

## Prevalence and Etiology of Early Return Visit (ERV) Within Three Days of Discharge in Emergency Department

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### ABSTRACT

**Objective:** To determine the frequency and etiology of Early Return Visits within 3 days of discharge to the Emergency Department.

**Study Design:** Prospective longitudinal study.

**Place and Duration of Study:** Emergency Department of Combined Military Hospital, Rawalpindi Pakistan, from Jan to Jun 2022.

**Methodology:** All patients visiting the Emergency Department within the defined 6-month period were included in this study, which came to 101'113. To determine overall incidence of Early Return Visits, total number of patients revisiting within 72 hours of Emergency Department discharge was used. To find out the possible factors responsible for ERVs, a sample size of 80 patients revisiting the Emergency Department was calculated through World Health Organization calculator and selected through random sampling technique. Factors responsible for unscheduled Early Return Visits were divided into three broad categories: Doctor-associated, Disease-associated, and Patient-associated.

**Results:** The total number of patients revisiting Emergency Department within 72 hours was 2,880 (2.9%). Out of these 52.5% patients reported back to the Emergency Department due to disease-associated reasons, 27.5% due to doctor-related reasons, and 20% revisited for patient-related reasons.

**Conclusion:** Two-point nine percent patients made ERVs to the Emergency Department within 72 hours. The most common causes of Early Return Visits in this study are disease-related issues followed by doctor-related issues.

**Keywords:** Early return visit, Emergency room visits, Patient discharge.

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### INTRODUCTION

Early return visits (ERVs) to the Emergency Department (ED) are a constant issue faced by most EDs around the world. They are one of the many factors contributing to ED overcrowding, excessive burden on healthcare resources, patient dissatisfaction and conflicts in the ED.<sup>1</sup> ERVs are also an important quality Key Performance Indicator (KPI) used to assess the efficiency and efficacy of quality of care provided in the ED.<sup>2</sup> ERV can be defined as the ED visit by a patient who returns to the department with the same or different problem within 3 days or 72 hours of ED discharge.<sup>3,4</sup>

The average ED ERV rate within 3 days of discharge ranges from 1.3-8.7%.<sup>5-6</sup> High incidence of ERVs add to ED overcrowding, increased waiting time and compromise quality of care for those requiring

urgent medical care.<sup>7</sup>

Multiple possible factors contribute to ED revisits.<sup>8</sup> Sometime there are genuine reasons to seek emergent medical care like disease progression despite treatment, new onset of symptoms or emergence of warning signs explained by the doctor at index visit for immediate review. However, patients often use ED as a shortcut for quick checkup and to avoid long queues in outpatient departments. Patients also revisit the ED due to lack of knowledge, awareness, or inadequate guidance regarding follow-up.<sup>9</sup>

Potential factors responsible for ED ERVs can be divided into 3 broad categories: (i) Doctor-associated issues include inadequate physician assessment, misdiagnosis, incorrect treatment and unclear discharge instructions. (ii) Disease-associated, where despite optimal therapy on initial visits, patients re-attend due to un-resolving or worsening symptoms or development of complications. (iii) Patient associated

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which are due to non-medical factors such as financial issues, poor patient education and inability to visit the OPD.<sup>5</sup>

Several international studies demonstrate a variable revisit rate and enlist numerous contributing factors. However, no such data is available in Pakistan to-date. Therefore, this study is being conducted to determine the incidence and probe into various contributing factors leading to these unscheduled ED revisits.

## METHODOLOGY

The prospective longitudinal study was conducted on patients re-attending the ED of Combined Military Hospital (CMH) Rawalpindi, Pakistan, within 72 hours of their index ED discharge between Jan-Jun 2022 after approval from the Institutional Ethical Review Committee was obtained (IERB approval certificate no 270). WHO calculator was used to calculate a sample size taking reported frequency of ERVs in ED 5.47%.<sup>10</sup>

**Inclusion Criteria:** Patients of either genders, belonging to all age groups presenting to the ED were included.

**Exclusion Criteria:** Patients who revisited after 72 hours of previous ED, were hospitalized at index ED or having more than 5 ED visits in ED were excluded.

All patients attending and revisiting the ED were analyzed to find out the proportion of ERVs. Sample size came out to be 80 patients. After calculating all the patients revisiting ED, a sample size of 80 patients was studied for the various factors responsible for ERVs. The first ED visit during study period was termed as Index visit while a subsequent ED visit by the same patient within 72 hours of the index visit discharge was termed as ERV. Possible factors responsible for unscheduled ERV were divided into three broad categories: doctor-associated, disease-associated and patient-associated factors.

Written informed consent was taken from the patients revisiting ED and well-designed pro-forma was used for data collection. A sample size of 80 patients revisiting ED were then selected using non-probability convenience sampling to study the various factors responsible for ERVs.

Statistical analysis was carried out using Statistical Package for Social Sciences (SPSS) version 20. Kolmogorov-Smirnov test was used for normality testing. Median with inter-quartile range (IQR) was

used to express continuous variables which did not follow normal distribution while Mean with standard deviation (SD) was used for normally distributed data. For categorical variables Chi-square test was used, Paired t-test (for normal data) and Wilcoxon test (for non-normal data) were used for numerical variables. The *p*-value of  $\leq 0.05$  was considered significant.

## RESULTS

In total 101,113 no of patients presented to emergency department during 6-month study period out of which 2,880 (2.85%) patients reported back to ED within 72 hours of ED discharge. Out of 80 patients with ERVs randomly selected for study, 42(52.5%) were male and 38(47.5%) were females. Mean age of the patients was  $34.68 \pm SD 21.3$  and 18 (22.5%) patients were from pediatrics category. The demographic features of the studied population are shown (Table-I).

**Table-I Demographic Variables of the Patients Revisiting the Emergency Department (n=80)**

Variables	n(%)
<b>Gender</b>	
Male	42(52.5 %)
Female	38(47.5)
<b>Age Categories</b>	
Pediatric	18(22.5%)
Adult	62(77.5%)
<b>Age (years)</b>	
Mean $\pm$ SD*	34.68 $\pm$ 21.3

\*SD: standard deviation

The data comparing index visit and revisit showed that among all the patients at index visit in ED, 41(51.2%), 24(30%) and 8(10%) patients were seen by junior resident, senior resident, and consultant respectively. However, during revisit the number of patients seen by junior resident, senior resident and consultant were 25(31.2%), 38(47.5%) and 16(20%) respectively. Overall length of stay in ED was reduced during return visit. The final outcome of the patients is shown in Table-II.

The most common factors responsible for ERVs were found to be disease-related in 42 cases (52.5%) followed by doctor-related 22(27.5%) and patient related 16(20%) factors (Figure-1). Figure-2 shows sub-categories of factors responsible for ERVs.

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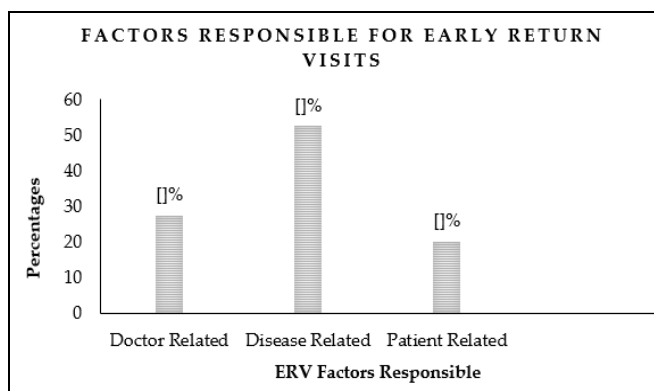


Figure-1. Causative Factors for Early Return Visits

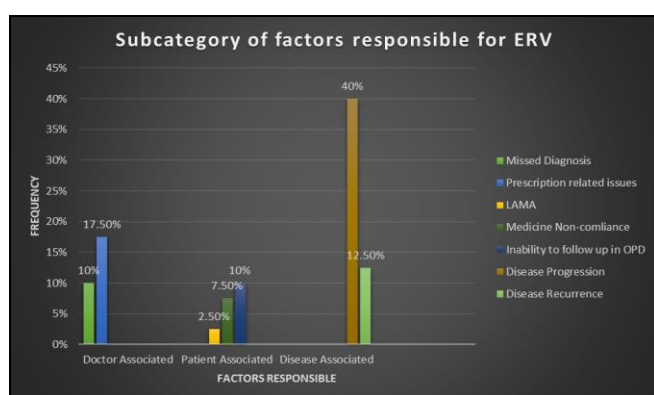


Figure-2. Sub-Categories of Factors Responsible for Early Return Visits

Table-II Index Visit versus Early Return Visit (n=80)

	Index Visit	Early Return Visit	p-value
Physician	n(%)	n(%)	0.078
House Officer/DMO	5(6.2)	1(1.3)	
Junior Resident	41(51.2)	25(31.2)	
Senior Registrar	24(30)	38(47.5)	
Consultant	8(10)	16(20)	
Unknown	2(2.5)	-	
<b>Length of stay</b>			
Median (IQR)	92 min (112 min)	97.5 min (93 min)	0.003
Outcome	n(%)	n(%)	0.001
Discharge with Home medication	74(92.5)	72(90)	
Admission	-	4(5)	
LAMA	2(2.5)	2(2.5)	
Refer to other hospital	1(1.3)	-	
Expired	-	2(2.5)	
Unknown	3(3.7)	-	

## DISCUSSION

The result of our study shows that the overall proportion of patients revisiting the ED within 3 days

of discharge is 2.85%. A literature review of the last decade shows several studies with similar results with ERV rates ranging from 1.3-8.7% in different Emergency Departments.<sup>5-6</sup> One retrospective study done in Saudi Arabia showed ED ERV rate of 1.3%.<sup>5</sup> Similarly, another study published in 2016 showed an overall incidence of ERVs in ED of 4% with 59% of male population.<sup>1111</sup> Another retrospective multilevel analysis of return visits published in 2018 showed ERV rate of 7.5%.<sup>1210</sup>

Our study shows that at index visit in ED, a large number of patients (57.4%) were seen by junior doctors (Junior resident or House Officer) while only 40% were seen by senior doctors (Consultant/Senior registrar). However, during revisit the maximum number of patients (67.5%) were seen by senior doctor. Overall, 5% patients were admitted to inpatient facility at return visit, which is similar to a published study.<sup>1313</sup>

Among all the 80 patients enrolled in the study, 42(52.5%) had disease related issues, which is consistent with previously published data.<sup>14</sup> ERV due to doctor related issues were 22(27.5%) and rest of the 16 cases (20%) had patient related issues. Disease progression or worsening of symptoms was the most common disease-related factor while the most common doctor-related factor responsible for ERV was sub-optimal treatment and prescription issues. Inability to follow up in OPD was the primary patient-related factor responsible for ERV.

For the efficient management of patients presenting to the ED, it is necessary to avoid overcrowding and minimize the avoidable ED early revisits.<sup>1515</sup> It is therefore necessary to identify the underlying causes and factors responsible for these ERVs and devise strategies and develop clinical practices to reduce unnecessary revisits.<sup>1616</sup> This will not only prevent an extra burden on the overstrained healthcare system of a country with limited resources, but also decrease an avoidable financial pressure on patients.<sup>1717</sup><sup>1616</sup>

The literature review of recent years revealed that the possible causes responsible for these early revisits have a lot of variations and that they remained poorly defined.<sup>18</sup>

## LIMITATION OF STUDY

We acknowledge that our study included the patients returning exclusively to the ED of our hospital. Patients might have returned to some other hospital leading to underestimation of unscheduled early returns.

## CONCLUSION

Two-point nine percent patients made ERVs to the Emergency Department within 72 hours. The most common causes of ERV in this study are disease-related issues followed by doctor-related issues.

**Conflic of Interest:** None.

### Authors' Contribution

Following authors have made substantial contributions to the manuscript as under:

KB & TP: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

MASK & SBKM: Study design, data interpretation, drafting the manuscript, critical review, approval of the final version to be published.

AT & MK: Conception, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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