



## Investigating Level and Reasons of Insurance Deductions of Hospitalization Bills in AL Zahra Academic and Medical Center of Isfahan in 2017

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### ABSTRACT

**Background:** Insurances are the most important financial sources of hospitals but sometimes insurance companies deduct amounts as deductions from the sum of requested amounts after investigating financial documents sent to hospitals monthly. The current study aims at determining the level and reasons for insurance bill deductions in AL Zahra Hospital in Isfahan.

**Methods:** This applied study is descriptive-cross sectional in method and has been conducted retrospectively. The statistical population of this study contained file information of hospitalized patients who have been referred to Isfahan AL Zahra Hospital in 2016. The sample size determined by Cochran Formula and 400 files has been investigated. Random sampling employed. The information has been extracted from patients through a checklist whose reliability and validity has been confirmed by insurance experts and management specialists. Qualitative methods of interview used to identify the most important reasons for increasing the deduction sums and statistical indices and descriptive scales (frequency, percent etc) have been analyzed.

**Results:** The most and the least percent of insurance deductions are related to Armed Forces Insurance (36.8 %) and Social Security Insurance Organization (3.64 %) respectively. Also, the most deductions of hospitalized files were related to visiting deductions of hospitalized patients' doctor and drug and consumables deduction, other services, surgeon and anesthetist commission, experiments and pathology, radiology and sonography are in next rates and the least deductions is related to doctors 2k visit cost, hoteling, and surgery room.

**Conclusion:** According to high percent of insurance deductions and investigation of its reasons, it has been revealed that hospitalized files related to visit by resident year 1 and 2 and absence of resident physician in center and the academic status of hospital that managers have to clarify this issue and use residents year 3 and 4, attending and resident physicians to reduce difference between hospitals and insurance companies and consider documentation as one of main elements of their agenda. So training all individuals who are influential on patients' bills such as doctors and nurses is essential.

**Key words:** Hospital, Hospitalized bill, Insurance deductions.

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## Introduction

Better health is fundamentally the philosophy of a healthy system existence and undoubtedly it is considered as its main and meaningful goal (1). Nowadays health protection organizations are faced with important challenges due to competition for services representation in cost-effectiveness ways which has created economic, political and legal motivations in health protection providers to control cost and maintain quality at the same time (2, 3) hospitals has allocated a major share of allocated sources and credits of health and treatment section, to themselves (4-6).

In economically developed countries more than 80 % of Gross Domestic Product (GDP) spent on sanitation and health of society in which 50 % to 80 % of health resources of the governmental section in developing countries are being spent in hospitals (7-11). According to public insurance law, one of the hospitals' earning resources is a representation and selling services to the insured covered by insurance companies. Insurance companies deduct amounts as deductions from the sum of requested amounts after investigating financial documents sent to hospitals monthly (12-14). Deduction means the amount of difference between what has to be received in lieu of services representation (based on approved tariffs) and what has been practically received (15). Such deductions are possible to be investigated from two points of view: from viewpoint of hospital, deducted sums are a part of hospital's earning which have not been paid by insurance company and from viewpoint of insurance companies, bills with more deductions need more time and work to be investigated and it has two consequences, first consequence: the more time spent to investigate hospitals bills and sent documents, the more time needed to receive hospital's demands from insurance companies which is a non-economic and illogical problem and second consequence: more expertise makes more investigation expense for insurance company (16-18).

Due to the lack of correct principles in information collecting, cost calculations and not

sending hospitalized patients' bills on time, many demands of represented services have been remained uncalculated and unpaid. Also due to not regarding insurance rules and insertion of extra and unnecessary services by hospitals that are not included in insurance companies' commitment, insurance companies apply deductions in refunding the cost of contractor hospital bills. This issue increases contractor hospitals' dissatisfaction and makes financial resources, spent costs and represented services unachieved and encounters hospitals with financial chaos and its derivative pressures. On the other hand, increasing the number of deductions makes proper services representation face serious problems and also impose increasing financial load to the patient through increasing out of pocket costs (19, 20).

Results of studies are demonstrative that according to the increasing process of medical costs and limitations of financial resources in Iran, controlling hospital costs is an inevitable problem. Based on studies, erased dates, out of date prescriptions and absence of prescription are among the most important reasons for insurance deductions (19-22). According to the above-mentioned items, during present status in which many hospitals are under financial distress, hospital high deductions is not acceptable by managers since this problem makes hospitals management disordered, quality services reduced and finally patients dissatisfied. So it is possible to enhance hospitals' efficiency and ultimately medical protection with a better and more precise perception of the prevalence level and reasons of deductions and also to prevent wasting hospitals' financial resources which considered as the main support in-service representation and hospital survival (23). Thus the purpose of the present study is to investigate level and reasons of insurance deductions of hospitalization bills in AL Zahra academic and medical center of Isfahan city to create a basis for decision making of managers along with controlling and reducing insurance deductions.



## Materials and Methods

This applied study is a mixed method and has been conducted retrospectively to investigate the level and reasons of insurance deductions of hospitalization bills in AL Zahra academic and medical center of Isfahan in 2016. This center with 900 confirmed beds and 750 active beds is considered as the biggest and the only specialty and super specialty center in Isfahan and other neighbor provinces, so hospital earning for the representation of qualified services and also maintaining its own clients is very important. Population size consists of discharged patients' files from AL Zahra medical and academic centers in 2016. Information about medical insurance deductions sum (Social Security Insurance Organization, Medical Services Insurance, Armed Forces Insurance, and Imam Khomeini Aid Committee Insurance) with respect to the type of service included in deductions, have been investigated. 400 files out of 70,000 hospitalized files have been selected through simple random sampling among files of every 12 months of a year and sample size determined by Cochran Formula then 170 Social Security Insurance Organization files, 150 Medical Services Insurance files, 50 Armed Forces Insurance files and 30 Imam Khomeini Aid Committee Insurance files have been studied. After investigation of deductions amounts through the use of the checklist, reasons for each deduction have been extracted during an interview with discharge and earning experts of the related hospital and the most important factors based on their importance from experts' viewpoints have been regarded.

Files in this study are ones that in lieu of represented services for them, insurance's share and organization's share have been separately calculated in the bill existing in the file which patient's share has been paid to hospital during paying off and insurance's share, as well as related prescriptions, have been sent to insurance organization. The employed instrument was a checklist based on research specific goals in

accordance with previous studies and through the use of experts' opinions. The used checklist contains deductions type items, sum, and its reason. Checklist validity and reliability have been confirmed by insurance experts and management specialists. At last collected data after being revised through Excel and SPSS have been analyzed. Also to analyze findings, descriptive statistical indices like diagrams, tables, and descriptive comparisons have been used.

This study was conducted with a code of ethics IR.SBMU.REC.1397.083

## Results

In the first step, based on findings investigated the sum of bills has been equaled with 40 billion rials (1 dollar in 2016 equals 30,000 rials). Totally on average, 4.45 % of this sum has been deducted by insurances which Armed Forces Insurance with 8.36 % and Social Security Organization Insurance with 3.64 % have the most and the least deductions respectively.

Generally, visit the physician with about 440 million rials has the most amount of deductions. But the surgery room with a sum of fewer than 70 million rials has the least deductions. Deductions of drug and consumables, other services of surgeons, surgeon specialist's and anesthetist's commission, experiments and pathology have been around 200 to 250 million rials that as mentioned earlier have allocated the most amount of deductions after physician's visit deductions. Deductions of full-time physicians and hoteling have been in the next rates with the amount of around 74 million rials.

In the second step, results related to main reasons of deductions in each of hospitalized sections have been determined through interviews with managers and supervisors of financial official units of study center that each of insurance types and representation of operational approaches to reduce deductions sums have been mentioned separately as follows:

**Table 1.** Deductions for inpatient cases in the hospital, 2016 (Rials).

Types of Deductions	Social Security Organization Insurance	Medical Services Insurance	Armed Forces Insurance	Aid Committee Insurance	Sum
Deductions of the hospitalized hoteling	49,952,447	21,003,450	1,411,900	1,411,900	73,779,697
Error in calculation by hospital (10 %)	4,995,245	2,100,345	141,190	141,190	7,377,970
Absence of resident physician in NICU degree 2 (70 %)	34,966,713	14,702,415	988,330	988,330	51,645,788
Direct discharge from CCU, ICU (10 %)	4,995,245	2,100,345	141,190	141,190	7,377,970
Inconsistency between special and general sections (10 %)	4,995,245	2,100,345	141,190	141,190	7,377,970
Deductions of the hospitalized physician visit cost*	183,236,428	166,343,740	42,495,920	48,304,080	440,380,168
Resident visit year 1 and 2 (90 %)	164,912,785	149,709,366	38,246,328	43,473,672	396,342,151
Visit as well as chemotherapy, pulse therapy and endoscopy (5 %)	9,161,821	8,317,187	2,124,796	2,415,204	22,019,008
Visit before surgery (5 %)	9,161,821	8,317,187	2,124,796	2,415,204	22,019,008
Deductions of k2 physicians visit cost**	29,936,724	29,082,640	14,627,493	1,131,680	74,778,537
Lack of full time physician's stamp and signature (80 %)	23,949,379	23,266,112	11,701,994	905,344	59,822,830
Not sending full time physicians' sentence (20 %)	5,987,345	5,816,528	2,925,499	226,336	14,955,707
Deductions of surgeon's, specialist surgeon's and anesthetist's commission	105,564,754	81,802,944	40,764,024	1,430,120	229,561,842
Error in calculation (10 %)	10,556,475	8,180,294	4,076,402	143,012	22,956,184
Lack of surgeon's stamp and signature of paper of surgeon and anesthesia description (50 %)	52,782,377	40,901,472	20,382,012	715,060	114,780,921
Lack of beginning and finishing time in paper of surgery description (5 %)	5,278,238	4,090,147	2,038,201	71,506	22,956,184
Not paying for residents year 1 and 2 (35 %)	36,947,664	28,631,030	14,267,408	500,542	80,346,645
Deductions of surgery room	31,669,426	24,540,883	12,229,207	429,036	68,868,553
Deductions of experiments and pathology	90,040,874	100,421,743	21,176,521	7,276,516	218,915,654
Not paying for more than one sample in prostate sampling (30 %)	27,012,262	30,126,523	6,352,956	2,182,955	65,674,696
Same requests within a day (10 %)	9,004,087	10,042,174	2,117,652	727,652	21,891,565
Inconsistency between file requested samples with HIS (30 %)	27,012,262	30,126,523	6,352,956	2,182,955	65,674,696
Inconsistency between relative value book and insurance organizations circulars (30 %)	27,012,262	30,126,523	6,352,956	2,182,955	65,674,696
Deductions of drug and consumables	81,277,272	144,715,675	19,356,179	11,518,295	256,867,421
Not registering expensive drugs by nurse (20 %)	16,255,454	28,943,135	3,871,236	1,151,830	50,221,655



Not updating drug and equipment price in drugstore (40 %)	32,510,909	57,886,270	7,742,472	5,759,148	103,898,798
Not registering expensive equipment on surgery description (10 %)	8,127,727	14,471,568	1,935,618	575,915	25,110,827
Ambiguous circulars (30 %)	24,383,182	43,414,703	5,806,854	4,031,403	77,636,141
Deductions of radiology and sonography costs	65,210,055	59,783,941	28,131,036	12,002,678	165,127,710
Not paying 2k to outsourcing units (60%)	39,126,033	35,870,365	16,878,622	7,201,607	99,076,626
Not reporting (20 %)	13,042,011	11,956,788	5,626,207	2,400,536	33,025,542
Not paying to residents year 1 and 2 (15%)	9,781,508	8,967,591	4,219,655	1,800,402	24,769,157
Inconsistency with request and performed service (5 %)	3,260,503	2,989,197	1,406,552	600,134	8,256,386
Deductions of other costs in the hospitalized bills***	137,980,193	60,392,070	30,191,117	13,828,442	242,391,822
Not interpreting items like monitoring and ECG (30 %)	41,394,058	18,117,621	9,057,335	4,148,533	72,717,547
Not paying other services by resident year 1 and 2 (20 %)	27,596,039	12,078,414	6,038,223	2,765,688	48,478,364
Error in calculation (10 %)	13,798,019	6,039,207	3,019,112	1,382,844	24,239,182
Inconsistency with relative value book and internal circulars of insurance organizations (15 %)	20,697,029	9,058,811	4,528,668	2,074,266	36,358,773
Not paying some services due to absence of physician in evening and night shifts (25%)	34,495,048	15,098,018	7,547,779	3,457,111	60,597,956
Total deductions	736,521,037	662,968,531	243,829,893	96,903,711	1,740,223,172
Cost of total file	20,242,593,624	13,423,374,256	2,916,996,328	2,552,121,935	39,135,086,143
Percent of deductions	0.04	0.05	0.08	0.04	0.21

## Discussion

According to insurance rules, often there are conflicts among insurance companies and medical centers during services representation and consequently when paying and receiving insurance demands which impose huge costs to medical centers due to its financial nature. The difference between insurance bills of medical centers and insurance companies is called deductions that occur when there is an inconsistency between requested services with represented one, inconsistency between requested tariff and committed one or inconsistency between requested services and committed one (13). The present study has investigated the insurance bills of the hospitalized in AL Zahra Hospital. Research findings showed that the sum of 4.45 % of hospital costs has not been refunded by insurance companies. Armed Forces Insurance (8.36 %) and Social Security Organization Insurance (3.64 %)

have the most and the least deductions percent respectively. Bagheri et al. also argued that Armed Forces Insurance (6.24 %) has the most deduction percent which is in line with the results of this study.

According to findings, the most deductions related to the hospitalized physician's visit, drug and consumables, other services, surgeon's commission, experiments, pathology, radiology, and sonography respectively and the least deductions related to full-time physician's visit, hoteling, and surgery room. Askari et al. (17), also maintained that the surgeon's commission, treatment commission, and drug have the most amounts of deductions in studied hospitals and argued that deficiency in insurance documents existing in hospitalized patients' file and not regarding regulations and circulars from insurance companies are in next rates. Also, Khalesi et al. (12), has allocated the most and the least sums of





deductions to surgery and experiments respectively. Safdari et al. has concluded that with the separation of bills according to the type of insurance, drug and consumables have the most sums of deductions. Drug deductions are related to inconsistency among doctor's prescription, nurse report and drug prescriptions, not registering medical orders by a physician and also not confirming and not registering drugs by a nurse. After drug deductions, surgery commission has the most sum of deductions as a result of the general description of surgery and not registering surgery, the date of hospitalization and date of surgery which is consistent with this study's result (21).

Dehnaviyeh et al. (24), has argued that hoteling, lab, and surgeon's commission have the most sum of deduction while electrocardiography, consultant physician's visit, and endoscopy have the least sum of deductions in Firouzgar Hospital and in Hasheminejad Hospital, lab and surgeon's commission have the most and electrocardiography, physiotherapy and endoscopy have the least sum of deductions. Rafiee et al. (22), has said that the most sum of deductions related to hoteling services, surgeon's commission, and drug and the least sum of deductions related to the physician's visit. Tabatabaei et al. also in a similar study in Shahid Rajaei Hospital in Ghazvin has recognized that the most sum of Social Security Organization Insurance deductions related to lab and the least of deductions sum related to doctor visit while in medical services insurance the most deductions related to consumables of surgery room and the least of it related to consultant physician's visit (25) which are somehow inconsistent with the present study results.

In the current study, the physician's visit has the most sum of deductions which in Askari's study this item has been noticed among the reasons for creating deductions in hospitals (17). But different studies have shown different results as Tvakoli et al. (16), has argued that the doctor's visit has the least sum of deductions. Tabatabaei et al. (25), also found out that doctor's visit has the least sum of deductions due to several reasons such as

consistency between the number of doctors and the number of clients referred to hospital during visit time of a physician. If there is consistency between the number of physicians and patients or if medical personnel be familiar with reasons of deductions and how to prevent them, the physician will have enough time to visit and fatigue and business may not hinder him to visit patients. Drug and consumables deductions are the second reason for deductions in this study. In Askari's and Tabatabaei's et al study also drug and consumables are regarded as the main reasons for deductions in hospitals (17,25).

Findings of the study about the reasons for deductions related to the hospitalized physician's visit have shown that visit of resident year 1 and 2 is the second reason for deductions. Stamp and signature of residents year 1 and 2 are not acceptable for insurance, to reduce deductions of the hospitalized physician's visit cost, patients have to be visited by attending physician or residents year 3 or 4 or after being visited by residents year 1 and 2 their prescription be stamped and signed by senior residents or attending physicians, or calculations performed accurately and conflicts between insurance companies and hospitals be solved that are consistent with Rafiee et al. (22), study results.

To clarify ambiguous circulars it is necessary to represent approaches to reduce deductions of drug and consumables cost, correct training and sensitivity of nurse personnel when registering expensive drugs and highlighting them, employing a specialized expert excellent in drugs and equipment to update prices before entering to drugstore, registration of expensive equipment in the paper of surgery description by a technician and rechecking it before exiting from recovery room by the recovery supervisor and discussion of health ministry with insurance organizations.

Approaches to reduce other hospitalized bills costs of deductions, training how to interpret and registration of cases such as monitoring and ECG by physician, notifying earning units to pay some of services by residents respecting academic curriculum and also checking files



before referring to insurance organizations, enough precision, and training, discussion with insurance organization to remove ambiguities and presence of resident doctor constantly in medical centers during evening and night shifts are effective. Absence of accurate and enough information in files are among the limitations of this study.

### Conclusion

Financial resources are the most important hospital resources in performing the agenda and controlling them. Insurance deductions impose huge sums to hospitals and waste financial resources which may not be compensated for the hospitals so it is necessary to apply accurate and correct policies to prevent from wasting such resources that are vital for the survival of the organization. Hospital information comprehensive systems are able to register all stages of treatment and perform insurance regulations to provide financial necessities of optimal use from human resources and reduction of insurance deductions. Proper training of human resources, employing hospital information comprehensive systems, smart checklist to control medical documents, investigating and removing deficiencies in patient's file before sending to insurance company are able to prevent from occurrence of main reasons of insurance deductions and wasting financial resources and return financial resources out of insurances to the financial cycles of hospitals since they are the most important points of hospitals earning.

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### Conflict of interests

There is no conflict of interests about this research to be declared.

### Authors' contributions

Zarei E designed research; Zarei E and Arabi S conducted research; Najafi M and Arabi S analyzed data; Arabi S wrote manuscript. All authors read and approved the final manuscript.

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