

# Hospital Bed Utilization: Perceptions of Healthcare Practitioners from Northern India

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## Abstract

**Background and Objectives:** Hospital bed utilization is influenced by various factors, which may be categorized into patient-related, physician-related, and administration-related issues. It could be argued that the causes of inappropriate hospital bed utilization would be perceived differently by the clinicians and the patients. Given the unique role of clinical practitioners in quality of care, their views on the causes of inefficient hospital resources use should be referred to in any improvement initiative. The aim of this study, thus, was to survey the relative importance of factors influencing utilization of hospital beds as perceived by the resident doctors and nurses.

**Methods:** This cross sectional study was conducted in an Apex Tertiary Care Public Institution in northern India. All the resident doctors and nurses from 18 wards of 7 specialties and 7 super-specialties were interviewed using a structured validated self-administered questionnaire. The data were summarized by descriptive statistical methods and analyzed using ANOVA and Chi-square tests.

**Findings:** While a substantial percentage of clinicians perceived that hospital beds were inappropriately utilized, the resident doctors were more convinced of inefficient hospital bed utilization than the nurses. High expertise of the doctors, reputation of the Institution, and limited autonomy of the residents were perceived as the causes for overstay. In addition, the resident doctors considered lack of training, unclear job description, and long duty hours as the reasons for inappropriate bed utilization, while their nursing counterparts did not opine such. Most doctors agreed that lack of appropriate policy for and lengthy procedures of admission and discharge influence the hospital stay, whereas corresponding emphasis was not recorded from the nurses. Also congruent with some previous studies, the majority of the nurses and doctors perceived ineffective hospital information system, absence of standard operating procedures, and lack of quality assurance system in ward management as potential contributing factors to overutilization of hospital resources.

**Conclusions:** While nurses highlighted administrative factors as the major causes of overstay, the resident doctors perceived all examined factors, including patient-related, physician-related, and administrative factors to be important; though in agreement with their nursing counterparts, they gave a higher weight to the administrative issues. The information provided on the relative importance of factors contributing to patient overstay may help policy-makers and administrators to promote more efficient utilization of healthcare system resources. According to our results, implementation of quality assurance system in ward management, revising admission and discharge policy, improving hospital information system, use of modern technology, providing clear-cut job description, and providing the clinicians with appropriate training may help alleviate the patient overstay and suboptimal utilization of resources in hospital.

**Keywords:** Hospital bed utilization, Patient overstay, Hospital management

## Background and Objectives

Inappropriate utilization of hospital resources has long been an issue of concern to hospital administrators as well as policy makers. The term “hospital bed utilization” denotes the manner in which a certain community

makes use of its hospital resources. Over-utilization and under-utilization are two primary facets of inappropriate utilization [2]. Over-utilization refers to the use of hospital resources (beds and manpower) which is of no benefit to the patient (such as staying more days after he/she has recovered enough to go home) or care, which can be provided at a lower level, and less costly healthcare setting [3, 4]. Conversely, under-utilization refers to the use of hospital resources below the expectations.

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**Table 1 Demographic and professional characteristics of the respondents**

Variables	Doctors (n=117)		Nurses (n=162)	
	N	%	N	%
Gender				
Female	41	35.1	106	65.3
Male	76	64.9	56	34.7
Age (years)				
< 25	0	0	57	35
25 – 40	117	100	50	31
> 40	0	0	55	34
Work Experience (years)				
< 5	91	77	57	35
5 – 15	26	23	50	31
> 15	0	0	55	34
Workplace				
Specialty Ward	77	66	106	66.5
Superspecialty Ward	40	34	56	34.5

The utilization of beds in a hospital is influenced by various factors (including patient-related, physician-related, and administration-related factors) [5-11]. While demographic characteristics and social and financial statuses of the patients have been highlighted as the major patient-related factors contributing to inappropriate bed utilization, limited autonomy of decision-making among resident doctors, fear of law suits, lack of training and job description, and heavy duty hours are highlighted as the major physician-related factors. Lengthy admission and discharge procedure, ineffective health information system (HIS), non-uniform admission policy, and lack of quality assurance, on the other hand, are identified as the major administration-related factors.

The perception of healthcare providers, in particular the doctors and nurses towards the healthcare services efficiency can play a vital role in improving the structure, system, and process of the health organization. Given the crucial role of healthcare providers in the length of patient stay, it could be argued that the conclusions on causes of inappropriate utilization of hospital beds would be different if it is solely based on the patient's perception [2, 12, 13]. Perception of healthcare providers can be considered as a mechanism of internal audit for quality improvement initiatives and is crucial to devise appropriate interventions [1]. Built on this, the present study sought to survey the perception of clinicians towards the bed

utilization in a Tertiary Care Medical Institute of national importance by the Act of the Parliament of India situated in Northern India.

## Methods

### Settings

This study was conducted in a tertiary care medical institute situated in Northern India. The Institute caters to approximately two million outpatients and 50000 inpatients on an annual basis.

### Data collection and analysis

The resident doctors (senior and junior residents) of all seven specialties and seven super-specialties of non-emergency departments of the Institute together with all the nursing staff (deputy nursing superintendent, assistant nursing superintendent, sister grade-I and grade-II) of these departments who were directly involved in patient care and/or administrative services were enrolled in the study. The exclusion criterion was work experience in the Institute of less than six months.

The data were collected using a researcher-made structured questionnaire. The content validity of the questionnaire was insured by extensive literature search and inviting suggestions from experts. Each unit was visited in person by the principal researcher after taking

**Table 2 Perception of the respondents towards factors potentially affecting hospital bed utilization**

Factors	Doctors		Nurses	
	N	%	N	%
<b>Patient-related</b>				
Fulfillment patients' needs	52	43.8	48	29.6
Large number of hospital beds	39	33.3	28	17.3
Inability of family members to take care of the patients	27	23.1	18	11.1
Patient's uncooperative attitude and refusal to discharge	63	53.8	62	38.5
Seriousness of patient conditions	76	65	137	84.6
Socio-demographic characteristics of patients	91	77.8	115	71
<b>Physician-related</b>				
Expertise of doctors	79	67.5	91	56.2
Reputation of the health center as a research and teaching institute	70	59.8	85	52.5
Little autonomy of junior doctors to discharge patients	86	52.5	69	42.6
Practice of defensive medicine/fear of law suits under CPA	26	22.2	29	17.9
Lack of training/clear cut job description	93	79.5	49	30.2
Long duty hours	95	81.2	75	46.3
<b>Administration-related</b>				
Lengthy admission and discharge procedure	71	60.7	58	35.8
Lack of appropriate admission and discharge policy	94	80.3	54	33.3
Inefficient hospital information system	80	68.4	73	45.1
Lack of standard operating procedure (SOP) in ward management	77	65.8	119	73.5
Lack of quality assurance department	69	59	131	80.9
Hurdles in mode of payment	46	39.3	78	48.1

due appointment from the participants. The confidentiality of the information was assured by collecting the completed questionnaires directly into a box.

The responses were quantified on 3-point Likert-type scale where 3 was taken for "Agree", 2 for "Can't say", and 1 for "Disagree". The significance of difference between values was examined using Chi-square and ANOVA tests.

### Ethical issues

The approval for conduction of the study was obtained from the Ethical Committee of the Institute, and the consent of the subjects was also obtained after briefing them on the objectives of the study.

### Results

A total of 279 clinicians (117 resident doctors and 162 nurses) participated in the study. The response rate was 93%. The socio-demographic profile of the participants

is given in Table 1.

The majority of the resident doctors (83%) believed that patient stay in the hospital is longer than standard (Table 2). The agreement on such factors as complete satisfaction of patients' needs, large number of beds, inability of family members to take care of patients, and uncooperative attitude of patients contributing to bed over-utilization was low (11-43.8%). However, age and socioeconomic status of the patients were perceived to be prime contributors to their overstay (65-84.6%). The score mean (SD, 95% CI) for patient-related factors among the resident doctors and nurses was 2.34 (0.37, 2.29-2.40) and 1.97(0.40, 1.91-2.03), respectively, indicating a significant difference (Table 3). As shown in Table 2, the doctors considered all three factors to be of comparable significance, whereas the nurses gave the highest emphasize to administrative factors. The score mean (SD, 95% CI) for physician-related factors among the residents and nurses was 2.47(0.33, 2.40-2.53) and 1.97 (0.47, 1.89-2.04), respectively, indicating a significant difference (Table 3).

**Table 3** Comparison of the perceived importance of factors potentially contributing to patient overstay between physicians and nurses

Factors	Doctors ( <i>n</i> = 117)			Nurses ( <i>n</i> = 162)		
	Mean	SD	95% CI	Mean	SD	95% CI
Patient-related	2.34	0.36	2.27 – 2.40	1.97	0.40	1.91 – 2.03
Physician-related	2.47	0.32	2.40 – 2.53	1.97	0.46	1.89 – 2.04
Administration-related	2.61	0.29	2.55 – 2.66	2.39	0.40	2.32 – 2.45

The majority of doctors agreed that admission and discharge policy contributes to bed over-utilization. Both groups agreed on administrative factors as an important contributor (66.7-82.9%). The mean score (SD, 95% CI) of administrative factors among the doctors and nurses was 2.61 (0.29, 2.55-2.66) and 2.39 (0.47, 2.32-2.45), respectively (Table 3).

## Discussion

The results of the present study showed that a large fraction of healthcare providers perceive that hospital beds are inappropriately utilized. The agreement on the importance of patient-related and physician-related factors as contributors to patient overstay was significantly higher among the doctors compared with the nurses. However, both groups gave a comparable emphasis to the role of administration-related factors.

Contrary to the nurses, most of the resident doctors perceived that longer patients stay than standard in the surveyed hospitals, indicating that the doctors were more aware of the inefficient hospital bed utilization compared with their nursing counterparts. The agreement on such factors as complete fulfillment of patients' needs, uncooperative attitude of the family members, and availability of large number of beds having large contribution to overstay was low. This observation contrasts with some previous studies [14, 15, 16, 17, 18, 19], suggesting that the patient family significantly contributes to unnecessary bed utilization by insisting the doctors to admit the patient or delay discharge [20-22]. However, there are also some studies that support our observation [23].

Most of the respondents agreed that quality services, high status of public doctors, reputation of Institution, and limited autonomy of resident doctors, as perceived by the public, are important contributors to patients overstay in hospital.

While heavy workload and long duty hours are rea-

sons for inappropriate bed utilization, the nurses did not perceive it so. It could be explained by the fact that the duty hours of nurses are typically six hours in a shift, whereas resident doctors are bound to work beyond the duty hours, which leads to various stresses and affects their performance, and thereby patient stay.

The resident doctors considered lack of training and unclear-cut job description as contributors to patients overstay. The existing literature suggests that over-utilization of hospital resources may be alleviated by training the doctors on optimal use of hospital resources.

Most of the doctors in the present study agreed that lack of admission and discharge policy and lengthy procedures of admission and discharge influence the patient stay, whereas the nurses' response for the same was not so high. Nevertheless, the responses, in general, point towards the need for standardization of admission and discharge procedures in the hospitals.

Congruent to the previous studies, our respondents perceived that frequent technical errors, absence of guidelines and procedures, poor health computing systems, and absence of quality management department were among the important factors influencing the utilization of hospital resources. Also consistent with the previous findings, the majority of our nurses and doctors perceived that ineffective hospital information system, absence of standard operating procedures, and lack of quality assurance mechanisms could contribute to patient overstay. Considering the technology-driven nature of modern healthcare, these findings imply that use of technology might smoothen and promote various healthcare processes and thus improve efficiency of health organizations.

## Study limitations

This study was conducted in a single medical center; hence, the results cannot be generalized. The survey

included only the resident doctors and nurses. Future studies may be expanded to survey the perception of other healthcare practitioners, including senior doctors, and paramedic clinicians. This study did not examine the views of emergency department clinicians.

## Conclusions

In this study, we evaluated the relative importance of factors potentially contributing to hospital bed over-utilization, including patient-related, physician-related and administration-related factors, as perceived by the doctors and nurses in a healthcare facility of national importance in India. While the nurses highlighted administrative factors as the major cause of overstay, the physicians weighed all factors comparably; though in agreement with their nursing counterparts, they gave a higher weight to administrative issues. The information provided on the relative importance of factors contributing to patient overstay may help policy-makers and administrators to promote more efficient utilization of healthcare system resources. Based on our results, implementation of quality assurance system in ward management, revising admission and discharge policy, improving hospital information system, use of modern technology, providing clear-cut job description, and providing the clinicians with appropriate training may help alleviate the patient overstay and suboptimal utilization of resources in hospital.

## Competing Interests

The authors declare no competing interests.

## Authors' Contributions

The authors contributed equally to the present study.

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