Health Education & Health Promotion (HEHP) (2013) Vol. 1 (1): (13- 20)

Validity and Reliability of the Najmiyeh Outpatients Satisfaction Questionnaire

Mohammad Gholami Fesharaki *[1], Mohammad Javad Jamali [2], Fatemeh Rahmati Najarkolaei [3], Masome Mohamadian [4], Mehdi Habibi [5], Zohreh Aghamiri [6]

Received: 12/11/2013 Accepted: 09/1/2013

Abstract

Aims: Evaluation of Patient Satisfaction (PS) is one of the most essential factors in improving the quality of healthcare systems.

The aim of this study is to determine the norms and to evaluate the validity and reliability of the Najmiyeh Outpatients Satisfaction Questionnaire (NOSQ).

Methods and Materials: This study has been conducted on 240 outpatients in Najmiyeh subspecialty hospital (Tehran-Iran) in 2011. They were selected using the proportional simple random sampling method. Following the confirmation of the content validity, we considered the construct validity and reliability applying Confirmatory Factor Analysis (CFA) and Explanatory Factor Analysis (EFA) and Cronbach's Alpha. Also, SPSS and AMOS version 18 were used for data analysis.

Findings: The sample population consisted of 240 subjects, including 132 females (55.1%) and 108 males (44.9%). The EFA reported three important factors in this regard, with a variance of 54% and Kaiser-Meyer-Olkin index of 0.82, all approved

1. Assistant Professor, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

Email: Mohammad.gholami@modares.ac.ir

2. Specialist, Baqiyatallah University of Medical Sciences, Najmie Subspecialty Hospital, Tehran, Iran

Email: dr.mohammadjavadjamali@yahoo.com

3. Assistant Professor, Health Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran

E-mail: fatemeh_rahmaty@yahoo.com

4. M.Sc, Baqiyatallah University of Medical Sciences , Najmie Subspecialty Hospital, Tehran, Iran

Email: maryam.mehraban2@gmail.com

5. B.Sc, Iran Helal Institute of Applied Science & Technology, Tehran, Iran

Email: habibi_mahdism@yahoo.com

6. M.Sc, Baqiyatallah University of Medical Sciences, Najmie Subspecialty Hospital, Tehran, Iran

Email:aghamirizohreh@yahoo.com

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

by the CFA (RMSEA= 0.04, CFI= 0.96). The outpatients' satisfaction factors were: "hospital information system, treatment and conditions". The reliability of the questionnaire was reported at %71 based on the Cronbach's alpha.

Conclusions: Both validity and the reliability indexes of the NOSQ have been reported at a desirable level; therefore it can be used as a valid and reliable instrument to measure the outpatients' satisfaction.

Key words: Standardization, Outpatients' satisfaction, Reliability, Validity.

Introduction

In the recent years, the guarantee of quality has been considered as one of the most important international aspects in healthcares services [1]. The quality of a healthcare system depends on several factors such as availability, costs, efficiency, feasibility, etc. [2].People's evaluation of such quality is only possible through the Satisfaction (SA) parameter. Today, consumer SA is considered an important parameter in evaluating the healthcare quality provided for patients [3, 4], employed as a means to control and evaluate healthcare services [5], and regarded as a sign of the healthcare providers' growing interest in utilizing the patients' assessments for healthcare systems [6], which has been of great help in improving the standards of healthcare organizations [7]. However, as any other psychological variable, we need an instrument to measure Patient Satisfaction (PS). There are several instruments for this purpose, such as La Monica-Oberst PS Scale [8], 15-item and 48-item PPHEN (Patient Perception of Hospital Experience with Nursing) Scale[9], Labarere et al. Questionnaire[10], Larson et al. Questionnaire [11], and QSH (Questionnaire for SA of Hospitalized) [12]. Also, regarding the outpatient SA for special patients, one may point to questionnaires such as Jacke et al. Outpatient Satisfaction in Scale [13], Aletras et al. [14], Labarère et al. [15], and Sonstroem [16]. Even with all these instruments available, lack of a solid evidence in defining and measuring PS and the deficiencies in explanation of its dimensions, aspects and construction in one hand, and the treatment centres' ever- increasing need for a wholesome understanding the patients and the effective factors on their SA, as well as lack of a standard instrument in Iran capable of evaluating outpatient SA on the other hand made the research necessary.

Subjects and Methods

This survey is an analytical-cross sectional

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

study. The subjects are all the outpatients of the Najmiyeh Subspecialty Hospital in Tehran-Iran. The inclusion criterion was decided as check-up with no hospitalization, and the exclusion criteria were the patients' unwillingness, inability or illiteracy. The sample population consisted of 240 patients selected randomly during December 2011, and January and February 2012, using simple random sampling method. The sample size is considered as sufficient with regard to the fact that the aim of the study is to determine the validity and reliability of the questionnaire [17]. The subjects answered the questionnaire willingly and in a relax manner. At the end, the data was analyzed totally. In addition to Najmiyeh Outpatient Satisfaction Questionnaire (NOSQ), the subjects answered a demographic questionnaire (age, gender, marital status, and education). The Confirmatory Factor Analysis (CFA) and Explanatory Factor Analysis (EFA) have been used to evaluate the construct validity; and the Internal Correlation and the Cronbach's alpha have been applied to evaluate the reliability. The data has been analyzed using descriptive statistics (percentage, mean, standard deviation) and inferential statistics (EFA, CFA), as well as SPSS and AMOS 18.

Results

The sample population consisted of 240 individuals with response rate of 95%, in which 132 (55.1%) were females and 108 (44.9%) were males. Concerning the age, 91 (37.9%) participants were less than 30 years old, 56 (23.3%) subjects were 31 to 40 years old and 93 (38.8%) subjects were over 41 years old; and concerning the insurance type, 188 Subjects (78%) were covered by the Armed Forces Insurance, 16 Subjects (6.8%) by Health Services Insurance, and 23 subjects (9.7%) Social Security Insurance, 9 subjects (3.8%) other types of insurance, and 4 Subjects (1.7%) were not insured. Regarding the participants' educational status, 42 (17.6%) individuals hadn't high school diploma, 96 (40.2%) individuals had high school diploma, 38 (15.7%) had Associated Degree, and 64 (26.5%) people had academic studies. The patients priorities to select the Hospital were, respectively: 47.5% (114 subjects) utilising their insurance, 25.1% (60 subjects) availability of expert physicians, 13.7% (33 subjects) ease of accessibility, 9.6% (23 subjects) others' recommendations, and 4.1% (10 subjects) fell into unspecific categories.

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

Table 1: The weights of the factors extracted, using the Exploratory Factor Analysis with Varimax Rotation

Items↓	Areas→	Hospital Conditions	Hospital Treatment	Hospital Information system
			F1	F2
question	Variance Percentage of Each Factor	21.58	20.59	13.04
1	With the staff's guidance and informing manner at the arrival in hospital		.79	
2	With the attitudes of the hospital's guards and employees		.34	
3	With the attitudes of the hospital's admission staff		.86	
4	With the attitudes of the hospital's secretary		.76	
5	With the attitudes of the cashier		.71	
6	With the observing the visit turn		.36	
7	With the physician's attitude		.30	
8	With the physicians' punctuality			.78
9	With informing the patients about the ailment and the treatment procedure	.382		.70
10	With attention to the patients' questions and providing the necessary recommendations	.48		.57
11	With the Hospital's hygiene	.77		
12	With the legal issues	.65		
13	With the hospital's facilities (chairs, TVs, water coolers, ...)	.79		
14	With the hospital's ventilation	.82		

Table 2: The Goodness of Fit Indexes

χ^2	df	P-value	$\frac{\chi^2}{df}$	RMSEA	CFI
110.89	70	.001	1.58	.04	.96

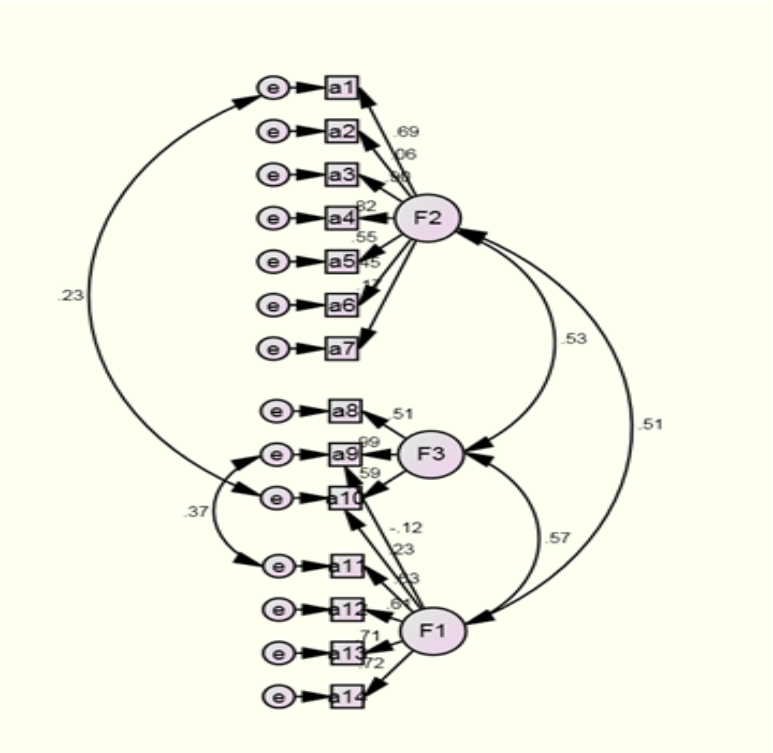
Validity

Several methods were used to evaluate the validity. At the first step, a thorough study and analysis of the literature on the factors involved in outpatients' satisfaction and the relevant questionnaires was conducted, and then a 14-item questionnaire was designed and distributed to a group of experts. The Delphi method and CVR index were applied to select those questions with the higher validity. Also, the CVI index [18] was calculated for all items in the questionnaire, they were verified from the three aspects of relevance, clarity, and simplicity. After analyzing the content validity, the EFA and CFA were employed to evaluate the construct validity. We analyzed the

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

correspondence of the items and the reported factors of 240 observations using the principal component analysis and the Varimax. EFA led to the identification of 3 factors with a cumulative variance of 55% and a Kaser-Meyer-Olkin provided us with the index of 0.82; both of them are desirable as factor analysis indexes. Accordingly, we have determined the three main factors of outpatients' satisfaction as: "hospital information system, treatment, and conditions". The data summary and the weights of the factors in the EFA are shown in Table 1. To verify the assumed factor structure in measuring the admitted patients' satisfaction, each item's role in measuring the desired components was analyzed using AMOS program. The results of the analysis are shown in table 2. The Root Mean Square Error of Approximation (RMSEA) was calculated as less than 0.05, the relative Chi-Square statistics less than 2 and the Comparative Fit Indices (CFI) higher than 0.9; which indicate that the model is appropriate [19]. Also, the fit CFA is illustrated in fig. 1.

Figure 1: the Fit of the Confirmatory Factor Analysis



Reliability

In this study, the total questionnaire Cronbach's alpha has been calculated as (%71) which means a desirable reliability.

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

General Guidelines on Using the Questionnaire

The questionnaire scoring system was determined 1 to 5 for each item; then the values of indexes pertaining to the hospital information system, treatment, conditions and the general satisfaction were specified based on the mean scores of the items 1 to 7, 8 to 10, 9 to 14, and 1 to 14, respectively.

Discussion

Despite of the abundance articles and researches on the patient SA, especially outpatient SA, sometimes numerous contradictory factors are reported as influencing the patients' SA. Hence, in some studies, the patient's SA has been reported slightly lower than that in the rival hospitals, even though they enjoyed better conditions. As an example, Jafari, et al. reported the general patient SA with the nursing services of Shahid Beheshti hospitals at 93.6% [20]; while in another study, for Ayatollah Taleghani Hospital, it was reported at 83% [21]. The reason for such contradictory studies has been identified as lack of accurate and equal evaluation of patients' SA. Therefore, considering the importance of such an evaluation and the need for a valid instrument to evaluate this concept among the outpatients, and constructing a valid and reliable instrument to identify the individual differences among the patients, we felt compelled to standardize NOSQ in a cross-sectional study.

The construct validity has been used to evaluate the validity. In step one, the CFA and EFA were used to evaluate the construct validity. The reliability of the questionnaire was confirmed by indentifying three factors with a cumulative variance of 54%, a Kaser-Meyer-Olkin index of .82 for the CFA, as well as an RMSEA of .04 and a CFI of .96 for the CFA [17, 19]. The reliability index of the questionnaire has been reported at a desirable level compared to the similar questionnaires that were designed, constructed and translated [9-16, 18, 22]. Therefore, this questionnaire is highly recommended for evaluation of the outpatients' SA; with regard to the collected data and the advantages of this questionnaire (small number of questions, the appropriate domain, standardization to evaluate the outpatients' SA, and high level of validity and reliably).

Conclusion

The results of the research revealed the validity and reliability of NOSQ at a very desirable level, thus making it a valid and reliable instrument in evaluating the outpatient's SA.

This study has been conducted for the first time in Iran. It validates Outpatients Satisfaction Questionnaire (OSQ). The results

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

of this study confirm validity and reliability of the Najmiyeh OSQ for measurement of the inpatient satisfaction. The findings also may help the health system of the country.

Restrictions

This research failed to collect samples from different hospitals as the sample population; the fact which makes the generalization of the results rather difficult.

References:

[1] Park K. Textbook of preventive medicine. 18 ed., Jabalpur: Banarasidas Bhanot Publishers 2005.

[2] Sing, M, Chadda R, Bapna J. Assessment of the hospital services by consumers: A study from a psychiatric setting. Indian J Public Health 2003; 47: 14-21.

[3] Prasanna K, Bashith M, Sucharitha S. Consumer Satisfaction about Hospital Services: A Study from the Outpatient Department of a Private Medical College Hospital at Mangalore. Indian J Community Med 2009; 34(2): 156-9.

[4] Acharya J. Acharya I. A study on compliance and behavioral responses of patients in an outpatient clinic. Indian J Community Med 2003; 28: 19-25.

[5] Jackson JL, Chamberlain J, Kroenke K. Predictors of patient satisfaction. Soc Sci Med 2001; 5: 609-20.

[6] Blue A, Chessman A, Gilbert G, Mainous A. Responding to patients' emotions: important for standardized patient satisfaction. Fam Med 2002; 32(5): 326-30.

[7] Nguyen Thi PL, Briancon S, Empereur F, Guillemin F. Factors determining inpatient satisfaction with care. Soc Sci Med 2002; 54: 493–504.

[8] La Monica EL, Oberst MT, Madea AR, Wolf RM. Development of a Patient Satisfaction Scale. Res Nurs Health 1986; 9: 43-50.

[9] Dozier, AM, Kitzman HJ, Ingersoll GL, Holmberg S, Schultz AW. Development of an Instrument to Measure Patient Perception of the Quality of Nursing Care. Res Nurs Health 2001; 24: 506-17.

[10]Labarere J, Francois P, Auquier P, Robert C, Fourny M. Development of French inpatient satisfaction questioner. Int J Qual Health Care 2001; 13(2): 99-108.

[11] Larson P, Ferketich S. Patients' satisfaction with nurses' caring during hospitalization. West J Nurs Res 1993; 15: 690-707.

[12] Antoniotti S, Baumstarck-Barrau K, Siméoni M, Sapin C, Labarère J, Gerbaud L, Boyer L, et al. Validation of a French hospitalized patients' satisfaction questionnaire: the QSH-45. Int J Qual Health Care 2009; 21(4): 243-52.

[Downloaded from hehp.daneshafarand.org on 2026-11-14]

[13] Jacke C, Eyshold U, Rosanowski F. Outpatient satisfaction in phoniatrics and pedaudiology.HNO 2009; 57(9): 918-30.(German)

[14] Aletras V, Papadopoulos E, Niakas D. Development and preliminary validation of a Greek-language outpatient satisfaction questionnaire with principal components and multi-trait analyses. BMC Health Serv Res 2006; 6: 6-66.

[15] Labarère J, François P, Bertrand D, Peyrin J, Robert C, Fourny M. Outpatient satisfaction: validation of a French-language questionnaire: data quality and identification of associated factors. Clin Perform Qual Health Care 1999; 7(2): 63-9.

[16] Roush S, Sonstroem R. Development of the physical therapy outpatient satisfaction survey (PTOPS). Phys Ther 1999; 79(2): 159-70.

[17] Hazard M, Dean F, Connell W. Statistical methods for health care research. 5th ed., Lippincott: Williams and Wilkins, 2005.

[18] Polit DF, Beck CT. The Content Validity Index: Are You Sure You Know What's Being Reported? Critique and Recommendations. Res Nurs Health 2006; 29: 489-97.

[19] Kalantari K. Structural equation modeling in social and economical research. Tehran: Saba Publication, 2008. (Persian)

[20] Jafari H, Markazi Moghadam N, Ainy E, Hajikaram S, Kohyar E, Hajifathali A. Patient Satisfaction and Its related Factors in Ayatollah Taleghani Hospital in 2006. Pajoohandeh 2007; 12(6): 541-6. (Persian)

[21] Hajian K. Satisfaction rate of hospitalized patients in Beheshti and Babol Yahyanejad hospitals from presented services. JBUMS 2007; 9(2): 51-60. (Persian)

[22] Risser N. Development of an instrument to measure patient satisfaction with nurses and nursing care in primary core settings. Nurs Res 1975; 24: 45-52.

[Downloaded from hehp.daneshafarand.org on 2026-11-14]