

## ORIGINAL ARTICLE

# Factors associated with patient satisfaction in a private health care setting in India: A cross-sectional analysis

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**Received:** April 11, 2018

**Accepted:** May 16, 2018

**Online Published:** June 13, 2018

**DOI:** 10.5430/jha.v7n4p44

**URL:** <https://doi.org/10.5430/jha.v7n4p44>

## ABSTRACT

The present study was conducted to assess patient satisfaction and factors associated with it in a tertiary care hospital in India; and to evaluate the delay in discharge process and its association with satisfaction. It is a cross-sectional analysis of secondary data abstracted from patient satisfaction forms of 1,054 individuals. We analysed factors associated with rating of hospital services and overall hospital experience. We also evaluated the delay in discharge process and its association with overall satisfaction of these patients. We used regression models to assess factor associated with satisfaction scores and “good hospital experience”. About 91% of individuals reported that their experience in the hospital was good. The mean satisfaction scores were significantly lower in patients with delays in discharge due to insurance problems (-0.14, 95% CI: -0.27, -0.02). An increase in one unit in doctor’s score was significantly associated with “good rating” of hospital services (OR: 1.37, 95% CI: 1.19, 1.58). Similarly, one unit increase in the housekeeping score (OR: 1.34, 95% CI: 1.18, 1.52) and billing score (OR: 1.83, 95% CI: 1.56, 2.16) were significantly associated with an overall “good” rating. Thus, problems faced by patients and relatives during completion of billing procedures are important factors that determine overall satisfaction with health care settings. Improving the interpersonal and communication skills of doctors will be an important intervention for better hospital experience.

**Key Words:** Patient satisfaction, Billing process, India

## 1. INTRODUCTION

Patient satisfaction has been defined as “fulfillment or meeting of expectations of a person from a service or product”.<sup>[1,2]</sup> It has been argued that patients and their relatives expect good clinical care as well as good facilities during their visit to the hospital, and these may be useful markers of quality of care.<sup>[1,3-5]</sup> In addition, Morris and colleagues highlight that “patient satisfaction” may also be a part of the “pay-for-performance metrics” and added incentives to hospitals.<sup>[6]</sup> Customer satisfaction can be a complex process; numerous authors have discussed various theories about customer satisfaction in detail.<sup>[7,8]</sup> Currently, when the patients

– particularly the ones that accesses health care in a private setting – have many options, future return to the same health care provider will depend on how satisfied they are with the health care settings.<sup>[9]</sup> In addition, it has been shown that satisfaction is also associated with treatment adherence.<sup>[10]</sup>

Studies have assessed the factors associated with patients’ satisfaction in various settings. Some of the important factors associated with patient satisfaction are age, experience with doctors in the hospitals, interaction with nurses, and general appearance of the hospital.<sup>[11-14]</sup> While some studies have found that male patients report higher satisfaction with health care services, others have found that males reported

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higher dissatisfaction; some other authors have not found any association between gender and patient satisfaction.<sup>[9,11,15]</sup> Apart from these factors, distance from the hospital, socio-economic status, and duration of hospital stay were also associated with patient satisfaction.<sup>[9,16]</sup> Another factor that has is considered important in patient satisfaction in the billing process. This forms a part of the “discharge process” and may be responsible for some of the delay in the process. Since, the discharge procedure is one of the last interactions with the health care setting; experience during this process may influence the overall patient satisfaction with the health care settings.

With this background, the present study was designed to assess the patient satisfaction in a tertiary care hospital in Mumbai (India) and the factors associated with patient satisfaction in these patients. We also wanted to evaluate the delay in discharge process, the factors associated with delay, and their association with overall satisfaction with the health care setting.

## 2. METHODS

The present study is a cross-sectional analysis of secondary data from 1,054 patients over a three month period in Mumbai, India.

### 2.1 Study site

The study was conducted at Dr L H Hiranandani Hospital, Mumbai, India. It is a private hospital situated in Suburban Mumbai, India and has all the major specialties and subspecialties (such as medical, surgical, orthopedics, obstetrics and gynecology, pediatrics). It caters to about 600 patients on an out-patient basis and 50 patients on an in-patient basis daily. The hospital also conducts about 450 surgeries on an average every month.

### 2.2 Study procedures and variables

All the patients filled up a feedback form at the time of discharge. They provide feedback on the quality of services and their satisfaction for various aspects of hospital care. These included: medical services (politeness, addressing the questions, provide information, and satisfaction); nursing services (politeness, explanation, professionalism, responsive to needs during hospital admission, medications on time); food services (quality of food, timely services, and appropriate according to the diet services); housekeeping services (aspects such as cleanliness and timely services); security services; billing services (such as whether the amount was appropriate or not and timely services); and the overall hospital experience.

If the discharge process was greater than 90 minutes, it was

considered as delayed discharge. The reasons for this delay were categorised as follows: delay due to medical insurance; delay by the consultant, delay in getting the discharge summary; waiting for the relatives; and any other reason as per the patient.

### 2.3 Statistical analysis

The data were entered in Ms Excel (© Microsoft Corp, USA) and converted to Stata Version 13.1 (© StataCorp, College Station, USA). We calculated the means and standard deviations (*SD*), and medians and interquartile range (IQR) for the continuous variables. We calculated the proportions for categorical variables. The proportions across multiple categories were compared using the chi square test or Fisher’s exact test for low expected cell counts. The means between two groups were compared using the *t*-test and the medians were compared using the Wilcoxon rank-sum test.

We then used regression models for multivariate analysis. For the linear variables (scores on different hospital satisfaction parameters), we used the linear regression models. We dichotomized the total hospital satisfaction score into two groups. Scores of four and five were considered as good experience and scores of one to three were considered as poor experience. We used logistic regression models for analysis of dichotomous data (Good versus poor experience).

The study was approved by the Ethics Committee of Dr. L H Hiranandani Hospital for secondary data analysis.

## 3. RESULTS

The median age (IQR) of these 1,054 patients was 36 (24-58) years. The median age (IQR) of 521 male patients was 34 (26-55) years and of 533 female patients was 40 (23-61) years; the difference was statistically significant ( $p = .03$ ). Most of the patients were admitted in the internal medicine ward (27%), pediatrics (15%), gynecology (13%), and surgery (10%). The patients were admitted for a median (IQR) of 3 (2-5) days; there were no significant differences in the duration of admission between males and females (see Table 1). The median (IQR) duration of discharge process was 157 (99-239) minutes. The median time from doctor’s visit to issuance of discharge summary was 19 (10-60) minutes and the median time from issuance to discharge summary to payment of hospital bills was 120 (60-185) minutes. About 23% of the patients did not report any delay in the discharge process. The most common reasons for delay during discharge were insurance related problems (33%), absence of relatives (24%), and delay in discharge summary (11%). About 91% of individuals reported that their experience in the hospital was good; the proportion was not significantly different in males and females (92% vs. 90%,  $p = .16$ ). We have pre-

sented demographic information, duration of stay, discharge information, and quality scores for all the services in Table 1.

**Table 1.** Demographic characteristics and satisfaction levels in 1,054 patients in a tertiary care hospital, Mumbai (India)

Characteristics	All	Male	Female	<i>p</i> value
<b>Total</b>	1,054	521	533	
<b>Age [n (%)]</b>				
• Up to 25 years	282 (27)	152 (29)	130 (24)	< .001
• 26 – 45 years	373 (35)	147 (28)	226 (42)	
• 46 – 65 years	217 (21)	121 (23)	96 (18)	
• ≥ 66 years	182 (17)	101 (19)	8 (15)	
<b>Specialty</b>				
• Cardiology	67 (6)	35 (7)	32 (6)	< .001
• Gynaecology	133 (13)	1 (1)	132 (25)	
• Orthopaedics	66 (6)	35 (7)	31 (6)	
• Paediatrics	162 (15)	83 (16)	79 (15)	
• Medicine	283 (27)	161 (31)	122 (23)	
• Surgery	110 (10)	69 (13)	41 (8)	
• Others	232 (22)	137 (26)	95 (18)	
<b>Number of days spent</b>				
• Median (IQR)	3 (2, 5)	3 (2, 5)	3 (2, 5)	.09
<b>Characteristics of discharge</b>				
• Duration of discharge (minutes) Median (IQR)	157 (99, 239)	162 (105, 240)	150 (90, 238)	.22
• Proportion of time (of total discharge time) from doctor's visit to discharge summary Median (IQR)	14.8 (5.5, 36.3)	17.1 (5.7, 40.5)	12.9 (5.0, 33.3)	.08
• Proportion of time (of total discharge time) from discharge summary to payment of the hospital bill Median (IQR)	84.9 (63.4, 94.4)	82.9 (58.5, 94.2)	87.0 (66.7, 94.9)	.08
<b>Reasons for delay during discharge</b>				
• No delay	238	112 (47)	126 (53)	.34
• Insurance related reasons	347	177 (51)	170 (49)	
• Relative not present	249	116 (47)	133 (53)	
• Delay in discharge summary	115	66 (57)	49 (43)	
• Billing issues	29	16 (55)	13 (45)	
• Other reasons	76	34 (45)	42 (55)	
<b>Scoring [Mean (SD)]</b>				
• Overall experience (Max score 5)	4.32 (0.74)	4.33 (0.69)	4.30 (0.80)	.51
• Nurses (Max score 25)	22.99 (3.03)	22.98 (2.88)	22.99 (3.18)	.95
• Doctors (Max score 20)	18.52 (2.32)	18.53 (2.19)	18.51 (2.43)	.83
• Food related services (Max score 15)	12.17 (2.63)	12.23 (2.66)	12.12 (2.61)	.50
• Housekeeping (Max score 15)	12.45 (2.81)	12.42 (2.75)	12.48 (2.88)	.74
• Security (Max score 5)	4.28 (0.89)	4.29 (0.85)	4.24 (0.92)	.40
• Billing services (Max score 10)	8.13 (2.03)	8.21 (1.97)	8.05 (2.07)	.20
<b>Hospital experience</b>				
• Good (4/5)	960 (91)	481 (92)	479 (90)	.16
• Poor (1/3)	94 (9)	40 (8)	54 (10)	

All the services were rated well by all the patients. The mean (*SD*) overall score was 4.32 (0.74) [the maximum was 5]. Similarly the mean (*SD*) score for nursing services was 22.99 (3.03), and for doctor's services was 18.52 (2.32); the maximum scores were 25 and 20 respectively. We found that, in general, patient's ≥ 66 years of age rated the ser-

vices significantly lower compared with younger patients. For instance, the overall score for patients ≥ 66 years was lower by 0.22 units (95% CI: -0.40, -0.04) compared with those who were 25 years or younger. The mean scores for nursing services, food services, housekeeping services, security services, and billing services were significantly lower

in the older individuals compared with younger patients (see Table 2). The mean overall satisfaction scores were significantly higher in cardiology patients compared with other patients (0.24, 95% CI: 0.03, 0.44). We also found that the mean overall satisfaction scores were significantly lower in patients who reported delays in discharge due to insurance

problems compared with those who did not (-0.14, 95% CI: -0.27, -0.02). These patients also had a significantly lower mean score for billing services (-0.62, 95% CI: -0.97, -0.28). We have presented multivariate estimates and their 95% CI for the scores in Table 2.

**Table 2.** Linear regression models for satisfaction scores in 1,054 patients in a tertiary care centre, Mumbai (India)

	Overall	Nurse	Doctors	Food	Housekeeping	Security	Billing
<b>Age</b>							
• Up to 25 years	Reference	Reference	Reference	Reference	Reference	Reference	Reference
• 26 – 45 years	-0.08 (-0.23, 0.08)	-0.76 (-1.39, -0.12)*	-0.23 (-0.71, 0.26)	-0.10 (-0.65, 0.45)	-0.48 (-1.07, 0.11)	-0.08 (-0.27, 0.11)	-0.30 (-0.74, 0.14)
• 46 – 65 years	-0.07 (-0.24, 0.10)	-0.58 (-1.27, 0.10)	-0.27 (-0.80, 0.26)	-0.15 (-0.74, 0.45)	-0.24 (-0.88, 0.40)	-0.06 (-0.27, 0.14)	-0.36 (-0.84, 0.12)
• ≥ 66 years	-0.22 (-0.40, -0.04)*	-1.31 (-2.04, -0.59)**	-0.47 (-1.03, 0.09)	-0.78 (-1.41, -0.16)*	-0.84 (-1.51, -0.17)**	-0.25 (-0.47, -0.03)*	-0.67 (-1.17, -0.17)**
<b>Sex</b>							
• Female	Reference	Reference	Reference	Reference	Reference	Reference	Reference
• Male	0.07 (-0.03, 0.16)	0.13 (-0.27, 0.52)	0.11 (-0.20, 0.41)	0.31 (-0.03, 0.65)	0.05 (-0.31, 0.42)	0.07 (-0.05, 0.19)	0.31 (0.04, 0.58)*
<b>Specialty</b>							
• Others	Reference	Reference	Reference	Reference	Reference	Reference	Reference
• Cardiology	0.24 (0.03, 0.44)	0.40 (-0.44, 1.24)	0.38 (-0.27, 1.03)	1.09 (0.37, 1.82)**	0.54 (-0.25, 1.32)	0.12 (-0.14, 0.37)	0.59 (0.03, 1.16)*
• Gynaecology	0.15 (-0.03, 0.32)	0.58 (-0.14, 1.30)	0.34 (-0.21, 0.90)	0.81 (0.18, 1.43)**	0.37 (-0.31, 1.04)	0.14 (-0.08, 0.36)	0.57 (0.07, 1.06)*
• Orthopaedics	0.09 (-0.12, 0.29)	0.26 (-0.57, 1.09)	0.10 (-0.54, 0.73)	0.48 (-0.24, 1.19)	0.29 (-0.48, 1.07)	0.12 (-0.13, 0.37)	-0.06 (-0.63, 0.50)
• Paediatrics	0.08 (-0.12, 0.29)	0.14 (-0.68, 0.95)	0.28 (-0.35, 0.91)	0.40 (-0.31, 1.10)	-0.10 (-0.86, 0.67)	0.03 (-0.21, 0.28)	0.13 (-0.43, 0.69)
• Medicine	-0.02 (-0.15, 0.11)	0.09 (-0.44, 0.62)	0.00 (-0.41, 0.41)	0.16 (-0.30, 0.62)	-0.28 (-0.77, 0.22)	0.12 (-0.04, 0.28)	0.07 (-0.29, 0.43)
• Surgery	0.12 (-0.05, 0.29)	0.14 (-0.55, 0.84)	0.39 (-0.14, 0.93)	0.65 (0.05, 1.24)*	-0.01 (-0.66, 0.64)	0.12 (-0.08, 0.33)	0.28 (-0.20, 0.77)
<b>Days (per day increase)</b>	0.01 (-0.01, 0.02)	0.04 (-0.01, 0.08)	0.03 (-0.01, 0.07)	0.04 (-0.01, 0.08)	0.01 (-0.03, 0.06)	0.00 (-0.01, 0.02)	0.03 (0.00, 0.07)*
<b>Reason for delay in discharge</b>							
• No delay	Reference	Reference	Reference	Reference	Reference	Reference	Reference
• Insurance related reasons	-0.14 (-0.27, -0.02)*	-0.32 (-0.83, 0.18)	-0.04 (-0.43, 0.35)	-0.40 (-0.84, 0.03)	-0.33 (-0.80, 0.15)	0.01 (-0.14, 0.16)	-0.62 (-0.97, -0.28)**
• Relative not present	-0.06 (-0.20, 0.07)	0.02 (-0.52, 0.57)	0.01 (-0.41, 0.43)	0.19 (-0.29, 0.66)	-0.21 (-0.72, 0.30)	0.10 (-0.07, 0.26)	-0.36 (-0.73, 0.01)
• Delay in discharge summary	-0.10 (-0.27, 0.06)	-0.64 (-1.33, 0.04)	-0.28 (-0.81, 0.25)	-0.18 (-0.78, 0.41)	-0.55 (-1.19, 0.09)	0.07 (-0.14, 0.27)	-0.30 (-0.76, 0.17)
• Billing issues	-0.18 (-0.47, 0.10)	-0.57 (-1.73, 0.60)	0.24 (-0.67, 1.15)	-0.95 (-1.95, 0.06)	0.06 (-1.03, 1.14)	-0.16 (-0.51, 0.18)	-0.65 (-1.44, 0.14)
• Other reasons	-0.01 (-0.20, 0.18)	0.18 (-0.60, 0.97)	0.09 (-0.51, 0.70)	0.34 (-0.34, 1.02)	-0.24 (-0.97, 0.49)	0.02 (-0.21, 0.26)	-0.16 (-0.69, 0.37)

Note. \* $p \leq .05$ , \*\* $p \leq .01$

Even though, in the unadjusted models, patients  $\geq 66$  years of age were less likely to rate the overall hospital services good compared with younger patients (OR: 0.47, 95% CI: 0.25, 0.90), after adjusting for other variables this association was not statistically significant (OR: 0.67, 95% CI: 0.16, 2.74). An increase in one unit in doctor’s score was associated with a significantly high likelihood of rating overall

hospital services as good (OR: 1.37, 95% CI: 1.19, 1.58). Similarly, one unit increase in the housekeeping score (OR: 1.34, 95% CI: 1.18, 1.52) and billing score (OR: 1.83, 95% CI: 1.56, 2.16) were significantly associated with an overall “good” rating. Furthermore, score for nursing services, food services, and security services were not significantly associated with an overall “good” rating. We have presented odds

ratios and their 95% confidence intervals for “good” rating in Table 3. Among individual qualities of physician care (in the multivariate adjusted models), we found that a unit increase in the politeness score (estimate: 0.17, 95% CI: 0.06,

0.28), providing medical information (estimate: 0.17, 95% CI: 0.05, 0.30), and overall satisfaction with doctors (estimate: 0.25, 95% CI: 0.14, 0.36) was significantly associated with a higher satisfaction score.

**Table 3.** Logistic regression models for factor associated with “satisfaction” with health care services in 1,054 patients in a tertiary care centre, Mumbai (India)

	Unadjusted Models (95% CI)	Adjusted Models (95% CI)
<b>Age</b>		
• Up to 25 years	Reference	Reference
• 26 – 45 years	0.70 (0.39, 1.28)	0.68 (0.18, 2.55)
• 46 – 65 years	0.67 (0.35, 1.30)	0.80 (0.20, 3.18)
• ≥ 66 years	<b>0.47 (0.25, 0.90)*</b>	0.67 (0.16, 2.74)
<b>Sex</b>		
• Female	Reference	Reference
• Male	1.36 (0.88, 2.08)	1.24 (0.63, 2.42)
<b>Specialty</b>		
• Others	Reference	Reference
• Cardiology	2.43 (0.83, 7.15)	1.79 (0.38, 8.49)
• Gynaecology	<b>3.94 (1.50, 10.42)**</b>	3.59 (0.66, 19.51)
• Orthopaedics	1.54 (0.61, 3.87)	3.05 (0.55, 17.09)
• Paediatrics	<b>2.62 (1.21, 5.67)*</b>	0.84 (0.17, 4.24)
• Medicine	1.21 (0.71, 2.05)	1.12 (0.47, 2.65)
• Surgery	2.27 (0.97, 5.33)	1.28 (0.41, 3.99)
<b>Days (per day increase)</b>	0.99 (0.94, 1.04)	0.97 (0.90, 1.05)
<b>Reason for delay in discharge</b>		
• No delay	Reference	Reference
• Insurance related reasons	0.61 (0.33, 1.10)	1.21 (0.47, 3.10)
• Relative not present	0.93 (0.47, 1.84)	1.42 (0.52, 3.90)
• Delay in discharge summary	0.66 (0.30, 1.43)	1.75 (0.52, 5.84)
• Billing issues	1.04 (0.23, 4.74)	4.93 (0.36, 67.09)
• Other reasons	1.09 (0.39, 3.07)	4.54 (0.69, 30.06)
<b>Nurse Score (per unit increase)</b>	<b>1.38 (1.29, 1.48)**</b>	0.95 (0.86, 1.06)
<b>Doctor’s score (per unit increase)</b>	<b>1.50 (1.38, 1.64)**</b>	<b>1.37 (1.19, 1.58)**</b>
<b>Food score (per unit increase)</b>	<b>1.48 (1.37, 1.59)**</b>	1.13 (0.99, 1.28) <sup>#</sup>
<b>Housekeeping score (per unit increase)</b>	<b>1.52 (1.41, 1.63)**</b>	<b>1.34 (1.18, 1.52)**</b>
<b>Security score (per unit increase)</b>	<b>2.41 (1.98, 2.94)**</b>	1.08 (0.74, 1.59)
<b>Billing score (per unit increase)</b>	<b>1.97 (1.76, 2.20)**</b>	<b>1.83 (1.56, 2.16)**</b>

Note. \*  $p \leq .05$ , \*\*  $p \leq .01$ , #  $p = .08$

#### 4. DISCUSSION

Thus, we found in general, majority of the patients reported that their hospital experience was good. Individuals who were more satisfied with clinical services, housekeeping services, and billing services were significantly more likely to report good experience in the hospital. Furthermore, the score for hospital experience was significantly lower in el-

derly individuals compared with younger individuals. About 23% of patient reported delay in discharge process; the most common reasons for delay were insurance related problems, absence of relatives, and delay in discharge summary.

Age is an important indicator of patients’ experience with hospital stay and treatment.<sup>[12, 13, 17]</sup> It has been found that older people are less likely to rate their health as poor.<sup>[17]</sup> A

potential explanation for this is that elderly individuals may indeed be grateful that they have a better access to health facilities compared with their parents; even though, this may not translate into improved services in reality.<sup>[18]</sup> Margolis and co-workers found that age was significantly associated with humanness of services and health education provided at hospital, even though it was not significantly associated with accessibility, continuity, or comprehensiveness.<sup>[4]</sup> In our study, we found that elderly patients were rated most of the services poorly. Thus, it is plausible even though services were comprehensive and accessible, there needed to be an increased emphasis on providing humane services and educating the patients adequately in aspects of health care will be useful interventions to improve satisfaction levels in elderly patients. Though not all studies have found an association between age and patient satisfaction,<sup>[11]</sup> specific health programmes for elderly patients guided by regular feedback will be useful in health care settings.

Interactions with service providers – doctors and nurses – are other important factors associated with satisfaction in health care settings.<sup>[14, 19, 20]</sup> In fact, Biderman and colleagues found physicians' services to be the strongest predictor of patients' satisfaction.<sup>[21]</sup> Furthermore, Cheng and co-workers found that interpersonal skills and technical skills were significantly associated with patients' satisfaction and recommendation of the health care institutes.<sup>[22]</sup> In our study, we found that patients who rated doctors' services better were more likely to report that their hospital experience was better. However, there was no such relation between nurses' services and overall hospital experience. A possible explanation could be that physicians usually work as individuals (even though they follow the general guidelines and protocols of the hospital), whereas the nursing staff work as a group often with the confines of well defined protocols monitored by senior members and head nurses. Thus, potentially, there is greater chance of variability in doctors' interaction with patients compared with nurses. As observed, patients who gave a higher score to politeness among doctors were significantly more likely to give a higher score to their hospital experience. Consequently, improving the interpersonal skills of doctors will be important to improve patients' satisfaction with health care settings.

In addition to services by health care providers, length of stay in the hospital, food services, and cleanliness are important to patients in health care settings.<sup>[23–25]</sup> Though, housekeeping services (such as cleanliness) was associated with better patient satisfaction, we did not find any relation between length of stay and patients satisfaction (either as a rating of hospital satisfaction or those reporting good experience). Incidentally, Borghans and colleagues analysed data over a period

of eight years and found that length of stay only correlated with patient satisfaction in the department of pulmonology; however, in general there was no relation between patient satisfaction and length of stay.<sup>[26]</sup>

Time spent in the discharge process, particularly billing process may be an important factor that determines patients' experience in health care settings.<sup>[11, 27]</sup> As observed in our data, even though the time from doctor's visit to issuance of discharge summary was less than 20 minutes, the time from issuance of summary to clearance of bills was nearly two hours. The most important reason for delay in the discharge process was "insurance related problems". In addition, after adjusting for other variables, one of the most important associations was between billing services and patient satisfaction; the odds ratio was largest for this association. Even though, billing is controlled by hospital authorities, many aspects of insurance may not entirely be controlled by hospital authorities. However, any bad experience during this process may result in poor satisfaction and, perhaps, revisiting the same hospital or recommending it to others. Thus, it is important that information about discharge process (including insurance procedures) be discussed with patients and relatives. It is quite likely that this may not entirely reduce the time taken during the discharge process; however, it will make them aware of what to expect when they are discharged, and not be agitated during the entire process.

The study was not without its limitations. We did not collect information on socio-economic status which may also influence patients' satisfaction with the health care system. However, since the data were collected from a private hospital, majority of the patients accessing services are from upper middle and upper class. Thus, we may have missed out on the hospital experiences of individuals from the lower socio-economic status. Also, this was a one-time assessment of satisfaction with hospital services. It would have been useful to know how many of these patients have accessed services in the past, and their overall satisfaction during the past visit. This information would have helped us evaluate if there has been any change in satisfaction levels and the factors associated with the change. Since these are secondary data, we had limited control on the type and nature of variables that were collected. A prospective study with a mixed-methods approach will be useful to address these concerns.

Nonetheless, in spite of these limitations, the study provides useful information on improving patients' satisfaction in an Indian private hospital setting. In general, Indian authors have evaluated patient satisfaction in government hospitals at primary secondary and tertiary level.<sup>[28–31]</sup> These studies found that patients, in general, were satisfied with health care

services; physicians care and attitude, and amenities in these health centres were associated with higher satisfaction.<sup>[28,31]</sup> Problems faced by patients and relatives during completion of billing procedures are important factors that determine overall satisfaction with health care settings. It may not be entirely possible to eliminate all the problems associated with billing procedures, especially if they are related to insurance payments. However, it will be important to prepare and educate the patients and their relatives on these issues. It will be useful to have information brochures on billing processes, so that they are sensitized to the whole process and know what to expect during the billing process. Another important intervention point is to improve the interpersonal and communication skills of doctors. There could be communication courses during medical education, internship,

and residency to improve these skills in health care professionals. Importantly, patients who were more satisfied with the doctors are more likely to be satisfied with the hospitals. Thus, both process characteristics and physical attributes, as described by Elleuch<sup>[20]</sup> are significantly associated with patient satisfaction in tertiary care settings.

## ACKNOWLEDGEMENTS

We would like to acknowledge Dr. S Chatterjee (CEO) for support and suggestions. We would like to thank Captain Valsa Thomas (Director, Nursing) for support during patient care and during the preparation of the manuscript.

## CONFLICTS OF INTEREST DISCLOSURE

The authors declare they have no conflicts of interest.

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