



## Akademik tıp merkezi hastanesi için yeni bir hizmet memnuniyeti anketinin güvenilirliği ve geçerliliği

### Reliability and Validity of a New Questionnaire of Outpatient Service Satisfaction for Academic Medical Center Hospital

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#### Anahtar Kelimeler:

Ayakta Hasta Memnuniyeti, Güvenilirlik, Geçerlik, Akademik Tıp Merkezi Hastanesi

#### Key Words:

Outpatients' Satisfaction, Reliability, Validity, Academic Medical Center Hospital

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#### ÖZET

Sağlık kuruluşlarının kalite yönetimi faaliyetlerinin en önemli komponentlerinden biri hasta memnuniyet düzeylerinin belirlenmesidir. Özellikle poliklinikler hastanelerde en önemli alanlardan biridir. Bu çalışmada bir üniversite hastanesi polikliniklerinde hasta memnuniyetini ölçmeye yönelik geçerli ve güvenilir bir araç geliştirmek amaçlanmıştır. Bu amaçla, Suudi Arabistan, Dammam Üniversitesi, King Fahd Üniversite Hastanesi'ne başvuran 445 hasta üzerinde 21 soru, 4 boyut altında geliştirilen, likert skalası ile memnuniyet durumları belirlenen bir anket formunun güvenilirliği Cronbach katsayısı ile, geçerlilik analizleri ise faktör analizi ile gerçekleştirilmiştir. Bu makalede araştırma sonuçları sunulacak ve tartışılacaktır.

#### ABSTRACT

**Background:** Measuring outpatient satisfaction is an integral component of quality management in healthcare settings. Outpatient service is a major part in the hospital services and patient care. **Objectives:** This study aims to develop a valid and reliable survey tool for measuring the quality of outpatient service in an academic medical center hospital. **Design:** A cross-sectional, analytical research design was conducted among outpatients. **Settings:** King Fahd Hospital of the University, University of Dammam, Saudi Arabia. **Patients and Methods:** The questionnaire was administered to 445 outpatients who attended the clinics during the period of April – June 2015 in King Fahd Hospital of the University. The questionnaire comprised of 21 items on 4 conceptual subscales: Professional care, Availability of service, Waiting time and Laboratory service. A five-point Likert scale was used to measure the level of satisfaction. Reliability was performed using Cronbach's  $\alpha$  coefficient. Factor analysis was done to test the validity of the survey instrument. **Main outcome measures:** Reliability, Validity for the questionnaire overall, and for each sub-scale. **Results:** Factor analysis indicated that the outpatients' satisfaction towards the quality of service scale had four latent factors, which explained 82% of the variance: The four subscales measured includes: (1) professional care, (2) availability of other services, (3) waiting time, and (4) satisfaction of laboratory service. The four factors had excellent reliability coefficients, ranging between 0.821 (professional care), 0.854 (availability of service), 0.730 (waiting time) and 0.717 (laboratory service). It is also observed that the full scale had excellent internal consistency (Cronbach's  $\alpha = 0.868$ ). **Conclusion:** This study provides evidence of reliability and validity of the new survey tool for the measurement of outpatient service satisfaction in academic medical center. **Limitations:** This study was conducted in an academic center medical center hospital, therefore the outcome as well the developed research tool is not suitable for non-academic Hospitals.

#### INTRODUCTION

Patients' satisfaction is considered to be a measure of health care.<sup>1,2</sup> By measuring the patients' satisfaction, we can find out the quality of all healthcare services. Hence the patient satisfaction on the quality of service provided to them is one of the key performance indicator in hospitals. Few studies indicate that patient satisfaction is 'one of the most useful indicators (Ware *et al.*, 1988; Vuori, 1991; Carr-Hill, 1992; Williams, 1994;

Scott *et al.*, 1994) in the success of a hospital.<sup>3-7</sup> Another study in the same field stated that patient satisfaction is a major indicator of the quality healthcare and the quality of service can be assessed by mapping out the patient satisfaction with healthcare providers.<sup>8</sup> There are several studies which indicate the importance of satisfaction studies in healthcare settings. Patient satisfaction has long been considered as an important component when measuring health outcomes and quality of care.<sup>9,10</sup>

A review by Crow *et al.* (2002) indicates that majority of patient satisfaction studies identified in the international literature used questionnaire based survey instruments, which are specifically designed for the study.<sup>11</sup> This is the concern and the need of testing the reliability and validity of instruments used, in terms of achieving comparability across settings.

As Hall and Dornan (1988) noted in their literature review on satisfaction, the aspects of the medical setting chosen for study vary that some areas (e.g., humaneness of health professionals, information about health care) are studied extensively while other aspects (e.g., outcomes) are assessed to a much lesser degree.<sup>12</sup> The study reports that humaneness and technical quality of medical care were ranked near the top, while the bottom five ranks were occupied by aspects of care that reflected the provider's attention to other patient needs and the patient's relation to the system as a whole. In addition, it was demonstrated that different aspects of medical care are measured with extremely uneven frequencies in satisfaction instruments. Satisfaction is a multi-factorial construct; the patients experience different facets and dimensions of a health service episode and they make multiple evaluations about the process of care as well as the outcome. The dimensions identified in the review were: access, cost, overall quality, humaneness, competence, information supplied, bureaucracy, physical facilities, attention to psychosocial problems, continuity of care and outcome of care.

In Saudi Arabia, there are several studies related with patient satisfaction in the field of ambulatory care (Al-Fariset *al.*, (1996); Mansour *et al.*, (1993)), primary health care (Alia *et al.*, (2014); Nadia *et al.*, (2013); Elsadiget *al.*, (2015); Abdullah *et al.*, (2000)) and inpatients satisfaction (Khalid Al *et al.*, 1995; Abdulla Al, 2000), but there is no such study measuring the quality of outpatients' service in an academic medical center hospital.<sup>13-20</sup> Hence this novel approach is to develop a tool to measure the quality of outpatient service in an academic medical center. The aim is to assess the reliability and validity of this new survey tool for measuring the quality of outpatient's service.

## METHODS

A structured questionnaire was designed to measure the outpatients' satisfaction on quality of the service and patient care; it includes demographic variables like age, gender, education, occupation, service department and visit status. The tool consists of 21 items related to four subscales, as follows: (a) Professional care including appointment service, (b) Availability of service, (c) Waiting time and (d) Laboratory service.

Each item of the instrument used a 5-point Likert scale ranging from 1- Very Poor to 5-Excellent.

A total of 445 participants were involved in this study. The study design was cross-sectional, analytical and the sample was selected by stratified random sampling from each specialties. Care had been taken to get a wide representation of samples by covering all outpatients' clinics.

Interviewers from the patient relations department and quality center administrated the questionnaire at King Fahd hospital of University, University of Dammam, Saudi Arabia. The required sample of participants were interviewed from all specialties during the period of 1<sup>st</sup> April to 30<sup>th</sup> June, 2015.

The test of validity for the survey instrument was performed by Cronbach's alpha, which is considered the most important technique for testing the validity (Cronbach, 1951) of the instrument.<sup>21</sup> Exploratory factor analysis was used to assess the dimensions of the outpatients' satisfaction to the quality of service scale.

The statistical criteria Kaiser-Meyer-Olkin (KMO) and the Bartlett test of sphericity were used to test the sampling adequacy and to examine the inter-independence of the subscales of the scale.<sup>22</sup> Extraction method in factor analysis was a principal component of analysis. To compute loading of factors Varimax Rotation was used.

## RESULTS

Reliability statistics [Table I] showed the value of Cronbach's Alpha coefficient for the whole scale as 0.868. This is more than 70%, which is an excellent internal consequence of the conceptual construction of the investigated scale.<sup>23</sup> The value of Cronbach's  $\alpha$  based on standardized item was 0.892, which reveals that if the number of items are increased, Cronbach's alpha gives the value of 0.892. The four sub-scales has very good reliability coefficients, ranging between 0.821 (professional care), 0.854 (availability of service), 0.730 (waiting time) and 0.717 (laboratory service) [Table 2].

**Table 1.** Reliability Statistics on Outpatients' satisfaction scale

Cronbach's Alpha	Cronbach's Alpha based on Standardized Items	N of Items
0.868	0.892	21

Applicability of factor analysis was confirmed, the statistical criteria KMO (KMO = 0.929) and the Bartlett test of sphericity (value 3930.5,  $P < 0.001$ ) [Table 3], indicates that the raw data is suitable for factor analysis. From the values of communality [Table 4], majority of the variables had a value more than 0.50,

which indicates that the quality of the measurements are satisfactory.

**Table 2.** Evaluation of the internal consistency of the subscales of questionnaire for evaluation of quality of outpatients' service. (Cronbach's  $\alpha$ )

Factor	Subscales	Items	Cronbach's $\alpha$
1	Professional care	6	0.821
2	Availability of service	8	0.854
3	Waiting time	3	0.730
4	Laboratory service	2	0.717

**Table 3.** KMO and Bartlett's test

Measures	Statistic	
Kaiser-Meyer-Olkin	0.929	
Bartlett's Test of Sphericity	Chi-square value	3930.526
	DF	210
	P value	0.000

Based on the eigenvalues, 4 factors were extracted and these account for the total variance of 82%. Factor 1 contains 6 significant loadings, of which the major items were: following doctors' advice (0.808); doctor's explanation about treatment (0.795) and examination by doctors (0.754) [Table 5]. Factor 1 seems to represent a combination of physician's satisfaction and overall appointment service. Factor 2 contains 8 significant loadings. The most important items were: friendliness and courtesy of the staff who provides your tests or treatment (0.685); convenience to reach investigation site (0.664); staffs concerns for your comfort, questions and worries (0.655) and convenience to reach appropriate OPD (0.643). Factor 3 contains 3 significant loadings, which is related with time taken for registration (0.771), time taken to reach consultant in OPD (0.746) and time taken in getting medicine from pharmacy (0.775), and finally Factor 4 contained 2 significant loadings, which deals with laboratory service.

**Table 4.** Communalities

Questions	Initial	Extraction
Seating arrangement in OPD	1.000	.535
Cleanliness in OPD	1.000	.599
Convenience to reach appropriate OPD	1.000	.637
Finding of consultant in OPD	1.000	.577
Convenience to reach investigation site	1.000	.630
Friendliness and courtesy of the staff who provides your tests or treatment	1.000	.471
Staffs concerns for your comfort, your questions and your worries	1.000	.648
Extent to which all staff (Physician, nurses, others) washed their hands before examining you	1.000	.558
Time taken for registration	1.000	.658
Time taken to reach consultant in OPD	1.000	.570
Time taken for examination	1.000	.645
Time taken in getting medicine from pharmacy	1.000	.630
Time taken in getting examination reports	1.000	.778
Examination by Doctors	1.000	.610
Doctors' explanation about treatment	1.000	.688
Following doctors' advice	1.000	.678
Understanding illness after consulting with doctor	1.000	.615
Skills of the staff who provided your tests or treatment	1.000	.656
Overall of appointment service	1.000	.599
Overall satisfaction of care received during your visit	1.000	.693
Overall satisfaction about our quality of the treatments	1.000	.734

**Table 5.** Rotated Component Matrix

Questions	Component			
	1	2	3	4
Seating arrangement in OPD	.416	.590	.082	.083
Cleanliness in OPD	.528	.526	-.202	.054
Convenience to reach appropriate OPD	.465	.643	-.006	-.088
Finding of consultant in OPD	.461	.600	-.064	.028
Convenience to reach investigation site	.413	.664	.059	-.122
Friendliness and courtesy of the staff who provides your tests or treatment	.041	.685	.013	.005
Staffs concerns for your comfort, your questions and your worries	.466	.655	-.015	-.041
Extent to which all staff (Physician, nurses, others) washed their hands before examining you	.358	.565	-.320	.086
Time taken for registration	-.010	-.017	.771	-.253
Time taken to reach consultant in OPD	-.027	-.067	.746	.097
Time taken for examination	-.038	-.046	.775	.200
Time taken in getting medicine from pharmacy	-.045	.131	.575	.529
Time taken in getting examination reports	.018	-.058	.062	.878
Examination by Doctors	.754	.110	.170	.018
Doctors' explanation about treatment	.795	.231	-.042	-.014
Following doctors' advice	.808	.146	-.067	.017
Understanding illness after consulting with doctor	.676	.379	-.103	.061
Skills of the staff who provided your tests or treatment	.706	.394	-.050	-.010
Overall of appointment service	.704	.303	.012	-.105
Overall satisfaction of care received during your visit	.706	.427	-.111	-.017
Overall satisfaction about our quality of the treatments	.717	.431	-.178	.035

## DISCUSSION

We successfully developed a new survey instrument for measuring the quality of outpatients' service in an academic medical center hospital. The internal consistency and reliability was tested by Cronbach's alpha coefficients. The within- factor alpha coefficients were observed in a range 0.717 to 0.854 which is found to be acceptable when compared with other 25 studies in which the range reported was from 0.43 to 0.90.<sup>24,25</sup> The 21 items/ variables which makes up our survey tool falls in an intermediate range of 13 to 100.<sup>26,27</sup> The number of extracted factors are modal among the reported range of 3 to 11 factors.<sup>28,29</sup> The explained variance of 82% is more optimal compared with other studies.<sup>30-32</sup>

We developed and validated the questionnaire tool, which is a reliable survey instrument for measuring the

quality of outpatient's service. Our finding justifies the recommendation of the use of this questionnaire on outpatients' satisfaction in various health care settings.

## CONCLUSION

The three factors which have to be considered while developing a survey tool in an academic center hospital are: (i) explained variance of above 82% (ii) overall internal consistency of reliability 0.868 and above, and (iii) reliability for the sub scales ranging from 0.717 to 0.854. Based on these statistical measures, we can conclude that this tool is a reliable and valid survey tool for measuring the quality of outpatients' service satisfaction. A questionnaire tool with high variance, consistency and reliability can be adapted by any academic medical center hospital and health care settings as one of the means of assessing outpatients' satisfaction.

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Appendix

Outpatient Satisfaction Survey: Questionnaire

In order to provide you with the best Healthcare services possible, we want to know how well we are doing now and what we might do better from your point of view. Please take a couple of minutes to provide us with important information to assist us in our effort to better serve you. Your responses are confidential and are greatly appreciated. Thank you.

**Background Questions**

- A. Patient Age .....
- B. Patient Gender Male  Female
- C. Education Illiterate  School  Graduate  Postgraduate  Others
- D. Occupation Government service  Business  Labore  House wife  Student
- E. Date of visit .....
- F. Visited Department .....
- G. Patient's first visit to our outpatient Center Yes  No

**Availability of Service** Poor Fair Good Excellent

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Seating arrangement in OPD  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Cleanliness in OPD  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Convenience to reach appropriate OPD  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Finding of consultant in OPD  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Convenience to reach investigation site   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Friendliness and courtesy of the staff who provides your tests or treatment                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Staffs concerns for your comfort, your questions and your worries                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Extent to which all staff (Physician, nurses, others) washed their hands before examining you | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Waiting Time** (please choose: 1. Less than 5 min, 2. 5-15 min, 3. 15-30 min, 4. More than 30 min)

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 9. Time taken for registration                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Time taken to reach consultant in OPD        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. Time taken for examination                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Time taken in getting medicine from pharmacy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Time taken in getting examination reports    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Professional care**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 14. Examination by Doctors                                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Doctors' explanation about treatment                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Following doctors' advice                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. Understanding illness after consulting with doctor       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Skills of the staff who provided your tests or treatment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

**Overall assessment**

- |  |                          |                          |                          |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 19. Overall of appointment service                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. Overall satisfaction of care received during your visit  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. Overall satisfaction about our quality of the treatments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Overall impression of this Hospital</b>                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |