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Prevalence and outcomes of unscheduled revisits within 72 hours of discharge from emergency department

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Abstract

Introduction: Emergency Department (ED) revisit shortly after discharge not only increases the workload but also impacts healthcare cost and quality of patient care. The main aim of this study was to determine the rates, causes, and outcome of revisits within 72 h of ED.

Method: A cross-sectional study over six months was carried out in the ED of Patan Hospital, Patan Academy of Health Science (PAHS). All patients who revisited an ED within 72 h of the initial visit were included. Variables studied were age-group, gender, chief complaints, diagnosis of initial and revisit. Study was ethically approved by the Institutional Review Committee of PAHS. Data were analyzed descriptively using MS Excel and SPSSversion20.

Result: Out of 23,879 cases, 280(1.2%) revisited the ED within 72 h. Fever was the most common symptom accounting for 109(38.9%) patients of total revisit cases. In 190(67.9%) patients, the main reason for the visit was due to the symptoms not getting better. Around two-third i.e. 177(63.2%) of revisits were discharged and 103(36.8%) were admitted. Maximum revisits were found to be done among the 20-59y age group.

Conclusion: The main reason for the revisit to ED was due to the persistence of the previous symptoms.

Keywords: emergency, revisits, outcome

Introduction

Overcrowding of the Emergency Department (ED) is an outgrowing problem in most tertiary hospitals. An unscheduled visit to the Emergency with a similar problem is considered a revisit.¹

Such revisits shortly after discharge not only increase the workload but also highlights the importance of quality care and appropriate follow-up.² Similarly, reducing the number of revisits not only reduces health care cost but also reduces the wait time for much needed critically ill patients.¹⁶ Average waiting time, overcrowding and use of unnecessary hospital resource is observed due to increased revisits case in the emergency department.¹⁹ Studies conducted in South Columbia and Qatar showed 6,858(3.2%) and 849(3.4%) of the total emergency visit cases revisited within 72 h of discharge respectively.^{7,8} However, some studies showed 3839(6%) of total cases revisited within 72 h of the initial visit.¹⁴

The elderly population, existing comorbidities, diagnostic errors, adverse events, treatment errors, improper treatment were some of the factors identified for revisits in Emergency.^{3,4} However, there is no data available in Nepal for revisit which signifies this study.

This study aimed to determine the rates, reason, and outcome of revisits in our setting as there is limited data regarding this issue. Since various factors which can be patient-related, physician-related, or disease-related contributing to revisits have also been studied, it can reduce the rates if properly addressed.⁵ This study may help in improving patient care as the revisit rates are also considered as a tool to assess the quality of care.⁶

Method

This was a cross-sectional study of prospectively collected data from 1 August 2019 to 31 January 2020 in the ED of Patan Hospital, Patan Academy of Health Sciences (PAHS), Nepal. Patients revisiting the ED within

72 h of discharge were included. Patients who left against medical advice were excluded from the study. The study was approved by the Institutional Review Committee of PAHS (Reference Number: drs1908051284).

The primary objective of the study was to find out the prevalence of emergency revisits within 72 h of discharge and causes of revisits. The secondary objective of the study was to analyze the outcome of the revisits in terms of admission or discharge and cause of revisit as persistence of original complaint, new symptoms, worsening of the symptoms, or adverse effect of the drugs.

A proforma was attached along with the Emergency form. Consent was taken from the patient to collect their information in the Triage area. The on-duty emergency doctors were informed beforehand regarding the study and the data to be collected: age, gender, address, date and time of discharge, diagnosis at the time of discharge from their previous visit and revisit date and time, any new complaints, revisit diagnosis and admission to the ward or discharge from ED after the revisit.

The MS Excel was used to collect data and analyzed descriptively using statistics SPSS version 20.

Result

Out of 23,879 patients who visited the ED of Patan Hospital, during the study period, a total of 280(1.2%) patients revisited the ED within 72 h of discharge. Females accounted for 160(57%) of total revisits. The reason for revisits among 190(67.9%) was due to symptoms not getting better. The maximum number of revisits 60(1.8%) occurred in November and was highest among the age group of 20-59 y accounting 167(59.6%) followed by above 60 y age group and 0-9 y age group comprising 57(20.3%) and 35(12.5%) respectively.

Analysis of the result shows the main causes of revisits were fever in 109(38.9%), followed by pain abdomen in 81(28.9%), shortness of breath in 20(7.1%), and headache being the least common cause for a revisit with only in 7(2.5%). During the revisit, 60(21.42%) cases presented with new complaints whereas the rest of them had the same presenting complaint with which they had presented on the initial visit. Regarding the final diagnosis among the revisit cases, 203(72.5%) patients had the same diagnosis whereas 77(27.5%) had a different diagnosis. During the ED revisits, among new diagnoses, 11(8.47%) of total new diagnoses were diagnosed as Sub Acute Intestinal Obstruction, followed by

9(6.93%) as Enteric Fever and 8(6.16%) as Acid Peptic Disease.

Two-third i.e. 177(63.2%) of revisits were discharged and one-third i.e. 103(36.8%) were admitted to different wards of the hospital. Most of the admissions were in the medicine department 37 cases, (35.6%) followed by 21(20.2%) cases in surgery, and then 19(18.3%) in the paediatric ward (N=19, 18.3%).

During the initial visit, 50(17.8%) were diagnosed with Acid Peptic Disease, followed by other categories of disease in 46(16.4%) and Urinary tract infection/renal colic in 40(14.3%).

Table1. Demographics of emergency department (ED) patients with unscheduled revisits within 72 h of discharge (N=280)

Variables	Total ED, N	Revisits, N	%
Total	23,879	280	1.8
Age y			
0-9	4590	35	0.8
10-14	770	9	1.2
15-19	1301	12	0.9
20-59	13209	167	1.3
≥60	4009	57	1.4
Gender			
Male		120	43
Female		160	57

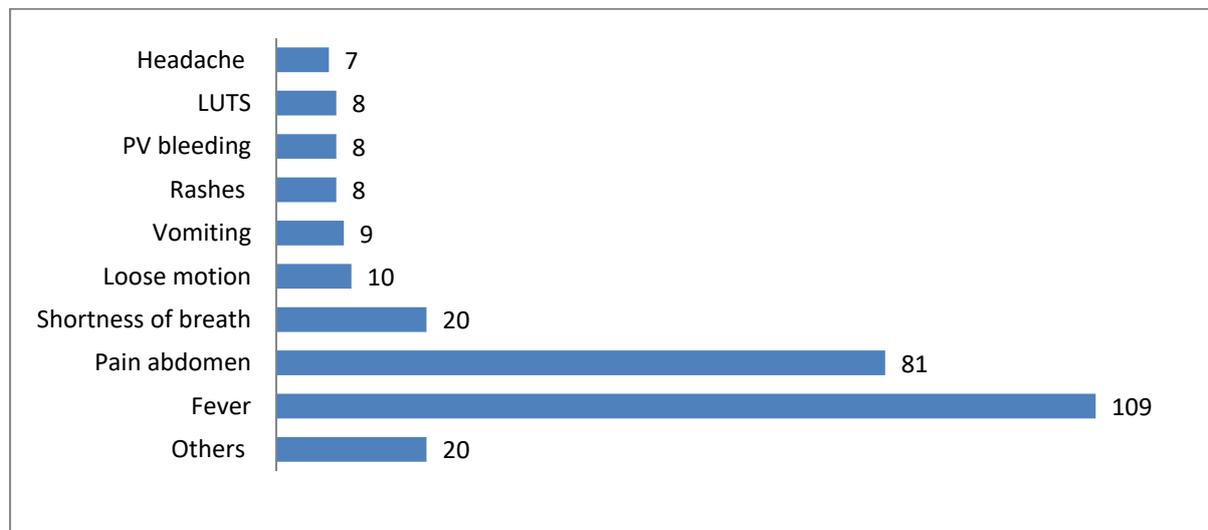


Figure 1. Chief complain during the first visit to the ED (N=280)

LUTS= Lower Urinary Tract Symptoms, *PV Bleeding= Per Vaginal bleeding

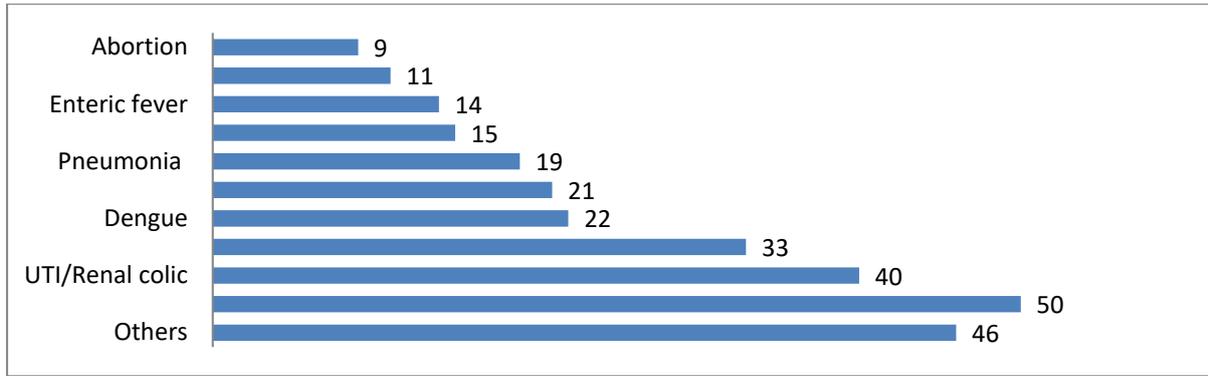


Figure 2. Discharge diagnosis on the first visit to the ED (N=280)

AGE- Acute Gastro enteritis, *URTI= Upper Respiratory Tract Infections, *AE COPD= Acute Exacerbation Chronic Obstructive Pulmonary Disease, *UTI= Urinary Tract Infection, *APD= Acid Peptic Disease

Table 2. Reason and outcome of unscheduled revisits within 72 h of discharge from ED (N=280)

Unscheduled revisits	N	%
Revisit diagnosis		
Same as the previous diagnosis	203	72.5
Different than the previous diagnosis	77	27.5
Reason for revisit		
Symptoms did not get better	190	67.9
Symptoms got worse	31	11.1
Adverse effects of drugs	5	1.8
Additional complaints	49	17.5
Symptoms recurred	5	1.8
Outcome of revisit		
Admitted	103	36.8
Discharged	177	63.2
Admission (ward) of revisit		
Medicine	37	35.6
Surgery	21	20.2
Pediatrics	19	18.3
GP unit	16	15.4
Gynae/Obs	7	6.7
Others	4	3.8

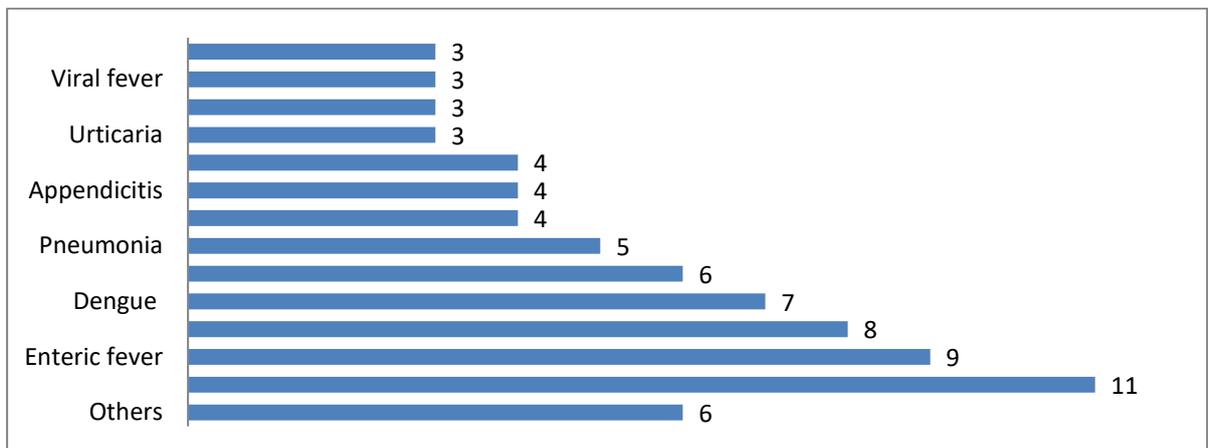


Figure 3. New diagnosis on revisits to ED

Note: SAIO-subacute gastrointestinal obstruction

Discussion

The prevalence of revisits in the ED within 72 h of discharge was found to be 1.2% (280 revisits out of a total of 23,879 ED cases). The rate is slightly higher compared to other studies conducted in South India (0.7%) and Thailand (0.2%).^{3,4} However, the studies have included revisits within 48 h of discharge only. Similarly, studies with longer time frames had higher rates of hospital emergency revisits.⁷

On contrary, a retrospective study done over a one-year time frame in Eastern Taiwan showed 1575/42379 (3.7%) revisit after 72 h of the initial emergency visit, which is higher compared to our study.¹⁵ Many previous studies and studies were done in Eastern Taiwan showed revisits to ED within 72 h were more common among the male gender, compared to females.¹⁵ However, on contrary, our study showed the revisits to ED were prevalent among females. This could be due to pre-existing chronic illnesses and early discharge from ED with improper treatment/missed diagnosis.

Among the revisit cases, the age group between 20-59 y had more revisits. This corresponds with studies done in Qatar and Malaysia where the majority of revisits were from the age group 20-40 y and 20-65 y in another study conducted in Columbia.⁸⁻¹⁰ and contrary to the report from in Singapore which showed >60 y aged population revisiting the most. The studies done in Qatar and Malaysia support our study that older age is not one of the main factors for revisits to ED. Of the total revisits, 67.9% presented due to initial symptoms not getting better and 17.5% had an additional complaint. The persistence of initial complaints resulted in 60.3% of revisits in Al Khor hospital, Qatar, and 85.1% of revisits in a study done in Belgium.^{8,11} Most of the studies done in multiple countries showed that most revisits were due to mainly symptoms not getting better, which was similar to our study. This could be due to inadequate management or missed diagnosis during the initial visit to ED. This is considered as one of the important risk predictors of the ED revisit shortly after the

initial visit. Several studies have also shown various predictive risk factors as a causative factor for ED revisits, which are classified into three different categories: illness, patient, and provider-related factors. Among which illness-related posed highest for the return to ED after the initial visit.¹⁴ A study done in the US at multilevel hospitals showed 88.6% of total revisits were found to have switched to other hospitals.¹⁶ The reason for switching to other medical centers could be predicted either due to patient-related factors or service provider-related factors. Revisits to other hospitals ED other than our hospital could have been done in our study, and could not be identified. Since our study was a single-center study, patients switching the hospitals could have been missed. Hence a multicentered study would help in validating our findings.

Fever was the most common presenting complaint during the initial visit and revisit in our study. This might be due to the dengue outbreak that occurred for the first time in Kathmandu in July 2019. The enteric fever seemed to be the other important diagnosis for the repeat visit due to fever.^{12,13} Respiratory problems were the frequent presenting complaints in the study conducted in Malaysia and Turkey whereas abdominal pain accounted for the first and second most presenting complaints in different studies done with similar objectives.^{7,10,18,20} These complaints are attributed to the next common presenting complaint in our study. Return visits to ED due to previously diagnosed lower respiratory and upper respiratory tract infections among patients could be due to cold season, missed or wrong diagnosis, and short ER stay during the first visit. The majority of cases (72.5%) had the same diagnosis on their revisit. No mortality or serious adverse events were observed in the revisit cases. The admission rate is higher (36.8% of total revisits) as compared to the study done in Colombia where the rate was 14%.⁹ This may be due to the higher incidence of additional complaints in our study group and the pre-existing symptoms of coexisting illnesses. A similar time frame retrospective cohort study done in Eastern Taiwan had an admission rate of

16.5%.¹⁵ Possible risk factors such as male gender, a longer length of stay was identified as the cause of admission, however, other factors such as age, comorbidities, mode of arrival, consultation, triage level were not associated with return admission.^{15,17} Though most of the admissions were in the medicine department, change of diagnosis was noticeably observed for abdominal complaints. This might also correlate with the pathophysiology of abdominal pain and availability of choice of investigations in the setting. Similar findings have also been observed in other studies where abdominal pathologies were the most common cause of missed diagnosis for a revisit. Identification and limiting the measures of more severely ill patients during the initial visit seems an important factor to minimize the revisit. Return visits with life-threatening diagnosis also suggest that medical error has occurred in the first visit.^{7,13,20}

Apposite record-keeping would help to identify the common characteristics of such patients and also guide on altering the management plan for most common chief complaints. Care should also be taken in discharging the patient early to avoid serious consequences. Another important aspect is the appropriate counseling of patients at the time of discharge regarding the course of illness and danger signs that truly need follow-ups in ED. Predicting the patient for likely revisits to ED would help to plan and appropriately use hospital resources. Identification of possible predictors those are likely to contribute in revisits after discharge such as patient-related factors (comorbidities, pre-existing illnesses, patient satisfaction/education, nature of diseases), physician-related (updated medical knowledge, misdiagnosis, inadequate essential treatment, adequate time given to the patient during the first visit) and provider-related factors (proper systematic patient flow management at ER, adequate resources) must be identified and reassess during the initial ED visit. This requires the updated knowledge and guidelines among the doctors working in Emergency, and availability of adequate

updated essential hospital ED resources. As most of the ED have their protocol, global standardization of protocols could help minimize the missed diagnosis and revisits. However, further study is required to suggest ways to improve the quality of care to minimize revisits in the emergency.

From our study, effective updated medical education for medical personnel to avoid wrong diagnosis/for identifying existing hidden illnesses, adequate time given to the patient at ED, and adequate essential hospital resources seems to be important to minimize the unnecessary revisits to ED shortly after the initial visit.

Some of the limitations of our study may be a cut-off of 72 h, and if we had used this shorter cut-off of 24 or 48 h like others studies, the findings will differ. Still, our finding does provide baseline data in local setup for further study.

Conclusion

Among the revisits at emergency, most of the patients revisited due to the persistence of initial symptoms. Possible predictive factors for the increase in unscheduled return visits could be a wrong initial diagnosis, length of stay in ED during the first visit, coexisting illnesses, and medical error.

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Conflict of Interest

None

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None

Author Contribution

Concept, design, planning- RM,AJ; Literature review- RM; Data collection/analysis- RM,GT,AJ; Draft manuscript-RM,GT; Revision

of draft- RM,GT; Final manuscript- RM,GT;
Accountability of the work- RM,GT,AJ.

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