

# Patient satisfaction and related factors in Kerman hospitals

A. Bahrapour<sup>1</sup> and F. Zolala<sup>1</sup>

رضاء المرضى والعوامل المتعلقة به في مستشفيات كerman

عباس بهرامپور، فرزانه ذو العلى

**الخلاصة:** أجرى الباحثان دراسة تحليلية مستعرضة شملت 3017 مريضاً، واستغرقت الفترة بين آذار/مارس 2002 وآذار/مارس 2003 للتعرف على مستوى رضاء المرضى في مستشفيات كerman. وقد استخدم الباحثان استبياناً يتألف من 4 أجزاء تغطي الجوانب الديموغرافية، والرضاء، واحتياجات المرضى، وحالة الصحة النفسية لديهم. وكان ما يزيد على نصف المرضى من النساء، وكان متوسط العمر 37.4 (ومجاله بين سنة واحدة و99 سنة)، وأعرب أقل من نصف المرضى بقليل عن رضاهم، وكانت هناك علاقة واضحة بين الرضاء وبين نمط المستشفى ( $P < 0.001$ ) والقاعة أو الجناح ( $P < 0.006$ ) ومستوى التعليم ( $P < 0.004$ ) وسوابق الإدخال إلى المستشفى ( $P < 0.001$ ) والحاجة إلى الخدمات الطبية ( $P < 0.001$ ) والحالة الصحية ( $P < 0.001$ ) وفترة الاستشفاء ( $P < 0.002$ ).

**ABSTRACT** To determine the level of patient satisfaction in hospitals in Kerman and to determine the factors affecting satisfaction, we did an analytic cross-sectional study on 3017 patients from March 2002 to March 2003. We used a 4-part questionnaire covering demographics, satisfaction, patients' needs and mental health status. Just over 50% of the patients were female. Mean age was 37.4 years (range 1–99 years). Just under 50% of patients were satisfied. There was a significant relationship between satisfaction and type of hospital ( $P < 0.001$ ), ward ( $P < 0.006$ ), education level ( $P < 0.004$ ), history of hospitalization ( $P < 0.001$ ), need for medical services ( $P < 0.001$ ), health status ( $P < 0.001$ ) and duration of hospitalization ( $P < 0.002$ ).

## Satisfaction des patients et facteurs secondaires dans les hôpitaux de Kerman

**RÉSUMÉ** Afin de déterminer le niveau de satisfaction des patients dans les hôpitaux à Kerman et les facteurs qui affectent cette satisfaction, nous avons réalisé une étude transversale analytique sur 3017 patients de mars 2002 à mars 2003. Nous avons utilisé un questionnaire en 4 parties couvrant la démographie, la satisfaction, les besoins des patients et l'état de santé mentale. Un peu plus de 50 % des patients étaient des femmes. L'âge moyen était de 37,4 ans (extrêmes : 1-99 ans). Un peu plus de 50 % des patients se déclaraient satisfaits. Il y avait une relation significative entre la satisfaction et le type d'hôpital ( $p < 0,001$ ), le service d'hospitalisation ( $p < 0,006$ ), le niveau d'instruction ( $p < 0,004$ ), les antécédents d'hospitalisation ( $p < 0,001$ ), le besoin de services médicaux ( $p < 0,001$ ), l'état de santé ( $p < 0,001$ ) et la durée de l'hospitalisation ( $p < 0,002$ ).

<sup>1</sup>Department of Biostatistics and Epidemiology, School of Health, Kerman University of Medical Sciences, Kerman, Islamic Republic of Iran (Correspondence to A. Bahrapour: abahrapour@yahoo.com)  
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## Introduction

In recent decades, determining the level of patient satisfaction has been found to be the most useful tool for getting patients' views on how to provide care. This is based on 2 major principles: patients are the best source of information on quality and quantity of medical services provided and patients' views are determining factors in planning and evaluating satisfaction.

Donabedian [1] has argued that client satisfaction is of fundamental importance as a measure of the quality of care because it gives information on the provider's success in meeting client values and expectations, matters on which the client is the ultimate authority. The measurement of satisfaction is, therefore, an important tool for research, administration and planning [2]. Client satisfaction is a crucial index for determining the quality of services and the way in which they are provided by medical staff [3].

Many studies have been done throughout the world to achieve these aims. The results of a study done by Demir and Celik in Turkey indicated that satisfaction with physicians, nurses, equipment and food services were the main determinants of overall satisfaction in hospitalized patients. The type of clinic in which the patients were managed was also important [4]. Jaipaul and Rosenthal found that level of satisfaction increased with age and then declined. Satisfaction was also greater in patients who reported they had better health [5].

In a study done by Weisman et al. in the United States of America, patient satisfaction was related to different factors for males and females [6]. Women's overall satisfaction was more dependent than men's on information content and continuity of care; men's overall satisfaction was more dependent on the personal interest shown in them by providers [6].

In an Iranian survey done by Ayatollahi et al., satisfaction level of patients who were treated by male doctors was greater than in the group who were treated by female doctors and level of satisfaction increased as age increased. There was an inverse relationship between patient satisfaction and education. Speciality was also important: the highest satisfaction level was in patients treated by paediatricians and the lowest for dermatologists. General health condition had a positive relationship with satisfaction [3].

One of the most important problems in health system in the Islamic Republic of Iran is patient satisfaction. Despite high expenditure and adequate facilities, we have observed that patients are often not satisfied. It is crucial that the health system provides services suitable for patients and which satisfy them because they are the main clients. As can be seen, level of satisfaction is associated with a number of factors, which may differ in different societies. This plays an important role in determining principles for planning and management.

The aim of this study was to establish the determining factors for patient satisfaction taking into account the above factors, which are of importance in planning, managing and evaluating. This is the first such study done in this field in Kerman, which is the second largest province in the Islamic Republic of Iran, area 18.2 m<sup>2</sup>, population just over 2 million (1966 census).

## Methods

The target population was patients who were hospitalized in Kerman province from March 2002 to March 2003. There are 2 types of hospital in Kerman province, the teaching hospitals (government hospitals), which are managed by the medical univer-

sity, and non-teaching (private and social security) hospitals. The sample population was selected by systematic random sampling. From a pilot study, sample size was determined as 3017. The method of sampling was proportional cluster sampling. All 7 hospitals were selected for the first cluster and different wards in each hospital were selected as the second cluster. Sample size in each cluster was determined according to the proportion of hospitalized patients in different wards. We selected every 2nd patient until the required sample size was met.

The participants were interviewed in the hospital when they were being discharged. The questionnaires were completed by the interviewer. Interviews were carried out on all days other than Fridays. If a patient who was selected refused to participate or was unable to answer the questions, the next person on the hospital registration form was selected as a replacement. There were just under 50 refusals. For children < 10 years old, parents answered the questions.

The questionnaire was developed by Ayatollahi and was in 4 parts: demographic characteristics; rate of patient needs to medical services; satisfaction (including behaviour of staff and doctors, availability of nurses and other services); and mental health status (anxiety, social behaviour and depression) [3].

For the analysis of data, descriptive statistics were used for determining indices, analysis of variance for comparing subgroups and logistic regression for determining factors which correlate with satisfaction. In logistic regression we have a binary variable as response and independent variables, which can be quantitative or qualitative. Using this method, the first variable was selected as the reference category and odds ratios were calculated for the other variables. The mathematical form [7] of this model is:

$$\ln \frac{p}{1-p} = \beta_0 + \sum_{i=1}^n \beta_i X_i$$

where  $\beta_0$  is the intercept,  $\beta_i$  is the coefficient of the independent variable,  $X_i$  is the independent variable and  $p$  is the probability of satisfaction.

To produce binary variables related to satisfaction, the mean of the scores was calculated for each patient; scores 1 and 2 were classed as unsatisfied and 4 and 5 as satisfied. For scores between 2 and 4, first the median was calculated; scores less than the median were classed as unsatisfied and the rest as satisfied, i.e. half the scores between 2 and 4 were "satisfied" and half "unsatisfied". We applied the logistic regression and ENTER method for finding determining factors. In the ENTER method, variables are entered in the model one after another as listed and finally the model includes only significant variables. *Minitab* statistical software was used for data analysis.  $P < 0.05$  was considered significant.

## Results

Of the total of 3017 participants, 1562 (51.8%) were females; characteristics of the participants are shown in Table 1. Mean age was 37.4 years, range 1–99 years. We found 49.4% of patients were not satisfied, 49.6% were satisfied; values were missing for 1.0%.

Looking at the significant differences between satisfied and unsatisfied categories, factors such as age and sex were not significant and so were not determining factors ( $P > 0.05$ ).

We used analysis of variance on original data without grouping, and logistic regression on binary variables. Independent variables were: level of health, sex, job, hospital, insurance, ward, hospitalized

**Table 1 Demographic and other characteristics of participants (n = 3017)**

Characteristic	Participants (%)
<i>Sex</i>	
Female	51.8
Male	48.2
<i>Work status</i>	
Employed	55.3
Unemployed	44.7
<i>Education</i>	
Illiterate	17.7
< school diploma	30.6
School diploma	36.1
University degree	15.6
<i>Duration of hospitalization (days)</i>	
< 1	9.5
1–4	76.9
5	13.6
<i>Type of hospital</i>	
Teaching	74.5
Private or social security	25.5
<i>History of hospitalization</i>	
Insured	98.5

history, hospitalization duration, and rate of medical care, age and education. The dependent variable was satisfaction score, a binary variable. Based on the analysis of variance, all of the independent variables except job were significant ( $P < 0.001$ ). Logistic regression showed that type of hospital, ward, education, history of hospitalization, need for medical services, health level and duration of hospitalization were significant (Table 2).

Probability of satisfaction increased with increase in health level, need for medical services, having a history of hospitalization and duration of stay in hospital ( $P < 0.05$ ) (Table 2). There was no trend in odds ratio for education level but in general this factor had a significant effect ( $P = 0.004$ ).

The odds ratios for teaching hospitals and the social security hospital were the same but satisfaction was significantly greater in private hospitals ( $P < 0.001$ ). In gynaecology and orthopaedics wards, the level of satisfaction was greater than in other wards (Table 2).

The logistic equation is:

$$Y = -1.81 + 0.034x_1 + 0.16x_2 + 0.39x_3 + 0.41x_4 + 0.0039x_5 + 0.76x_6 + 0.508x_7 - 0.018x_8 + 0.0019x_9 - 0.049x_{10} + 0.311x_{11}$$

where:  $Y$  = satisfaction,  $x_1$  = type of hospital,  $x_2$  = sex,  $x_3$  = ward,  $x_4$  = duration of hospital stay,  $x_5$  = age,  $x_6$  = need for medical services,  $x_7$  = health level,  $x_8$  = education,  $x_9$  = job,  $x_{10}$  = insurance,  $x_{11}$  = history of hospitalization ( $x_6$  and  $x_7$  were calculated from the scores on the questionnaire).

## Discussion

We found no significant relationship between patient satisfaction and sex; this is consistent with the survey of Weisman et al. [6]. Patient satisfaction rose with increasing need for medical services. This could be because patients with greater needs in fact use more medical services. This provides a kind of mental safety for the patients, so they may feel they were treated with more consideration and care. Providing medical equipment can also increase satisfaction, as found in a previous study [8]. We also found that satisfaction rose with increasing patient health level, and this is consistent with the findings of other studies [5,9].

The effect of the age variable on satisfaction was not significant but it showed interesting results. The greatest level of satisfaction was in the group 15–24 years old, then it decreased gradually and increased again in the group who were over 60 years

Table 2 Logistic regression coefficients for factors affecting patient satisfaction in Kerman province, 2002–03

Factor	Regression coefficient	SE	OR	P-value	95% CI
<i>Sex</i>				> 0.210	
Female <sup>a</sup>					
Male	-0.09	0.11	0.91	> 0.418	0.73–1.14
<i>Age (years)</i>				> 0.323	
1–14 <sup>a</sup>					
15–24	0.13	0.27	1.13	> 0.635	0.67–1.95
25–35	-0.06	0.29	0.95	> 0.844	0.54–1.66
36–45	-0.17	0.30	0.84	> 0.558	0.47–1.50
46–60	-0.26	0.29	0.77	> 0.383	0.43–1.27
> 60	-0.09	0.31	0.91	> 0.765	0.49–1.67
<i>Education level</i>				0.004	
Illiterate <sup>a</sup>					
Primary	-0.41	0.17	0.66	< 0.012	0.48–0.91
Middle school	-0.43	0.16	0.65	< 0.006	0.48–0.88
Diploma	-0.61	0.15	0.55	< 0.001	0.40–0.74
Technician	-0.41	0.23	0.67	< 0.083	0.43–1.05
Bachelor & higher degree	-0.65	0.23	0.52	< 0.005	0.33–0.82
<i>Job<sup>b</sup></i>				> 0.414	
Unemployed <sup>a</sup>					
Retired	0.44	0.26	1.55	> 0.09	0.93–2.60
Self employed	0.19	0.15	1.21	> 0.20	0.89–1.64
Government employee	0.14	0.15	1.15	> 0.37	0.84–1.56
Private sector employee	0.47	0.38	1.61	> 0.21	3.76–3.40
Student	-0.05	0.18	0.94	> 0.76	0.65–1.36
<i>Duration of hospitalization (days)</i>				< 0.002	
< 1 <sup>a</sup>					
1–4	-0.18	0.17	0.84	> 0.29	0.60–1.16
5	0.30	0.20	1.34	> 0.135	0.91–1.99
<i>History of hospitalization</i>				< 0.001	
No					
Yes	0.42	0.13	1.52	< 0.001	1.18–1.95
<i>Need for medical services</i>				< 0.001	
Low <sup>a</sup>					
Moderate	0.66	0.11	1.92	< 0.001	1.55–2.38
High	0.94	0.16	2.52	< 0.001	1.88–3.46
<i>Health level</i>				< 0.001	
Good <sup>a</sup>					
Medium	-0.51	0.11	0.60	< 0.001	0.48–0.70
Poor	-1.2	0.13	0.20	< 0.001	0.23–0.38

**Table 2 Logistic regression coefficients for factors affecting patient satisfaction in Kerman province, 2002–03 (concluded)**

Factor	Regression coefficient	SE	OR	P-value	95% CI
<i>Hospital</i>				< 0.001	
Kerman Darman <sup>a,c</sup>					
Arjomand <sup>d</sup>	1.17	0.24	3.21	< 0.001	1.99–5.17
Shafa <sup>c</sup>	-0.02	0.14	0.98	> 0.887	0.75–1.28
Bahonar <sup>c</sup>	-0.55	0.13	0.58	< 0.001	0.45–0.75
Razieh Firooz <sup>d</sup>	-0.75	0.19	0.47	< 0.001	0.33–0.69
Kashani <sup>e</sup>	-0.92	0.18	0.40	< 0.001	0.28–0.56
<i>Ward</i>				< 0.006	
<i>Internal<sup>a</sup></i>					
Gynaecology	0.292	0.148	1.33	< 0.048	1.00–1.78
Orthopaedics	0.154	0.195	1.17	> 0.429	0.80–1.71
Surgery	-0.094	0.144	0.91	> 0.514	0.69–1.20
Urology	-0.179	0.282	0.83	> 0.526	0.48–1.45
Neurology	-0.2	0.214	0.82	> 0.351	0.53–1.24
Ear, nose & throat	-0.211	0.222	0.81	> 0.343	0.52–1.25
Ophthalmology	-0.273	0.231	0.76	> 0.237	0.48–1.19
Emergency	-0.3	0.251	0.74	> 0.232	0.45–1.21
Burn	-0.39	0.664	0.67	> 0.552	0.18–2.47
Dermatology	-0.403	0.404	0.67	> 0.318	0.30–1.47
Cardiology	-0.41	0.176	0.66	< 0.019	0.46–0.93
Paediatrics	-0.515	0.324	0.60	> 0.112	0.31–1.13
<i>Insurance</i>				> 0.45	
<i>Social security<sup>a</sup></i>					
Aided	0.69	0.57	1.99	> 0.23	0.64–6.18
Welfare	0.298	0.4	1.34	> 0.46	0.61–2.98
Governmental	0.21	0.27	1.23	> 0.43	0.72–1.20
Medicare	0.02	0.22	1.02	> 0.92	0.65–1.60
Rural	-0.01	0.23	0.98	> 0.94	0.61–1.56
Private	-0.4	0.43	0.66	> 0.34	0.28–1.55
Other	-0.18	0.27	0.83	> 0.49	0.48–1.40

SE = standard error of regression coefficient.

OR = odds ratio.

CI = confidence interval.

<sup>a</sup>Reference category.

<sup>b</sup>Married women who worked in the home were classified as unemployed and children under 10 years were classified under their fathers' job as the parents answered the questions.

<sup>c</sup>Teaching hospital.

<sup>d</sup>Private hospital.

<sup>e</sup>Social security hospital.

old. This means that older people were more satisfied, similar to the findings of Jaipaul and Rosenthal [5].

Level of satisfaction in different types of hospital varied. The greatest level of satisfaction was observed in private hospitals and after that in training hospitals. The lowest level of satisfaction was in the social security hospital. These differences may be related to the kind of services provided: crowding, medical services, experience of staff, advanced equipment and better facilities. These results confirmed those of a survey done in Jordan [10].

Level of satisfaction was related to type of ward: satisfaction was greater in gynaecology and orthopaedic wards than other wards. The special circumstances of patients hospitalized in gynaecology wards (delivery and childbirth and being happy with the outcome) could be a factor. In the orthopaedic wards the reason could be related to the longer duration of hospitalization (confirmed in the duration of hospitalization variable); patients may have become familiar with the staff and health systems during their stay and also have acquired more knowledge about particular problems that could not be resolved as well as the better facilities and more experienced staff in this ward [11]. Level of satisfaction was significantly related to history of hos-

pitalization and duration of hospitalization, and increased with both. Patients may have become familiar with the health system and medical staff and so felt less scared than if they were in a new and strange place. This factor has not been studied in previous research.

In our study, education was a determining factor in level of satisfaction (the highest satisfaction score was for those who were illiterate and the lowest for those with a university degree) but there was no trend in the odds ratio. In a study done by Ayatollahi et al., level of education was inversely correlated with satisfaction. In general, we found that patient satisfaction was more related to treatment and disease factors than demographic factors such as age, sex, and job.

In this study we had some restrictions. In the paediatric wards, parents were questioned instead of their children. The questionnaire was filled when the patients were discharged so patients who died in hospital were not included in the sample. Patients who were in intensive care could not answer the questions.

We recommend that more studies be done in this field in other provinces and countries to compare with the results of this study.

### References

1. Donabedian A. *The definition of quality and approaches to its assessment*. Ann Arbor, Michigan, Health Administration Press, 1980.
2. Avis M, Bond M, Arthur A. Satisfying solution? A review of some unresolved issues in the measurement of patient satisfaction. *Journal of advanced nursing*, 1995, 22(2):316-22.
3. Ayatollahi SMT et al. Patient satisfaction from their consultant physicians in Shiraz. *Journal of Kerman University of Medical Sciences*, 1999, 6(3):149-56.
4. Demir C, Celik Y. Determinants of patient satisfaction in a military teaching hospital. *Journal of healthcare quality*, 2002, 24(2): 30-4.

5. Jaipaul CK, Rosenthal GE. Are older patients more satisfied with hospital care than younger patients? *Journal of general internal medicine*, 2003, 18(1):23–30.
6. Weisman CS et al. Gender and patient satisfaction in managed care plans: analysis of the 1999 HEDIS/CAHPS 2 OH adult survey. *Women's health issues*, 2001, 11(5):401–15.
7. Kleinbaum DG et al. *Applied regression analysis and multivariable methods*, 3rd ed. Pacific Grove, California, Duxbury Press, 1994: 656–86.
8. Andaleeb SS. Service quality perceptions and patient satisfaction: a study of hospitals in a developing country. *Social science medicine*, 2001, 52(9):1359–70.
9. Pickett SA et al. Factors predicting patients' satisfaction with managed mental health care. *Psychiatric services*, 1995, 46(7):722–3.
10. Mawajdeh SM et al. Patient expectation and satisfaction in different hospitals in Irbid, Jordan. *Saudi medical journal*, 2001, 22(7):625–9.
11. Meng YY et al. Satisfaction with access to and quality of health care among Medicare enrollees in a health maintenance organization. *Western journal of medicine*, 1997, 166(4):242–7.

#### **Establishment of the *Palestinian Medical Journal***

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