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Original Research Article

Overcrowding and possible solutions for a busy gynecological emergency department: a hospital-based setting

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ABSTRACT

Background: The objective of this study is to determine the trends of patients presenting in Obstetrics and Gynecology emergency department and to identify possible solutions.

Methods: This retrospective hospital record-based study was conducted at Government Medical College Jammu, Jammu and Kashmir, India from the department of Gynecology and Obstetrics and comprised data of all patients presenting to the emergency department between 1st January 2018 to 31st December 2018. Patients were assessed in terms of demographic features, presenting complaints, admission types (urgent, non-urgent), referral from other hospitals or coming from home. The total number of patients admitted and the number of patients sent home was also recorded.

Results: A total of 1,46,366 patients were analyzed retrospectively. Out of which 63,004 (43.05%) were sent home from the OPD while 83,362 (56.95%) presented to the emergency department. Of them, 49,383 (59.24%) were discharged straight away from the ED after emergency treatment and care while 339,79 (40.76%) were admitted. Out of 339,79 patients, 24,932 (73.37%) stayed in the emergency whereas 9047 (26.63%) admitted into different wards for elective procedures. Majority of the patients 26,098 (89.92%) came from home and 2927 patients (10.08%) were referred from other hospitals. Labour pains 7833 (31.42%) was the most common presentation. Trauma was the reason for admission in 112 (0.45%) patients out of 29025. 971 (3.89%) patients presented with gynecological problems. 4093 (14.10%) patients presented with non-urgent indications. Rest of all patients presented with indications which were categorized as urgent and were admitted. All data was analysed using SPSS version 20.

Conclusions: To reduce the overcrowding in the emergency department and improve quality of obstetrics and gynecological services, Inpatients and Outpatient departments at primary and secondary care levels need to be strengthened. Patients with non-urgent problems should be provided adequate care at primary and secondary health care centers.

Keywords: Emergency department, Labour pains, Overcrowding, Quality of care

INTRODUCTION

Emergency department (ED) crowding was first described nearly 20 years ago.^{1,2} Overcrowding of the ED is a significant public health problem in the United States of America (US), Europe and Asia.³⁻⁶ The international crisis of ED crowding has received

considerable attention, both in political and lay venues.⁷⁻¹³ According to the American college of emergency Physicians, 'Crowding occurs when the identified need for emergency services exceeds available resources for patient care in the ED, hospital or both.'¹⁴ In recent years, because of the increase in population and internal migrations, excessive amounts of patients are observed in

the emergency departments of training and research hospitals.¹⁵ It also reduces the quality of care the patient receives, the length of stay (LOS) for non-elective admissions rises and the number of serious incidents rise.¹⁶

The phenomenon of ED overcrowding cannot be attributed to any single factor but instead appears to be a product of complex causal relations, encompassing several internal and external factors most of which are beyond the control of ED staff.¹⁷⁻¹⁹

Possible causes include use of the ED for non-emergent cases an aging population, increasing patient acuity labour shortages lack of community based alternatives to the ED, delays while waiting for laboratory testing to be completed, lack of public education regarding appropriate ED use and the range of services available in general practitioners offices, lack of long-term care and other alternative settings, and lack of availability of ED or inpatient beds (or both).¹⁷⁻²²

Patients who present to EDs often face long waiting times to be treated and those who require admission have even a longer wait for an inpatient hospital bed.²² The current study was planned to analyse some of the specific causes of overcrowding and possible solutions.

By analysing the duration and causes of prolonged stay, authors attempted to better delineate the problem and propose possible solutions. The data may be helpful in persuading hospital administrators to adopt necessary changes to improve the quality of ED patient care.

METHODS

Authors retrospectively collected the medical data of the patients admitted in Government Medical College Jammu, Jammu and Kashmir, India from the department of Gynecology and Obstetrics in one-year period between 1st January 2018 to 31st December 2018. Data was collected through the Hospital record section (HRS) that generates daily reports.

Inclusion criteria

- All the patients who were admitted in the ED as per the data obtained from HRS were included.

Exclusion criteria

- Patients sent home from OPD.
- Patients discharged straight away from the ED after emergency treatment and care
- Patients admitted directly into different wards for elective procedures.

Patients were assessed in terms of demographic features, presenting complaints, admission types (urgent, non-urgent), referral from other hospitals or coming from

home. The total number of patients admitted and the number of patients sent home was also recorded.

Statistical analysis

The data was collected on a pre- designed proforma and was evaluated and analysed using SPSS version 20.

RESULTS

Of the 1,46,366 patients, 63,004 (43.05%) send home from the OPD while 83,362 (56.95%) presented to the emergency department. Of them, 49,383 (59.24%) were discharged straight away from the ED after emergency treatment and care while 339,79 (40.76%) were admitted. Out of 339,79 patients, 24932 (73.37%) stayed in the ED whereas 9047 (26.63%) were admitted into different wards for elective procedures. (Table 1).

Table 1: Total patients evaluated in gynecology obstetrics department.

Total patients	No.	%
Total patients evaluated	146366	-
Patients sent home from OPD	63004	43.05
Patients presented to emergency	83362	56.95
Patients discharged from emergency	49383	59.24
Total patients admitted	33979	40.76

Total number of patients seen in various months of the year in Gynecology OPD, Antenatal OPD and Post-partum contraception (PPC) OPD were 41366, 91441 and 5301 respectively (Table 2).

Table 2: Month wise OPD for the year 2018 in gynecology and obstetrics department.

Month	Gynae	Antenatal	PPC	Total
January	2945	7856	576	11377
February	3236	7976	499	11711
March	4014	8129	530	12673
April	3327	7102	476	10905
May	3992	8408	335	12735
June	2950	7512	293	10755
July	3781	9398	443	13622
August	3527	9306	419	13252
September	3623	9216	381	12860
October	3184	8496	473	12153
November	3083	8042	454	11579
December	3704	8618	422	12744
Total	41366	91441	5301	146366

Total number of patients seen in various months of the year in Emergency department were 2468 and 26657 with Gynecological problems and Antenatal cases respectively (Table 3).

Total number of patients admitted in various months of the year were 2505,691, 30783 with Gynecological, PPC

problems and Antenatal cases respectively (Table 4). Of 29025 patients who presented to emergency, 26098 (89.92%) came from home/self-referral whereas 2927 (10.08%) were referred from other hospitals (Table-5).

Table 3: Month wise patients seen in emergency department for the year 2018.

Month	Gynae	Antenatal	Total
January	157	1463	1620
February	147	1745	1892
March	112	1822	1934
April	86	1570	1656
May	283	2091	2374
June	274	2193	2467
July	358	2677	3035
August	335	2893	3228
September	319	3026	3345
October	129	2361	2490
November	115	2187	2302
December	153	2529	2682
Total	2468	26557	29025

Table 4: Month wise admission for the year 2018 in gynecology and obstetrics department.

Month	Gynae	Antenatal	PPC	Total
January	244	2700	137	3081
February	241	2388	74	2703
March	224	2437	74	2735
April	180	2112	34	2326
May	261	2198	48	2507
June	168	2239	73	2480
July	182	2616	46	2844
August	210	2956	27	3193
September	237	2934	31	3202
October	212	2815	42	3069
November	165	2652	45	2862
December	181	2736	60	2977
Total	2505	30783	691	33979

Table 5: Referral of patients.

Patients	Number (29025)	%
Came from home/self-referral	26098	89.92
Referred from other hospitals	2927	10.08

971 (3.89%) patients were not pregnant and presented with heavy menstrual bleeding and other Gynecological symptoms. 4093(14.10%) patients presented with non-urgent indications (Table 6). Rest of all patients presented with indications classified as urgent (Table 7).

52.67% (2156) patients came with complaints of p/v discharge. 1308 (31.96%) patients presented with pregnancy and urinary tract infection whereas 15.37% (629) patients came for routine antenatal checkups. (Table 6). Most common presenting complaint was

labour pains with rate of 31.42% (7833 patients) while patients presenting with per vaginal leaking were 18.57% (4631). 7.06% (1759) patients presented with antepartum haemorrhage, 13.38% (3336 patients) presented with sluggish fetal movements, 11.44% (2851 patients) presented with raised blood pressure in pregnancy, 5.88% (1467 patients) presented with post-dated pregnancy, 4.42% (1102 patients) presented with pregnancy with loose motions and 2.20% (549 patients) presented with pregnancy and vomiting. Trauma contributes to a small proportion of patients 112 (0.45%) (Table 7).

Table 6: Non-urgent indications/reasons for presentation.

Non- Urgent indications	Number (4093)	%
P/v discharge	2156	52.67
Urinary tract infection	1308	31.96
Came for antenatal checkup	629	15.37

Table 7: Urgent indications/reasons for presentation.

Urgent indications	Number (24932)	%
Labour pains	7833	31.42
P/v leaking	4631	18.57
Sluggish fetal movements	3336	13.38
Raised blood pressure	2851	11.44
Antepartum hemorrhage	1759	7.06
Postdated pregnancy	1467	5.88
Pregnancy with diarrhea	1102	4.42
Heavy menstrual bleeding	971	3.89
Pregnancy with vomiting	549	2.20
Missed abortion on scan	321	1.29
Pregnancy with trauma	112	0.45

DISCUSSION

ED overcrowding is closely related to a decrease in subjective patient satisfactions and objective quality care.^{23,24} In a great deal of studies, the outrageous crowd in the emergency departments is reported to become more common and reached a critical point, thus the situation created a threat for public health and patient safety.²⁵⁻²⁷ In present study, 83362 (56.95%) patients stayed in the ED before being discharged or admitted into hospital. Most of them waited for reports of their blood tests sent to the main laboratory of the hospital while waiting for final assessment by ED gynecologist to admit or to discharge. Some time lapse occurred due to delay in intervention or treatment required either due to shortage of nursing staff or due to already overburdened nursing staff and doctors. Usually, the lab took 4 to 6 hours to generate the reports almost for all patients who had a stay of more than 4 hours in ED. A significant proportion of patients presented in ED with health problems which are classified as non-urgent. The percentage of patients presenting with non-urgent indication were 4093 (14.10%) while in other countries of the world like

Turkey the ratio of patients presenting in the hospital is 28%-76% for non-urgent indications in pediatric department, while its 31% for obstetrics and gynecology ED.^{28,29} In Europe the percentage of these patients is 40% while in USA it's between 9-54%.³⁰ This single factor has been suggested as an important contributor to overcrowding not only in Government Medical College Jammu, Jammu and Kashmir, India but also in many other hospitals worldwide. Another cause of overcrowding is the use of emergency as the source of primary health care by most of the patients in our hospital. 629 patients came for a routine antenatal checkup.

The French government implemented several measures to improve the coordination of health care services and EDs and to control the flow of ED visits.³¹ Alternative health care structures such as primary care units located near the hospitals that can take care of non-urgent patients who go by themselves to an ED or have been wrongly directed to one were constructed. These structures helped solve the ED overcrowding problem.³² "Inappropriate" use of ED is a term used for over use of EDs in western society.³³ Inappropriate use results in not only compromised efficiency of healthcare personnel, infrastructure and financial resources of the ED, but also in delay of treatment of serious medical conditions.³⁴⁻³⁶ Admitted patients had a longer LOS because of delays in obtaining inpatient beds.³⁷ Another factor that affects LOS in the ED is inpatient LOS.

The issue is to be discussed with our organizational reforms and the decision to get point-of-care testing (POCT) is to be implemented for quick reporting and early decisions for patients staying in ED for longer period of time. It will definitely decrease the LOS that will impact the quality of care as well. The main causes of crowding in literature includes non-urgent visits, frequent flyer patients, influenza season, inadequate staffing, inpatient boarding, and hospital bed shortage. The major effects of crowding are patient mortality, transport delays, treatment delays, ambulance diversion, patient elopement and financial effect. The major solutions of crowding include additional personnel, observation units, hospital bed access, non-urgent referrals, ambulance diversions, destination control, crowding measures and queuing theory.³⁸ A large number of high-quality articles have been published about ED crowding.³⁹ However, literature reviews show that randomized controlled trials are lacking, perhaps because many ED operational changes involve the entire department rather than the individual patient who may be randomized to experimental and control groups.⁴⁰

The major concern in developing countries like India is the increasing population rate which results in day by day increasing number of patients in emergency thus compromising care of mother and fetus and increasing the maternal and fetal morbidity and mortality.

Trauma during pregnancy is the leading cause of maternal mortality in different parts of the world with 20% of maternal deaths directly attributable to injury.⁴¹ Trauma was the cause of presentation in 112 (0.45%) cases in this study. In another study known lethal injuries occur in 1:12 pregnant patients due to the roadside accident and domestic violence. Other causes of trauma are fall and other injuries.⁴² In other countries like Canada, 15 maternal deaths were reported due to trauma from 1997-2000.⁴³

A report by national trauma data bank study quoted that trauma-related mortality among pregnant women is lower than non-pregnant. This is due to the protective mechanical and physiological effects of pregnancy. So, the possible solutions discussed above with a proper step-down or observation unit will be very helpful for a better impact on quality of care provided. The retrospective design based on existing patient registers or databases cannot exclude the possibility of confounding that may have affected these results. Accuracy and variability in the quality of documentation among different health care personnel it was not feasible to ensure with retrospective audit of databases. The findings show considerable variability in crowding measures, time intervals, patient populations and hospital status, resulting to inability to generalize. Another major limitation of this study is that gynecologist patient contact time during an ED visit was not recorded due to retrospective data collection. One factor that may affect the ED stay is sickness rate of staff, gynecologist or consultants. These data were also not available

CONCLUSION

ED overcrowding could be considered as a "local" manifestation of a "systemic" disease. The causes of it are a complex network of interwoven processes and the effects of ED crowding are numerous and adverse. Various targeted solutions have been attempted but further studies of efficacy are needed. ED boarding is one of the main factors for overcrowding, but emergency doctors and hospitals as a whole must take actions to mitigate the problem because the ED alone cannot solve the problem. Always keeping in mind that targets cannot overrule clinical judgment, 90 % of all patients should leave the ED within 6-8h, improving the use of existing beds as first line hospital strategy and only later considering the use of admitted patients to hallway beds when the ED is close to full capacity.

Policy makers and hospital managers must focus on measures to reduce non-urgent presentations to the ED in order to minimize possible medical inaccuracies. Moreover, policy makers have to strengthen not only our outpatient department in tertiary care hospitals but also make improvements at primary and secondary health care level, so that patients with non-urgent problems can be dealt in primary and secondary health care centers.

Recommendations

- Shortage of ED staff should be fulfilled on an immediate basis for in-time proper intervention and management of patients required inside ED and that is one of the important risk factors compromising the quality of care in our set-up. One reason for delay in transfer of patients from ED to the hospital bed was the shortage of nurse aids.
- There should be a day care unit outside ED for patients with health problems which are classified as non-urgent. It will ease the burden on ED staff who are already overburdened. Although their percentage i.e. 14.10%, was small, it was one of the factors involved in delay of treatment to patients being admitted in non-critical areas of ED due to interruption faced by the nursing staff.
- There should be a checklist for reassessment of patients in ED especially in a proper step-down area for quick recovery and stabilization of ill patients that will result in a shorter duration of stay in ED.
- Emergency gynecologist and administrators from different hospitals should join to develop a realistic and effective protocol to facilitate inter-facility transfer and prevent patient dumping.
- ED overcrowding is multidisciplinary problem that can only be solved by joint efforts of various departments and the administration of the hospital.

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