

Development of healthcare employee satisfaction scale: Reliability and validity study

Healthcare employee satisfaction scale

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Abstract

Aim: This study aimed to develop a scale that would help assess the levels of employee satisfaction among healthcare professionals.

Material and Methods: In this methodological study, the routine steps of scale development were followed, including the formulation of items, receiving specialist opinion, application, validation and reliability. In the data analysis, exploratory factor analysis and confirmatory factor analysis for "the Employee Satisfaction Scale" were performed. Cronbach's alpha coefficients were calculated for each dimension and overall reliability.

Results: The data were found to have excellent fitting in exploratory factor analysis with a probability value of $p < 0.05$ and a Kaiser-Mayer-Olkin (KMO) value of 0.866 by Bartlett's test. The overall concept explanatory factor was 70.99%, which was sufficient to assess employee satisfaction. In the confirmatory factor analysis, all covariance values across the sub-dimensions were significant ($p < 0.05$). Factor loadings of items were between 0.57 and 0.96. Cronbach's alpha coefficient for the overall ESS was 0.869. The composite reliability coefficients were > 0.70 , which meant sufficiency for composite reliability. In addition, the variance for each dimension showed the desired level with a mean of variance (MVE) > 0.50 .

Discussion: In this study, a comprehensive and practical scale with a high reliability-validity level was added to the literature in order to quantify employee satisfaction which is one of the most important components of the healthcare system.

Keywords

Employee satisfaction scale; Healthcare worker; Healthcare professional; Health science; Health management; Reliability; Validity

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Introduction

The roles of decision-makers and participants in health-care provision have become the most important element in the provision of high-quality healthcare. Since the health sector is a labor-intensive field, it is important to employ and train skilled labor, and to support sustainable development and career. The fact that ensuring the satisfaction of healthcare providers improves the quality of healthcare and contributes to financial resources of healthcare organizations has led to focusing the attention of policy-makers and healthcare executives on this issue [1,2,3].

Employee satisfaction indicates feelings of employees toward the work [4]. Locke defined employee satisfaction as “a favorable and satisfying emotional state resulting from the assessment of job and job experiences by an individual” and suggested a set of primary dimensions of satisfaction, including the job itself, payment, promotion, working conditions, benefits, colleagues, personal values and employee relations [5]. Employee satisfaction, job satisfaction, and work satisfaction are concepts that are often used interchangeably in the literature. In some studies, job satisfaction was addressed as a subdimension of employee satisfaction [6].

Given the intense work-load together with the complexity of delivering services to patients and their relatives requiring psychological support, the concept of satisfaction is more important in healthcare providers [7]. Healthcare providers with higher employee satisfaction can create high motivation in teamwork and cooperation, ensure improvements in healthcare quality, and become successful in problem-solving and effective decision making, thus, minimizing errors. In addition, high employee satisfaction also improves job satisfaction with decreased absent days, personnel turnover rates and exhaustion levels, relieves mental and physical problems, and enhances personnel reliability [1-3].

Dissatisfied healthcare employees may reflect negative feelings to patients, provide insufficient care and tend to leave early or abandon work [1,3]. Several studies have shown that the satisfaction of healthcare providers also affects patient satisfaction [8]. Decreased employee contribution to the facility negatively affects the revenue of hospital either in direct or indirect ways. Employees with a poor satisfaction are more likely to experience stress, resulting in low productivity [3]. In healthcare settings, studies of employee satisfaction have been generally conducted in different professions including nurses, clinicians and therapists. Currently, there seems to be a lack of a global approach covering all employees regarding employee satisfaction in the healthcare sector. [9]. Studies evaluating employee satisfaction in healthcare in Turkey are mainly based on the Employee Feedback Questionnaire of the Turkish Ministry of Health (available at: <https://kalite.saglik.gov.tr/Eklenti/30308/0/anket-uygulama-rehberi-son-basim-11042019pdf.pdf>).

This study aimed to develop a reliable and validated employee-satisfaction scale for all professions working in healthcare facilities. This assessment has gained particular importance in terms of the sustainability of the healthcare system during the Coronavirus (COVID-19) pandemic.

Material and Methods

In this methodological study, the steps of scale development, including the formulation of items, receiving a specialist opinion, preliminary application, validation and reliability were followed [10].

In the first stage, a 6-question semi-structured interview with answers was designed to identify item pool, including employee rights, relations with senior management, work environment, social opportunities and job security. Following focus group discussions with 10 healthcare providers, 37 items were identified. At the second stage, the draft scale was prepared via assessment of 37 items by an expert panel including 8 members specializing in quality in a healthcare facility and health management. The items were designed to be rated by a 5-points Likert scale “strongly disagree, disagree, undecided, agree, strongly agree”. There is no reverse-scored item on the scale. The draft scale also included sections regarding consent and demographic data.

The sample size calculation was based on a number of items \times 10 in exploratory factor analysis; thus, the sample size was estimated to be 370 (37 \times 10). The questionnaire was designed as an online survey on Google surveys by adding 8 items on sociodemographic data and informed consent. The questionnaire was applied between December 2019 and March 2020 by sending an invitation link via e-mail, SMS or social media to participants working in healthcare facilities. Overall, the draft scale was completed by 477 participants, and the data obtained were analyzed. Among these, 2 participants had insufficient response rates in the questionnaire, thus, they were excluded from the analysis. Finally, data from 475 participants were analyzed.

The study was approved by the Hamidiye Ethics Committee on Non-Interventional Studies of Health Sciences University (08.11.2019-19/131). The study was conducted in accordance with the tenets of the Helsinki Declaration.

Statistical Analysis

The data were analyzed using SPSS for Windows and AMOS software. In the study, exploratory factor analysis and confirmatory factor analysis were applied to the Employee Satisfaction Scale. Cronbach's alpha and composite reliability values were calculated for sub-dimensions of the scale.

Results

Data from 475 participants were analyzed. Among the participants, 57.1% were females, while 42.9% were males; 30.7% of the participants were aged \geq 41 years. Again, 38.5% of the participants were single, while 59.6% were married; 8.4% of the participants were graduated from primary school, while 16.0% from high school, 18.5% from an associate degree program, 36.8% from an undergraduate program and 20.2% from the graduate program. When work duration was assessed, it was seen that work duration was 0-1 years in 8.6%, 1-5 years in 35.8%, 6-10 years in 21.3% and \geq 11 years in 34.3% of participants.

Factor Analysis of Employee Satisfaction Scale (ESS)

Exploratory Factor Analysis

As probability value ($p < 0.05$) and KMO value were 0.866 in Bartlett's test, performed for the fitting of results obtained from

37-item scale to exploratory factor analysis, the dataset was found to have excellent fitting in factor analysis.

In the factor analysis (Table 2), the overall concept explanatory was found as 70.99 % ; thus, it was considered that the scale can explain employee satisfaction. The scale was found to have a high reliability level since the scale consisted of 7 sub-dimensions and Cronbach's alpha was >0.80 for all 7 sub-dimensions in the factor analysis. In the sub-dimensions, factor explanatory was found as 15.45 in employee rights/relationship with senior management, 11.6% in food services, 10.91% in cleanliness-hygiene, 9.56% in the work environment, 8.89% in belonging, 7.77% in social opportunities and 6.81% in job security dimensions.

Eight of 37 items, were excluded from analysis, since factor loading values were <0.50. The items excluded were as follows: "I am satisfied with workplace organization (food, transportation, etc.) in case of off-time work and extra-ordinary situations", "I will continue to work in this organization, even if I find a job with better financial potential", "I think that appropriate and effective in-service training is provided", "I think that the work environment is ergonomic", "I feel safe in the unit I worked", "I am satisfied with the manner of work (job rotation) and working hours", "I can readily access the tools needed for the job" and "I am asked about my opinion during the supply of materials that I would use for my job".

Confirmatory Factor Analysis

By excluding 8 items from the exploratory factor analysis, the ESS scale with the remaining 29-items was analyzed for 280 participants and a confirmatory factor analysis was performed. Of 280 participants, 55% were female while 45% were male. The mean age was 37.1±1.44 years. Among the participants, 10.0% graduated from primary school, while 15.5 % from high school, 14.5% from an associate degree program, 45.6% from an undergraduate program and 14.4% from the graduate program.

The significance of the quantification model was assessed by confirmatory factor analysis using AMOS version 22.0 [11]. In the assessment, it was seen that the quantification model was acceptable. In 29-items ESS, all covariance values across sub-dimensions were significant in confirmatory factor analysis (p<0.05). Factor loadings of items (Figure 1) ranged from 0.57 to 0.96.

All sub-dimensions included in exploratory factor analysis were preserved. All items assessed in exploratory factor analysis were also included in confirmatory factor analysis; no items were excluded, as the factor loadings were found to be >0.50. Table 3 presents detailed data from confirmatory factor analysis.

The confirmatory factor analysis was considered significant since the model fitting values χ^2 and χ^2/df were found as 832.766 and 2,807 (p<0.05). Since the fitting indexes of model [GFI (0,874), CFI (0,958), SRMR (0,0720), RMSEA (0,062)] were within the acceptable range, the confirmatory factor analysis was considered valid for ESS [12].

Cronbach's alpha reliability score was found as 0.869 for ESS, while it was 0.881 in employee rights-relationship with senior management (ER-RSM), 0.867 in food services (FS), 0.854 in cleanliness-C (H), 0.841 in work environment (WE), 0.838 in belonging (B), 0.812 in social opportunities (SO) and 0.811 in

Table 1. Percentage distribution of the demographic characteristics of the participants

	n	%
Gender		
Male	204	%42,9
Female	271	%57,1
Age		
≤25 years	85	%17,9
26-30 years	94	%19,8
31-35 years	63	%13,3
35-40 years	87	%18,3
≥41 years	146	%30,7
Marital status		
Single	183	%38,5
Married	283	%59,6
Other	9	%1,9
Education		
Primary school	40	%8,4
High school	76	%16,0
Associate degree program	88	%18,5
Undergraduate program	175	%36,8
Graduate program	96	%20,2
Work duration		
0-1 years	41	%8,6
1-5 years	170	%35,8
6-10 years	101	%21,3
≥11 years	163	%34,3

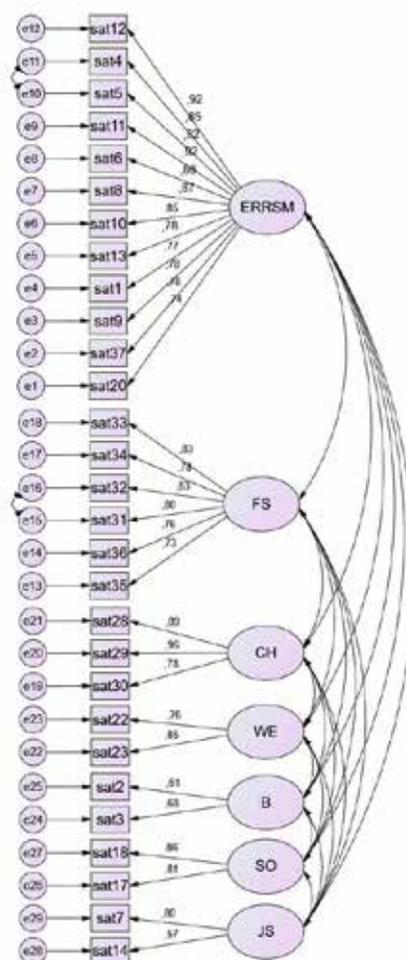


Figure 1. Confirmatory factor analysis of Employee Satisfaction Scale

Table 2. Summary of Exploratory Factor Analysis of Employee Satisfaction Scale

Factor	Items	FL	FE	CRA
Employee rights-relationship with senior management	I feel that my administrators stand behind me when I am performing requirements of my job.	0,869	%15,45	0,881
	I am happy to work with my superiors.	0,862		
	I know that I can share my problems when needed.	0,831		
	I think that my administrators behave fairly in the work environment.	0,812		
	I think that my recommendations regarding my job and operations are considered.	0,795		
	My opinions are requested regarding improvements in my job and work environment.	0,782		
	I am appreciated for my achievements by the administrators.	0,766		
	I think my personal rights are protected.	0,745		
	I am happy to be working in this healthcare facility.	0,731		
	My opinion is asked when any change is needed in my place of duty.	0,688		
	I recommend the healthcare facility that I am currently working to others.	0,681		
I think work-related safety and occupational health measures are sufficient.	0,608			
Food services	Hot meals are served sufficiently hot.	0,911	%11,6	0,876
	Cold meals are served at an appropriate temperature.	0,873		
	I think that the amount of food served is sufficient.	0,838		
	I am satisfied with meals in general.	0,825		
	I am satisfied with food services during duty.	0,783		
Cleaning - Hygiene	I think that the staff serving meals in the restaurant adopt hygiene measures.	0,726	%10,91	0,854
	I am satisfied with cleanliness of the work environment.	0,812		
Work environment	I think that hygiene regulations are conformed to in the work environment.	0,779	%9,56	0,842
	I think that toilets are clean and hygienic.	0,776		
Belonging	I think that ambient temperature is appropriate in work environment.	0,754	%8,89	0,838
	I think that sufficient measures are taken against noise in the work environment.	0,665		
Social opportunities	I like my job.	0,794	%7,77	0,812
	I like working with my colleagues.	0,790		
Job security	I think that social activities are sufficient in my healthcare facility.	0,719	%6,81	0,811
	I am satisfied with social opportunities of my healthcare facility.	0,608		
Total	I do not feel any concern about losing my job.	0,635	%70,99	0,869
	I am satisfied with my salary and incentives.	0,629		

KMO: 0,866 Bartlett's test p- value (p<0.05) FL: Factor loading FE: Factor explanatory

job security (JS) sub-dimensions. As composite reliability (CR) coefficients were >0.70, the composite reliability was considered sufficient. In addition, the mean variance explained (MVE) values were found as >0.50, the mean variance explained was at the desired level for each dimension.

Discussion

In the current study, we have developed a scale aiming at measuring satisfaction levels among healthcare providers, with reliability and validation analyses. The Employee Satisfaction Scale included 29 items in 7 dimensions, including employee rights/relationship with senior management, work environment, belonging, social opportunities, job security, cleanliness-hygiene and food services.

In factor analysis, the dataset was found to have an excellent fitting, with a probability value of <0.05 and a Kaiser Mayer'Olkin (KMO) value of 0.866 in Bartlett's test. The scale was shown to reflect employee satisfaction at a high level. All covariance values across sub-dimensions were significant in confirmatory factor analysis (p<0.05), with an overall concept explanatory of 71.0%. Factor loadings of the items ranged from 0.57 to 0.96. Cronbach's alpha coefficient was 0.869. The composite reliability was considered sufficient, with a composite reliability

coefficient of >0.70. The mean variance explained was at the desired level for each dimension (>0.50). These findings suggest that the ESS is a reliable and valid quantification tool.

Compared with the 29 items and 7 dimensions of the present scale, Erken previously developed an employee satisfaction scale for a thesis study in Turkey, but with 15 items and 3 dimensions, including organization-manager, work satisfaction-environment and payment (available at: <https://tez.yok.gov.tr>). The authors are of the opinion that the current scale has a higher representative power in reflecting employee satisfaction, with a higher overall concept explanatory of 71.0% versus 66.57%. In terms of reliability, the present study provided a high Cronbach's alpha coefficient of 0.869, which was comparable to 0.88 of the Employee Satisfaction Scale of the Turkish Health Ministry in 2011 [12]. Kumar and Khan reported a higher level of reliability (0.909) in their 49-item and 7-dimension employee satisfaction scale developed for healthcare providers in India [13]. These investigators proposed that their scale was distinct from those developed for Western countries, particularly for two sub-dimensions, human resources and patient relations, emphasizing the role of these two sub-dimensions in job satisfaction in the Indian healthcare sector [13].

Hsieh et al. developed a 34-item and 7-dimension employee

Table 3. Confirmatory factor analysis of Employee Satisfaction Scale

Item	Dimension	Estimate	Std Estimate	C.R.	P
sat20	<---	ERRSM	1,000	0,739	
sat37	<---	ERRSM	1,076	0,776	17,482 ***
sat9	<---	ERRSM	1,148	0,776	17,494 ***
sat1	<---	ERRSM	,989	0,766	17,219 ***
sat13	<---	ERRSM	1,111	0,776	17,492 ***
sat10	<---	ERRSM	1,258	0,848	19,279 ***
sat8	<---	ERRSM	1,269	0,867	18,210 ***
sat6	<---	ERRSM	1,213	0,860	19,606 ***
sat11	<---	ERRSM	1,437	0,923	21,272 ***
sat5	<---	ERRSM	1,136	0,818	18,533 ***
sat4	<---	ERRSM	1,183	0,851	19,394 ***
sat12	<---	ERRSM	1,381	0,919	21,159 ***
sat35	<---	FS	1,000	0,728	
sat36	<---	FS	,991	0,758	18,286 ***
sat31	<---	FS	1,030	0,801	16,006 ***
sat32	<---	FS	1,188	0,825	16,503 ***
sat34	<---	FS	1,107	0,778	17,674 ***
sat33	<---	FS	1,198	0,835	16,935 ***
sat30	<---	CH	1,000	0,778	
sat29	<---	CH	1,210	0,963	23,724 ***
sat28	<---	CH	1,125	0,891	22,062 ***
sat23	<---	WE	1,000	0,849	
sat22	<---	WE	,905	0,760	15,586 ***
sat3	<---	B	,400	0,679	
sat2	<---	B	,335	0,606	9,176 ***
sat17	<---	SO	1,000	0,809	
sat18	<---	SO	1,041	0,863	19,370 ***
sat14	<---	JS	,534	0,567	12,566 ***
sat7	<---	JS	1,000	0,802	

***p<0.001 **p<0.01 *p<0.05 C.R.: critical table value P: test probability value

satisfaction scale to measure employee satisfaction in healthcare providers in Taiwan. [14]. The main difference of the present scale from theirs was the inclusion of two dimensions, i.e. cleanliness-hygiene and food services.

Conclusions

As for all administrative levels, the determination of employee satisfaction is an essential part to improve administrative processes. Encouragement of employees to express their feelings and thoughts will contribute to enhanced organizational communication. Finding solutions for problems based on employee responses will lead to favorable outcomes, including reductions in negative employee emotions to patients and decreased levels of quitting work and absent days. The higher the employee satisfaction, the greater the patient satisfaction and loyalty, and the higher the efficiency and revenues of hospitals. In the current study, the authors attempted to develop a comprehensive and practical scale with high reliability-validity levels in order to better quantify the satisfaction levels of healthcare providers, who are the most important component of the healthcare system. On the other hand, the present scale can be used by other investigators to improve clinical practice.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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