

Evaluation of Recorded Data for Patient History and Final Diagnosis in Brucellosis Patients in a Major Training Hospital, North-East Iran

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Abstract

Purpose: Patient history and final diagnosis information must be properly recorded and stored in the patient's medical chart. The purpose of this study was to evaluate the information adequacy of the patient history forms as well as the concordance of the final diagnosis recorded in the medical records of patients with International Classification of Diseases (ICD) system. **Methods:** This cross-sectional study was performed with 201 hospital records of patients with a final diagnosis of brucellosis at Imam Reza Hospital in Mashhad, Iran between the years of 2013-2017. First, the adequacy of the patient history form was assessed. Then, the final diagnosis recorded by the physician in the patient's file was matched to the ICD code. **Results:** The results were as follows: Patient age and history of drug use in 96%, marital status in 17%, address of residence and occupation in 42%, 3% and 38% of the height and weight of patients respectively, education in only one patient, history recent travel 15% and animal contact status in 53% were recorded in patient history forms. In 166 cases (82%), the final diagnosis recorded by the physician complied with the full ICD code. Brucella arthritis and neurobrucellosis were the definitive diagnoses that had the highest number of unrecorded ICD II codes in the patient records. **Conclusion:** Due to incomplete and/or incorrect taking of patient history, appropriate educational and training methods for physicians in training hospitals should be implemented. Concerning the final diagnosis recorded in the patient's file, physicians also need to learn about ICD and the importance of detailed recording in the final diagnosis.

Keywords: Brucellosis, Final diagnosis, ICD, Biography, Patient records

INTRODUCTION

Health information plays a key role in the prevention, diagnosis, treatment, and prognosis of diseases; about 85% of activities a physician performs during his or her professional career include collecting, organizing, and using this information in disease management [1]. Furthermore, having a correct information database is also a basic requirement in any research. Incomplete and/or inaccurate data in addition to causing legal problems also have clinical implications as well as affecting researches aimed at improving the treatment of patients. We can thus conclude that the complete recording of hospital information in the medical records of patients is a necessity in medical sciences [2].

In recent years, many health information activists have proposed strategies to identify factors that may contribute to improving the quality of medical care. One of the key requirements for improving the quality of medical care is documentation. Documentation includes the recording of clinical, laboratory, and imaging procedures and the clinical

outcome of the patient, which are of particular importance in the medical records of the patient [3,4]. Previous studies have shown that education and training significantly improve the quality of medical record documents [5, 6] as the American Health Information Management Association claims that training programs are one of the most effective ways to

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improve the medical record registration process [7]. It has also been noted that the use of incentives, updating of medical forms, and frequent review of physicians' records are useful ways to improve documentation [7]. Incomplete and/or inaccurate data collection is a problem which exists all over the world. One systematic review showed that many countries complained of inadequate, inappropriate, and unacceptable hospital information records [8,9].

Among the various information stored, patient history and the final diagnosis records are the most important. Correct diagnosis of the disease is a complicated process that begins as soon as the patient enters the doctor's room. To perform the diagnostic process efficiently, multiple datasets are collected through interviews, previous patient medical records, and previous laboratory and paraclinical tests. Speaking with the patient provides the physician the first valuable information to begin the diagnostic process. During their professional lives, physicians conduct between 100,000 and 200,000 interviews with patients [10, 11]. Although specialized imaging and laboratory studies are helpful for diagnosis, a clinician's clinical skills are an essential element in patient management. Scientific and technological advances in laboratory and para-clinical tests have not altered the fact that physicians' clinical skills determine the path to diagnosis and treatment as the decision to perform these lies in the hands of the physician, who decides which laboratory tests to use, confirms or rejects [1]. Patient history forms in training hospitals, such as Imam Reza Hospital in Mashhad City of Iran, are completed by interns and specialist medical residents; Evaluation of data in the patient records may reflect the quality of the interviews performed. Interviewing skills significantly contribute to patient and physician satisfaction, stress control, patient's ability to recall information, disease diagnosis, and adherence to treatment and therefore patient health [12-16]. Establishing a good physician-patient relationship is vital in achieving a correct diagnosis, which depends highly on effective communication skills [17, 18]. By obtaining a detailed history, physicians receive 60 to 80 percent of the information needed for a diagnosis [19], and a detailed history alone can lead to a correct diagnosis in 76% percent of cases [18]. The right technique of taking a physical history and physical examination enhance the ability of physicians to correctly diagnose, treat, and care for patients. By getting a detailed history and quality physical examination, in addition to establishing a good relationship between the physician and the patient, physicians' assessment of the disease will be more accurate and will, therefore, guide physicians' clinical thinking.

The final diagnosis recorded in the patient record is also of particular importance. All cumulative statistics on the distribution of diseases worldwide are based on the final diagnosis recorded in the patient's medical records; regional and national policies to combat the disease and its associated problems are adopted based on these statistics. The 11th edition of the International Classification of Diseases (ICD) guidelines states that the recording of diagnostic information should be done systematically using standard procedures [20].

The relationship between the final diagnosis recorded by the physician in the patient's case, and the diagnostic code used in the hospital information system is of particular importance. In this study, as a secondary objective, we seek to examine the degree of correlation between the final diagnosis recorded by the physician in the patient's charts with the diagnosis coded in the hospital information system.

METHOD

This descriptive cross-sectional study was performed in Imam Reza Hospital of Mashhad City in Iran. After obtaining permission to review hospital records from the University Research Department, we examined hospital records with a definitive diagnosis of brucellosis between the year 2013 and 2017. A total of 201 hospital records with a diagnosis of brucellosis were evaluated for comprehensive health information; items including age, marital status, address of residence, occupation, height, weight, recent contact with animals, recent travel and education were recorded in the patient records to determine the adequacy of the record form information. Then the final diagnosis cases recorded in the patients' file were matched with the ICD book with the help of a medical record expert. The data extracted from the files were analyzed using SPSS 22 software, and the results were presented.

RESULTS

Of the 201 cases reviewed, 191 (96%) recorded the patient's age, 35 (17%) Marital status, 85 (42%) Address of the patient and in 85 (42%) patient's occupation. The height and weight of only 6 (3%) and 38 patients (19%) were recorded; respectively. Personal and social history of drug use was recorded in 191 patients (96%). Education was reported in only one patient. Recent travel history was recorded in 30 patients (15%) and animal contact was recorded in 107 patients (53%). There was no statistically significant difference between the patient histories taken by medical students (interns) and the training residents. Also, the frequency of factors evaluated was almost the same in both groups. Figure 1 shows a comparison of factors related to personal information and social history taken in two groups of residents and general medical students.

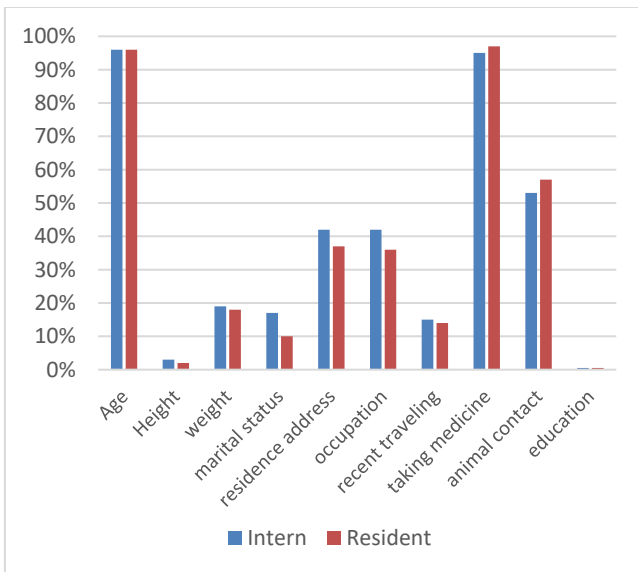


Figure 1: Comparison of recorded factors related to personal information and social history in patient history form with final diagnosis of brucellosis between two groups of residents and general medical students

Table 1 shows the frequency of final diagnosis recorded in the case of brucellosis patients at the time of study at Imam Reza Hospital in Mashhad. As this table shows, brucellosis, brucellosis arthritis, and brucellosis neuro were the most prevalent.

Table 1: Frequency of final diagnosis recorded in brucellosis patient records

Final Diagnosis	Number	Percentage
brucellosis	141	70.1
brucella arthritis	24	11.9
brucellosis neuro	16	8
brucella orchitis	9	4.5
brucella meningitis	5	2.5
brucella endocarditis	2	1
brucella epidural abscess	1	.5
brucella spondylitis	1	.5
TB and brucellosis	1	.5
disseminated brucellosis	1	.5
Total	201	100

Examination of the final diagnosis code recorded in the file revealed that in 166 cases (82%), the complete ICD code consisted of the registration of the first code, the second code, and if necessary, the third code. Table 2 shows the frequency of cases where the second ICD code was not recorded in the patient record. As the table shows, Brucella arthritis and neurobrucellosis were the definitive diagnoses that had the highest number of unrecorded ICD II codes in the patient records.

Table 2: Frequency of final diagnosis of brucellosis in cases of non-recorded of the second ICD10 code

Final Diagnosis	Frequency	Percent
Brucella arthritis	15	41.7
Neurobrucellosis	13	36.1
Brucellaorchitis	3	8.3
Brucella meningitis	2	5.6
Brucella endocarditis	2	5.6

DISCUSSION

According to the analysis and results of this study, it seems that in the two categories of personal information and personal and social history, physicians focus only on age, drug addiction and drug use, which is in stark contrast to the minimum requirement in a standardized history-taking. Patients' marital status, occupation, education, recent travel history, and exposure to pets or livestock are among the factors that may be particularly helpful in determining exposure to pathogens or organisms. Therefore, it is recommended to encourage students and physicians to pay attention to this small and simple but vital component in collecting and recording accurate information in the medical records of patients; thus, positive steps can be taken to help physicians improve their clinical reasoning, and thus be more effective in their diagnosis.

In Iran, in the past two decades, evaluation systems have been closely monitoring the health care system. Accreditation programs are one way that may help improve the quality of health services in this field [21, 22]. Vahedi et al in 2018 studied the impact of teaching medical record-keeping in hospital records. The study concluded that training workshops for specialized training residents significantly improved the medical record keeping of hospital records [23]. Rabeiei et al investigated the status of data recording in the medical records of training hospitals in Hamadan, Iran. Their study showed that hospital records have serious deficiencies in recording information. The study cited reasons for failing to adhere to the correct principles of medical record keeping in educational hospitals due to overcrowding, lack of responsibility by students and interns, and most importantly lack of adequate training [24].

Accurate collection and recording of standard coded patient records are essential for health care planning, analysis, research, and for policymaking. Lack of knowledge on how to record via code and of the rules of coding, illegible handwriting, lack of familiarity with the principles of correct diagnostic write up, and the use of abbreviations are examples of coding errors. In this study, as a second objective, we examined the coding status of brucellosis in hospital records over 5 years. As it became clear from the analysis and results of this study, the final diagnosis recorded in the file did not fully comply with the three-step coding by the ICD. This is

associated with a higher percentage of cases of brucellosis and neuroboris. 15 (42%) out of the 24 patients with brucellosis arthritis had second-degree diagnostic code recorded, these cases were excluded from the diagnosis of infectious arthritis by the hospital information system as these patients with infectious arthritis were individually coded with a diagnosis of brucellosis only. This coding mismatch can also be seen for neurobrucellosis. Therefore, data extraction from the hospital information system and retrospective studies will be automatically eliminated, which will reduce the accuracy of retrospective studies. In this regard, it is recommended that hospital managers establish appropriate interventions to improve the status of the final diagnosis recorded in the patient's file and to comply more closely with the ICD. Although this study was conducted at Imam Reza Hospital in Mashhad, it is expected that the results of this study will be similar to other hospitals since the structure of training hospitals throughout developing countries is the same, furthermore, all intern and specialist residents follow the same training program as well.

CONCLUSION

The required information items are not fully recorded in the patient history form with the final diagnosis of brucellosis, and it is necessary to design appropriate training and intervention courses for interns and assistants in teaching hospitals. In some cases, the final diagnosis recorded by the physician in the patient record does not correspond to the final diagnosis registered with the ICD in the hospital information system. It also requires physicians to understand the ICD and the importance of detailing the final diagnosis as well as the legal requirement for detailed records of the final diagnosis.

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