



Hoteling medical consumables in the Inpatient emergency department, cost or income? A prospective observational study

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Abstract

Background & Aims: Estimates and available statistics indicate that, on average, 20% to 30% of the costs of a hospitalized patient are related to drugs and consumables, and on the other hand, more than 95% of treatment processes depend on drugs and medical supplies. Consumption requirements for the inpatients are divided into two main categories: 1) Consumption requirements are mentioned with the same name and with a specific number and price in the patient's invoice. 2) Hoteling consumption requirements that the number and amount of this consumption requirements are not recorded anywhere in the patient's file, and the costs of this consumption are covered by three percent of the six percent of nursing services.

Materials & Methods: This descriptive cross-sectional study was performed as a prospective observation in the inpatient emergency department of Hazrate Rasool Akram Hospital in Tehran in the second half of 2018, and 898 patients were monitored.

Results: The study ward had 40 inpatient bed counts, where 898 patients were admitted and hospitalized. The Inpatient Bed Occupancy Rate was over 100%, and the inpatient bed count day was 1706. The frequency distribution of hospitalized patients was 47 different diseases. The cost of their hoteling consumables was 976,776,808 Rials that 186,909,360 Rials of those costs were collected from various insurance deposits and cash receipts, and the rest of the costs, which was equivalent to 81% of the cost of hoteling consumables in December, remained uncollected.

Conclusion: Considering that the cost of Hoteling consumption requirements is provided as 3% of the 6% of nursing services, and on the other hand, the list of Hoteling consumption requirements in different insurances and hospital revenue units is not clear, it is suggested: Firstly, a complete and telling list of hoteling medical consumables should be prepared and communicated, and secondly, according to the existing inflation and the inadequacy of the daily bed tariff and market conditions, the relevant percentage should be adjusted to cover the costs.

Keyword: Hoteling consumption requirements, hospitalized patients, emergency department

Received 12 June 2022; accepted for publication 01 August 2022

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Introduction

Today, it can be said that one of the most important factors in determining the quality and quantity of "medical" services provided in hospitals is the quality of "pharmaceutical and related supplies" services, so in many cases, the lack of one or more items of vital medicine or medical supplies, or the occurrence of a mistake in the use of medicine in the hospital, destroys the value of all other services provided in the perspective of patients and also reduces the effectiveness of treatment (1). On the other hand, estimates and available statistics indicate that, on average, 20% to 30% of the costs of a hospitalized patient are related to drugs and consumables. On the other hand, more than 95% of treatment processes depend on drugs and medical supplies. Therefore, it is evident that any optimal application, reasonable savings, or loss of desire in this area greatly impacts the treatment process, patient satisfaction, patient economy, and hospital economy. Among the very important issues in this field is how to consume and use medical consumables, as well as recording the consumption of the consumables (2-5). The emergency department of the hospital is essential in the quantity and quality of services provided so that in the accreditation and grading of the hospital, the degree obtained by the emergency department determines the total degree of the hospital (6). The special characteristics of the emergency department and the patients of this department put the consumption and registration of drugs and consumables in the emergency department in particular conditions, including the consumption of abnormal supplies and their incorrect registration (7). Medical supplies in the hospital have long been divided into two categories and calculated. One category of medical consumables is registered as consumables in the patient's file with a certain number and calculated in the final invoice, the other category is essentials that have a general aspect of consumption, and it is not possible to calculate the amount consumed for each patient, which is called hoteling consumption requirements (8). Due to the changes that have been made in technology, type of necessities, etc., hoteling consumables have become very diverse and numerous,

and this increase in their number and price has caused the place foreseen to provide their credit (half of the 6% of nursing services), does not provide the credit needed for these costs. The lack of literature and written studies on the hoteling consumption requirements in the inpatient wards, as well as, the results of several studies on deductions in different wards of the hospital and the cause of deductions in the studied wards, show that the emergency department has the highest amount of deductions in most studies and service registration (9-11). Therefore, this study seeks to investigate the consumption of hoteling consumption requirements in the inpatient emergency department and to calculate the difference between the costs in this department and the realized income from these costs.

Materials & Methods

This cross-sectional descriptive study was conducted in an observational and prospective manner in the emergency department of a medical teaching hospital in Tehran in the fall of 2018 and has the code of ethics IR.IUMS.REC1398.367 in Iran University of Medical Sciences. In this study, all patients hospitalized in the emergency department from the beginning of December 2018 to the last day of December, in total and including 898 patients, were monitored around the clock regarding the consumption and recording of consumption of consumable medical supplies. To collect observations, a standard form for registering the patient's consumables used in the inpatient departments, the type of disease, medicine, and consumables used for the patient, the date of hospitalization, and their discharge were mentioned and recorded. The initial form was used in November for three days as a test to record information. After extracting the information and matching the resulting information, the final questionnaire (observation form) was prepared and used with the items desired by the research team. In order to record information and as an observer, due to the problems caused by the entry of the observer into the shift, including the disturbance of the usual atmosphere and the unnaturalness of the space for the normal routine of work by the employees, the lack of space and the high cost of using people, the expert-

led the research team to the conclusion that volunteer employees of the department should be used as observers after three training sessions. To avoid indifference and prevent recording some events and incidents, a research team member, as an observer, was used to control and monitor the process day and night and unexpectedly. Descriptive statistics were used to calculate the percentage and ratio of costs to analyze the data. Finally, the minimum and maximum amount of consumables consumed in the department per bed and patient was determined. Also, considering the calculation of the ten diseases that had the most frequency distribution among patients in that month, the percentage of the cost of consumables per disease was calculated in the section. Then, the difference from the perspective of the expenses incurred and the realized income was also calculated according to the number of necessities consumed and the incomes. Excel was used

for statistical calculations.

Results

The results of studies on the amount of consumption and registration of medical supplies (hoteling) in the inpatient emergency department indicate that for 898 patients admitted to this ward in December 2018, a total of 976,776,808 Rials has been spent on hoteling supplies. From the insurance incomes and free payments of these patients, which included 1706 beds per day, a total amount of 186,909,360 Rials has been received, which according to the difference between 798,867,448 Rials between the amount spent and the amount received. Statistics show that 19% of the costs have been collected from 6% of nursing services to finance the costs of hoteling consumables (Figure 1). Table 1 shows the status of the inpatient emergency department in December 2018 in the relevant field.

Table 1. Costs for Hoteling consumption requirements of emergency department

inpatient bed count	inpatient	inpatient bed count day	Total costs of hoteling consumables	Total amounts received for hoteling consumables	Percentage of uncollected costs
40	898	1706	976776808 Rials	186909360 Rials	81%

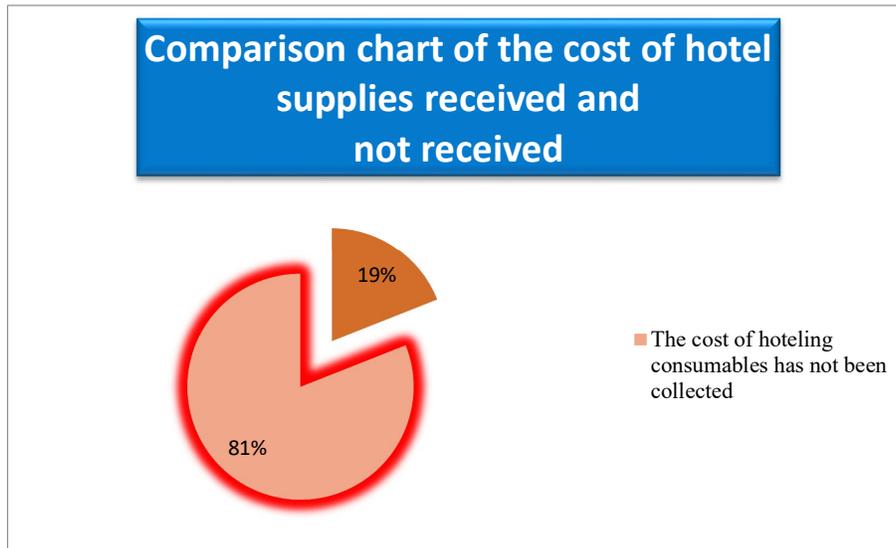


Fig 1. comparison chart of the cost of hotel supplies received and not received.

The frequency distribution of the ten most common diseases, inpatient bed count day by patients with these diseases, and the cost of supplies for each of these diseases are shown in [Table 2](#).

Table 2. Frequency distribution of ten diseases with the highest number

R	Name of disease	Number of patients	Percentage of total patients	inpatient bed count day	The cost of hoteling consumables	Percentage of total costs
1	Car occupant [any] injured in an unspecified traffic accident	113	12.5	396	151970112Rial	15.5
2	Other and unspecified convulsions	79	9	86	63976129Rial	7
3	Pneumonia, unspecified, Influenza with other respiratory manifestations, virus not identified	73	8	189	97732110Rial	10
4	Other fall from one level to another, Unspecified place, During the unspecified activity, Fracture of shaft of ulna, closed	66	7	301	131751571Rial	13.5
5	Respiratory disorder	63	6.5	112	54367440Rial	5.5
6	Chronic kidney disease, Disorder of urinary system	46	5	64	53128760Rial	5.4
7	Malaise and fatigue	42	4.5	58	31000400Rial	3
8	Disease of digestive system, unspecified	35	4	62	46754500Rial	5
9	Fracture of lower end of radius, closed	30	3.5	106	78554000Rial	8
10	Chest pain, unspecified	27	3	59	40987000Rial	4

Table 3. Cost of hoteling consumables per day bed and patient

R	Name of disease	Number of patients	inpatient bed count day	Cost of hoteling consumables per bed day	Cost of hoteling consumables per patient
1	Car occupant [any] injured in an unspecified traffic accident	113	396	383762Rial	1344868Rial
2	Other and unspecified convulsions	79	86	743908Rial	809824Rial
3	Pneumonia, unspecified, Influenza with other respiratory manifestations, virus not identified	73	189	517101Rial	1338796Rial
4	Other fall from one level to another, Unspecified place, During the unspecified activity, Fracture of shaft of ulna, closed	66	301	437712Rial	1996235Rial
5	Respiratory disorder	63	112	485423Rial	862975Rial

6	Chronic kidney disease, Disorder of urinary system	46	64	830136Rial	1154973Rial
7	Malaise and fatigue	42	58	534489Rial	738104Rial
8	Disease of digestive system, unspecified	35	62	754104Rial	1335842Rial
9	Fracture of lower end of radius, closed	30	106	741075Rial	2618466Rial
10	Chest pain, unspecified	27	59	69469Rial	1518037Rial

As shown in Table 3, the cost of hoteling consumables per day in patients with urinary tract and kidney diseases is the highest cost for the hospital, and patients with car accident injuries have the lowest cost of hoteling consumables for hospital per day. According to the results, the cost of hoteling consumables in the emergency department of hospitalized per patient with lower limb fractures with 2618466 Rials per patient, the highest cost, and the patient with fatigue, weakness, and lethargy with 738104 Rials per patient, has the lowest cost of hoteling consumables for the hospital.

Discussion

The emergency hospital ward had 40 inpatient bed count in December and admitted 898 patients. In this month, the amount of 976,776,808 Rials has been spent on hoteling medical consumables, of which only 186,909,360 Rials have been paid to the hospital, and the rest of the expenses, i.e., equivalent to 81% against the cost, must be paid from other provide hospital revenues. The results of calculations have shown that the deduction of hoteling medical consumables in the hospital emergency department was equal to 81%, which the special conditions of the ward, the particular characteristics of its patients, the inaccuracy and skill of the staff of this ward in registering prescription items in the relevant system and the difference in prices of various necessities among insurance companies have the greatest impact on these deductions. Mohammadi and colleagues in the study of deductions of insurance organizations in the emergency department, the deductions of consumables and medicine with 40% of the total deductions of the emergency department announced the highest amount of deductions in this

department (12) which is consistent with the results of the present study. On the other hand, for various reasons, including: - The price of public sector tariffs, such as inpatient bed day, has increased in proportion to the price of hoteling consumables and existing inflation. - The list of hoteling consumables has been added irrationally. These reasons have created a large gap between the costs incurred for hoteling medical supplies and revenues from 6% of nursing services. This difference in the studied section has caused the non-receipt of up to 81% of the expenses. In other words, out of every 100 Rials spent by the hoteling medical consumables, only 19 Rials have been received. Lack of data entry equipment and information with high speed and accuracy to record the consumption of essentials in patients' files was one of the cases observed in this study, which seems to equip the ward with features such as a barcode scanner while increasing the speed, and accuracy of consumption recording. According to the results of Saravani Aval's study on the readiness of hospitals of Iran University of Medical Sciences and under the auspices of MADAD Co. to use the barcode in the pharmaceutical system, updating and facilities of the system in use have reduced drug deductions which is consistent with the results of the present study (13). Personality and personal characteristics of staff, such as negligence, lack of skills and scientific knowledge of nursing staff and ward secretaries in the field of drug use and registration and medical supplies, have caused many deductions in different wards of hospitals. As in several studies (8, 14, 15) this issue has been emphasized, these features are especially evident in the field of consumption registration. It seems that the reconsideration of the use of crew and low-efficiency

staff and employees who have no service motivation, in the hospital wards, as a system operator and importer of information in the system, and more monitoring and control and systematically will be a solution. Due to the specific characteristics of different departments, such as emergency, where stress, workload, and the importance of time in the patient's life cause numerous problems in how to use and record consumption, the use of new technologies such as GSI and hospital scanners while increasing the speed, causes a significant reduction of medication errors and consumption will be consumed. (16) The use of new pharmaceutical systems and updating by the Iran Assistance Group and the use of barcodes for all pharmaceutical processes such as estimation, request, consumption, return, and finally consumption registration has made it very safe, but the status of medical consumables and especially hotel consumption is traditionally practiced, and effective monitoring is not available. Considering the successful experience of medicine, it seems to be helpful in transferring experiences and using the methods used in the pharmaceutical system to the consumption requirements.

Conclusion

The hospital emergency department paid 976,776,808 Rials for hoteling medical consumables in December 2018 for 898 patients admitted to this ward, receiving a total of 186,909,360 Rials from various insurance deposits and patients' cash amounts. Due to the difference in costs and receipts, only 19% of the amount spent in this area has been received, and 81% must be financed from other hospital revenues. Certainly, this forced transfer of credit will cause the departments and other parts to be used to pay for the hoteling medical consumables, and the relevant services and measures will be grounded, and the hospital will be challenged in them. Considering the place allocated for financing the cost of hoteling necessities (3% of the 6% of the inpatient bed), also the list of necessities which is introduced under the name of hoteling in different insurances and hospital revenue units, and that the list of these necessities It is a matter of taste and it depends on

the opinion of individuals, it is necessary that the list of hoteling medical consumables is determined equally and accurately among all insurers, and also, due to the existing inflation and the incompatibility of the flat rate with the current market conditions, the relevant percentage should be adjusted and corrected.

Acknowledgments

Hereby, the research team expresses its gratitude and appreciation for the efforts, cooperation and assistance of the management and staff of Hazrat Rasool Akram Hospital and especially the head nurse and each of the emergency department staff of this hospital. This article is part of the results of the research project, approved by the Health Management and Economics Research Center of Iran University of Medical Sciences with the project number 14214-48-01-98.

Conflict of interest

According to the authors, there is no conflict of interest between the contents and results of this article and the authors.

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