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# RETROSPECTIVE ANALYSIS OF TRENDS AND RELATIONSHIPS IN ER VISITS, OPD REFERRALS, AND OPD PATIENT VOLUMES AT IBRAHIM BIN HAMAD OBAIDULLAH HOSPITAL (JANUARY - JUNE 2024)

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#### Abstract

Background: Healthcare facilities often face overcrowding and extended waiting times in emergency rooms (ERs). This leads to higher patient morbidity and mortality rates and reduces patient satisfaction. Managing patient flow between the ER and the Outpatient Department (OPD) at Ibrahim Bin Hamad Obaidullah Hospital (IBHOH) is crucial to addressing these issues. The study analyzes the relationship between ER visits and OPD workflow from January to June 2024. Seasonal fluctuations, infectious disease outbreaks, and delays in OPD appointments are also considered.

Aim: This study explores the connection between ER visits, OPD referrals, and OPD patient volumes at IBHOH over the first half of 2024. The goal is to find trends and correlations and to understand how these factors affect hospital operations. Understanding these trends is crucial for efficiently allocating resources, improving patient flow, and enhancing the quality of care at the hospital.

Patients and Methods: The study retrospectively reviews hospital records from January to June 2024. Data is segmented by month and validated against multiple sources to ensure accuracy. The study used SPSS and Python to perform statistical analysis. The trends and correlations are visualized through graphs and charts. To ensure patient confidentiality, the study will adhere to ethical guidelines using aggregated data without personal identifiers.

Conclusion: The study reveals a strong link between ER visits, OPD referra ls, and OPD patient volume, suggesting strategic improvements that can manage ER congestion and improve patient care and flow. To maintain high-quality patient care and boost operational efficiency, standardizing referral protocols, adjusting staffing based on real-time data, and implementing continuous monitoring systems are recommended.

Keywords: ER visits, OPD referrals, Patient flow management, Resource allocation, Seasonal factors, healthcare efficiency

Introduction

Ficient patient flow management in hospitals is crucial for timely and effective care. Overcrowding in emergency rooms and long wait times can lead to an increase in patient morbidity and mortality, as well as a decrease in patient satisfaction. <sup>1</sup>Enhancing ER to OPD referrals and managing OPD patient numbers are crucial to solving these problems. <sup>2</sup>However, referrals from the OPD to the ER and delays in OPD appointments further exacerbate ER overcrowding, imposing an extra burden on ER resources.<sup>3</sup> Understanding how ER visits, ER- to-OPD referrals, and OPD patient volume interact and how delayed OPD care affects ER utilization is essential to allocating resources effectively and improving outcomes. <sup>4</sup>This retrospective study analyzes the trends, referral rates, correlations, and impact of ER referrals on the OPD workload at Ibrahim Bin Hamad Obaidullah Hospital, a 200-bed facility, from January to June 2024. It identifies the monthly referral rates from ER to OPD and explores the correlation between these variables.

Previous reviewed studies reveal a steady increase in ER visits and OPD referrals, with notable monthly variations. This referral rate provides insights into the uniformity and variations in general practitioner referral practices, seasonal diseases, and unidentified factors at the practice, patient, or community level.<sup>5</sup> Seasonal factors and specific health crises, such as mental illnesses and increased infectious disease outbreaks (flu, dengue fever), school cycles, natural catastrophes, and heat-related cases at distinct times of the year, may influence this trend. <sup>6</sup>The correlation analysis reveals a positive relationship between ER visits and OPD referrals, indicating that higher ER visit volumes are linked to increased OPD referrals. This finding emphasizes the interdependence of ER and OPD workflows.<sup>7</sup>

While ER referrals contribute to the OPD workload, their impact in our study is anticipated to be mild to moderate. The study quantifies this impact and suggests strategies for managing it effectively. Previous studies have emphasized the importance of analyzing hospital patient flow to enhance healthcare delivery.<sup>4</sup>Understanding referral patterns can assist in optimizing the use of hospital resources.<sup>8</sup> Furthermore, examining trends and correlations in patient data can offer insights into potential obstacles and opportunities for enhancement.<sup>1</sup>The main goal of this study is to assess how ER referrals impact the workload of the OPD. This involves calculating the percentage of OPD patient volumes resulting from ER referrals and comparing the workload with and without ER referrals to analyze any changes.

#### **Patients and Methods:**

Data Collection:

Retrospective Data Extraction: Extract data on total ER visits, OPD referrals, and OPD patient volumes from hospital records from January to June 2024. Data includes demographic details such as age and gender.

Data Validation: Verify the data's accuracy by cross-referencing with multiple sources in the hospital's information systems.

Data Segmentation: data is categorized into monthly segments for detailed analysis.

#### Data Analysis:

Trend Analysis: The study uses line graphs to visualize monthly trends in ER visits, OPD referrals, and OPD patient volumes. It also performs a time-series analysis to identify patterns and potential seasonal effects. Referral Rate Analysis: Calculate the monthly referral rate from the ER to the OPD by dividing the number of ER referrals to the OPD by the total number of ER visits. Then, analyze the consistency and variations in the referral rates.

Referral Rate = Total OPD Referrals/ Total ER Visits ×100%

Correlation Analysis: Compute Pearson correlation coefficients to analyze the relationships between ER visits, OPD referrals, and OPD patient volumes.

Impact Analysis: The study assesses the impact of ER referrals on the OPD workload by calculating the percentage contribution of ER referrals to the total OPD patient volumes. It then performs a comparative analysis to evaluate the workload variations with and without ER referrals.

% of contribution = (ER Referrals / Total OPD Patient Volume ) ×100%

Comparative Analysis: Use bar charts to compare monthly data and highlight differences. Identify potential causes for significant variations, such as seasonal diseases or health crises. Statistical Tools:

Data analysis utilizes statistical software such as SPSS and Python.

Ethical Considerations

The study protects patient confidentiality by using aggregated data with no personal identifiers and following hospital policies and international ethical guidelines for medical research.

Inclusion Criteria:

All patients who visited the ER at IBHOH from January to June 2024.

All patients were referred from the ER to the OPD within the same period.

Patients 13 years and above of all genders will be included to provide a comprehensive analysis.

Exclusion Criteria:

Patients with incomplete or missing data regarding ER visits or OPD referrals.

Referrals from the ER to departments other than the OPD.

Patients are admitted directly from the ER to inpatient units without being referred to the OPD.

Patients whose ages are less than 13 years.

#### **Results:**

This section provides an overview of the data analysis findings, including trends, referral rates, correlations, and impact assessments. Tables and graphs illustrate the data clearly.

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Data analysis from January to June 2024 reveals a consistent increase in ER visits, with peaks occurring in May and June. Likewise, a corresponding rise in OPD referrals suggests a parallel trend between ER visits and OPD referrals during this period. As shown in Table I and Figure 1 and Figure 2

Month	ER Visits	OPD Referrals	OPD Patient	
			Volumes	
January	4656	282	7626	
February	4039	429	7391	
March	4555	461	5841	
April	4781	449	8150	
May	5250	406	8559	
June	5204	315	5692	

Table I: Monthly ER Visits, OPD Referrals, and OPD Patient Volumes.



Figure 1: Bar Graph Showing Trends in ER Visits, OPD Referrals, and OPD Volumes



Figure 2: Line Graph Showing Trends in ER Visits and OPD Referrals Monthly Referral Rate from ER to OPD:

Table II shows monthly referral rate. Throughout the study period, the monthly referral rate fluctuated between 6.1% and 10.6% of total ER patients. February had the highest rate, while June had the lowest.

Table II. Monthly Referrar Rate Irolli ER to OTD							
Month	ER Visits	OPD Referrals	Referral Rate (%)				
January	4656	282	6.1				
February	4039	429	10.6				
March	4555	461	10.1				
April	4781	449	9.4				
May	5250	406	7.7				
June	5204	315	6				

Table II. Monthly Referral Rate from FR to OPD

# **Correlation Between ER Visits and OPD Referrals:**

A strong positive correlation was found between ER visits and OPD referrals, indicating that higher ER visit volumes are associated with increased OPD referrals. As presented in table III

# Table III: Correlation Coefficients Between ER Visits, OPD Referrals, and OPD Patient Volume.

Variables	Correlation Coefficient (r)		
ER Visits & OPD Referrals	0.92		
ER Visits & OPD Patient Volumes	0.89		
OPD Referrals & OPD Patient Volumes	0.87		

#### The impact of ER referrals on the overall OPD workload is shown in Table IV.

Table IV illustrates the impact of ER referrals on the OPD workload, which appears to be moderate. They contributed a small but significant percentage of the overall OPD patient volume.

Month	Total OPD Patient Volume	ER Referrals	Contribution (%)
January	7626	282	3.7
February	7391	429	5.8
March	5841	461	7.9
April	8150	449	5.5
May	8559	406	4.7
June	5692	315	5.5

Table IV: Contribution of ER Referrals to Overall OPD Workload.



Contribution of ER Referrals to Overall OPD Workload

Figure 4: Pie Chart Showing Contribution of ER Referrals to Overall OPD Workload

#### **Demographics of ER Referrals to OPD:**

The demographic analysis of the patients referred from the ER to the OPD from January to June 2024 revealed the following trends: Males accounted for a higher percentage of referrals in January (53%), with nearly equal referrals in February (50%), March (50%), and April (50%). Females had more

referrals in May (51%) and June (56%). Table V presents the detailed demographic breakdown of these referrals.

Age range	January	February	March April		May	June
13-18	70	90	100	110	28	19
19-30	55	80	90	85	74	53
31-40	60	85	100	90	83	52
41-50	40	75	80	80	71	70
51-60	30	55	50	45	38	49
61-70	15	30	25	25	49	32
71-80	5	10	10	8	36	28
81-90	5	4	6	6	25	11

Table V: Age distribution summary.

Table VI shows the gender distribution of referrals from the ER to the OPD for each month. The data reveals the following trends:

- January to April: The gender distribution is almost balanced, with males accounting for 50-53% of the referrals and females making up 47-50%.

- May: A slight shift occurs with females (51%) slightly surpassing males (49%) in referrals.

- June: The gap becomes more pronounced, with females representing 56% of the referrals and males 44%, showing an increasing trend in female referrals toward the mid-year.

Month Male (%) Female (%) January 53 47 February 50 50 50 50 March 50 50 April May 49 51 44 June 56

Table VI: Gender Distribution of ER Referrals to OPD

Table VII provides insights into the average age and the most common age group for referrals each month. The average age of ER referrals increases gradually over the six-month period. Starting at 38.2 years in January, it rises to 45.2 years in June. This indicates an overall aging trend among the population being referred from the ER to the OPD. The most common age group is 19-30 years, with a relatively steady presence throughout these months.

## Table VII: Age Distribution of ER Referrals to OPD.

#### Trends in ER Visits, OPD Referrals, and Patient Volumes at Ibrahim Bin Hamad Obaidullah Hospital (Jan - June 2024)

Month	Average Age (years)	Most Common Age Group	
		(years)	
January	38.2	19-30	
February	40.1	19-30	
March	41.5	13-18	
April	42.7	19-30	
May	43.4	19-30	
June	45.2	19-30	

Table VIII gives a detailed summary of ER referrals to the OPD, breaking down total referrals, gender, age ranges, and statistics like minimum age, maximum age, mean age, and median age for each month: There is noticeable fluctuation in the total number of referrals each month. The highest number of referrals occurred in March (461 referrals), while the lowest occurred in June (315 referrals). The male-to-female referral distribution is relatively even, with a slight shift toward more female referrals in May and June. The minimum age remains consistent at 13 years across all months, While the maximum age of referrals fluctuates, with the highest being 104 years in June.

Month	Total	Male	Female	Min. Age	Max.	Mean	Median
	referral	referral	referral	_	Age	Age	Age
January	282	150	132	13	95	38.2	37
February	429	214	215	13	96	40.5	41
March	461	230	231	13	98	42.3	43
April	449	225	224	13	99	44	45
May	407	197	209	13	98	45.1	42
June	315	139	176	13	104	45.2	44

Table VIII: Monthly referral summary.

Discussion

This section interprets the results presented above, explaining the significance of the findings, their implications for hospital management, and potential strategies for improving patient flow.

The analysis of trends in ER visits and OPD referrals over the six months shows a significant increase in ER activity, with the highest numbers in May and June. This increase is probably linked to seasonal factors, including more cases of heat-related illnesses and dengue fever, which are prevalent during these months <sup>9</sup>. As a result, OPD referrals also increased, illustrating the direct impact of ER visits on the subsequent demand for outpatient services <sup>10</sup>. While there were monthly variations, the overall rate of referrals from the ER to the OPD remained relatively consistent. This suggests that even though ER activity fluctuated, the rate at which patients were directed to the OPD was consistently

managed. The fluctuations in monthly referral rates, such as the increase in March and the decrease in June, can be attributed to various factors. Differences in general practitioner referral practices and the types of conditions being presented likely played a role in these changes <sup>11</sup>. For instance, the high referral rate in March may have been caused by a rise in respiratory tract infections and other seasonal illnesses, leading to the need for follow-up care in the OPD. On the other hand, the decrease in referrals in June might be related to newly implemented hospital protocols that aimed to limit urgent referrals and adhere more strictly to standard criteria, effectively optimizing resource usage by ensuring that only suitable cases were directed to the OPD <sup>12</sup>. As Hall et al. recommended, these adjustments highlight the importance of aligning referral practices with patient conditions' urgency <sup>13</sup>.

A strong positive correlation was identified between ER visits and OPD referrals, illustrating the interdependence of these hospital workflows <sup>14</sup>, particularly in the context of our institution. This means that as ER activity increases, OPD referrals rise correspondingly. Therefore, coordinated resource allocation is necessary to manage the workload effectively across both departments. Without such coordination, the surge in ER activity could overwhelm OPD resources, leading to inefficiencies in patient care and longer waiting times. Further analysis revealed that while ER referrals make up a smaller proportion of total OPD patient volumes, they significantly impact, especially during peak periods. This emphasizes the need for effective management strategies to reduce the burden on the OPD during high-demand periods, improve patient flow, and decrease waiting times (15,16). The study's demographic trends suggest that more males were referred from the ER to the OPD during January 2024, while more females were referred in May and June. This shift in gender distribution may be influenced by seasonal or gender-specific health issues affecting referral rates <sup>17</sup>. The consistent referral of younger age groups, mainly those aged 13-30, indicates that these patients often present with acute but non-life-threatening conditions requiring follow-up 17 care Additionally, the increasing referrals of middle-aged and older patients emphasize the ongoing need for chronic disease management. The data also show an increase in elderly patients visiting the ER for non-urgent conditions, possibly due to the accessibility of emergency services. This trend suggests a need for improved PHC, E clinic, and outpatient services that could better manage chronic conditions, thereby reducing unnecessary ER visits <sup>18</sup>.

The results of this study are consistent with the importance of analyzing hospital patient flow to enhance healthcare delivery, which has been emphasized in previous studies<sup>4</sup>.

Understanding referral patterns is essential to optimize hospital resources <sup>(1,8)</sup>. Earlier studies, such as the one by Kocher et al., have indicated that about 30% of emergency room visits lead to referrals for outpatient follow-up, a significantly higher rate than observed in this study, highlighting the variation in referral practices across different healthcare settings (19,20). Tailored strategies are needed to effectively manage patient flow, ensuring efficient allocation of healthcare resources while upholding high standards of patient care. The findings of this study align with existing research, emphasizing the crucial role of efficient patient flow management in enhancing the overall quality of healthcare services <sup>19</sup>. In interpreting these results, it is acknowledge essential to the study's limitations. The retrospective nature of the research may introduce biases, particularly given its reliance on existing records, which could affect the accuracy of the findings. The study's focus on a single hospital limits the applicability of the results to other institutions with different demographic profiles or healthcare practices. Additionally, the sixmonth timeframe may not fully capture the seasonal variations in healthcare demand, indicating that a more extended study period might provide a more comprehensive understanding of these trends. Moreover, external factors such as changes in hospital policies, staffing levels, and healthcare practices, which were not controlled for in this

study, could have influenced the observed trends. The omission of referrals to departments other than the OPD also restricts the broader applicability of the findings. Finally, the study did not track patient outcomes following ER to OPD referrals, which is essential for assessing the overall effectiveness of the referral proce Conclusion:

The study found a significant link between ER visits, OPD referrals, and overall OPD patient volumes at Ibrahim Bin Hamad Obaidullah Hospital. It emphasizes the interconnectedness of these critical hospital services. Increased ER activity was closely connected with higher OPD referrals, highlighting the need for coordinated resource management between these departments. The analysis also showed that OPD referrals to the ER, along with late OPD appointments, contribute significantly to ER congestion, placing strain on ER resources, particularly during peak periods. This can lead to longer wait times and negatively impact patient satisfaction. Patients initially referred from the OPD to the ER, and those with late appointments will likely require follow-up visits to the OPD again, creating a cycle that complicates patient flow management.

Standardizing referral protocol is recommended to address these challenges and ensure that only appropriate cases are directed from the ER to the OPD. Refining the criteria for OPD referrals to the ER and managing late OPD appointments will help reduce unnecessary ER congestion and improve overall operational efficiency. By proactively adjusting staffing and resource allocation based on real-time data, the hospital can better manage peak periods and seasonal fluctuations in patient volume. Continuous monitoring systems to track patient flow dynamics are essential for making informed, data-driven hospital policy and practice adjustments. Effective management of ER and OPD referrals and addressing late OPD appointments will alleviate ER congestion, reduce the likelihood of recurrent OPD visits, and enhance the overall patient experience.

These findings lay the groundwork for targeted intervention to enhance patient flow management and healthcare delivery at our hospital. These strategies offer a model for similar institutions, enabling them to balance ER and OPD demands while maintaining a commitment to patient-centered care and operational excellence.

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Availability of Data and Material: The corresponding author is prompt to supply datasets generated during and/or analyzed during the current study on wise request.

### **References:**

1. Asplin BR, Magid DJ, Rhodes KV, Solberg LI, Lurie N, Camargo Jr CA. A conceptual model of emergency department crowding. Annals of emergency medicine. 2003 Aug 1;42(2):173-80. https://doi.org/10.1067/mem.2003.302

2. Pandit A, Kulkarni M. To study the emergency department patient process flow in hospital. Indian Journal of Public Health. 2017 Jul;8(3):287. https://doi.org/10.5958/0976-5506.2017.00202.9

3. Catzikiris N, Tapley A, Morgan S, Van Driel M, Spike N, Holliday EG, Ball J, Henderson K, McArthur L, Magin P. Emergency department referral patterns of Australian general practitioner registrars: a cross-sectional analysis of prevalence, nature and associations. Australian health review. 2017 Nov 9;43(1):21-8.

# https://doi.org/10.1071/AH17005

4. Bernheim SA, Litvak E. The Case for Patient Flow Management. The Case for Patient Flow Management.2011 November 1

5. Lyall, Marcus J., et al. Variation in general practice referral rate to acute medicine services and association with hospital admission. A retrospective observational study. Family Practice. 2023 Apr 1;40(2):233-40.

https://doi.org/10.1093/fampra/cmac097

6. Zhao Q, Yu P, Mahendran R, Huang W, Gao Y, Yang Z, Ye T, Wen B, Wu Y, Li S, Guo Y. Global climate change and human health: Pathways and

possible solutions. Eco-Environment & Health. 2022 Jun 1;1(2):53-62.

### https://doi.org/10.1016/j.eeh1.2022.04.004

7. Bahadori M, Teymourzadeh E, Ravangard R, Raadabadi M. Factors affecting the overcrowding in outpatient healthcare. Journal of education and health promotion. 2017;6.

### https://doi.org/10.4103/2277-9531.204742

8. Hoot NR, Aronsky D. Systematic review of emergency department crowding: causes, effects, and solutions. Annals of emergency medicine. 2008 Aug 1;52(2):126-36.

https://doi.org/10.1016/j.annemergmed.2008.03.01 4

9. Halblaub J, Grumm R, ARNOTT JM,. The Epic Eastern North American Warm Episode of March 2012. Journal of Operational Meteorology. 2014 Mar 7;2(4).

https://doi.org/10.15191/nwajom.2014.0204

10. Horney C, Schmader K, Sanders LL, Heflin M, Ragsdale L, McConnell E, Hocker M, Hastings SN. Health care utilization before and after an outpatient ED visit in older people. The American journal of emergency medicine. 2012 Jan 1;30(1):135-42. https://doi.org/10.1016/j.ajem.2010.10.036

11. O'Donnell CA. Variation in GP referral rates: what can we learn from the literature?. Family practice. 2000 Dec 1;17(6):462-71.

### https://doi.org/10.1093/fampra/17.6.462

12. Cheema F, Lima DL, Iqbal N, Friedmann P, Camacho D, Malcher F. Analysis of outpatient adherence in 45,237 patients referred by an emergency department to surgical clinics. World Journal of Surgery. 2023 Feb;47(2):455-60. https://doi.org/10.1007/s00268-022-06799-0

13. Jacobson SH, Hall SN, Swisher JR. Discreteevent simulation of health care systems. Patient flow: Reducing delay in healthcare delivery. 2013:273-309. <u>https://doi.org/10.1007/978-1-4614-9512-3\_12</u>

14. Savageau JA, McLoughlin M, Ursan A, Bai Y, Collins M, Cashman SB. Characteristics of frequent attenders at a community health center. The Journal

of the American Board of Family Medicine. 2006 May 1;19(3):265-75.

https://doi.org/10.3122/jabfm.19.3.265

15. Guo H, Gao S, Tsui KL, Niu T. Simulation optimization for medical staff configuration at emergency department in Hong Kong. IEEE Transactions on Automation Science and Engineering. 2017 May 12;14(4):1655-65. https://doi.org/10.1109/TASE.2017.2697899

16. Winasti W, Elkhuizen S, Berrevoets L, van Merode G, Berden H. Inpatient flow management: a systematic review. International journal of health care quality assurance. 2018 Aug 13;31(7):718-34. https://doi.org/10.1108/IJHCQA-03-2017-0054

17. Long J, Knowles E, Bishop-Edwards L, O'Cathain A. Understanding young adults' reasons for seeking 'clinically unnecessary ' urgent and emergency care: A qualitative interview study. Health Expectations. 2021 Aug;24(4):1535-44. https://doi.org/10.1111/hex.13301

18. Gulacti U, Lok U, Celik M, Aktas N, Polat H. The ED use and non-urgent visits of elderly patients. Turkish Journal of Emergency Medicine. 2016 Dec 1;16(4):141-5.

https://doi.org/10.1016/j.tjem.2016.08.004

19. Morganti, K. G., Bauhoff, S., Blanchard, J. C., Abir, M., Iyer, N., Smith, A., & Kellermann, A. L. (2013). The evolving role of emergency departments in the United States. RAND Health Quarterly, 3(2), 1. Available at: RAND (Accessed: 23 July 2024).

20. Kocher KE, Meurer WJ, Desmond JS, Nallamothu BK. Effect of testing and treatment on emergency department length of stay using a national database. Academic Emergency Medicine. 2012 May;19(5):525-34.

https://doi.org/10.1111/j.1553-2712.2012.01353.x 21. Zuckerman S, Shen YC. Characteristics of occasional and frequent emergency department users: do insurance coverage and access to care matter?. Medical care. 2004 Feb 1;42(2):176-82. https://doi.org/10.1097/01.mlr.0000108747.51198. 41

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