Association of discharge diagnosis with initial clinical findings

Abstract

The objective is to investigate the matching between emergency department and discharge diagnosis as well as how investigations affect accurately of emergency department diagnosis. The study was conducted retrospectively over a six-month period. Setting: The ER Department at KSMC, including four in-patient specialties: orthopedics, surgery, and medicine. Subjects: All patients that entered the emergency room during the study period. The correlation degree of hospital discharge diagnosis and admission diagnosis serve as the primary outcome markers. Results: 72% of diagnoses at admission completely or partially matched diagnoses at discharge. Young people, and traumatized cases had significantly superior diagnosis accuracy, according to data. The diagnostic accuracy was impacted by the specialization department and the investigations done. In conclusion, the physical examination and history are still the two most important diagnostic techniques employed in the emergency room. Simple tests available in the ER were frequently ineffective at improving diagnostic accuracy.

Introduction

There are significant clinical, monetary, and legal ramifications in the event of a discrepancy, making it challenging to maintain a high accuracy rate between admission and discharge diagnosis. One of the primary consequences of inconsistent diagnosis is the prolongation of hospital stays (Johnson et al., 2009). The process of diagnosis entails identifying the illness that is the source of a patient's symptoms and warning signs. Investigations, the physical examination, and the history all play a significant role in making a successful initial diagnosis. Investigations were frequently conducted throughout the procedure. It enables the medical professional to select the optimal treatment option and prognosis. The diagnosis determined at the admission time forms the basis of the doctors' initial treatment plan, which also explains why some patients receive several types of care throughout their hospital stay. When a different diagnosis is made while the patient is in the hospital, it could result in complaints from the patient and legal action. (Leape et al., 1991).

Inadequate investigations and administrative mistakes are among the factors contributed to the diagnosis being insufficient at admission time (Chiu et al., 2003). The initial diagnosis for a patient admitted fromED is frequently made based on the patient's entry presentation, clinical examination, and laboratory investigations. Additionally, the original diagnosis might not match the one offered by the doctors who admitted the patient to the ward. As a result, the diagnosis could change while the patient is in the hospital, especially in complicated circumstances, leading to a new discharge diagnosis (McNutt et al., 2012).

13% of patients admitted from the ED to inpatient care in GH Lim et al., 2003 study exhibited discrepant (unmatched) diagnosis (Lim et al., 2002). According to a different study, orthopedic patients, diagnosis accuracy was 76%, and for surgical patients, it was 90.3%. (Chiu et al., 2003).According to Pakistani retrospective study which was conducted in a tertiary hospital, mismatched diagnoses made in medicine department through emergency department was 41% in 1995, 37% in 2000, and 14% in 2007 (Shahid et al., 2012).

The goal of our study was to identify diagnostic discrepancies frequency between hospital discharge and emergency department diagnoses. Additionally, we sought to understand the patient and diagnostic characteristics that lead toincreased rate of diagnostic mismatchsame as the impact of various investigation types on the accuracy of the diagnosis.

Method

March through August in 2021 were the six randomly selected months. Retrospective computer data of every patient admitted from the KSMC's ER department to the medical, surgical, and orthopedic departments were examined. This review covered the months of March 2021 to May 2021.

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It was investigated how specific the ED doctors' provisional diagnoses were. A diagnosis was considered to be precise if it identified a specific disease process affecting one or more distinct organ or structure. For instance, chest discomfort was not thought to be particular although peritonitis was. This concept took into account the ED's operational constraints. For instance, determining whether upper gastrointestinal bleeding is coming from the oesophagus, stomach, or duodenum may be impossible for ED clinicians. The degree of agreement between the emergency department diagnosis and discharge diagnosis was used to gauge accuracy.

Full match meant that the discharge diagnosis agreed with the ED diagnosis, regardless of whether it was specific or not. When the ED diagnosis and the discharge diagnosis were only partially in agreement, this is known as a "partial match." For example, when an acute appendicitis emergency department diagnosis partially matched a discharge diagnosis of caecal diverticulitis, (More information will be given in the section on the results). The authors considered every possible "partial match" scenario before coming to their conclusions. When there was no connection between the admission diagnoses and discharge one, it categorized as "unmatch."

The impacts of age, sex, medical specialization, and the type of ED examination (including X-ray, blood tests, urinalysis with reagent strips, electrocardiography and ultrasonography) on the accuracy and level of diagnostic matching were evaluated. Version 24 of SPSS was used to process and analyze the data. For assessing hypotheses, the chi-squared test and t test were used.

Ethical approval was obtained by ministry of health under IRB number (). Also approval was obtained from KSMC managers who gave us the permission to access patient’s files.All information was kept confidential, no one will have access to data unless the statistician and data processers.

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Results

The study had 2278 admissions in total. Ages ranged from under a year to 102 years (mean 49, median 57). The diagnostic accuracy was shown to be considerably higher in the younger age group when the adult patients were divided into groups by age (18-63 years versus 64 years or above, p value less than 0.001). The ratio of men to women was 1.38:1. Males were much younger than females in terms of age (female mean age 53, male mean age 46, p value less than 0.001). Significantly improved specificity and matching were linked to male sex (p value less than 0.001).

The medical department was visited by the majority (52.9%). The remainder was admissions to the surgical department (18%), and orthopedic department (12.7%) and rest department was excluded. 54.2% of cases were classified as urgent (Category 3), while 36.4% were less urgent (Category 4). Only 10.4% were due to trauma. Among the diagnoses given upon ED admission, 67.7% were specific, and 71.6% were a complete or some match with the diagnoses given at discharge.Due to our inherent constraints, ED doctors were unable to make exact diagnoses, hence they were considered to be only matched partially with the final diagnoses. For instance, even though an intestinal obstruction could be clearly diagnosed in ED, the underlying reason would typically be impossible to identify through clinical means. Another reason for awarding a partial match to an emergency department diagnosis was that ED clinicians occasionally preferred to make an open diagnosis that was less specific but yet informative enough to move forward with additional research and care. As a result, diagnoses such as chest illness, hip fracture, and injuries to the finger, leg, or foot were considered partial matches.

If a particular provisional diagnosis was made in the ED, there was a significantly higher chance of having a full or partial match of diagnosis (83.4% versus 46.9%, p0.001) (Table 1). In traumatic situations, the diagnosis accuracy was statistically higher (85% versus 70.2%, p 0.001). (Table 2)

Figure 1 displays the diagnosis accuracy across several specialties. Table 3 displays the use of investigations for cases that were accepted to the ED.

Table 4 displays having blood work done (most commonly a complete blood picture, or CBC) considerably increased the diagnosis accuracy (p value=0.03). Surprisingly, for medical admissions, those without an ECG or an X-ray had far higher accuracy (p less than 0.001). Blood testing had no significanteffect on the matching. There was no discernible difference between patients who underwent ED investigations versus those who did not, for surgical and orthopedic admissions.

Table 1.Matching by specificity of emergency department diagnosis (p<0.001)

	Full or partial match	Not matched
Specific diagnosis	1457 (83.4)	290 (16.6)
Non-specific diagnosis	390(46.9)	441 (35.1)

Table 2.Matching between patients with trauma and patients without trauma (p<0.001)

	Full or partial match	Not matched
Trauma	220(85)	39 (15)
Non-trauma	1627(70.2)	692 (29.8)

Figure 1. Accuracy of admission diagnosis in each specialty

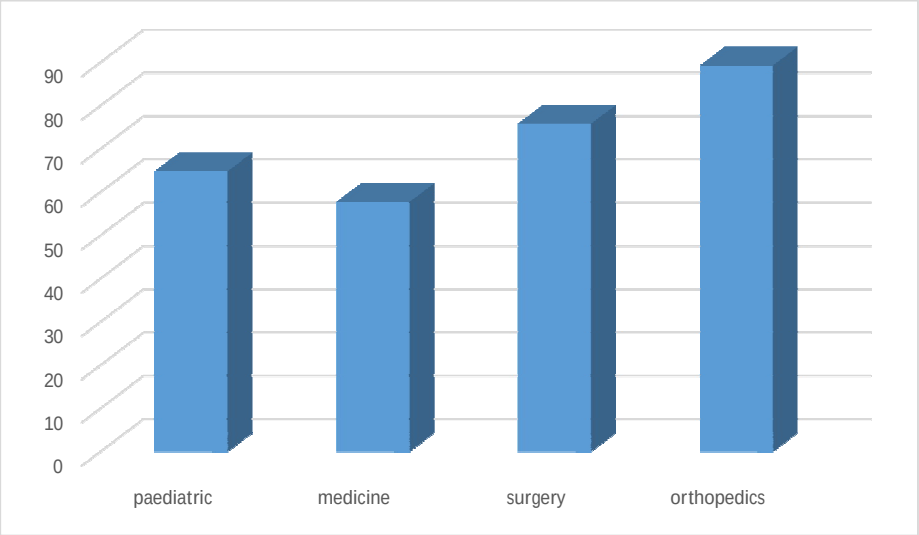

Table 3. Frequency and (percent) of investigations used in each case type

	X RAY	Blood Investigations	Electrocrdiography	Urine analysis	Ultrasound
Medical	1118 (81.9)	709 (51.9)	791 (57.9)	69 (5)	5 (.3)
Surgical	269 (57.9)	176 (37.9)	52 (11.2)	52 (11.2)	38 (8.1)

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Orthopedic	679 (85.8)	181 (22.8)	459 (58)	19 (2.4)	4 (.5)
Total	2166	1066	1302	140	47

Table 4. Effect of investigations on accuracy of diagnosis

	X RAY	Blood Inv.	Electrocardiography	Urine analysis	Ultrasound
	P value				
Medical	0.001*	Not S.	P value 0.001*	Not S.	Not S.
Surgical	Not S.	P value 0.05	Not S.	Not S.	Not S.
Paediatric	Not S.	Not S.	Not S.	0.05*	Not S.
Orthopedic	Not S.	Not S.	Not S.	Not S.	Not applicable

* indicate negative effect on diagnosis accuracy

Inv. Investigations

Discussion

This was the first and largest local investigation on the relationship between hospital discharge diagnosis and emergency department admission diagnosis. Only a few similar research have been published in the international literature. In order to ascertain the frequency of missed diagnoses at the emergency department at King Fahd Hospital of the University (KFHU) in Khobar, Saudi Arabia, as well as the pertinent causes, a retrospective cohort research was conducted there in 2009. According to their analysis, missed diagnoses made up 8% of cases, fully/partially matched diagnoses were 62%, unmatched diagnoses were 10%, and symptoms & unspecific diagnoses made up 18%. Interns encountered a high percentage of fully/partially matched diagnoses (65%) compared to consultants high percentage of unmatched diagnoses (26%)(El-Mahalli and Mokhtar., 2009).

In contrast to X-rays, which negatively affect diagnostic quality in the medicine department, our study indicated that blood investigations increased diagnosis accuracy in emergency surgical situations. Accuracy may also improve as you gain more experience interpreting X-rays. Over-interpretation, which could be caused by a combination of insufficient information gleaned from the patient's medical history and a lack of experience reading X-rays, could be used to explain the current study's findings regarding the potential detrimental effect of X-rays on diagnostic accuracy. While examining X-rays, radiologists occasionally request extra clinical data in order to do "clinical correlation" and determine the most likely diagnosis. Prior to a patient's final disposition, senior on-site doctors or even radiologists may be consulted. (George et al., 1992; Fleisher et al., 1983; Preston et al., 1998).

Li et al., 1995 found a diagnosis error rate of only 4%, their study relied on the initiative of the inpatient specialists to get feedback. The current study may act as a motivating point for future investigations into the accuracy of emergency department diagnoses, clinical audits, or other quality assurance activities. Overall, especially in the orthopedicspecialty, the level of specificity and matching attained was satisfactory. But there is always room for development, particularly for geriatric patients. The specific requirements and diagnostic quirks of emergency problems in elderly people should be covered in emergency medicine training, as some writers have noted (Kizer and Vassar, 1998); McNamara et al., 1992).

Patient history and clinical examination are the two tools that one may use to increase the accuracy of an ED diagnosis because straightforward investigations like X-rays, bedside urinalysis, electrocardiography, and blood tests are not that helpful in doing so. Therefore, it is crucial for medical professionals working in the ED to learn the ability and art of doing a physical examination and taking a history effectively.

Conclusion

Improvements in ED diagnostic accuracy are definitely needed, particularly for nontrauma situations, young patients, and the elderly. Better training in indicators and interpretations is necessary because it was discovered that the straightforward investigations offered at emergency departments were useless and even misleading. The most crucial and fruitful diagnostic methods

for emergency physicians continue to be the patient history and clinical examination parts of good clinical evaluation approaches.

References

Comment [Op4]: Rewrite all reference in same pattern according to journal guideline.

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