



## A SCALE DEVELOPMENT STUDY: PATIENT PRIVACY SCALE

## BİR ÖLÇEK GELİŞTİRME ÇALIŞMASI: HASTA MAHREMİYET ÖLÇEĞİ

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## ABSTRACT

**Objective:** This study was carried out to develop a patient privacy scale to determine patients' thoughts on protection of their privacy at the hospital.**Method:** The study is a methodological study. This study was carried out between January and August 2020 with patients hospitalized in except pediatric clinics, the surgical and internal medicine clinics in a university hospital in an eastern province in Turkey. The “patient privacy draft scale” (HPS) was used as a data collection tool. The study was conducted with a total of 318 patients hospitalized in 150 surgical wards and 168 in internal wards.**Results:** The draft scale consisting of 33 items and 4 sub-dimensions (perception of privacy, protection of privacy, environment privacy and privacy awareness) prepared by the researchers in line with the literature was submitted for evaluation by experts through providing their opinions, and as a result of the evaluation, one item Content Validity Index (CVI) less than 0.30 was removed from the scale, and the draft scale was reduced to 32 items. According to the expert opinions, the CVI of the scale was 0.90. The value of Cronbach's Alpha was 0.915. An explanatory factor analysis was performed for construct validity; the Kaiser-Meyer-Olkin (KMO) value of the scale was 0.914, and the Bartlett test's result was  $\chi^2=2636.728$  ( $p=0.000$ ). The four-factor scale structure, which was designed by explanatory and confirmatory factor analysis in line with validity and reliability studies, was verified. Items with a factor load value below 0.30 were removed from the scale, and according to the analysis results obtained, the patient privacy scale took its final form with 18 items and 4 subdimensions (perception of privacy, protection of privacy, environmental privacy, and privacy awareness).**Conclusion:** This scale is a valid and reliable tool that can be used in the assessment of patient privacy in a hospital.**Key Words:** Patient, Privacy, Hospital, Development, Scale

## ÖZ

**Amaç:** Araştırma, hastaların hastanede mahremiyetlerinin korunması ile ilgili düşüncelerinin belirlenmesi için “Hastane Mahremiyet Ölçeği” geliştirmek amacıyla yapıldı.**Yöntem:** Araştırma, metodolojik bir çalışmaydı. Bu çalışma, Ocak-Ağustos 2020 tarihleri arasında Türkiye'nin doğusunda yer alan bir üniversite hastanesinin cerrahi ve dahiliye servislerinde yatmakta olan hastalarla gerçekleştirildi. Araştırmada veri toplama aracı olarak “Hastane Mahremiyet Ölçeği Taslağı” (HMÖ) kullanıldı. Çalışma 150 cerrahi serviste yatan ve 168 dahili serviste yatan toplam 318 hasta ile gerçekleştirildi.**Bulgular:** 33 madde ve 4 alt boyuttan (mahremiyet algısı, mahremiyetin korunması, ortam mahremiyeti ve mahremiyet farkındalığı) oluşan taslak ölçek uzman görüşlerinin değerlendirilmesine sunuldu ve değerlendirme sonucunda, Kapsam Geçerlik İndeksi (KGI) 0.30'dan küçük bulunan 1 madde ölçekten çıkarıldı ve ölçek taslağı 32 maddeye indirildi. Uzman görüşü doğrultusunda ölçeğin KGI değeri 0.90 idi. Cronbach Alpha değeri 0.915'dir. Yapı geçerliliği için açıklayıcı faktör analizi yapıldı, ölçeğin Kaiser-Meyer-Olkin (KMO) değeri 0.914, Bartlett test  $\chi^2=2636.728$ ;  $p=0.000$  bulundu. Geçerlik ve güvenilirlik çalışmaları doğrultusunda doğrulayıcı faktör analizi yapılarak tasarlanan 4 faktörlü ölçek yapısı doğrulandı. Faktör yük değeri 0.30 altında olan maddeler ölçekten çıkarılarak, elde edilen analiz sonuçlarına göre ‘Hastane Mahremiyet Ölçeği’ 18 madde ve 4 alt boyut (mahremiyet algısı, mahremiyetin korunması, ortam mahremiyeti ve mahremiyet farkındalığı) ile son şeklini aldı.**Sonuç:** Bu ölçek hastanede hasta mahremiyetinin değerlendirilmesinde kullanılabilecek geçerli ve güvenilir bir araçtır.**Anahtar Kelimeler:** Hasta, Mahremiyet, Hastane, Geliştirme, Ölçek

## INTRODUCTION

Although the concept of privacy is believed to have emerged from the first day human beings came into existence, no universal definition of this concept has been established. The fact that privacy changes with time, culture and society is stated as a reason for this. However, it is known that privacy is associated with "something that should be hidden and kept secret" [1]. Rapid scientific and technological developments in healthcare services, higher education levels, the influence of media and mass media tools, and human rights developments have made patient rights and problems

experienced in this regard more visible in recent years. All these developments and changes have brought along some problems in the provision of health services, and issues such as patient rights, employee safety, and patient safety have come to the fore. The concept of privacy in the context of patient rights comprises key quality indicators such as recognition and respect of an individual's right to privacy; maintaining self-worth, which is directly related to maintaining and supporting personal control; participation in decision making, improving relationships and comfort; and patient satisfaction [2]. In case of illness, individuals' biological, psychological, and

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health care can harm their individual privacy and autonomy while those individuals are receiving healthcare. Patients need their privacy to be protected. By protecting the privacy of patients while receiving healthcare services, patients' autonomy, dignity, rights and private lives are also protected [3]. An individual, who is put into a foreign environment other than his/her family environment, becomes dependent on those providing health care, and because he/she is outside his/her private area, he/she experiences difficulties in maintaining privacy. During this period, the patient is forced to stay with many people he/she does not know. During treatment, it is important to evaluate the privacy of patients hospitalized in healthcare institutions [4]. Previous studies on the concept of privacy generally examined practices and opinions of healthcare professionals regarding the privacy of patients and its protection using mostly unverified inventories and questionnaires. Some of those were the "privacy scale," evaluating nurses' attitudes toward privacy, which was validated and verified by Öztürk et al. [5]; the "patient privacy practices inventory of health institutions" used in a study of Özata and Özer [6]; the "privacy awareness scale" for nursing students, which was validated and verified by Öztürk et al. [7]; and questionnaires on the opinions of nurses regarding patient privacy used in studies by Joung et al. [8] and Lee and Park [9].

Considering the clinic-specific studies on privacy, Akyüz and Erdemir's [10] studies evaluating the opinions and expectations of surgical patients and nurses regarding privacy in care, data were obtained with semi-structured interview forms, since there is no scale for validity and reliability. Bekmezci and Özerdoğan [11] "Situation to protect individual privacy of health workers in obstetrics and gynecology" in their study by Değirmen and Şaylıgöl [12] developed the scale. There are a limited number of scales specific to the gynecology clinic, in which the patient evaluates his/her privacy. When the studies are examined, it is seen that the existing scales evaluate the perception of privacy of certain patient groups and do not cover all dimensions of privacy. However, no measurement tool for adults patients' assessment of their privacy, covering all hospitalized clinics, has been found in the literature. Today, protecting and maintaining the privacy of the patient is seen as one of the most important components of quality in all health services and nursing services.

Using a measurement tool whose validity and reliability have been tested in obtaining data that will form the basis of scientific knowledge will allow more objective measurements to be made. The developed instrument can be used to objectively assess patients' thoughts about privacy during clinical procedures, can be useful for the patients' recovery, and can fill a gap in the literature. This study is aimed at developing a valid and reliable measuring tool of determining thoughts of hospitalized patients regarding privacy.

## METHOD

### Study Type

This was a methodological study.

### Place and Time of the Study

This study was carried out between January and August 2020 with patients hospitalized in except pediatric clinics, the surgical and internal medicine clinics in a university hospital in an eastern province in Turkey

### Universe and Sample of the Study

The study population consisted of patients hospitalized in the surgical and internal medicine clinics of a university hospital located in the center province of Erzurum. For a sufficient sample size in factor analysis, "50 is stated as very poor, 100 as poor, 200 as medium, 300 as good, 500 as very good and 1000 as perfect" [13]. Without carrying out sampling, a total of 318 patients, of which 150 were hospitalized in the surgical and 168 in the internal medicine clinic, who were aged

18 years and older, did not have any communication problems and agreed to participate in the study, were included.

### Data Collection Tools

The "patient privacy draft scale" (HPS) was used as a data collection tool. The HPS, which was created by the researchers in line with the literature, consists of 33 statements and evaluates patients' thoughts about privacy and whether patients' privacy is protected [14-20]. This item pool was presented to nine experts for their opinions and consists of positive expressions classified in four subdimensions: perception of privacy, protection of privacy, environmental privacy, and privacy awareness within the framework of Karataş and Yıldırım [21] power resources classification theoretical framework defined in the relevant scientific literature. It is a Likert-type scale that is rated between 5, "I strongly agree," and 1 "I strongly disagree." The scale's scope and language validity have been determined.

### Ethical Aspects of the Study

Before starting the study, the researchers obtained the approval of the Ethics Committee of Atatürk University, Faculty of Medicine (B.30.2.ATA.0.01.00/406) and the written permission of the institutions where the study would be conducted. Only patients who volunteered to participate were included. Those who agreed to participate were informed about the aim and possible useful results of the study, and their verbal consent was obtained. The participants were informed that their information would be kept confidential.

The study conducted considering the ethical principles specified in the Declaration of Helsinki.

### Statistical Analysis

Data evaluation was performed on a computer using the Statistical Package for Social Sciences (SPSS) 18.0 package program.

Surface and content validity, construct validity, and reliability analyses were carried out for the validity and reliability study of the HPS. Percentage and mean tests were carried out for the scale's validity analysis, the content validity index (CVI) with expert opinions for content validity, an explanatory factor analysis (EFA) to determine construct validity, and a confirmatory factor analysis (CFA) was made within the scope of structural equation modeling. In addition, Bartlett test, Kaiser-Meyer-Olkin (KMO) test and Varimax Rotation test were carried out for EFA, CMIN/DF, RMSEA, GFI, NFI, TLI, CFI compatibility tests and the PATH diagram for CFA; item-total correlation tests and Cronbach's Alpha internal consistency coefficient were used for reliability analysis.

## RESULTS

### Content validity

The surface validity and content validity were tested before the reliability and structural validity of the scale were tested. The draft scale was developed with the help of literature information within the scope of surface validity. Language support was also included to test whether the scale is understandable when read and whether the length of the sentences is appropriate. In addition, surface validity of each item of the scale was evaluated by the experts by carrying out the surface validity test together with the content validity test. For content validity, the draft scale (33 items) was submitted to for opinions of nine experts from the Faculty of Nursing, Faculty of Health Sciences and Faculty of Education. The experts scored each item's suitability between 1, "Not suitable, remove," and 4, "Totally suitable". In addition, the experts were asked to write their opinions and suggestions regarding each item clearly. One item CVI less than .30 was removed from the scale, and the draft scale was reduced to 32 items [22,23]. The scale item CVI was determined to be 0.72-0.96.

**Table 1.** Factor load values of scale items of HPS according to subfactors

Item No	Statement	Mean	SD	Privacy Perception Factor 1	Protection of Privacy Factor 2	Environmental Privacy Factor 3	Privacy Awareness Factor 4
2	Privacy perception can change with time.	3.08	1.35		.721		
3	In case of death, privacy is maintained.	3.46	1.23		.591		
7	Failure to pay attention to privacy causes discomfort in patients.	4.06	1.01	.974			
8	Protection of privacy makes patients happy.	4.15	0.93	1.021			
9	Protection of privacy is the patient's right.	4.19	0.91	.905			
11	Female patients place more importance on privacy than male patients do.	3.59	1.09				.945
13	Attention is paid to the protection of physical privacy, even in emergencies.	3.51	1.08		.909		
14	The privacy of patients who are not able to protect themselves (those with mental disability, children, etc.) is protected.	3.81	1.03		.668		
15	Interventions to be applied to patients are carried out by paying attention to their religious sensitivity.	3.80	0.98		.647		
18	Privacy is observed when patients are in the toilet or shower.	3.96	0.99				.530
20	When one enters the patient rooms, one knocks on the room door, and the room is entered by asking for permission.	3.89	0.94				.744
21	Patient rooms are designed to protect personal privacy.	3.60	1.20			.975	
22	Patient rooms have a personal locker for patients.	3.88	0.97			.717	
23	Privacy is observed in medical procedures (blood collection, ECG, ultrasonography, etc.).	3.84	0.96		.504		
24	Care is taken not to impair the privacy of patients during treatment and care.	3.79	0.98		.522		
27	The toilets used in the hospital are separate for men and women.	3.90	1.05	.510			
29	Hospital staff (nursing staff, cleaning, etc.) pays attention to privacy.	3.75	0.97			.818	
31	Patients have the right to keep all their health information confidential.	4.09	0.82	.377			
Eigenvalue				7.611	1.657	1.250	1.027
Variance explained (%)				40.057	8.723	6.581	5.404
Total variance explained (%)					60.765		
Total Cronbach's Alpha Value					0.915		

**Construct validity**

The item factor load values of each subdimension of the draft scale were examined, and 14 items with a total factor load below 0.30 were excluded; thus, the number of items in the scale was reduced to 18 (Table 1). Of the 18-item draft scale, items 7–9, 27 and 31 belong to the privacy perception subdimension; items 2, 3, 13–15, 23 and 24, to the protection of protection of the privacy subdimension; items 21, 22 and 29, to the environmental privacy subdimension; and items 11, 18 and 20, to the privacy awareness subdimension.

**Table 2.** Patient Privacy Scale fit indices values

CFA fit indices	Normal value	Acceptable value	Found value
CMIN/X <sup>2</sup> /DF	<2	<5	2.353
GFI	>0.95	>0.90	.90
NFI	>0.90	>0.85	.885
CFI	>0.95	>0.90	.93
RMSEA	>0.95	>0.90	.068
TLI	<0.05	<0.08	.915

The sufficiency of sampling and the suitability of the correlation matrix were tested before factor analysis. The result of the Kaiser–Meyer–Olkin sampling proficiency test was 0.914 and that the Bartlett's sphericity test was X<sup>2</sup>=2636.728 and highly significant (p<0.000). A confirmatory factor analysis (CFA) was performed to verify the compatibility of the subdimensions created based on the Karataş and Yıldırım [21] model for construct validity of the HPS draft.

The goodness-of-fit indices and factor loads obtained as a result of the CFA are given in Table 2 and Figure 1.

After the statistical analysis of the HPS draft, the distribution of the items according to the subdimensions of the scale and the item total score correlations are presented in Table 3.

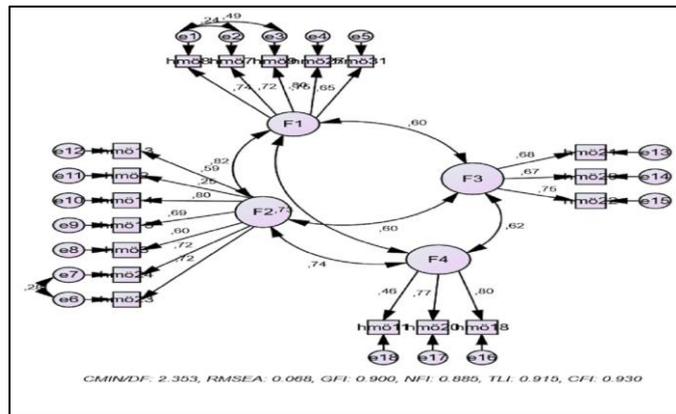
After the CFA, it was seen that item-total score correlation values and factor loads in all subdimensions were at least 0.30 (Table 3).

The analysis made for the internal consistency of the subdimensions of the HPS indicated that the Cronbach's Alpha coefficient was a = 0.865 for the privacy perception subdimension, a=0.816 for the protection of privacy subdimension, a=0.744 for the environmental privacy subdimension and a = 0.705 for the privacy awareness subdimension (Table 3).

**Table 3.** Distribution of item numbers according to subdimensions of the patient privacy scale, factor loads and internal consistency analysis (n=318)

Scale and subdimensions	Number of items	Items	Item total score correlation	Factor loads	Cronbach's Alpha
Privacy Perception	5	7-3*, 8-4*, 9-5*, 27-16*, 31-18*	.422-.801	.377-.980	.865
Protection of Privacy	7	2-1*, 3-2*, 13-7*, 14-8*, 15-9*, 23-14*, 24-15*	.158-.656	.505-.909	.816
Environmental Privacy	3	21-12*, 22-13*, 29-17*	.453-.522	.717-.975	.744
Privacy Awareness	3	11-6*, 18-10*, 20-11*	.336-.623	.530-.945	.705

\*Items in bold font are the new item numbers determined after the construct validity analysis.



**Figure 1.** Patient Privacy Scale item factor loads

**DISCUSSION**

The reliability and validity of the draft scale were tested to develop a scale for the privacy of patients in hospitals. In this regard, attempts have been made to provide a scale that will provide correct, consistent, and valid data or data collection and evaluation.

Reliability is defined as the degree of consistently and steadily measuring what a test or scale wants to measure and validity is the degree to which a scale measures what is intended to be measured, or how the measurement tool is fit for to the characteristic to be measured [24]. In another definition, validity is stated as whether the measurement data really reflect the characteristic that must be measured [25].

The most basic step of scale development is to define the conceptual and theoretical definition of the characteristic to be measured [26]. In the first stage of scale development, literature screening was carried out and widely accepted power supplies classification specified by Karataş and Yıldırım was taken as the basis [21].

The literature states that in scale development, it would be beneficial for one to prepare several items more items of how many-item scale is desired to be developed or three or four times more if possible [26,27]. A 33-item draft scale was prepared in this regard. “Content validity is done to determine to what extent each item in the scale measures the concept to be measured. For content validity, the expert group to be consulted should consist of between 5 and 40 people [28].” For content validity, the form was presented to nine experts for the opinions, and the Davis Technique was used for eliciting expert opinions.

“It was stated for reliability and validity analyses that for the determination of sample size the number of participants can be selected as 5-10 times more than the number of total scale items [29]. The scale was applied to 318 patients, who accepted to participate in the study, and the statistical analysis of the draft scale was carried out with this number.

Internal consistency is a reliability indicator used to determine whether all subscale of the scale measure the same characteristic. The item total score reliability gives information on each item’s reliability [30].

“A high correlation coefficient indicates the compatibility of the scale item with the theoretical structure. It is suggested that the item total score correlation coefficient should be above 0.30.” [28]. After item total score correlation, the items 1, 4, 5, 6, 10, 12, 16, 17, 19, 25, 26, 28, 30, and 32 were removed from the scale, and the number of items was reduced to 18 (Table 1).

Factor analysis was carried out to measure the scale’s construct validity. “Factor analysis is a method, divided into two groups as explanatory factor analysis and confirmatory factor analysis, most commonly used to evaluate whether the items in the scale will be collected under different dimensions” [31]. “According to factor analysis, the lower limit for KMO sample adequacy is specified as 0.50, and values of 0.80 and above are described as perfect” [28]. It was observed that the KMO value was more than 0.914, and the sample size was at a perfect level for validity analysis.

The study was based on the most widely accepted classification of power supplies specified by Karataş and Yıldırım [21], and the fit of the subdimensions with the model was tested by CFA. In CFA scale development studies, it was stated that the draft scale was created to reveal whether the subdimensions determined for measurement of the construct validity were statistically verified [31]. “According to the result of a single value, and not according to the results of various fit indices, it is decided in CFA whether the model is compatible with the theory” [32]. In this study, CFA was applied for the HPS draft, and the results of the fit index were evaluated.

**Chi-squared fit statistics**

If this value is less than or equal to 2, it indicates that the model is a good model, and if it is less than or equal to 5, it has an acceptable fit statistic” [33]. The chi-squared value was within acceptable limits (Table 2).

**Root Mean Square Error of Approximation**

This “describes the approximate square root of the mean”. If the *root mean square error of approximation* (RMSEA) is less than or equal to 0.08, and the p value is less than 0.05, then the fit is good, and if the RMSEA is less than or equal to 0.10, then the fit is poor. The RMSEA value is within acceptable limits (Table 2). “If the CFI, GFI, TLI, and NFI values are greater than or equal to 0.90; that is, they are acceptable” [13,33,34]. The generally used goodness-of-fit values confirm the data set of the measurement model (Table 2).

The most appropriate method for determining the internal consistency of a scale and the most frequently used method in Likert-type scales is the calculation of the Cronbach's Alpha reliability coefficient. “If the Cronbach's Alpha coefficient is less than 0.40, it is not reliable; if it is between 0.40 and 0.59, it has low reliability; if it is between 0.60 and 0.79, it is fairly reliable; and if it is between 0.80 and 1.00, it is highly reliable” [27,35].

Examination of the study findings indicated that the subdimensions' privacy perception and protection of privacy have high reliability and that the subdimensions' environmental privacy and privacy awareness have fairly high reliability (Table 3).

The total score range of the 18-item HPS, which was created after statistical evaluation, is between 18 and 90 points. An increase in the mean score indicates that the perception that patients' privacy is well protected in hospitals is high. Scores to be obtained from the subdimensions are as follows: 5-25 from the privacy perception subdimension, 7-35 from the protection of privacy subdimension, 3-15 from the environmental privacy subdimension and 3-15 from the privacy awareness subdimension.

### Limitations and Generalizability of the Study

Limitations of the study are that the study was conducted only in a university hospital and that the reliability of the data collection tool was not tested over time. Another limitation of the study is the lack of a test-retest application within the scope of reliability studies of the scale development process.

### CONCLUSION

According to the results of the validity and reliability analyses carried out for the development of the patient privacy scale; The surface validity of the scale, which has a 5-point Likert-type assessment, was performed, and it was determined that the CVI showing the content validity, the item-total correlation showing the reliability, and the Cronbach Alpha value were high and above the desired values.

According to the validity and reliability results of the scale, it was seen that the surface and content validity were provided, the content validity index was high or the items were suitable for the purpose and structure. After the factor analysis rotation process; the scale consists of 4 subdimensions (privacy perception, protection of privacy, environmental privacy, and privacy awareness) and 18 items. It was determined that the patient privacy scale can be used as a valid and reliable scale for hospitalized patients. It can be suggested that the scale should be tested through studies conducted in different institutions.

### Implications for Nursing Practice

The concept of privacy in the context of patient rights comprises key quality indicators such as recognition and respect of an individual's right to privacy; maintaining self-worth, which is directly related to maintaining and supporting personal control; participation in decision making, improving relationships and comfort; and patient satisfaction. Using a measurement tool whose validity and reliability have been tested in obtaining data that will form the basis of scientific knowledge will allow more objective measurements to be made. To increase the quality of nursing care, to make a difference in clinical applications and patient care results, to increase patient satisfaction, to develop the science of nursing and nursing care, to provide evidence-based standardization of care and nursing practices, and to provide autonomy, Patient Privacy Scale will be possible.

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