years age group ( $p=0.000$ ), those with high school or higher education ( $p=0.000$ ), and those who stayed in the hospital for 1–6 days ( $p=0.001$ ) stated that the infection rate of the hospital would affect the choice of hospital. Some patients reported that they would like to be treated in the same hospital even though the infection rate is high (Table 2).

A total of 71.3% of the participants stated that they can warn any healthcare worker if they behave in a way that will expose them to infection. In particular, patients with high school or higher education degree ( $p=0.000$ ), between 18 and 37 years old ( $p=0.17$ ), hospitalized in the surgery clinic ( $p=0.004$ ), and hospitalized for 1–6 days ( $p=0.014$ ) reported that they could warn more. The majority (35.3%) of the patients who said they would hesitate to warn were 58 years old and over ( $p=0.034$ ), had less than high school education ( $p=0.002$ ), hospitalized in

the internal medicine clinics ( $p=0.004$ ), and hospitalized for 1–6 days ( $p=0.004$ ) (Table 3). A total of 28.1% of the patients who stated that they could not warn stated that they would hesitate to warn, and 10% stated that if they warned, it would negatively affect their treatment.

## DISCUSSION

HAIs are explained by the principles of no harm, respect for autonomy, beneficence, non-harming, and justice<sup>5</sup>.

**Principle of autonomy:** Autonomy is a human right to self-determination. In order for the patients who are planning to be hospitalized to decide in which hospital they can be treated, the infection rates of the hospitals should be explained<sup>1</sup>. It has been suggested that, in countries with high HAI-related mortality, patients look at the risk of getting HAIs when choosing the institution to be treated<sup>5</sup>. In our study, patients in the 18–37 years age group ( $p=0.000$ ), those with high school or higher education degree ( $p=0.000$ ), and those patients hospitalized for 1–6 days ( $p=0.001$ ) stated that the infection rates of the hospitals would be effective in choosing the hospital<sup>5</sup>. Some patients reported that they would like to be treated in the same

**Table 2.** The state of patients wanting to know what healthcare-associated infections are and the healthcare-associated infection rate of the hospital.

	Do you know what HAIs are?			Do you want to know the HAI incidence rate of the hospital?			Does the HAI rate of the hospital affect your choice of hospital?		
	Yes	No	p	Yes	No	p	Yes	No	p
	n (%)	n (%)		n (%)	n (%)		n (%)	n (%)	
Education									
Less than high school	46 (23.8)	147 (76.2)	<b>0.000</b>	175 (90.7)	18 (9.3)	0.612	98 (50.0)	95 (49.2)	<b>0.000</b>
High school and above	51 (43.6)	66 (56.4)		104 (88.9)	13 (11.1)		86 (73.5)	31 (26.5)	
Gender									
Female	55 (31.1)	122 (68.9)	0.924	154 (87.0)	23 (13.0)	<b>0.043</b>	111 (62.7)	66 (37.3)	0.119
Male	42 (31.6)	91 (68.4)		125 (94.4)	8 (6.0)		73 (54.9)	60 (45.1)	
Age (years)									
18–37	16 (23.5)	52 (76.5)	0.293	60 (88.2)	8 (11.8)	0.828	52 (76.5)	16 (23.5)	<b>0.000</b>
38–57	36 (33.0)	73 (67.0)		98 (89.9)	11 (10.1)		70 (64.2)	39 (35.8)	
58 and above	45 (33.8)	88 (66.2)		121 (91.0)	12 (9.0)		62 (46.6)	71 (53.4)	
Clinic									
Internal medicine clinics	35 (31.5)	76 (68.5)	0.945	101 (91.0)	10 (9.0)	0.844	62 (55.9)	49 (44.1)	0.399
Surgery clinics	62 (31.2)	137 (68.8)		178 (89.4)	21 (10.6)		122 (61.3)	77 (38.7)	
How many days in the hospital									
1–6 days	67 (33.0)	136 (67.0)	0.370	182 (89.7)	21 (10.3)	0.845	134 (66.0)	69 (34.0)	<b>0.001</b>
7 days and above	30 (28.0)	77 (72.0)		97 (90.7)	10 (9.3)		50 (46.7)	57 (53.3)	

Statistically significant values are indicated in bold.

**Table 3.** Situations and reasons of patients wanting to warn the healthcare worker who may expose them to healthcare-associated infection.

	Would you warn the healthcare worker if he or she engages in a behavior that may expose you to HAI?			If you do not warn, what is the reason?					
	Yes	No	p	I hesitate to warn			If I warn, my treatment will be adversely affected		
				Yes	No	p	Yes	No	p
	n (%)	n (%)		n (%)	n (%)		n (%)	n (%)	
Education									
Less than high school	124 (64.2)	69 (35.8)	<b>0.000</b>	66 (34.2)	127 (65.8)	<b>0.002</b>	24 (12.4)	169 (87.6)	0.066
High school and above	97 (82.9)	20 (17.1)		21 (17.9)	96 (82.1)		7 (6.0)	110 (94.0)	
Gender									
Female	128 (72.3)	49 (27.7)	0.645	48 (27.1)	129 (72.9)	0.669	17 (9.6)	160 (90.4)	0.789
Male	93 (69.9)	40 (30.1)		39 (29.3)	94 (70.7)		14 (10.5)	119 (89.5)	
Age (years)									
18–37	55 (80.9)	13 (19.1)	<b>0.017</b>	13 (19.1)	55 (80.9)	<b>0.034</b>	3 (4.4)	65 (95.6)	0.213
38–57	82 (75.2)	27 (24.8)		27 (24.8)	82 (75.2)		12 (11.0)	97 (89.0)	
58 and above	84 (63.2)	49 (36.8)		47 (35.3)	86 (64.7)		16 (12.0)	117 (88.0)	
Clinic									
Internal medicine clinics	68 (61.3)	43 (38.7)	<b>0.004</b>	42 (37.8)	69 (62.2)	<b>0.004</b>	13 (11.7)	98 (88.3)	0.453
Surgery clinics	153 (76.9)	46 (23.1)		45 (22.6)	154 (77.4)		18 (9.0)	181 (91.0)	
How many days in the hospital									
1–6 days	154 (75.9)	49 (24.1)	<b>0.014</b>	47 (23.2)	156 (76.8)	<b>0.008</b>	17 (8.4)	186 (91.6)	0.189
7 days and above	67 (62.6)	40 (37.4)		40 (37.4)	67 (62.6)		14 (13.1)	93 (86.9)	

Statistically significant values are indicated in bold.

hospital, even though the HAI rate was high. As a reason, 48% stated that they trust their physician, and 52% stated that they believe that the university hospital is always better than other hospitals. In a study, it was shown that patients were influenced by positive recommendations about the hospital (31.8%), and they preferred the hospital they applied to just because they knew the physician (31.1%)<sup>11</sup>. This result is obtained because patients might think that university hospitals will meet their needs although the infection rate is high, and some patients need services that require advanced expertise and want to be treated by a physician who is good in their field<sup>12</sup>.

**Benefit principle:** For the benefit of patients, patients should be explained how to protect themselves from HAIs. However, it has been explained that accurate information is rarely given to patients about HAIs<sup>1</sup>. In this study, 31.3% of the patients had information about HAIs. Almost all of those who stated that they had knowledge (92.8%) evaluated their knowledge as insufficient. In the study conducted in Sydney, 8 out of 15 patients were shown to have sufficient knowledge about HAIs<sup>7</sup>. In our study, the educational level of the patients who had knowledge about HAIs was high (p=0.000).

In the study of Merle et al., patients with a high level of education defined HAIs correctly, similar to the findings of our study<sup>13</sup>. This may be due to the increase in the research and comprehension skills of the patients as their educational level increases. In our study, the fact that most of the patients with a high level of education knew that HAIs may enable them to take precautions to prevent infections. Patients must obtain information about infections from reliable sources<sup>8</sup>. In this study, 68.0% of the patients learned about infections from the Internet and people with experience of infection. In a study conducted with surgical patients, it was shown that patients acquired most of the information about infections outside the hospital<sup>14</sup>. In another study, it was shown that only 14% of the patients were informed by the healthcare worker<sup>14</sup>. The fact that the patients could not learn information about HAIs from the healthcare professionals suggested that they could not reach the correct and up-to-date information. The reason why patients are not informed about HAIs may be because healthcare professionals are worried that patients will be worried<sup>6</sup>. Almost all patients wanted to know about all aspects of HAIs. In the study of Merle et al., 76.9% of the patients wanted to get information

about hospital infections<sup>13</sup>. Patients' lack of knowledge about HAI may increase the risk of infection<sup>5</sup>.

To prevent and control the risk of HAI, patients should have some roles and responsibilities. In this study, 98.1% of the patients stated that they also have roles and responsibilities in the prevention of infections, and 97.1% associated these roles and responsibilities with handwashing and personal hygiene. In the study by Seale et al., the participants stated that they have a role in preventing infections in the hospital and this role is to protect their personal hygiene<sup>7</sup>. In our study, it may be due to patients' assumption that they should pay more attention to hand hygiene and the pandemic's emphasis on the importance of hand hygiene information on social media.

**Do no harm:** One of the basic ethical principles in the provision of healthcare services is to do no harm<sup>3</sup>. HAI is a completely preventable infection. However, patients may be exposed to HAIs and may be harmed. WHO stated that the incidence of HAIs in low-income countries is 10%<sup>15</sup>. In our study, it was found that 15.5% of the patients had HAIs. This result shows that the rate of HAIs is high in the hospital where the research was conducted. When necessary precautions are taken to prevent infections, patients' lives can be saved and treatment costs can be reduced<sup>3</sup>.

**Explaining the truth:** Telling the truth is a mandatory requirement unless it causes significant harm to patients. In this study, it was explained to all the infected patients that they were exposed to the infection. Patients with high school or higher education degree ( $p=0.033$ ) and hospitalized in the surgery clinic ( $p=0.036$ ) wanted to be informed in case of infection in order to consciously participate in the treatment. Informing all patients exposed to HAIs suggested that physicians were telling the truth to their patients and that patients' right to abstain from non-consensual treatments and their autonomy were respected<sup>1</sup>.

Patients should have the knowledge and courage to ask healthcare professionals about hand hygiene<sup>1</sup>. In a study, 48.8% of patients stated that they were willing to remind physicians

and 49.9% of them to nurses to wash their hands<sup>16</sup>. In our study, this rate was high, and 71.3% of the patients stated that they could warn any healthcare worker if they acted in a way that would expose them to infection. The higher rate of patients who stated that they could warn the healthcare worker in our study may be because the patients witnessed deaths during the pandemic and cared about their health. A total of 35.3% of the patients who said they would hesitate to warn the healthcare professional were 58 years old and over ( $p=0.034$ ), had less than high school education ( $p=0.002$ ), and were treated in the internal medicine clinics ( $p=0.004$ ). This difference may be because educated and young patients are conscious. A total of 28.1% of the patients who stated that they could not warn stated that they would not dare to warn, and 10% stated that, if they were warned, it would negatively affect their treatment. These thoughts of the patients may be because some healthcare professionals discourage patients from asking questions, dislike being told what to do, and have unequal power in the patient-physician relationship. In particular, it may be beneficial to address the fears and concerns of elderly and low-educated patients and to inform them about patient rights.

Nurses have important roles in HAIs. Nurses can encourage patients to take responsibility for their own health and safety and explain their rights to patients<sup>1</sup>.

## CONCLUSION

None of the patients are informed about HAIs when they are hospitalized. It may be recommended that the educational level of society should be increased in order to increase the awareness and participation of patients on healthcare services-associated infections.

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