

# Hospital Performance in Reducing Insurance Deductions in the Health Sector

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## Abstract

**Background:** Today, providing household health expenses for the health system is an important challenge. The increase in health service costs has created some problems. In this regard, the insurance seems to play a key role in such expenses for the household. One of the major problems between healthcare centers and insurance organizations is about the reimbursement of services provided to patients by the insurers according to the contract. Substantial amounts of these expenses, categorized as deductions, are not reimbursed to the healthcare centers by the insurance organizations.

**Objectives:** The purpose of this study was to investigate the effective measures in reducing insurance financial deductions with an emphasis on the role of insurance.

**Methods:** The current research was descriptive-analytical and cross-sectional, which was conducted in Shahid Rajaei Hospital of Gachsaran. For this purpose, 170 patients (families) were selected as research samples, and finally 165 patients (families) were included in the study. The research population consisted of 400 employees of Shahid Rajaei Hospital in Gachsaran, and a simple random sampling method was employed to select 196 participants, according to Cochran's formula. A researcher-developed questionnaire with 21 questions was used for data collection. The formal and content validity of the questionnaire was confirmed, and its reliability was verified using Cronbach's alpha. The collected data were analyzed using parametric tests by SPSS software.

**Results:** The research data indicated that uncompromised elements such as not distorting the date and prescription, having the stamp and signature on insurance prescriptions, transparent and digitally typed medical orders, proper completion of medical procedures descriptions by physicians, accurate and precise registration of equipment, drugs, and supplies, proper registration and documentation of daily requests, and request for basic care instructions in medical and nursing orders, have an impact on reducing insurance financial deductions at Shahid Rajaei Hospital in Gachsaran, across the inpatient, clinical, and administrative departments.

**Conclusion:** Based on the obtained results, by implementing effective and transparent measures, identifying and eliminating factors contributing to the increase in insurance deductions, it is possible to reduce the disputes between hospitals and insurance organizations. The findings show a significant relationship between health insurance coverage and use of preventive care services, adverse health outcomes, reduced performance, preventable health problems, severe disease at the time of diagnosis, and premature mortality.

**Keywords:** Insurance, Financing, Hospital

## 1. Background

Hospitals are among the largest centers providing healthcare to the community.<sup>1,2</sup> Health costs are always one of the important topics discussed by economic researchers and health researchers. Today, there is a lot of concern about the economic impact of health costs on the shoulders of households that deal with the disease. Health financing is directly observed in many developing countries. In Iran's health system, which has a multiple financing model, health expenses are jointly financed by the government, insurance organizations and direct payment. Insurance medical coverage is one of the main financing mechanisms of health systems to protect the

family's finances against costs.<sup>3</sup> One of the main topics in health economics has been the behavior of patients and providers of health insurance that covers part or all of health care costs.<sup>4</sup> Between 50 and 80 percent of public health resources in developing countries are consumed by hospitals. Today, hospitals are in financial trouble in many ways. With a better and more accurate understanding of the costs related to different activities, managers can moderate the efficiency of hospital departments as a whole.<sup>5</sup> Hospitals and medical centers have many financial problems due to the non-cooperation and cooperation of insurance organizations and non-payment of their claims.<sup>6</sup> Due to the fact that the

insurance companies could not fulfill their obligations on time and faced financial problems to the hospitals, the hospitals are facing difficulties in providing and replacing the consumables. This situation has caused limitations in the provision of new medical services.<sup>7</sup> Due to the limitation in the replacement of equipment and the limitation of services and the referral of more patients, the government sector has limited services and the patients are queuing up. Going to the private sector has increased the patient's expenses, while some patients do not have additional insurance. The occurrence of this situation has caused some patients to give up the treatment and wait for the condition to improve. When hospitals have provided services and insurance companies have not fulfilled their obligations, there are limitations in providing services; otherwise, hospitals will suffer. The cause of these problems is insurance and financial issues.<sup>8</sup> There is a significant relationship between health insurance coverage and access to primary and preventive care,<sup>9</sup> treatment of acute and traumatic conditions, and medical management of chronic diseases.<sup>10</sup>

Today, healthcare is a natural right for nations and a strategic issue for governments from an economic point of view. A brief overview of the health system of the countries of the world shows that all governments have accepted that health is a right, all governments are obliged to provide and fulfill it, and the difference between countries is only in the manner, amount and prioritization of government expenditures. In order to provide health services to the masses of people and have fair access to health facilities and services, it is necessary to review and transform the management structure of the country's health system.<sup>11</sup> In today's society, having health insurance has become a necessity for all individuals.<sup>12</sup> It provides insurance coverage against unforeseen risks and expenses that may arise due to medical emergencies. With the increasing medical inflation rates, not having sufficient health insurance coverage can result in significant costs for individuals.<sup>13</sup> Hospitalization and surgical procedures, along with the associated expenses, are one of the serious concerns for families.<sup>14</sup> The level of health insurance coverage for preventive care is one of the most important determinants of receipt of recommended preventive services for men and women aged 18 to 64 years. These results suggest that comprehensive health insurance coverage for clinical preventive care may significantly increase receipt of recommended preventive services for this population.<sup>15</sup>

The continuous increase in the cost of hospital services, including the procurement of supplies, surgeons' fees, medications, operating room expenses, general costs, and hospitalization expenses, creates significant financial burdens for patients and their families in many cases. Compensating for these expenses requires long-term saving planning, which can be challenging due to its

own specific difficulties.<sup>14</sup> The volume of hospital operational expenses and the inefficiency of healthcare and treatment departments raise questions about how hospitals allocate their resources. There are two main sources of income for public hospital budgets: funds from the government's general budget and specific revenues generated by affiliated hospitals of medical universities and healthcare services in the country. These sources play a significant role in financing the current expenses of the mentioned hospitals.<sup>16</sup>

Published statistics on the number of people covered by health insurance in Iran indicate that about 92% of the population benefits from some type of insurance services provided by insurance organizations such as health insurance, social security, the armed forces, the Imam Committee, private insurance, and other organizations.<sup>8</sup> In public hospitals, the income from the government's general budget is used to cover personnel salaries and benefits. The specific revenues include cash payments received from self-paying patients, cash franchise received from patients covered by various insurance organizations, and income from insurance services. Insurance services provided to patients are covered by various insurance policies through healthcare tariffs in the public sector. Each year, after approval and notification by the Supreme Insurance Council, the insurance companies receive payments from the hospitals based on the submitted invoices. Additionally, an annual income cap is allocated to the medical universities in the national budget law for the medical treatment sector.<sup>17</sup> Indeed, as hospitals serve as the largest and most expensive operational units in the healthcare system, it is essential to manage them more economically to prevent wastage of resources. Ensuring hospitals are economically managed that always demand the attention, accuracy, and efforts of hospital managers. These areas include mastering and controlling the hospital's financial situation, securing the necessary financial resources, and increasing efficiency in the revenue department of hospitals. The complexity of the healthcare sector, the high costs and price growth within it, the increasing demand for access to health and well-being, limited resources, and human workforce constraints have made it more critical than ever to enhance productivity and employ cost control methods in this field. Regardless of the one-sided contracts that often put hospitals in a passive position, substantial amounts of hospital income are deducted as deductions annually. A brief look at the deductions applied in service-providing units shows that they constitute a significant portion, around 10%, of the hospital's revenue. Unfortunately, the lack of a cohesive system to review and monitor the revenue collection process makes reducing these deductions seem unattainable. Therefore, it is essential to examine effective measures to reduce insurance financial deductions at Shahid Rajaei Hospital in Gachsaran, across the

inpatient, clinical, and administrative departments.

## 2. Objectives

The purpose of this study was to investigate the effective measures in reducing insurance financial deductions with an emphasis on the role of insurance.

## 3. Methods

The current research is an applied, descriptive, and cross-sectional study. In this research, in order to investigate the effective measures in reducing insurance financial deductions, it was necessary to prepare an initial questionnaire, considering that there was no standard questionnaire in the field of the target of the research, with the help of literature review, cooperation and consensus of experts in the field. With the help of research, effective indicators were identified. The reliability (internal consistency)<sup>18,19</sup> and validity of the questionnaire were then investigated.<sup>20</sup>

To determine the content validity of the questionnaire, insurance experts and hospital financial and administrative officials were asked to select one of the four options "completely relevant", "relevant", "somewhat relevant" and "irrelevant" for each item (variable). Considering that the number of experts was 10, the minimum acceptable CVR index value was determined to be 0.62 and the minimum was 0.79 based on the Lawshe table.<sup>20</sup>

Initially, to ensure whether factor analysis is permissible in this study and whether sampling adequacy exists, the KMO statistic was calculated. This statistic is an indicator for the values of simple and partial correlation coefficients on all variables. The KMO index was obtained as 0.88 at a significance level of 0.001, which allows factor analysis at a high level.

The initial question bank, which includes effective measures, was collected in the first stage. To ensure more understanding of the meaning and purpose of the questions, the questionnaire was distributed among 10 experienced university professors and executive experts (insurance experts and insurance managers such as social security and medical service and employees such as health care managers and financial experts) In order to get people's opinions about the ambiguities of the questionnaire. After solving the questions of validity and reliability, the questionnaire was finalized and compiled based on the evaluation and presentation of experts' opinions.

To determine the reliability of the questionnaire, experts were asked to complete and submit the questionnaires. Cronbach's alpha was reported as 0.87.

The questionnaire used in this research consists of two parts, the first part contains questions related to the personal characteristics of the respondents such as: age, gender, education, work experience, and the second part contains questions related to each of the dimensions of

the research (such as not distorting the date and prescription, having the stamp and signature on insurance prescriptions, transparent and digitally typed medical orders, proper completion of medical procedures descriptions by physicians, accurate and precise registration of equipment, drugs, and supplies, proper registration and documentation of daily requests, request for basic care instructions in medical and nursing orders). The final questionnaire was distributed among experts and the results were collected.

The research population consisted of 400 employees of Shahid Rajaei Hospital in Gachsaran, and the sample size included 196 individuals with a possible loss of approximately 200 people (such as hospital managers, insurance experts, medical economists, quality improvement unit personnel, nurses, finance personnel, administrative affairs), determined using Cochran's formula. Given that 50% of the entire population was selected as a sample, half of the people in each unit were selected as the research sample using a quota method. Finally, after distributing the questionnaires, 196 questionnaires were returned in full.

Data were collected using a researcher-developed questionnaire with 21 questions with a five-point Likert spectrum. The questionnaire's validity was confirmed by insurance experts and insurance management specialists.

### 3.1. Statistical Analysis

In this study, descriptive statistics, analytical statistics, and one-sample t-test were used to analyze the data. In line with the specialized and practical goals of this study, the obtained data were analyzed using parametric tests and SPSS version 20 and Lisrel software.

## 4. Results

The descriptive and analytical results from the statistical tests of the present study are shown in Table 1.

Based on the findings, the highest frequency of effective measures in reducing insurance deductions is related to the proper registration and documentation of daily requests, with 91%. Following that, requests for basic care in medical and nursing orders, and accurate completion of medical procedures descriptions by physicians, were ranked with 88% and 78% effectiveness, respectively. The least effective measure in reducing insurance deductions was related to not distorting the date and prescription, with 63% effectiveness (Table 1).

As observed in Table 2, the average scores of effective measures in reducing insurance deductions at Shahid Rajaei Hospital in Gachsaran have been determined based on respondents' perspectives. It is evident that the mean of effective measures in reducing insurance deductions at Shahid Rajaei Hospital in Gachsaran has a significant difference from the midpoint or the test value. Since this value is less than 0.05, it indicates a statistically significant

**Table 1.** Descriptive Indicators

Elements	Mean	Median	Mode	Standard deviation	Variance	Min	Max
Not distorting the date and prescription	3.23	3.25	3	0.63	0.39	1.25	4.75
Having the stamp and signature on insurance prescriptions	3.19	3.25	3.25	0.73	0.53	1	5
Transparent and digitally typed medical orders	3.22	3.25	3	0.66	0.43	1.50	4.75
Proper completion of medical procedures descriptions by physicians	3.79	4	4.50	0.78	0.61	1.50	5
Accurate and precise registration of equipment, drugs, and supplies	3.66	3.60	3.80	0.72	0.52	1.40	5
Proper registration and documentation of daily requests	3.88	4	5	0.91	0.83	2	4.40
Request for basic care instructions in medical and nursing orders	3.69	3.75	4.50	0.88	0.77	1.25	5

**Table 2.** Mean and SD of Effective Measures in Reducing Financial Insurance Deductions of Shahid Rajaei Hospital in Gachsaran

Variable	Mean	Standard deviation	Mean difference	Degrees of freedom	t	Significance level	Confidence interval	
							Lower bound	Upper bound
Not distorting the date and prescription	3.23	0.63	0.23	195	5.95	0.002	0.15	0.31
Having the stamp and signature on insurance prescriptions	3.19	0.73	0.19	195	4.14	0.002	0.10	0.28
Transparent and digitally typed medical orders	3.22	0.66	0.22	195	5.34	0.003	0.14	0.30
Proper completion of medical procedures descriptions by physicians	3.79	0.78	0.79	195	16.50	0.003	0.70	0.89
Accurate and precise registration of equipment, drugs, and supplies	3.66	0.72	0.66	195	14.48	0.001	0.57	0.75
Proper registration and documentation of daily requests	3.88	0.91	0.88	195	15.22	0.003	0.77	1
Request for basic care instructions in medical and nursing orders	3.69	0.88	0.69	195	12.33	0.002	0.58	

**Table 3.** Prioritization of Effective Measures in Reducing Financial Insurance Deductions of Shahid Rajaei Hospital in Gachsaran in the Inpatient, Clinical, and Administrative Departments

Variable name	Mean	t
1 Proper completion of medical procedures descriptions by physicians	3.79	16.50
2 Proper registration and documentation of daily requests	3.88	15.22
3 Accurate and precise registration of equipment, drugs, and supplies	3.66	14.48
4 Request for basic care instructions in medical and nursing orders	3.69	12.33
5 Not distorting the date and prescription	3.23	5.59
6 Transparent and digitally typed medical orders	3.22	5.34
7 Having the stamp and signature on insurance prescriptions	3.19	4.14

difference, confirming that these measures are indeed effective in reducing insurance deductions.

## 5. Discussion

Based on the conducted analysis, it can be concluded that the accurate completion of medical procedure descriptions by physicians is effective in reducing insurance deductions at the hospital. This finding aligns with previous studies.<sup>6,8,21</sup> Therefore, it can be inferred that the use of computer systems and their significant role in improving documentation quality and reducing medical deductions is essential. These systems can alert users about any deficiencies in patient records, keep them informed about potential issues, and lead to a reduction in resource utilization, including financial, human, and equipment resources in healthcare facilities. Furthermore, cost savings are expected to be achieved by implementing such systems.

Additionally, we have observed that the registration and documentation of daily requests are effective in reducing insurance deductions at the hospital. This finding

is consistent with the findings of previous studies.<sup>6,8,22</sup> Therefore, it can be concluded that the reason behind the level of deductions is the incomplete documentation of patient records by healthcare team members in hospitals, where each member may have deficiencies and inaccuracies in documenting the services provided to patients in the hospital records.

Based on the obtained results, it can be said that the accurate and precise registration of equipment, medication, and facilities is effective in reducing insurance deductions at the hospital. This finding aligns with previous studies.<sup>8,21,24</sup>

Therefore, it can be concluded that the proper registration of equipment,<sup>25</sup> medication, and facilities holds significant importance in the hospitals' performance,<sup>26</sup> as a considerable percentage of the hospital's assets are accumulated in their inventories. Moreover, the inclusion of basic care requests in medical orders and nursing notes is also effective in reducing insurance deductions at hospitals. This finding is consistent with the studies by

Muriana et al.<sup>22</sup> Thus, it can be inferred that in order to safeguard patient information, access levels to patient records need to be defined and controlled. Determining access levels to patient records means authorizing users to access patient record information. After account verification, access permissions are granted based on the defined levels for different users.

In fact, in the process of determining access levels, it is specified which user is authorized to access what information from the patient's record. There are various approaches to determine the available access levels. Additionally, we have seen that not distorting the date and prescription is effective in reducing insurance deductions at the hospital. This finding is consistent with the studies by Norouz Sarvestani et al.<sup>19</sup> and Hoseini et al.<sup>27</sup> Therefore, it can be concluded that the main reasons for deductions in outpatient prescriptions are related to distorting (crossing out, the use of carbon paper, incorrect liquid registration, double lines, and two-colored text of the prescription), lack of physician's and hospital's stamps on the prescription, invalid date on the prescription, and the physician's failure to include the date on the prescription sheet, as well as the non-timely submission of prescriptions within the same month.

According to the conducted analysis, it can be said that having the stamp and signature on insurance prescriptions is effective in reducing insurance deductions at hospitals. This finding is consistent with the studies by Norouz Sarvestani et al.<sup>19</sup> and Ernesto et al.<sup>28</sup> Therefore, it can be concluded that hospitals should adopt appropriate policies to minimize the amount of deductions.

The research findings indicate that the transparency, digitization, and typing of physician orders are effective in reducing insurance deductions at the hospital. This finding is consistent with the studies by Schelling et al.<sup>29</sup> and Marathe et al.<sup>30</sup> Therefore, it can be concluded that the patient's medical record, which is created and managed in the form of a set of electronic data records by clinical specialists and other authorized documenters in the hospital information system, is stored and retrievable securely in the database of that center.

Based on the conducted analysis, it can be stated that accurate completion of medical procedure descriptions by physicians, daily request registration and documentation, accurate registration of equipment, drugs, and supplies, inclusion of basic care requests in physician and nurse orders, absence of errors in dates and prescriptions, transparent and digital typing of medical orders, and having stamps and signatures on insurance prescriptions are all effective in reducing insurance deductions at the hospital. These findings are consistent with previous research and studies in this field.

Therefore, it can be concluded that the use of computer systems and their effective role can enhance the quality of documentation and reduce medical deductions. They can

alert users about any deficiencies in patient records, making them aware of potential issues and leading to the efficient utilization of resources, including financial, human, and equipment, in healthcare facilities. This can result in cost savings. The reason behind the incompleteness of recorded documents in patient files by healthcare team members in hospitals is their inadequate and imprecise documentation of the provided services to patients.

The accurate and precise registration of equipment, medications, and supplies has an importance role in the functioning of hospital. Because, a significant percentage of the hospital's assets are accumulated in its inventories, and their management is both challenging and costly. Hospitals strive to determine the most optimal and cost-effective approach, employing the principles and science of management for the proper and accurate utilization of equipment, medications, and supplies. Time, cost, and accuracy are essential elements in decision-making processes in this regard.

## 6. Conclusion

To rectify and implement accurate and precise registration systems for equipment, medications, and supplies, reliance on knowledge and diverse techniques from various disciplines is essential. This is aimed at eliminating waste, such as overproduction, excessive purchasing, reworking or discarding equipment and medications, unnecessary movements in the work environment, flawed processes, waiting for supplies, transportation inefficiencies, time wastage, and allocating excess space for inventory. In order to safeguard patient information security, access levels to patient records must be defined and controlled. Determining access levels means authorizing users to access patient information through an authorized mechanism.

One of the limitations of the present research was the selection of samples from only one hospital (Shahid Rajai Hospital, Gachsaran). Therefore, the goal was specifically local policy-making. Therefore, it is recommended that this study be conducted at the provincial and national levels to generalize the results to a larger research area.

Based on the results of the current research, the following suggestions can be used to reduce insurance deductions:

1. Implement necessary measures to protect clinical patient records (including outpatient, inpatient, and emergency) from unauthorized access, use, and disclosure.
2. Conduct regular training sessions to reduce documentation errors and other causes of insurance deductions for employees, students, and related personnel.
3. Verify the information elements entered by nurses and department secretaries, confirm the compliance of physician orders with instructions, verify documents related to patient education, check for drug interactions in physician orders, and confirm the delivery of para-clinical reports to the patient.
4. Different groups of users should have authorized

access to patient records based on their respective tasks, determining the level and type of access to patient information.

5. Employ medical records staff to improve the medical record documentation process.
6. Use reminders and alerts in hospital information systems to reduce medication errors.
7. Negotiate with insurance organizations to make decisions for improving the causes of deductions in hospitals.
8. Establish a hospital deductions committee with the participation of financial affairs and senior management representatives, as well as clinical department representatives, holding regular meetings.
9. Record deductions made in hospital information systems and apply them to payroll for staff and physicians.
10. Provide feedback on deductions manually or electronically, segmented by employees and departments.

### Research Highlights

#### What Is Already Known?

Personnel familiarity with insurance laws, and using a hospital data system can help prevent insurance deductions.

#### What Does This Study Add?

The correlation between the use of preventive care services and adverse health outcomes, reduced performance, preventable health problems, severe disease at the time of diagnosis, and premature mortality was found to be significant.

### Author Contributions

Authors contributed equally to this work.

### Conflict of Interest Disclosures

All authors declared that they have no conflict of interest.

### Ethical Approval

This study was approved by the Ethics Committee of Azad University of Shahrekord under the code IR.IAU. SHK.REC. 1404.023. Furthermore, a written informed consent was obtained from all participants.

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