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

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INTRODUCTION

Patients’ satisfaction is considered to be a measure of health care,¹² 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 indicators in hospitals. Few studies indicates 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.¹³-⁷ Another study in the same field stated that patients 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.⁸ 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.⁹¹⁰

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ANCAK:

Sayı 4’te yayınlanacak ve tartışılacaktır. Bu makalede araştırma sonuçları sunulacak ve tartışılacaktır.

ÖZET

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

Reliability and Validity for the questionnaire overall, Williams, 1994;

A cross-sectional, analytical research design was conducted among outpatients. This study provides evidence of reliability and validity of the new questionnaire.

The questionnaire 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. Another study in the same field stated that patients 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. 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.
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.11 This is the concernand 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.12 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); Elsadig et 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.13–20 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 1st April to 30th 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.21 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.22 Extraction method in factor analysis was a principal component of analysis. To compute loading of factors Varimax Rotation was used.

RESULTS

Reliability statistics [Table 1] 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.23 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 have 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].

| 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 communitality [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 sub-scales of questionnaire for evaluation of quality of outpatients' service. (Cronbach’s α)

| Factor | Subscales       | Items | Cronbach’s α |
|--------|-----------------|-------|--------------|
| 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); staff’s 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       |
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 0.90.24,25 The 21 items/variables which makes up our survey tool falls in an intermediate range of 13 to 100.26,27 The number of extracted factors are modal among the reported range of 3 to 11 factors.28,29 The explained variance of 82% is more optimal compared with other studies.30-32

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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Al-Kuwaiti ve Maruthamuthu: Reliability and Validity of a new questionnaire
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**

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

**Availability of Service**

| Service                           | Poor | Fair | Good | Excellent |
|-----------------------------------|------|------|------|-----------|
| 1. Seating arrangement in OPD     |      |      |      |           |
| 2. Cleanliness in OPD             |      |      |      |           |
| 3. Convenience to reach appropriate OPD |      |      |      |           |
| 4. Finding of consultant in OPD   |      |      |      |           |
| 5. Convenience to reach investigation site                  |      |      |      |           |

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

| Task                                           | Options |
|-----------------------------------------------|---------|
| 9. Time taken for registration                |         |
| 10. Time taken to reach consultant in OPD     |         |
| 11. Time taken for examination                |         |
| 12. Time taken in getting medicine from pharmacy |       |
| 13. Time taken in getting examination reports |         |

**Professional care**

| Task                                           | Options |
|-----------------------------------------------|---------|
| 14. Examination by Doctors                    |         |
| 15. Doctors’ explanation about treatment      |         |
| 16. Following doctors’ advice                 |         |
| 17. Understanding illness after consulting with doctor | |
| 18. Skills of the staff who provided your tests or treatment | |

**Overall assessment**

| Task                                           | Options |
|-----------------------------------------------|---------|
| 19. Overall of appointment service            |         |
| 20. Overall satisfaction of care received during your visit | |
| 21. Overall satisfaction about our quality of the treatments |         |

**Overall impression of this Hospital**

| Options |
|---------|
|         |