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Comparison of Hospital Expenditure and Revenue from 6% Hoteling-Eligible Items Over Two Years: A Case Study at Ayatollah Mosavi Zanjan Educational-Medical Center

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ABSTRACT

Background: Drug and hoteling costs account for approximately 30% of hospital expenses. Therefore, a thorough focus on the efficiency and costs of this sector is of special importance for hospitals, as scrutinizing these costs can enhance service quality. It appears that insurance payments for hoteling services may not be economically viable for government hospitals. Hence, this study was conducted to examine this assumption. This study aimed to compare allocated hoteling costs with the actual amounts and assess the profit and loss in Ayatollah Mosavi Zanjan Educational-Medical Center in the years 2018 and 2019.

Methods: The number and monetary value of hoteling items delivered from the pharmacy unit to the medical departments (each department separately) during 2018 and 2019 were determined by extracting data from the HIS system. Additionally, the occupied bed days for each department were identified, and the amount received in rials from insurance organizations (6% income from hoteling services) was confirmed with the hospital's financial unit.

Results: The research findings indicate significant differences in hoteling costs across various hospital departments. CCU, NICU, and Women's Active Ward were more profitable, while AICU, ICU-OH, and BICU incurred losses. Outpatient cases and certain departments were not covered by hoteling. Non-hoteling items also contributed to hospital losses. Furthermore, it was revealed that hoteling costs increased by 64% in 2019, while insurance tariffs saw only a 15% increase.

Conclusion: The majority of hospital departments running at a loss can have detrimental effects on patient care quality. Therefore, this issue requires oversight from the Ministry of Health, Treatment Deputy, insurance organizations, and hospital management.

Keywords: Hospital Costs, Financial Management, Hospital, Cost-Benefit Analysis

Introduction

The reimbursement mechanism for treatment costs stands as a pivotal factor with direct and indirect implications on the financial management and control of hospital expenditures. In this context, nations employ diverse reimbursement systems (1). Reimbursement mechanisms are categorized into retrospective and prospective systems. In our country, surgical operation tariffs are computed utilizing the Global and California methods. The global method represents a prospective approach, encompassing presently only 90 common surgical procedures in the country and excluding specific diseases. To address this limitation, the California method is concurrently employed, serving as a retrospective reimbursement methodology (2).

Costs associated with hoteling items constitute a subset of hospital expenditures that cannot be readily allocated to treatment costs due to their immeasurable and non-countable consumption. This category encompasses consumables not explicitly itemized in the patient's billing statement. Whenever insurance organizations cover expenses for drugs and consumables, a corresponding hotel fee is remitted to the hospital for the provision of these items to patients. As these items are not individually listed on the patient's invoice, the hospital pharmacy routinely distributes them to hospital units, typically on a weekly or monthly basis. Inadequate control over hoteling items may result in inefficiencies, particularly within the public sector (3). Due to the paramount significance hospitals hold within the health economy, the imperative necessitates the application of economic and financial analyses (4, 5). Analyzing the total cost, particularly the cost of beds, provides the government with a key advantage. It allows for comparison and analysis of total costs across various centers and regions of the country. This, in turn, facilitates the formulation of accurate budget plans and mandates government units to adhere to them. Furthermore, cost analysis aids hospital management in identifying areas of potential costs that require more meticulous management (6). Global surgeries and hoteling expenses collectively contribute to approximately 30% of total hospital expenditures (7).

Due to numerous deficiencies in the effective payment system, a study was conducted in 2016 to establish a "global" tariff for common surgical procedures. Several years post-implementation, queries have emerged among healthcare providers and insurance organizations regarding the extent to which the execution of this plan has successfully realized its intended objectives (8). Addressing the shortcomings in the global payment system warrants additional research to rectify these deficiencies within each global initiative. This involves scrutinizing the actual costs, resource utilization, and average hospitalization days for each procedure, with necessary corrections implemented as deemed essential.

Materials and Methods

This study adopts a descriptive-analytical and retrospective approach. It was conducted at Ayatollah Mousavi Hospital in Zanjan, an educational-therapeutic center, utilizing a cross-sectional methodology. The primary objective is to assess the actual costs associated with hoteling in global surgical operations, with the evaluation based on the hoteling costs within a global scheme established by the hospital.

The hospital encompasses various departments, including paraclinic, outpatient, and inpatient services. Initially, data on hoteling items were retrieved from the pharmaceutical warehouse, and the input of items to the departments was obtained from the central pharmacy and the Hospital Information System (HIS). Subsequently, the total cost of hoteling items, subject to 6%, was computed for each department on a monthly basis.

Additionally, information on local income at 6% was gathered separately for each department through HIS system queries for the months of 2018 and 2019 from the financial affairs unit and the center's revenue unit.

The number of daily beds for inpatient departments per month was acquired from the medical records unit, along with the corresponding insurance tariffs for each department. Using this data, the amount received from insurance for each department was calculated using the provided formula:

Amount received from insurance=(Number of daily beds × Insurance tariff × 6% × 70%)

Furthermore, the income from the hotel at 6% was averaged with the amount obtained from the above formula to normalize the obtained figures. Finally, the average difference for each section was determined separately from the total amount of hoteling items leaving the warehouse for each section, indicating the profit and loss for each department.

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Results

The outcomes of the research unveil a substantial variance between the allocated and actual hoteling costs at Ayatollah Mousavi Educational-Therapeutic Center in Zanjan. Analyzing data extracted from the HIS system for the year 2018, the highest profit per bed was observed in the CCU department, amounting to 102,562 Rials, followed by the NICU department with 62,134 Rials, and the Women's 2-Elective department with 44,757 Rials. This signifies that these departments operated in a manner that generated a profit from the center's hotel services for each occupied day bed. Notably, 10 out of the 19 hospital departments recorded profits this year.

Conversely, the most significant losses were incurred by the AICU department (275,944 Rials), ICU-OH department (123,289 Rials), and BICU department (85,950 Rials) per occupied day bed. Moving to the subsequent year, 2019 witnessed profits solely in four departments, namely the Women's 2-Elective department (31,575 Rials), CCU department (26,309 Rials), Urology and Thorax department (16,262 Rials), and NICU department (15,199 Rials) per bed per occupied day. The departments with the highest losses in 2019 included AICU (465,793 Rials), ICU-OH (253,362 Rials), and BICU (128,524 Rials) per occupied day, painting a contrasting financial picture compared to the preceding year. (Table 1).

In certain departments, the computation of hoteling costs is inapplicable to outpatients with stays less than 6 hours, as these departments lack insurance coverage for hoteling. Moreover, some departments indirectly contribute to patient care, utilizing hoteling items without levying charges for these consumables, either from the patient or insurance organizations. Examples include the Laboratory and Radiology units.

In 2018, calculations revealed a net loss of 7,119 million Rials attributable to paraclinical and non-hospital departments connected to hoteling. This figure increased to 11,209 million Rials in 2019. Over these two years, the hospital incurred losses of 1,792 and 2,884 million Rials due to items erroneously included in the hoteling list, despite not being inherently part of hoteling items. In total, the hospital experienced losses amounting to 86,716 and 90,065 million Rials due to hoteling items in 2018 and 2019, respectively (Table 2).

A review of hoteling item prices in 2019 disclosed a 64% increase in the cost of providing these items compared to the preceding year. Conversely, the insurance organization-approved tariff witnessed a 15% annual increment compared to previous years.

Discussion

Research consistently highlights the significance of costing and accurately estimating hoteling expenses as a crucial factor in formulating service pricing strategies. This process aids in identifying the root causes of deviations from budgetary expectations, analyzing service unit costs, evaluating internal hospital projects, and facilitating precise financial planning for future periods (9).

The present study underscores the considerable impact of inflation on the escalated costs of providing hotel items. However, the approved government tariffs have not kept pace with the surge in expenses, resulting in a substantial discrepancy and financial losses for numerous hospital departments. The overall hospital loss attributed to hoteling items has reached approximately 19,191 million Rials. Similar research findings point to a disparity between the actual bed-day cost of hospitalization and its representation in financial records, leading to a mismatch between hospital income and expenditure (10,11).

In the examined hospital, paraclinical and non-inpatient departments, where consumable hotel items lack insurance coverage, emerge as the primary contributors to financial losses. Enhanced supervision is warranted in these areas to curtail losses effectively. Additionally, the hospital's educational status, hosting students in medical and paramedical sciences, is identified as a causal factor for increased item consumption. Addressing this issue through vigilant guardianship could mitigate excessive consumption and reduce hospital losses. This aspect should be factored into the budget allocation for the University of Medical Sciences.

The identified losses, if left unattended, pose a threat to the stability of patient services over time. Consequently, active monitoring by health authorities, the Deputy Food and Drug Administration, insurance organizations, and hospital management is imperative. The consistent discrepancy between the cost of hoteling items and the approved tariffs underscores the need for a comprehensive review of the global system. Such a reassessment aims to rationalize tariffs and prevent losses for service providers, insurance organizations, and, most importantly, patients.

Conclusion

Accumulating evidence underscores the pivotal role of hotel costing and cost estimation in shaping health service pricing strategies, pinpointing reasons for budgetary deviations, and conducting thorough cost analyses within service units. This investigation reveals a pronounced escalation in the costs associated with providing hotel items, a trend not paralleled by commensurate adjustments in government-approved tariffs. Consequently, the discernible gap between actual costs and approved prices has resulted in widespread financial losses across various hospital departments, totaling approximately 19,191 million Rials. Consistent with broader research findings, the actual unit cost for each inpatient bed-day fails to accurately represent the financial reality, creating a misalignment between hospital income and expenditure.

In the examined hospital, the primary contributors to financial losses are traced to paraclinical and non-hospital items, where hoteling costs lack insurance coverage, leading to substantial deficits. Furthermore, the educational status of the hospital, accommodating medical and paramedical students, intensifies item consumption, occasionally resulting in uncontrolled usage. A more vigilant monitoring approach can foster rational consumption and mitigate hospital losses, emphasizing the necessity of allocating funds mindfully.

These financial losses, if left unaddressed, pose a gradual threat to the quality of patient care, necessitating heightened oversight from the Ministry of Health, the Ministry of Food and Drug, insurance organizations, and hospital management. In light of these findings and similar research outcomes, there is a clear imperative to revisit and revise the global system, ensuring tariff rationalization to avert losses for service providers, insurance organizations, and, most critically, patients.

Ethical Considerations

The study was confirmed by the Ethics Committee of Zanjan University of Medical Sciences: IR.ZUMS.REC.1399.174

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This study was part of Mahdi Allahyari PharmD thesis registered in Zanjan University of Medical Sciences.

Authors' contributions

All authors contributed to obtaining final approval.

Conflict of interest

The authors declare that there is no conflict of Interest.

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Tables

Table 1: The amount of profit (loss) of the inpatient departments of the hospital

Department	Profit (loss) per bed in 2018	Profit (loss) per bed in 2019
AICU	(275,944)	(465,793)
BICU	(85,950)	(128,524)
CCU	102,562	26,309
NICU	62,134	15,199
ICU-OH	(123,289)	(253,362)
PICU	(64,455)	(74,769)
Men's surgery	(11,347)	(76,898)
Gynecological surgery	(12,042)	(69,586)
Neurosurgery	(7,510)	(66,372)
Obstetrics and Gynecology	(5,614)	(69,332)
Burn	25,184	(89,934)
Transplant	12,152	(20,506)
Children	14,144	(9,807)
Infants	21,299	(24,425)
Orthopedics	19,802	(10,069)
Heart	14,593	(7,307)
Heart 2	(14,342)	(89,510)
Urology and thorax	22,613	16,262
Women 2 – Elective	44,757	31,575
Average	(13,750)	(71,939)

Table 2: Amount of profit (loss) of hospital departments (numbers in millions of Rials)

	profit (loss) in 2018	profit (loss) in 2019
The total profit (loss) of admission	242	(5,105)
Paraclinical & outpatient departments	(7,119)	(11,202)
Non-hoteling items available in the list of items	(1,792)	(2,884)
Total profit (loss) of the hospital	(8,669)	(19,191)

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