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Patient Satisfaction in 112 Emergency Health Services: Scale Development and Validation

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Abstract

Aim: Despite its critical importance, no standardized scale specifically adapted to measure patient satisfaction with all aspects of 112 Emergency Healthcare Services is available. We aimed to develop a scale to measure patient satisfaction with 112 Emergency Healthcare Services.

Materials and Methods: This study was conducted in accordance with the Declaration of Helsinki. First, studies on patient satisfaction were reviewed, and then a questionnaire inventory consisting of 40 items was created to measure the desired domain. We sent the inventory to 10 experts in the field and asked them to evaluate the appropriateness of the items for the purpose of the study. The content validity index was calculated, and the items that should remain in the measurement tool. After conducting the pilot test, using these results, data were collected from 400 patients/patient relatives who applied to 112 Emergency Health Services in Aksaray province between 27.05.2015 and 30.06.2015 using the survey technique, and the collected data were analyzed by Kaiser-Meyer-Olkin test, Bartlett test, exploratory factor analysis, and confirmatory factor analysis.

Results: The scale, which was determined to consist of 26 items based on the analyses, consists of 4 sub-dimensions: ambulance personnel, call answering personnel, on-scene service provision, and ambulance technical equipment. The Cronbach's alpha coefficient of the developed scale was 0.907, and the goodness-of-fit measures were excellent.

Conclusion: A reliable scale for measuring patient satisfaction in 112 Emergency Health Services, which may be suitable for health managers, health professionals, and researchers interested in this field, has been introduced to the literature.

Keywords: Emergency medical services, transportation of patients, patient satisfaction, scale development

Introduction

Health is one of the most critical service areas that directly impacts the quality of life of humans. To enhance the effectiveness of the healthcare system and improve patient satisfaction, assessing and continuously improving the quality of healthcare services are essential. Among the key indicators for evaluating healthcare quality, patient satisfaction is one of the most significant. This reflects the extent to which patients' expectations are met and the overall experiences of the patients are positive. Patient satisfaction serves not only as a measure of healthcare providers' performance but also guides the improvement of patient-centered care. Furthermore, it positively influences patient loyalty and health outcomes, making it an essential focus for healthcare organizations aiming to elevate their quality management and care standards.

Patient satisfaction is commonly defined as the comparison between patients' expectations and the benefits they perceive before and after receiving healthcare services (1). Performance measurement in healthcare aims to foster continuous improvement in service delivery, emphasizing patient satisfaction as a key priority. Generally, patient satisfaction is influenced by whether the healthcare service meets or exceeds expectations

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and whether it is perceived positively. From the initial visit to a healthcare institution to diagnosis, treatment, and the final outcome, patient satisfaction serves as a vital indicator of service quality throughout the care process (2).

Measuring patient satisfaction is integral to ensuring the provision of quality healthcare and tailoring services to meet patients' needs and expectations (2). While numerous studies have explored patient satisfaction in various healthcare settings- such as private hospitals, primary, secondary, and tertiary care institutions, and among inpatients- there is a notable gap in the literature regarding satisfaction levels within 112 Emergency Healthcare Services. Existing research in this area is limited and predominantly relies on surveys as the primary evaluation method.

To address this gap, this study aimed to develop a comprehensive, valid, and reliable measurement tool specifically designed to evaluate patient satisfaction with 112 Emergency Healthcare Services. By identifying key dimensions critical to improving the quality of these services, this research contributes to the literature by providing a robust framework for assessing patient satisfaction in emergency care.

Enhancing patient satisfaction in emergency healthcare not only improves individual patient experiences and strengthens the overall public health outcomes and sustainability of healthcare services. Therefore, policymakers and healthcare providers must prioritize service quality and adopt a patient satisfaction-focused approach.

Compared to existing scales, such as the Emergency Department Patient Satisfaction Scale and the Patient Satisfaction with Emergency Medical Services survey, our approach offers a more comprehensive assessment. While these scales focus on overall satisfaction elements, our instrument includes different subdimensions. Furthermore, our scale is specifically designed to assess prehospital care and fills a gap in the literature by addressing factors critical to the 112 emergency care experiences, such as communication with dispatchers and paramedic evaluations.

Materials and Methods

Study 1: Inventory Creation

Procedure

National and international studies on the subject were reviewed to determine the construct to be measured by examining all dimensions of the subject. A pool of 40 items was created to cover all dimensions of the construct to be measured. The question pool included questions on the dimensions of telephone access to the 112 emergency call number, ambulance arrival time, level of knowledge of employees and service delivery method, technical equipment, patient privacy, process of delivering the patient or injured person to the health institution, and general satisfaction level. The developed scale is a five-item Likert-type scale. The answers are listed as 1- strongly disagree, 2- disagree, 3- neutral, 4- agree, and 5- strongly agree. The respondent answers the items by marking one of the options.

Sample and Analysis Method

After creating the item pool, experts were consulted to assess the appropriateness of the items in terms of content and scope. For this purpose, 10 experts were selected and asked to evaluate the relevance of the items in the question pool to the aim of the study. The experts provided their opinions for each item as "absolutely necessary," might be necessary but not essential," or "not necessary". The experts' responses were evaluated by calculating the content validity ratio (CVR), as expressed in Davis's technique (3). The CVR index was calculated using the formula [CVR=N_G/(N/2)-1], where N represents the total number of participating experts and N_G represents the number of experts who marked the "absolutely necessary" option (4). According to Yurdugül (4), statistically significant CVRs are shown in Table 1 below ($p<0.05$).

In this study, we calculated the CVR index of each item in the 40-item question pool sent to 10 experts. From the calculations, 8 items with a CVR index below 0.62 were removed from the inventory, and the remaining 32 items were obtained (Appendix 1).

Study 2: Scale Development and Validation

Procedure

The present study used a cross-sectional analytical survey design. The quantitative data were collected between 27.05.2015 and 30.06.2015 via face-to-face interviews and questionnaires by conducting interviews with either patients or their relatives who received services from 112 Emergency Health Services. Care was taken to ensure that the participants were not under pressure while filling out the questionnaire. It took an average of 5 minutes to complete the questionnaires. Before the developed scale was applied to the entire sample, a pilot study was conducted with 20 patients and their relatives who had used

Table 1. Acceptable values for the content validity index (4)

Number of experts	Min. value	Number of experts	Min. value
5	0.99	8	0.78
6	0.99	9	0.75
7	0.99	10	0.62

Min.: Minimum

Aksaray 112 Emergency Health Services. At the end of the pilot study, the comprehensibility of the scale and the questions were tested, and it was decided that it would be applicable.

Sample and Analysis Method

The study population consisted of patients and their relatives who received Aksaray 112 Emergency Health Services during the study period at the Aksaray Province Center. The provincial health directorate reported that approximately 15.000 people used the 112 Emergency Health Services in Aksaray Province on relevant dates. Because it was impossible to reach this population, the required sample size was calculated to be 375 people with a 95% confidence interval using the PASS 11 software. However, according to Büyüköztürk (5), since it is recommended that "the sample size in scale development studies should be at least 10 times the number of questions", it was decided that the sample size should be 400 people; therefore, there were 40 items in the first question inventory. Within the scope of the research, the contact information of 400 patients and their relatives who received services, registered in the database of the Aksaray Provincial Health Directorate 112 Command Control Center, was obtained via a simple sampling selection method. The participants were informed about the research, and data were collected from the volunteers via face-to-face surveys. Participants were allowed only one answer per person. The inclusion criteria were to be a patient or a relative of a patient who used 112 Emergency Health Services on the relevant dates and not to be an unconscious patient. The exclusion criterion was being an unconscious patient. Participants were provided with detailed information about the purpose, scope, and nature of the study before their participation. They were explicitly informed that their responses would be used solely for research and that their participation was voluntary. Written consent was obtained from all participants, who were assured of the confidentiality and anonymity of their data. For participants who were relatives of unconscious patients, the same process of information dissemination and consent was followed. Ethical approval for the study was obtained from the relevant institutional ethics committee, which ensured that the research adhered to ethical guidelines and standards. Demographic and situational factors such as age, gender, health status, cultural background, previous experiences, and urgency may have influenced participants' responses. In addition, factors such as the conditions under which emergency services are provided and waiting times may also influence satisfaction levels. The study was conducted in accordance with ethical rules at all stages and adhered to the COPE guidelines. Ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Selçuk University Faculty of Health Sciences (decision number: 05, date: 27.05.2015). Additionally, written permission to conduct the study was obtained from the Aksaray Provincial Directorate of Health.

Statistical Analysis

Descriptive statistical analyses, Cronbach's alpha (α) reliability coefficient, the Kruskal-Meier method, and Bartlett's test were used to analyze the data. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to evaluate the construct validity of the scale, after which goodness-of-fit values were calculated. In EFA, varimax rotation and principal component analysis were used. Items with factor loadings below 0.30, which is an acceptable value for social sciences, were removed from the scale. Analyses were conducted using SPSS 22.0 and AMOS 23.0 software.

Results

The mean age of the participants in the sample group was 44.74±14.99 years, and 196 were female. In the sample group, 176 of the participants were primary school graduates, 116 secondary school graduates, 108 higher education graduates, and 284 were married.

Validity and Reliability Analysis

After discarding 8 items with a CVR index below 0.62 from the initial 40-item question pool, we applied the following analyses and stages to the 32-item inventory to develop a valid and reliable measurement tool:

First, the Cronbach's α value of the scale in our study was calculated as 0.907, indicating that the scale was reliable. EFA and CFA were used to assess the validity of the scale. In EFA, the appropriateness of the data was examined using the Kaiser-Meyer-Olkin test (KMO) coefficient and Bartlett's test of sphericity (BTS). According to the EFA results, the BTS of the scale was significant. The KMO value was 0.636, and it was decided that the data were suitable for factor analysis (χ^2: 10133.638; df: 435; p=0.000) (Table 2).

Table 2. Cronbach's Alpha, KMO and Bartlett's test results of the developed scale

Cronbach's alpha, KMO and Bartlett's test results		
Cronbach alpha coefficient (α)		0.907
Kaiser-Meyer-Olkin measure of sampling adequacy		0.636
Bartlett's test of sphericity	Approximate chi-square	10133.638
	DF	435
	p	0.000

KMO: Kaiser-Meyer-Olkin, DF: Degrees of freedom

Table 3 presents the common variance. Common variance is the amount of variance that each variable in the scale shares with other variables. In our research, items with factor loadings of 0.30 were included in the analysis. According to these results, 2 more items were removed from the scale, and a scale of 30 items was obtained (6,7).

After determining the number of items, the number of factors is determined. The aim of factor selection is to obtain a small number of factors that best represent the relationships between the items. As shown in Table 4, the factors in this study were identified using the principal component method, and the number of significant principal components was determined to be 4. The cumulative variance explained by the four factors constituted 54.85% of the total variance. The findings presented in Table 4 were obtained by rotating the factor loadings of each item. The rotation was performed using the Varimax method. The lower cut-off point of the items was set at 0.30, and each factor was given a name derived from the factor matrix. The first factor was labeled the "Ambulance Staff Dimension", the second factor was labeled the "Call Answering Staff Dimension", the third factor was labeled the "Incident Scene Service Delivery Dimension", and the fourth factor was labeled the "Ambulance Technical Equipment Dimension". In factor analysis, if the structure is unidimensional, the first factor should explain at least 40%

Table 3. Common variance table

Items	Factor loadings
When I called 1-1-2, I reached the staff on duty quickly and easily.	0.309
The staff who answered the phone listened to me carefully.	0.702
The staff member who answered the phone understood what I was saying.	0.304
The staff who answered the phone was respectful towards me.	0.474
I trusted the staff who answered the phone.	0.643
The ambulance arrived at the address I gave without any delay.	0.309
The ambulance staff asked questions about the patient's/injured person's complaints.	0.658
Ambulance staff listened to the patient's/injured person's complaints.	0.509
Ambulance staff applied the necessary intervention to the patient/injured at the scene.	0.686
Ambulance staff gave explanatory information about the patient/injured.	0.651
Ambulance staff showed enough care for the patient/injured.	0.328
Ambulance staff brought all the devices they will use to the scene.	0.454
Ambulance staff gave morale to the patient/relative.	0.604
I trusted the professional knowledge of the ambulance staff.	0.661
I was generally satisfied with the demeanor of the ambulance staff.	0.553
Ambulance staff were in uniform.	0.375
Ambulance staff paid attention to hygiene rules.	0.308
I found the teamwork of the ambulance staff good.	0.688
Ambulance staff did their best for us.	0.581
Ambulance staff paid attention to the privacy of the patient/injured.	0.477
Ambulance staff were friendly.	0.493
Ambulance staff gave clear answers to our questions.	0.532
Ambulance staff explained the necessary procedures.	0.539
The devices brought by the ambulance staff worked smoothly.	0.668
Ambulance staff explained clearly why the patient/injured should be transferred/not transferred to the hospital.	0.527
Ambulance staff delivered the patient/injured person to the hospital as soon as possible.	0.647
The ambulance was adequately equipped for all kinds of interventions.	0.642
The interior of the ambulance was suitable for weather conditions.	0.755
The interior of the ambulance was quiet, noiseless and comfortable.	0.688
The ambulance provided safe transportation to the hospital.	0.687

of the total variance. On the other hand, for multifactor structures, the total variance explained is expected to be 40% (8). Therefore, this value was taken as a reference in the scale developed in the study, and it was concluded that the scale met the necessary conditions.

The nature of the factors in the scale obtained as a result of EFA, the general structure of the scale, and the extent to which the scale to be obtained explains patient satisfaction were determined by CFA. CFA was conducted on a scale consisting of 4 factors and 30 items developed as a result of EFA. In CFA, regression coefficients between factors and items take values between 0 and 1, and it is desirable that these coefficients are as close to 1 as possible. In the literature, items with regression coefficients below 0.40 are recommended to be excluded from the analysis (8). Therefore, items with regression coefficients below 0.40 were excluded from the analysis. After each item was removed, the analysis was repeated. The regression coefficients of items 1 and 2 under the second factor and items 1 and 13 under the first factor were found to be below 0.40. Therefore, these four items with low regression coefficients were removed from the scale because they did not represent the latent variables well. Finally, CFA was applied to the scale consisting of 26 items and 4 factors (Figure 1). In CFA, three covariances were created after the four items were removed from the analysis. This was done to improve the fit index values obtained while preparing the research model diagram in AMOS. When creating covariances between items, it is recommended to create covariances between items using the same factor. In this context, covariances were created between items 2 and 3 and items 11 and 12 under the first factor and between items 5 and 6 under the third factor. After each covariance correction, the calculation was repeated and the fit index values were recalculated. The final calculated fit index values of the developed scale are presented in Table 5. The values obtained were within acceptable limits. Therefore, the factors identified by EFA and the items' loading on the factors were confirmed by CFA.

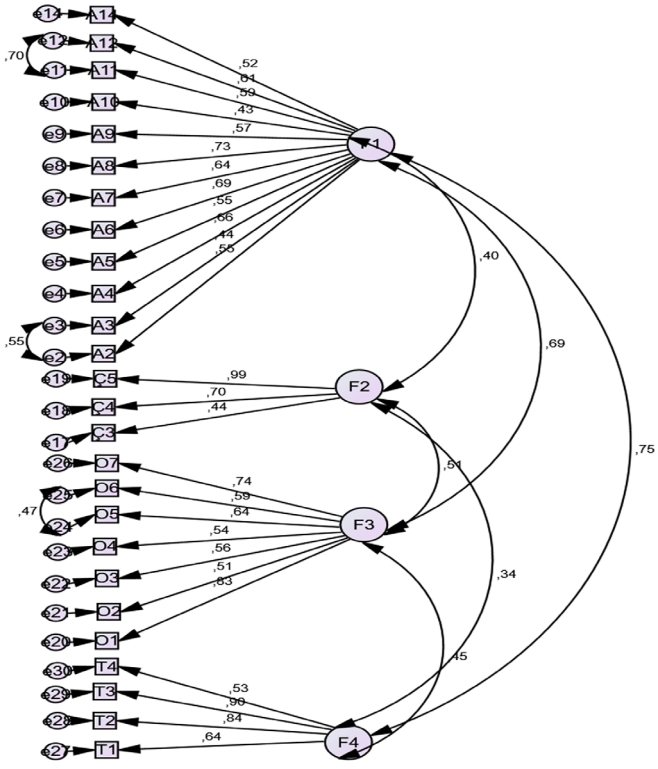

Figure 1. Output of the confirmatory factor analyses

Discussion

The main characteristics of a quality measurement tool are validity and reliability. The validity is the degree to which the scale used can measure the phenomenon. Reliability is the consistency between all questions in the measurement tool and its ability to measure in the same way each time it is used (9). The content validity of the developed scale was evaluated using the CVR index, and internal consistency reliability was calculated using Cronbach's alpha coefficient. Cronbach's alpha coefficient is an indicator of the homogeneity and internal consistency of items in a scale. This coefficient is calculated between 0 and 1, and it is desirable for it to be as large as possible. The larger the Cronbach's alpha coefficient, the more consistent are the items on the scale with each other. For Likert-type scales, Cronbach's alpha coefficient should be as close to 1 as possible (10). A Cronbach's alpha coefficient >0.50 is considered the minimum acceptable value for internal consistency (11). For factor analysis, it is first necessary to assess whether the available data are suitable for factor analysis. For this purpose, a correlation matrix is first created, and variables with strong correlations are identified. Variables with strong correlations are typically grouped under the same factor. Then, Bartlett's test was performed to determine whether the data were suitable for factor analysis. If the Bartlett test value is $p<0.05$, the data are considered suitable for factor analysis. Finally, sampling adequacy was measured using the KMO test, and the KMO value was expected to approach 1. In the literature, the values found in the KMO test are considered unacceptable if they are below 0.50; poor if they are 0.50; moderate if they are 0.60; good if they are 0.70; very good if they are 0.80; and excellent if they are 0.90 (12).

The construct validity of the developed scale was analyzed by EFA and CFA. Factor analysis is a multivariate statistical analysis based on the relationships among data, providing a more concise presentation of it (13). The main purpose of factor analysis is to group a large number of variables, determine whether they can

Table 4. Distribution of items according to the Varimax method				
Items/dimensions	**Factors**			
Ambulance staff dimension	**1**	**2**	**3**	**4**
The ambulance arrived at the address I provided without delay.	0.510			
The ambulance staff asked questions about the patient's/injured person's complaints.	-0.654			
Ambulance staff listened to the patient's/injured person's complaints.	-0.685			
Ambulance staff gave explanatory information about the patient/injured.	0.709			
Ambulance staff paid enough attention to the patient/injured person.	-0.370			
Ambulance staff gave morale to the patient/relative.	0.345			
I trusted the professional knowledge of the ambulance staff.	0.536			
I was generally satisfied with the demeanor of the ambulance staff.	0.529			
Ambulance staff were in uniform.	0.539			
Ambulance staff paid attention to hygiene rules.	0.460			
I found the teamwork of the ambulance staff good.	0.808			
Ambulance staff did their best for us.	0.716			
Ambulance staff explained clearly why the patient/injured person should be transported/not be transported to the hospital.	0.557			
Ambulance staff delivered the patient/injured person to the hospital as soon as possible.	0.578			
Explained variance.	29.775%			
Call answering staff dimension	**1**	**2**	**3**	**4**
When I called 1-1-2, I reached the staff on duty quickly and easily.		0.454		
The staff who answered the phone listened to me carefully.		0.828		
The staff member who answered the phone understood what I was saying.		0.521		
The staff who answered the phone was respectful towards me.		0.567		
I trusted the staff who answered the phone.		0.436		
Explained variance.	9.465%			
On-scene service delivery dimension	**1**	**2**	**3**	**4**
Ambulance staff applied the necessary intervention to the patient/injured at the scene.			0.684	
Ambulance staff brought all the devices they will use to the scene.			0.676	
Ambulance staff paid attention to the privacy of the patient/injured.			0.573	
Ambulance staff were friendly.			0.414	
Ambulance staff gave understandable answers to our questions.			0.593	
Ambulance staff explained the necessary procedures.			0.676	
The devices brought by the ambulance staff worked smoothly.			0.727	
Explained variance.	80.365%			
Ambulance technical equipment dimension	**1**	**2**	**3**	**4**
The ambulance was adequately equipped for any kind of intervention.				-0.473
The interior of the ambulance was suitable for weather conditions.				-0.816
The interior of the ambulance was quiet, noiseless and comfortable.				-0.652
The ambulance provided safe transportation to the hospital.				0.732
Explained variance.	7.244%			
Total explained variance.	54.848%			

Table 5. Fit indices of the model*

Concordance indices	p	CMIN	DF	CMIN/DF	IFI
Standard model	0.000	1139.70	290	3.93	0.922
Concordance indices	**CFI**	**RMSEA**	**GFI**	**RMR**	**AGFI**
Standard model	0.950	0.080	0.854	0.049	0.957

*AGFI, CMI, DF which is the difference between the number of observed data points and the number of estimated parameters. RMSEA refers to the which evaluates model fit in structural equation modeling. RMR stands for the, indicating the average residual error in the model. CFI or the, compares the fit of a target model to an independent baseline model. GFI is the assessing how well the model reproduces observed data. Lastly, IFI stands for the evaluating model improvement over a baseline model. AGFI: Adjusted goodness of fit index, CMIN: Chi-square minimum value, DF: Degrees of freedom, RMSEA: Root mean square error of approximation, RMR: Root mean square residual, CFI: Comparative fit index, GFI: Goodness of fit index, IFI: Incremental fit index

be expressed as factors, and identify which factor the items in the scale should belong to. In this way, the researcher can easily interpret the meaning of the relevant factor by examining the items included in the grouped factors (14).

In the second stage, EFA was performed. EFA is a type of analysis that divides a large number of variables into different groups and transforms the groups into new variables by maximizing the relationships within a group and reducing the links between groups. These new variables are called factors. This strategy aims at reducing the number of variables and revealing new constructs by exploiting the relationships between variables (15). The rotated factor matrix is then created. Correlation coefficients or factor loadings are examined to determine which factor each independent variable falls under. In addition, the researcher can subject factors to axis rotation for factor analysis. The factor rotation does not affect the basic mathematical properties of the solution. As a result of axis rotation, the loading of items in one factor increases, whereas the loading in other factors decreases. Thus, factors have high correlation with each other and can be interpreted more easily. The varimax, quartile, and equamax rotation methods are most commonly used. In the final stage, the resulting factors are labeled and each factor is given a name. In the third stage, CFA was conducted. CFA is an analysis that aims to verify the model used in scale development and validity analyses of a previously created model. CFA evaluates the compatibility of the factors created by EFA with the items under them. In structural equation models, the conceptual model is assessed using data. CFA is generally used in scale development and validity analysis and aims to determine the accuracy of a predetermined structure (16). Fit statistics quantify how well the pre-built models describe the data. The model fit is evaluated using various fit statistics. The fit statistics were used to evaluate the suitability of the parameters of the suggested models and the statistics derived from the sample data. A model cannot be accepted if it does not suit the data (17).

As a result of the analyses conducted in line with the study's purpose, factors were identified, and a valid and reliable measurement tool was developed using EFA and CFA. The EFA and CFA revealed that the scale developed in the research consists of 4 dimensions and 26 items. The dimensions consisted of questions about the following: the ambulance staff; the call-answering staff; on-scene service provision; and the technical equipment of the ambulance (18).

We have introduced a valid and reliable measurement tool that can handle all subdimensions of the subject in detail in the literature. The KMO analysis result was 0.636, and Bartlett's test result was 10133.638, which was found to be significant ($p<0.01$) (19). The factor structure was analyzed using principal component analysis and the Varimax rotation method. The factor loading values of the items ranged from 0.304 to 0.755 (20). In the present study, we included those with a factor loading value greater than 0.30. As a result, a scale with three dimensions and 30 items was obtained. The total variance explained by the 30 items in the four dimensions was 58.848%. After CFA was performed on the data, four additional items with low regression coefficients were removed from the scale (20). A valid and reliable measurement tool consisting of 4 dimensions and 26 items was introduced to the literature from the finalized scale model, with fit indices within acceptable limits (Appendix 2).

The developed scale has significant implications for both practical applications and healthcare policy. By providing a validated and reliable tool specifically tailored for 112 Emergency Healthcare Services, this scale bridges an essential gap in the literature. The multidimensional structure allows for a comprehensive evaluation of service quality, addressing critical aspects such as ambulance staff, call-answering personnel, on-scene service provision, and technical equipment. These dimensions not only facilitate the assessment of current service standards and provide actionable insights to guide improvements in emergency healthcare delivery. Furthermore, the scale's robust psychometric properties ensure its applicability across various settings, supporting its use in broader healthcare policy initiatives to enhance patient satisfaction and service efficiency. By segmenting key points and highlighting their potential contributions, this study underscores the novelty and practical value of the proposed measurement tool.

Study Limitations

Unconscious patients who received services from 112 Emergency Health Services during the study dates constitute a limitation of this study, because the questionnaire could not be applied. The

relatives of these patients were interviewed and included in the study.

Conclusion

The findings of this study provide an appropriate and reliable tool to measure all aspects of patient satisfaction with 112 Emergency Health Services. As a result of this study, the necessary validity and reliability analyses were performed, and the 112 Patient Satisfaction in Emergency Health Services Scale consisting of 4 sub-dimensions and 26 items was developed. The 112 Patient Satisfaction in Emergency Health Services Scale is a valid and reliable measurement tool that measures patient satisfaction with 112 Emergency Health Services. The developed scale is a tool that can be used by health managers, health professionals, researchers, and related people to measure the level of satisfaction with 112 Emergency Health Services. For each item in the scale, an increase in the total score indicates an increase in satisfaction, and a decrease in the total score indicates a decrease in satisfaction.

Ethics

Ethics Committee Approval: The study was conducted in accordance with ethical rules at all stages and adhered to the COPE guidelines. Ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Selçuk University, Faculty of Health Sciences (decision number: 05, date: 27.05.2015). Additionally, written permission to conduct the study was obtained from the Aksaray Provincial Directorate of Health.

Informed Consent: Written consent was obtained from all participants, who were assured of the confidentiality and anonymity of their data. For participants who were relatives of unconscious patients, the same process of information dissemination and consent was followed.

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Footnotes

Authorship Contributions

Concept: E.K, Y.E.Ö, Design: E.K, Y.E.Ö, Data Collection or Processing: E.K, Analysis or Interpretation: E.K, Y.E.Ö, Literature Search: E.K, Writing: E.K.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Appendix 1: Satisfaction with Emergency Health Services Scale				
Inventory	**Not required**	**Possible but not necessary**	**Absolutely necessary**	**KGO Index**
When I called 112, I reached the staff on duty quickly and easily.	0	1	9	0.80
The staff member who answered the phone listened to me carefully.	0	0	10	1
The staff member who answered the phone explained what I needed to do in a way I could understand and informed me.	0	0	10	1
The staff member who answered the phone understood what I was saying.	0	1	9	0.80
The staff member who answered the phone was respectful to me.	0	1	9	0.80
I trusted the staff member who answered the phone.	0	1	9	0.80
I was generally satisfied with the staff who answered the phone.	0	0	10	1
The ambulance arrived at the address I gave without any delay.	0	1	9	0.80
The ambulance staff asked questions about the patient's/injured person's complaints.	0	1	9	0.80
Ambulance staff listened to the patient's/injured person's complaints.	0	1	9	0.80
Ambulance personnel applied the necessary intervention to the patient/injured at the scene.	0	0	10	1
Ambulance personnel gave explanatory information about the patient/injured.	0	0	10	1
Ambulance personnel showed enough care for the patient/injured person.	0	1	9	0.80
Ambulance personnel brought all the devices they would use to the scene.	0	1	9	0.80
Ambulance personnel gave morale to the patient/relative.	0	1	9	0.80
I trusted the professional knowledge of the ambulance personnel.	0	0	10	1
I was generally satisfied with the demeanor of the ambulance personnel.	0	1	9	0.80
Ambulance personnel were in uniform.	0	1	9	0.80
Ambulance personnel paid attention to hygiene rules.	0	0	10	1
I found the teamwork of the ambulance personnel good.	0	0	10	1
Ambulance personnel did their best for us.	0	0	10	1
Ambulance personnel paid attention to the privacy of the patient/injured.	0	0	10	1
Ambulance personnel were friendly.	0	1	9	0.80
Ambulance staff gave understandable answers to our questions.	0	1	9	0.80
Ambulance staff explained the necessary procedures.	0	0	10	1
The devices brought by the ambulance staff worked smoothly.	0	1	9	0.80
Ambulance personnel explained clearly why the patient/injured person should be transported/not be transported to the hospital.	0	1	9	0.80
Ambulance personnel delivered the patient/injured person to the hospital as soon as possible.	0	0	10	1
The ambulance was adequately equipped for all kinds of interventions.	0	0	10	1
The interior of the ambulance was suitable for weather conditions.	0	0	10	1
The interior of the ambulance was quiet, noiseless and comfortable.	0	1	9	0.80
The ambulance provided safe transportation to the hospital.	0	1	9	0.80

Appendix 2. Satisfaction with Emergency Health Services Scale					
Items/dimensions	**Strongly disagree**	**Disagree**	**Undecided**	**I agree**	**Absolutely agree**
Ambulance staff dimension					
1. Ambulance personnel asked questions about the patient's/injured person's complaints.	1	2	3	4	5
2. Ambulance personnel listened to the complaints of the patient/injured.	1	2	3	4	5
3. Ambulance personnel gave explanatory information about the patient/injured.	1	2	3	4	5
4. Ambulance personnel showed enough care for the patient/injured person.	1	2	3	4	5
5. Ambulance personnel gave morale to the patient/relative.	1	2	3	4	5
6. I trusted the professional knowledge of the ambulance personnel.	1	2	3	4	5
7. I was generally satisfied with the demeanor of the ambulance personnel.	1	2	3	4	5
8. Ambulance personnel were in uniform.	1	2	3	4	5
9. Ambulance personnel paid attention to hygiene rules.	1	2	3	4	5
10. I found the teamwork of the ambulance staff good.	1	2	3	4	5
11. Ambulance personnel did their best for us.	1	2	3	4	5
12. Ambulance personnel delivered the patient/injured person to the hospital as soon as possible.	1	2	3	4	5
Call answering staff dimension					
13. The staff member who answered the phone understood what I was saying.	1	2	3	4	5
14. The staff member who answered the phone was respectful to me.	1	2	3	4	5
15. I trusted the staff member who answered the phone.	1	2	3	4	5
On-scene service delivery dimension					
16. Ambulance personnel applied the necessary intervention to the patient/injured at the scene.	1	2	3	4	5
17. Ambulance personnel brought all the devices they will use to the scene.	1	2	3	4	5
18. Ambulance personnel paid attention to the privacy of the patient/injured.	1	2	3	4	5
19. Ambulance personnel were friendly.	1	2	3	4	5
20. Ambulance personnel gave understandable answers to our questions.	1	2	3	4	5
21. Ambulance personnel explained the necessary procedures.	1	2	3	4	5
22. The devices brought by the ambulance personnel worked smoothly.	1	2	3	4	5
Ambulance technical equipment dimension					
23. The ambulance was adequately equipped for all kinds of interventions.	1	2	3	4	5
24. The interior of the ambulance was suitable for weather conditions.	1	2	3	4	5
25. The interior of the ambulance was quiet, noiseless and comfortable.	1	2	3	4	5
26. The ambulance provided safe transportation to the hospital.	1	2	3	4	5