Evaluating Miscoding in the Codes Provided for Diagnostic and Surgical Tariffs

Soodeh Shahsavari (1)
Ali Valinejadi (2)
Ameneh Safari (3)
Ramin Ceraghbaigi (4)
Rohollah Mohammadi (5)
Ali Godini (6)
Rahman Setoodeh (7)
Ali Mohammadi (8)

(1) PhD, Assistant Professor of Statistics, Department of Health Information Technology, Paramedical School, Kermanshah University of Medical Sciences, Kermanshah, Iran. (2) PhD, Assistant Professor of Health Information Management, Social Determinants of Health Research Center, Department of Health Information Technology, Paramedical School, Semnan University of Medical Sciences, Semnan, Iran.
(3) M.Sc. of Health Information Technology, Department of Research Management Office, Faculty of Paramedics, Kermanshah University of Medical Sciences, Kermanshah, Iran. (4) GP, Consultant Physician, Document Center, Social Security Organization, Kermanshah, IR Iran
(5) MS. in Critical Care Nursing, Imam Reza Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran
(6) MS. in Physiology, Department of Insurance Compensation, Document Center, Social Security Organization, Kermanshah, Iran
(7) MS. in Human Recourse Management, Department of Administrative, Shohada Hospital, Social Security Organization, Kermanshah, Iran
(8) Assistant Professor of Health Information Management, Department of Health Information Technology, Paramedical School, Kermanshah University of Medical Sciences, Kermanshah, Iran.

Correspondending author:
Ali Mohammadi.
Department of Health Information Technology,
Paramedical School,
Kermanshah University of Medical Sciences,
Kermanshah, Iran.
Tel: +98.8338279697
Email: a.mohammadi@kums.ac.ir

Abstract

Introduction: Coding errors are inevitable, but an acceptable level of their correctness must be considered.

Aim: The aim of this study was to evaluate the errors in the codes provided for diagnostic and surgical tariffs.

Materials and Methods: This descriptive and cross-sectional study was performed in 2016. Research resources were records in compensation units in the center of medical documents of social security organization. Data were collected using a checklist by compensation unit coders. Validity of checklist was confirmed by six experts. The data were analyzed by SPSS-20 software and provided in descriptive tables.

Results: Findings indicated that 90.7 percent of the accomplished procedures were surgery. 95 percent of them were done in private hospitals of which 61 percent were specialized. 114 tariff codes with relative value of 3338.1 from 260 codes with the relative value of 9696.4 and 62 modification codes with relative value of 910.94 from 301 codes with relative value of 3360.57 were not confirmed. Most types of documentation error were related to not being confirmed, of 106 requested codes according to the documentations by coders.

Conclusion: Therefore, according to the results of research it is essential the physicians be aware of the importance of documentation and of writing a detailed description of taken procedures and abstaining from providing additional codes. Some proper policies must be adopted to reduce procedure miscoding.

Key words: coding, miscoding, tariffs, diagnostic procedure, surgical procedure

Please cite this article as: Mohammadi A. et al.. Evaluating Miscoding in the Codes Provided for Diagnostic and Surgical Tariffs. World Family Medicine. 2018; 16(2): 43-52. DOI: 10.5742/MEWFM.2018.93237

Introduction

The proper management of medical centers with the use of the potential of information systems in using available resources can guide the growing hospitals. Failure to accurately record and save data is among the problems that disorder correct decision making and causes waste of resources. Fees of completed procedures for physicians are recorded by codes provided to perform these procedures. Recording the wrong codes causes need for more time devoted to surveying records, injustice to the patient in terms of more reimbursement and multiple deductions for hospitals [1].

The correct and complete data collection using standard coding is crucial for planning, research, analysis, reimbursement and policy-making. The use of coding standards increases data quality and improves the decision-making process [2]. The usefulness of coded medical data relies basically on the same coding on the similar entities independent of the person or coding time [3]. Coding provides the standardization of expressions so that the data can be used by persons other than those who collect the data, so is very important [4].

Coding medical data is important because of the quality of care and the national reports [5]. With regard to the application of coded data in management activities, observing the coding quality and its assessment is necessary more than ever [6]. The use of health information is possible when it is organized and classified correctly, and this can be done through the coding [7]. Coding could be defined as following: assigning a symbol or code for diagnostic terms and procedures based on a common used book of classification [8]. Various studies, recording flawed information in files, lack of familiarity of physicians with the principles of writing diagnosis, lack of familiarity with the classification systems of diseases and inexactness and coders' being inexperienced, are some factors that lead to data miscoding [9].

Coding errors are inevitable. Some of the errors are in the scope of controlling information management process and the others are common in the result of insufficiency of source document or lack of information integration, resulting from current computer programming and software logic [2]. The reality of coding in a hospital system is much more complex than coders think. Poor hand-writing, incomplete or inadequate documentation, lost medical documents and lack of access to electronic documents cause coding to be incomplete or miscoding [10].

Providing intentional wrong codes also causes coding errors. These errors cause, in the first stage, injustice to the patient, because the records are surveyed after discharge, when the patient has paid the cost. In the next step the created errors cause to prolong records and codes investigation time; they cause delayed resource reimbursement by insurance to hospitals and this causes the management of these centers to be confronted with many problems. Most of the documentation difficulties result from a lack of understanding of coding method by physicians and how the documentation is affected because of their coding[1].

In a change in the system it is possible to create the request for getting more by using the code assignation with up-coding. Or multiple codes with up-coding are listed

instead of a correct code. This cheating deceives patients and insurance companies and distorts statistics. A large part of reimbursement of patients admitted to the hospital will be based on the reimbursement systems. Therefore, the appropriate coding of procedures has a financial impact on the Hospital [11]. Investigating strengths and weaknesses and errors in determining tariffs must be taken into consideration. Providing any code should be based on documents, rational reasons and their impact on the health system, insurance and individuals of society [12].

Tariff determination of health services in Iran has been adopted from "Current Procedure Terminology (CPT)" of America; it has been not come about natively nor has it been updated since its implementation. With implementing the health system reformation plan in 2014, the health system tariffs became native and were updated by the Ministry of Health. So with regard to the problems related to the change of system, lack of being familiar with coding rules, the incomplete documentation as well as requesting the error codes to obtain more, this research was conducted surveying a variety of coding errors in diagnostic-surgical procedures related to records of hospitalized patients.

Materials and Methods

The study was applied and performed by descriptive cross-sectional method in 2016. Research resources were records referred to compensation unit in the Medical Documents Center of the social security organization in 2015. The reason why we chose the records of this unit was the lack of modifying documentation and the modification or change of codes for services provided by insurance experts residing in the hospital. The records referred to the compensation unit were selected from the first of April 2014 until the end of March 2015 based on research criteria. The criteria included: being records of hospitalization, codes are not global, being surgical services and not relating to consulting, the record is coded by the center doing services and also the records from the first of April 2014 until the end of March 2015 that were referred to the compensation unit of medical documents of social security organization.

Sampling was census and all the records that met the research criteria (118 files) were investigated. The instrument of collecting data was a checklist. It was designed by researchers based on the type of record data, codes, investigation process and factors affecting confirmation of codes, all kinds of documentation errors leading to miscoding as well as conducted studies; it was divided into seven parts.

1. The first part of the checklist was the patient's demographic information including gender, type of hospitalization, diagnosis and the main procedure.

2. The second part was the information related to the location and service providers. This part included the type of hospital in terms of specialty and affiliation, type of specialty and scientific rank of the surgeon and Anesthesiologist.

3. The third part was related to the type of procedure and classifying it based on the book of surgery diagnostic procedures tariffs approved by the Ministry of health and medical education of the Islamic Republic of Iran in 2014.

4. The fourth part included the surgical tariff codes and the number of modification codes of surgery and anesthesia requested by medical centers.

5. The fifth part was the number of surgery tariff codes and the number of surgical and anesthesia modification codes approved in the medical documents compensation unit.

6. The sixth part was related to the coding errors that were divided into two parts, of surgery and anesthesia. In both parts the first section included the tariff codes and the second section, the modification codes. Coding errors for tariff and modification codes section included: wrong code, i.e. the number of requested codes is correct but the code was wrong. Additional code i.e. the number of codes that were requested by the Medical Center and by the coding expert of compensation unit was not approved and low code i.e. the number of codes that were requested by the Medical Center and were added by the coding expert of the compensation unit. For each of the possible modes in coding error the (tariff or modification) code was collected.

7. The data of documentation errors were collected using the last part of the checklist. Error type not recorded (doing procedure that a code with relative value has been requested for, but its description is not in the record). Illegible (mentioned documents were not legible). Unverified (inserting codes that were not approved with respect to record documents). Inconsistent (mentioned codes were not compatible with documents) and the ambiguous abbreviations (abbreviations that were not standard and there was not any code or value for them)

Content validity of checklist was confirmed by six experts (two people for health information management, two people as physicians and two people as coders).

Data collection was done by coders in the compensation unit. During checking of records to verify codes and reimbursement to the patient, the data were recorded in the checklist. The data were entered in SPSS-20 and were analyzed according to the research objectives and questions. Ultimately the results and analysis were provided in the descriptive tables.

The access to data was authorized with the letter of introduction of No.15676 of 14/4/2015 from Kermanshah University of medical sciences for the medical documents center of social security organization and with agreement of its officials. Also the ethical considerations were met to observe privacy principles on the use of data and not mentioning the name of hospital, patients and experts.

The lack of coding procedures of some records was one limitation of the research. In these records an amount has been received from patient for the hospital, surgical and anesthesia services. No code has been mentioned for the surgery and anesthesia procedures; these records were excluded from the study based on the research criteria.

Results

Based on the criteria of selecting study units, 118 records were surveyed. The number of male and female patients was randomly equal and each group contained 59 people. All patients were electively accepted, of whom 9 cases were for Day Care and 109 cases for hospitalization.

Table 1: frequency of type of hospital in terms of affiliation and specialty and the city in which is situated that hospital, surgeon and anesthesia rank and type of procedure

Type of variable	Criteria	percentage	frequency
Type of hospital in terms of affiliation	Treatment-educational	0	0
	Depending on university	0	0
	Social security	0	0
	Military forces	5	6
	Private	95	112
	Petroleum	0	0
	Other	0	0
Type of hospital in terms of specialty	Public	4.2	5
	Specialized	61	72
	Super specialty	17	20
	Specialized clinic	17.8	21
City of hospital	Kermanshah	1.7	2
	Tehran	97.5	115
	Mashhad	0.8	1
Surgeon rank	Specialist	60	71
	Super specialty	40	47
Anesthesia rank	Specialist	94	111
	Super specialty	6	7
Type of procedure	Diagnostic	4.2	5
	Surgery	90.7	107
	Both	5.1	6

95 percent of the patients had referred to private centers and 61 percent of these centers were specialized. For treatment 97.5% of patients had referred to Tehran and 61 percent of them to specialists. 90.7% of procedures done for these patients were surgical.

Table 2: number of patients referring to the surgical specialties

Surgeon's specialty	Number	Surgeon's specialty	Number
Neurosurgery	19	Eye	22
Plastic surgery	5	Heart	2
Digestion	1	Children heart	1
Pain medicine	1	General surgeon	9
Endocrine surgeon	1	Women oncology	1
Vessels surgeon	2	Women	19
Hand repair surgery	3	Urology	5
Physical medicine	2	Children urology	1
Spinal cord surgeon	1	Orthopedic	22
		Children orthopedics	1

The greatest reference was related to the eye and orthopedic specialties (with 22 patients) and in the second stage women and neurosurgery with 19 patients.

Table 3: number of reference, requested and confirmation tariff and modification codes based on tariffs classification

System	Num. of patients	Modification				Tariff			
		relative value	confirmed	relative value	requested	relative value	confirmed	relative value	requested
Integumentary system	11	153.54	18	268.7	25	445.5	13	896.5	31
Musculoskeletal	21	254.86	42	432.29	39	881.9	25	1594	53
Respiratory	1	5.4	2	16.1	4	18	1	30.6	1
Cardio-vascular	5	91	8	138.2	10	445	5	798.8	10
Blood and lymph	0	0	0	0	0	0	0	0	0
Digestion	10	188.8	22	327.2	30	698	10	844.2	13
Urine	4	102	10	109.5	13	236	4	339.5	9
Male genital	2	19.4	2	17.4	2	109	2	132.4	2
Female genital	19	193.43	31	263.4	46	570.2	19	930.2	31
Endocrine glands	0	0	0	0	0	0	0	0	0
Nervous system	24	713.46	58	1219.28	76	1973.2	44	2557.7	67
Eye and supplements	19	506.74	43	414.5	51	774.8	21	1373.5	38
Auditory	2	21	3	54	5	106.7	2	199	5
Total	118	2449.63	239	3360.57	301	6358.3	146	9696.4	260

The majority of the patients related to the nervous system and musculoskeletal system, with 24 and 21 patients, respectively; blood and lymph system and endocrine had no reference. The nervous system with 67 tariff codes and the Relative value of 2557.7 and 76 modification codes with Relative value of 1219.28 had the most requested and modification code. Confirmation codes of nervous system were 44 tariff codes with Relative value of 1973.2 and 58 modification codes with coefficient of 713.46. In the musculoskeletal systems, the modification codes and confirmed Relative value had an increase compared with requested codes. In total 260 tariff codes with the Relative value of 9696.4 and 301 modification codes with Relative value of 3360.57 were requested. 106 tariff codes with Relative value of 6358.3 and 239 modification codes with coefficient of 2449.63 were confirmed.

Modification codes of surgery included multiple surgery (code number 51), assistant surgeon (code number 80) and semi-aggressive technology (code number 85). Based on the classification system, 105 modification codes of surgery were requested; multiple surgery 31 codes, assistant surgeon 48 codes and semi-aggressive technology 26 codes. The most requested modification codes for multiple surgery for integumentary and nervous system were seven codes. The most occurring code for assistant surgeon and semi-aggressive technology in nervous system was 15 and eight respectively. From 105 requested modification codes of surgery 101 codes were confirmed; multiple surgery had 48 codes, assistant surgeon39 codes and semi-aggressive technology 14 codes. For multiple surgeries 17 codes have been added. Assistant surgeon codes and semi-aggressive technology for all systems were the less requested confirmation codes.

Modification codes for anesthesia included position (code number 32), comorbidity (code number 35), emergency patient (code number 36), and age over 70 years (code number 37), difficult anesthesia (code number 38), recovery (code number 39), time (code number 42) and local anesthesia (code number 45). Based on classification system 196 modification codes were requested. The most requested modification code for anesthesia was respectively related to the time of 82 and recovery of 56. Local anesthesia with one code had the most insufficient requested code. From 196 requested modification codes of anesthesia 140 codes were confirmed. For all the systems where there were fewer the confirmation codes from which the recovery with 19 unconfirmed codes had the greatest decrease.

Table 4: coding errors for tariff and modification codes of surgery and anesthesia on the basis of the tariff classification system

Classification system	Anesthesia						Surgery					
	Modification			Tariff			Modification			Tariff		
	Few	Additional	Wrong	Few	Additional	Wrong	Few	Additional	Wrong	Few	Additional	Wrong
Integumentary system	0	2	0	0	5	0	2	4	0	0	6	3
Musculoskeletal	2	6	0	0	1	0	9	6	0	0	15	4
Respiratory	0	1	0	0	1	0	0	0	0	0	0	1
Cardio-vascular	0	0	0	0	1	0	0	3	0	1	4	0
Blood and lymph	0	0	0	0	0	0	0	0	0	0	0	0
Digestive	0	4	0	0	0	0	0	7	1	0	4	4
Urine	0	2	0	0	0	0	1	1	0	0	2	1
Male genital	1	0	0	0	0	0	0	0	0	0	0	0
Female genital	0	12	0	0	1	0	2	7	0	0	11	8
Endocrine	0	0	0	0	4	0	0	0	0	0	0	0
Nervous system	0	10	0	0	4	0	3	16	0	0	14	4
Eye and supplements	1	7	0	1	0	0	12	5	0	0	12	5
Auditory	1	1	0	0	0	0	0	2	0	0	2	0
total	5	45	0	1	13	0	29	51	1	1	70	30

Additional code request was the most occurring error type of tariff and modification codes of surgery respectively with 70 and 51 codes. Musculoskeletal system with 15 codes had greatest requested additional code for tariff of surgery and the nervous system with 16 codes had the greatest additional requested code for surgical modification. Errors related to tariff and modification codes of anesthesia were additional code requests. There was no wrong code request for tariff and modification codes of anesthesia.

Table 5: Frequency of specialist based on the rank and type of coding error

Specialty	Physician's rank	Number	Miscoding		Additional code		Few code	
			Tariff	Modification	Tariff	Modification	Tariff	Modification
Surgeon	specialist	71	23	1	38	33	1	10
	super specialty	47	7	0	32	18	1	19
total		**118**	**30**	**1**	**70**	**51**	**1**	**29**
Anesthesia	specialist	111	0	0	5	34	1	4
	super specialty	7	0	0	8	11	0	1
total		**118**	**0**	**0**	**13**	**45**	**1**	**5**

The rank of the 71 surgeons was specialty. Specialists had more coding errors in requesting the wrong tariff code (23), additional tariff (38) and additional modifications (33). The error of requesting few codes with 19 codes was more by the super specialty surgeon. 111 persons were anesthesiologists. 45 additional requested modification codes were the most occurring error type among them. There was no wrong code for coding error request by the specialist and super specialty of anesthesia.

Table 6: Documentation errors based on tariff classification

Book chapter	Ambiguous abbreviation	inconsistent	Not approved	Illegible	Not recorded
Integumentary system	0	3	10	0	0
Musculoskeletal	0	2	19	0	1
Respiratory	0	1	0	0	0
Cardio-vascular	0	0	5	0	0
Blood and lymph	0	0	0	0	0
Digestion	0	1	9	0	1
Urine	0	1	3	0	0
Male genital	0	0	2	0	0
Female genital	0	5	15	0	0
Endocrine glands	0	0	0	0	0
Nervous system	0	3	22	0	0
Eye and supplements	0	1	19	0	0
Auditory	0	0	2	0	0
Total	0	17	106	0	2

Not being confirmed of 106 requested codes of surgeons, according to the documents of coders, were the most occurring documentation error type.

Table 7: Coding errors in modification codes of surgery and Anesthesia

	Error	Wrong	Additional	Few	Total
Anesthesia	Total	0	80	5	85
	Local anesthesia (45)	0	0	0	0
	Time (42)	0	37	5	42
	Recovery (39)	0	16	0	16
	Problematic anesthesia (38)	0	1	0	1
	Age higher than 70 (37)	0	7	0	7
	Emergency patient (36)	0	6	0	6
	Comorbidity (35)	0	5	0	5
	Position (32)	0	8	0	8
surgery	Total	1	63	31	95
	Semi-aggressive technology (85)	0	19	2	21
	Assistant surgeon (80)	0	25	0	25
	Multiple surgery (51)	1	19	29	49

Coding errors in surgical modification codes with 95 cases were more than anesthesia with 85 cases. The most occurring error type in modification codes of surgery and anesthesia was additional request with respectively 63 and 80 codes.

Discussion

The procedures taken in indirect care are provided for in the form of tariff codes and the service cost is paid entirely by the patient according to the provided codes. Then for reimbursement the patient refers to the compensation unit in the center of medical documents. In this unit the records are re-surveyed and coded by coders. In the compensation unit the amount of reimbursement specified is based on the codes provided by the coders. There is a difference between the codes provided in the medical centers and the compensation unit. The errors created in codes will cause a change in relative value and the paid cost. The additional paid costs are not refundable to the patient. In this research, the coding errors are associated with errors that have been created due to incomplete, inconsistent and ambiguous documentation or the request of wrong, additional or few codes. Errors were analyzed according to the demographic profile of the patient, illness, procedure, medical specialty and the type of medical centers.

The results of this study showed that 114 tariff codes with relative value of 3338.1 from 260 codes with the relative value of 9696.4 and 62 modification codes with relative value of 910.94 from 301 codes with relative value of 3360.57 were not confirmed. In total the coding errors have caused 4249.04 of the relative value unit to be not confirmed. Given that the basic fee for a unit in 2015 has been equivalent to 380000 Rials, 1614635200 Rials have been requested additionally only from 118 patients. Findings resulting from the research of Cheng indicated that 16 percent of 752 investigated cases had changes in the tariff codes. That is, approximately $US575,300 the additional cost was requested [13].

On the basis of the obtained findings, the greatest error of surgical and modification tariff codes was to request additional code; the tariff codes included 70 additional codes and the modification ones 51 additional codes. Also the request of additional code (relating to the basic code of anesthesia) was the most occurring error type for anesthesia tariff and the requests of additional modification code the most occurring error type in anesthesia. In a study of Karami et al the request of additional modification codes and the request of anesthesia relative value were some causes of imposed multiple deductions [14]. The findings of the research of Mohammadi et al indicated that in the hospitalization section the highest percentage of multiple deductions was dedicated to the costs of anesthesia [1]. In the study of Khorrami as well the greatest multiple deductions were related to surgery sectors [15].

Rank of most of the surgeons who had a coding error was specialty (71 people); this was also true of anesthesia physicians (111 people). Among these experts, the most occurring coding error was related to the request of additional code. In a study of Mohammadi, assigning the wrong code and up-coding were some factors that have led to multiple deductions [1]. In a study of Khorrami physicians' lack of familiarity was the main reason for that [15]. Based on these findings it seems necessary for the physicians to achieve a correct understanding of the levels of required details and limitations to write codes; this shows the necessity of educating in coding (especially among experts). Also in order to prevent the occurrence of these errors it is necessary to monitor the performance of physicians by hospitals and take some strategies aiming to reduce these errors.

Most occurring coding errors (wrong and additional code) on the basis of the tariff classification system were related to the systems that had highest reference (nervous and musculoskeletal system). According to the mentioned findings we can infer that the probabilities of coding errors are higher in cases where the references are higher. The increase in the

confirmation code compared to the request one in some systems was related to the modification code of 51. These codes were requested by the surgeon with the tariff code, but based on the simultaneous surgery law the tariff code was eliminated; they were provided by coder with the modification code of 51. This clarifies the necessity of paying more attention of hospitals to monitor precisely the physicians' performance in the specialties that have greatest reference. In addition, in the areas where the reference is high, educating physicians in the field of coding is more important.

The findings showed that the most important type of documentation was related to the codes not approved by coder (106 items). After that the inconsistent documentation with 17 cases had the greatest documentation error. In this regard, the results of the study of Cheema and Khwaja also showed that the highest documentation error was dedicated to the codes that have not been confirmed by coder; they included 24 cases. After that 2 cases were related to non-recorded codes [16]. In the present study also the unrecorded codes were 2 cases, but before this the error related to inconsistent documentation and had more cases (17 cases). In the research of Naran et al. 266 codes were not approved. Also in this study, the ambiguous abbreviations were one of major reasons for the documentation error [17]. This is while in the present research there was not observed any error related to the ambiguous abbreviations. In a study of Mitra et al as well 6 cases from 47 cases of errors were related to the codes that have not been recorded at all [18]. Given that one of the objectives of the plan for health system reformation is to reduce the patients' payments [19], in accordance with the results of a recent study it appears that the implementation of this plan has been not effective in reducing coding errors of tariff codes, but it could have been successful in reducing coding errors of modification codes.

Conclusion

According to the achieved results it is essential correct policies are adopted in order to decrease the surgical procedures coding errors. To achieve optimal accuracy in coding physicians need to be aware of the importance of documentation and of writing a detailed description of taken procedures. Some of the procedures are complex and sometimes a small change in one procedure can cause a change in the final code. The coding data are the most comprehensive data available for policy-making and decisions in allocation of resources; so coding errors can provide a wrong image of working burden of a department. Based on the findings of the present research and due to a high rate of surgery and anesthesia coding errors, the medical systematic training for physicians to reduce coding errors and additional codes seems necessary. Also it is necessary for hospitals to give importance to educational issues as well as monitor the performance of physicians in order to protect the rights of the patient.

References

[1] Mohammadi A, Azizi AA, Ceraghbaigi R, Mohammadi R, Zarei J, Valinejadi A. Analyzing the deductions applied by the medical services and social security organization insurance toward receivable bills by University Hospitals of Khorramabad. Health Information Management 2013; 10 172-80 [In Persian].
[2] Alipour J, Karimi A, Erfannia L, Shahrakipour M, Hayavi Haghighi M, Kadkhoda A. Reliability of medical diagnosis with international classification of diseases 10th version in 2011. Health Information Management 2013; 10:26-34 [In Persian].
[3] Kunt, H., Dayıoğlu, H., Çaycı, M.K., Korkmaz, M. (2013). The Assessment as Bone Mineral Density of Bone Damage in Radiology Workers Occupationally Exposed to Ionizing Radiation. European Journal of General Medicine; 10(4): 214-218.
[4] Al-Shorbaji N. Health and Medical Informatics: Technical Chapter in Health Information Support, Regional Office for the Eastern Mediterranean. Geneva, Switzerland: World Health Organization 2001.
[5] Leon-Chisen N. Coding and quality reporting: resolving the discrepancies, finding opportunities. Journal of AHIMA 2007; 78:26-30.
[6] Foley MM, Garrett GS. Code ahead: key issues shaping clinical terminology and classification. Code Ahead: Key Issues Shaping Clinical Terminology and Classification/ AHIMA, American Health Information Management Association 2006.
[7] Khorami F, Alipour J, Dehghani M. The Impact of Errors in Completing Death Certificate on Coding, Underlying the Cause of Death in Shahid Mohammadi Hospital of Bandarabbas. Journal of Health Administration 2013; 15:76-84 [In Persian].
[8] Organization WH. Medical Record Manual: A Guide for Developing Countries.; 2 Edd. Geneva, WHO publicaons 2006:43-6.
[9] Doshmangir L, Rashidian A, Moaeiri F, Akbari Sari A. Effect of proposed changes of relative values of different specialists medical tariffs on payment weight of specialties and health system costs. 2011.
[10] Price E, Robinson K. Professional practice and innovation: The coding masterpiece: a framework for the formal pathways and processes of health classification. Health Information Management Journal 2011; 40:14-20.
[11] Kunt, H., Dayıoğlu, H. (2011). The Effects of Radiation on Bone Mineral Density of Radiology Workers Depending on The Device They Use. European Journal of General Medicine; 8(4):318-322.
[12] Rasidian A, Doshmangir L. Substitution of 'California'book, the First Clinical and Diagnosis Tariff Reference book in Iran: Expert's View Points. Medicine and cultivation Research Journal 2013; 22:59-78.
[13] Ismail, H.C., Biswal, B.M. (2004). Fatigue in cancer patients treated by external radiotherapy. European Journal of General Medicine; 1(1): 9-13.
[14] Karami M, Safdari R, Moini M. Impact of hospital deductions imposed by the social security insurance on patient's teaching hospitals of Kashan. Journal of Urmia Nursing And Midwifery Faculty 2010; 8:0-.

[14] Karami M, Safdari R, Moini M. Impact of hospital deductions imposed by the social security insurance on patient's teaching hospitals of Kashan. Journal of Urmia Nursing And Midwifery Faculty 2010; 8:0-.
[15] Khorami F, Hosseini ER, Baniasadi T, Azarmehr N, Mohammadi F. Prioritizing insurance deductions factors of Shahid Mohammadi hospital inpatients records using Shannon Entropy, Bandar Abbas, Iran. Hormozgan Medical Journal (HMJ) 2013; 17:77-82 [In persian].
[16] Nayman, A., Odev, K. (2013). Diagnosis of Pulmonary Embolism By 64-Detector MDCT Combined with Doppler Ultrasonography and Indirect CTV of The Leg: A Different Protocol, European Journal of General Medicine; 10(1):7-13.
[17] Öktem, Z.B., Songür, E., Öz, F.T. (2012). Dental Treatment of A Xeroderma Pigmentosum Patient Under Deep Sedation. European Journal of General Medicine; 9(1):149-151.
[18] Mitra I, Malik T, Homer JJ, Loughran S. Audit of clinical coding of major head and neck operations. The Annals of The Royal College of Surgeons of England 2009; 91:245-8.
[19] Rezaei S, Arab M. Effects of the New Health Reform Plan on the Performance Indicators of Hamedan University Hospitals. Journal of School of Public Health and Institute of Public Health Research 2016; 14:51-60.