

## CONGESTION IN EMERGENCY DEPARTMENT OF UNIVERSITY OF ILORIN TEACHING HOSPITAL, ILORIN, NIGERIA: CAUSES, IMPLICATIONS AND MANAGEMENT

Deborah Iyabo Oyeleye<sup>1</sup>, Joel Adeleke Afolayan<sup>2</sup>, Agu Chioma<sup>1</sup>, Olayinka Onasoga<sup>2</sup>.

<sup>1</sup>School of Postbasic Nursing Studies, University of Ilorin Teaching Hospital, Ilorin.

<sup>2</sup>Department of Nursing Science, University of Ilorin, Ilorin, Nigeria

Corresponding Author's email: joel.afolayan@gmail.com



DOI: 10.29816/sjss.7.2.9

### ABSTRACT

*This is a descriptive research on causes, implications and management of overcrowding in emergency department(ED) as perceived by emergency nurses in the University of Ilorin Teaching Hospital, Ilorin, Kwara State, Nigeria. Simple random sampling was used in selecting fifty (50) respondents for the study. A self-developed structured questionnaire was tested for its validity and reliability before its administration to the respondents was used and a reliability coefficient of .68 was obtained. Findings showed that 20(40%) of the respondents agreed that too much time was spent by emergency staff in assessing patients' causes ED overcrowding, 20(40%) were of the opinion that increase in medical errors was a consequence of ED overcrowding. Also 20(40%) agreed that providing care only to patients with emergencies as a way of ameliorating ED overcrowding. Two research hypotheses were also tested using Chi square inferential statistics, the result revealed there is significant relationship between large sized Emergency Department and ED overcrowding. The research hypothesis also showed there is significant relationship between inadequacy and inefficiency of emergency staff and ED overcrowding ( $X^2_{cal} = 39.04$  = calculated value, at alpha level 0.05 with df of 2,  $X^2_{tab} = 5.9$ ,  $X^2_{cal} = 11.26$  = calculated value, at alpha level 0.05 with df of 2,  $X^2_{tab} = 5.9$ ). With the findings, there is a relationship between overcrowding and poor patient outcomes. Emergency staff especially nurses have a role to play in maintaining the standard of patient care in the face of overcrowding, but most of the solutions to overcrowding and resultant poor outcomes lie outside the ED. It is therefore recommended that Emergency nurses should adopt a good prioritization culture and the management should as well increase administrative commitment to address the issues that affect EDs.*

**Keywords:** Causes, Congestion, Emergency Department, Implications, Management.

### Introduction

Emergency care is one of the most sensitive areas of health care and this sensitivity is commonly based on a combination of factors such as urgency and large patient population. Urgency of care results from a combination of

physical and psychological distress, which appears in all emergency situations in which a sudden, unexpected, agonizing and at times life threatening condition leads a patient to the Accident Emergency Department (ED).

This department is a critical component in health care, available 24 hours a day, 7-day a week, particularly for all who require acute care (Trezeciak and Rivers, 2007).

### **Literature Review**

Accident and Emergency Department congestion has been an increasingly serious problem for more than a decade (McCabe, 2009). This rise in ED utilization has effectively saturated the capacity of EDs and emergency medical services in many communities. The resulting phenomenon, commonly referred to as ED congestion, now threatens access to emergency services for those who need them most and numerous reports have questioned the ability of United States emergency departments to handle an increasing demand for emergency services. Emergency Department (ED) congestion is widespread in US cities and has reportedly reached crisis proportions (Fatovich, Nagree & Sprivulis, 2005).

Sinclair (2007) stated that ED congestion is a global problem that has drawn increasing international attention, and that the nature of emergency medicine (EM) has changed significantly in recent years with new treatment options and the availability of more medical technology, such as specialized intravenous thrombolysis in stroke, stent placement in acute myocardial infarction, and the use of ultrasound. Many of these are time-critical procedures, leading to greater emphasis on the resuscitation, stabilization, investigation, and initial management in the ED leading to longer stay in the emergency department.

Brandon, Stephen and Deepak (2010) opined that Emergency Department congestion is common in countries across the globe. Patients must often wait hours before being seen by a doctor and far longer before being transferred to a hospital bed. The result is not merely inconvenience but rather a degradation of the entire experience-quality of care suffers, patients' safety is endangered,

staff morale is impaired and the cost care is increased.

ED congestion has evolved from a complex series of problems. Hostetler, Mace and Brown (2007) identified insufficient inpatient beds, ED staff time spent in assessing patients and size of ED as the most common causes of congestion. Emergency Medicine Journal (2005) stated the causes of ED congestion as inadequate inpatient capacity, higher severity of illness and hospital system restructuring. West (2009) mentioned increased hospital occupancy, increasing patient acuity, patient self-referral, inexperienced medical staff, staff shortages and delayed ancillary services.

Worldwide, rigorously conducted studies have found an association between congestion and reduced access to care, decreased quality measures, and poor outcomes. Other serious problems associated with ED congestion include: delayed time-critical interventions and increased complications (e.g., more recurrent myocardial infarctions or episodes of congestive cardiac failure); increased medical error; less frequent and less adequate pain control; prolonged hospital length of stay, further worsening the underlying cause and increased costs per stay; more legal actions and complaints; and severe problems with staff turnover and burnout. ED congestion causes ambulance diversion and delays to offloading ambulance patients, with both financial and service impact on pre-hospital care (Fatovich, Nagree & Sprivulis, 2005).

A study carried out by Talleshi, et al. (2014) found the average of stay in the ED to be over 24 hours with five people each day among which 73% were over 60 years old. Reasons of long-stay patients include: lack of bed in ICU (71%), give up (12%), lack of bed (12%), lack of determination by a physician (5%), respectively. Derlet, Richards, and Kravitz (2009) conducted a national random survey of 575 ED directors regarding the

definition and extent of ED congestion and factors associated with it. Ninety-one percent of the medical directors interviewed reported ED congestion, with 53% reporting congestion occurring several times a week and 39% stating that it was a daily problem.

Hoot and Aronsky (2008) commonly studied effects of crowding as including patient mortality, transport delays, treatment delays, ambulance diversion, patient elopement, and financial effect. studied common solutions of congestion as additional personnel, observation units, hospital bed access, non- urgent referrals, ambulance diversion, destination control, crowding measures, and queuing theory. The results illustrated the complex, multifaceted characteristics of the ED crowding problem.

There is dearth of literature on ED overcrowding in Nigeria but this does mean this problem does not exist in Nigerian hospitals. To this end, the researchers embarked on this study to examine the causes, implications and management of overcrowding in emergency department of University of Ilorin Teaching hospital, Ilorin in Nigeria.

### Research hypotheses

The following two hypotheses were used and tested for the study:

- (i) There is no significant relationship between emergency department structure and ED congestion.
- (ii) There is no significant relationship between inadequacy and inefficiency of emergency staff and ED congestion

### Materials and Methods

A descriptive survey aimed at determining the causes, implication and management of congestion in the emergency department as perceived by emergency department nurses in UITH, Ilorin. Simple random sampling technique was used to select 50 emergency nurses working in accident and emergency units and a structured questionnaire used as instrument for data collection. The instrument was presented to research experts and a statistician for necessary modifications to ensure face and content validity while a pilot test was carried out on ten (10) respondents in female medical ward after the real administration of the questionnaires, test-retest method was used with the same result to ascertain reliability.

Copies of the questionnaire were administered to the respondents with the assistance of three (3) research assistants and instructions were clearly stated in the questionnaire. Confidentiality of all the information received through the questionnaire was ensured by not disclosing any related information to non-significant persons to the study and anonymity was maintained including coding the questionnaires. The questionnaires were administered to subjects on individual basis and filled under the supervision of the researchers and retrieved immediately by the researchers on completion. Data obtained was presented in tables and charts and the formulated hypotheses tested using Chi-square.

### Results

**Table 1: Socio-demographic Characteristics of Respondents**

| Variable   | Frequency (%) |
|------------|---------------|
| <b>Age</b> |               |
| 21-30years | 10(20)        |
| 31-40years | 30(60)        |
| 41-50years | 8(16)         |

|                                    |        |
|------------------------------------|--------|
| 51 years and above                 | 2(4)   |
| <b>Sex</b>                         |        |
| Male                               | 4(8)   |
| Female                             | 46(92) |
| <b>Marital status</b>              |        |
| Single                             | 15(30) |
| Married                            | 33(66) |
| Divorced                           | -      |
| Widowed                            | 2(4)   |
| <b>Religion</b>                    |        |
| Christianity                       | 23(46) |
| Islam                              | 27(54) |
| Traditional                        | -      |
| <b>Qualification</b>               |        |
| Registered nurse                   | -      |
| Registered nurse-midwife           | 28(56) |
| Accident and Emergency certificate | 22(44) |
| <b>Years of working experience</b> |        |
| Less than 1year                    | 3(6)   |
| 1-7years                           | 28(56) |
| 8-14years                          | 12(24) |
| 15-21years                         | 4(8)   |
| 22years and above                  | 3(6)   |

---

**Source:** Authors' field work, 2016

**Table 2: Frequency Distribution of Respondents on the causes of congestion in Emergency Department (ED).**

|     | <b>Options</b>                                               | <b>Frequency (%)</b> |
|-----|--------------------------------------------------------------|----------------------|
| i   | Insufficient inpatient beds                                  | 14(28)               |
| ii  | Patient self-referral                                        | 6(12)                |
| iii | Too much time spent by emergency staff in assessing patients | 20(40)               |
| iv  | Patients staying longer than expected in the emergency unit  | 10(20)               |

---

**Source:** Authors' field work, 2016

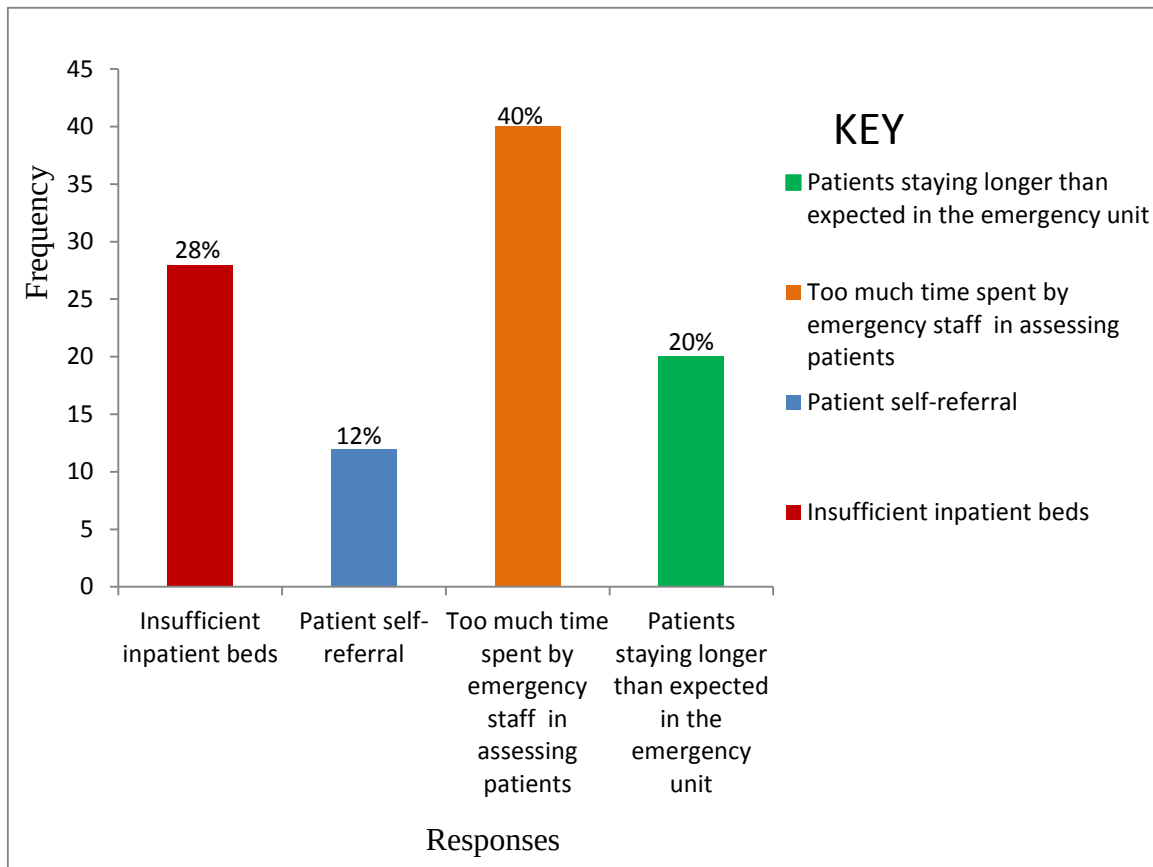


**Figure 1: Causes of congestion in Emergency Department (ED).**

**Table 3: Frequency distribution of respondents on the consequences of congestion in emergency department.**

| Options |                                                 |    | Frequency (%) |
|---------|-------------------------------------------------|----|---------------|
| i.      | Increased medical error                         | 20 | 20(40)        |
| ii      | Severe problems with staff turnover and burnout | 14 | 12(28)        |
| iii     | A threat to disaster preparedness               | 9  | 9(18)         |
| iv      | Erodes reliability and competence of ED staff   | 7  | 7(14)         |

**Source:** Authors' field work, 2016

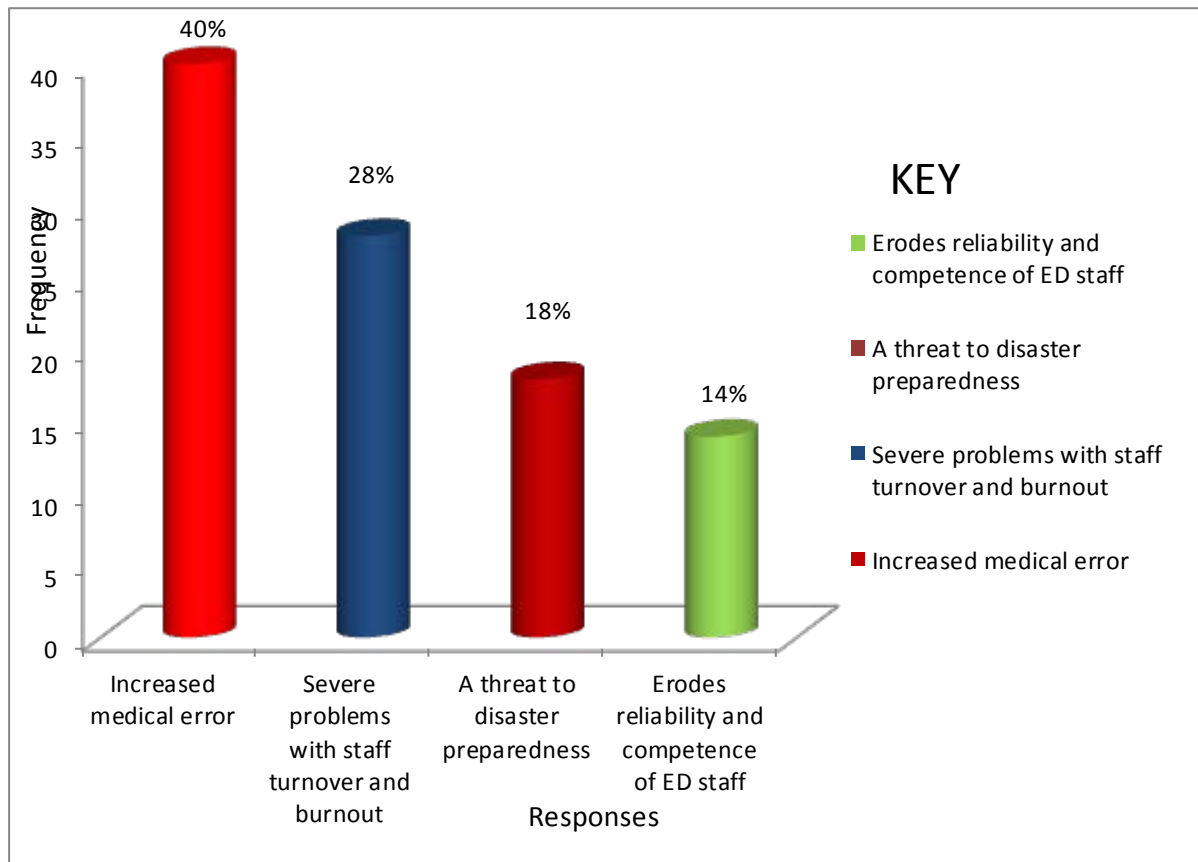


**Figure 2: Consequences of congestion in emergency department.**

**Table 4: Frequency Distribution on delayed time in critical interventions and increased complications**

| Question                                                                                                | Yes | %  | No | %  | Idon't know | % |
|---------------------------------------------------------------------------------------------------------|-----|----|----|----|-------------|---|
| Do you believe ED congestion causes delayed time in critical interventions and increased complications? | 41  | 82 | 6  | 12 | 2           | 4 |

**Source:** Authors' field work, 2016

**Table 5: Frequency distribution of respondents on the strategies to curb congestion in emergency department.**

| Options                                             | Frequency(%) |
|-----------------------------------------------------|--------------|
| I Expanding emergency ward capacity                 | 10(20)       |
| ii Providing care only to patients with emergencies | 20(40)       |
| iii Providing alternatives for primary health care  | 13(26)       |
| iv Increasing staff strength                        | 7(14)        |

**Source:** Authors' field work, 2016

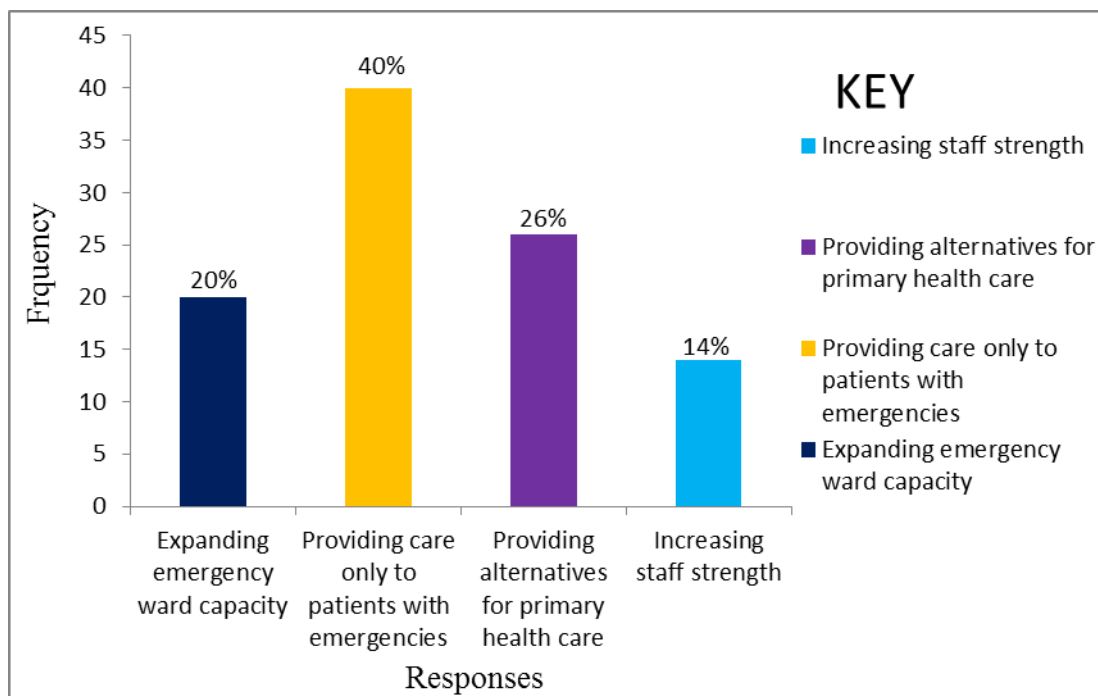


Figure 3: Bar chart showing frequency distribution of respondents on the strategies to curb congestion in emergency department.

#### Research Hypothesis 1

**H<sub>01</sub>: There is no significant relationship between emergency department structure and ED congestion.**

| Options                                                                        | Yes       | No        | Row total  |
|--------------------------------------------------------------------------------|-----------|-----------|------------|
| Small sized emergency department                                               | 40        | 10        | 50         |
| Insufficient care beds in the emergency centre                                 | 43        | 7         | 50         |
| Limited space to cope with the load of patients accessing the emergency centre | 14        | 36        | 50         |
| <b>Column total</b>                                                            | <b>97</b> | <b>53</b> | <b>150</b> |

$\chi^2_{cal} = 39.04$  = calculated value, at alpha level 0.05 with df of 2,  $\chi^2_{tab} = 5.9$ .

**H<sub>02</sub>: There is no significant relationship between inadequacy and inefficiency of emergency staff and ED congestion**

| Questions                                                                                                                                                    | Yes | No | Row total |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----|-----------|
| Do you believe that poor prioritization of urgent cases in the emergency department can lead to ED congestion?                                               | 30  | 20 | 50        |
| Do you agree that inexperienced medical staff spend much assessing patients in the emergency department leading to delay and boarding of patients in the ED? | 45  | 5  | 50        |
| Do you know that staff shortages in emergency department can lead                                                                                            | 45  | 5  | 50        |

to ED congestion?

**Column total**

120 30 150

$X^2_{cal} = 11.26$  = calculated value, at alpha level 0.05 with df of 2,  $X^2_{tab} = 5.9$ .

Calculated value of {11.26} is greater than the table value of {5.9} therefore, the hypothesis is rejected, hence, there is significant relationship between inadequate and inefficiency of emergency staff and ED congestion. This means that skilled and efficient emergency staff will carry out their work more diligently and faster and this will help reduce waiting times and ED congestion.

## Discussion

Discussion of research findings is based on the research hypotheses as seen below.

### Question 1: What are the causes of congestion in emergency departments units?

Table 2 showed that, majority of the respondents 20(40%) agreed that too much time spent by emergency staff in assessing patients causes ED congestion, this is supported by Hostetler, Mace and Brown (2007) who contended that the development of new diagnostic approaches and therapies has contributed to increases in the "assessment" time in some groups of patients. This is also supported by African Journal of Emergency Medicine (2014) who reported in a study that majority of the respondents stated the followings as triggers of emergency congestion (a) insufficient care beds in the emergency centre ( $n = 37$ ; 97%); (b) limited space to cope with the load of patients accessing the emergency centre ( $n = 35$ ; 92%); (c) admitted patients staying in the emergency centre longer than expected ( $n = 33$ ; 87%); (d) stretchers always being occupied because there are not enough to cope with the emergency centre patient load ( $n = 28$ ; 81%); (e) a culture of poor prioritisation of urgent cases in the emergency centre ( $n = 20$ ; 53%); (f) inadequate numbers of emergency centre nurses on duty ( $n = 28$ ; 74%); (g) an excessive number of non-urgent investigations requested ( $n = 22$ ; 58%); (h) doctors taking longer to complete consultations for various

reasons ( $n = 18$ ; 48%); (i) laboratory and radiological delays ( $n = 31$ ; 81%).

### Research question 2: What are the consequences of congestion in emergency departments?

Table 3 showed that majority of the respondents 20(40%) were of the opinion that increase in medical errors is a consequence of ED congestion. This is in agreement with the finding of Fatovich, Nagree and Sprivulis (2007) who laimed that other serious problems associated with ED congestion include: delayed time-critical interventions and increased complications (e.g., more recurrent myocardial infarctions or episodes of congestive cardiac failure); increased medical error; less frequent and less adequate pain control; prolonged hospital length of stay, further worsening the underlying cause and increased costs per stay; more legal actions and complaints; and severe problems with staff turnover and burnout. ED congestion causes ambulance diversion and delays to offloading ambulance patients, with both financial and service impact on pre-hospital care

Emergency Medicine Journal (2006) documented that increased risk of medical errors: Medical errors are frequently a byproduct of complex hospital "system" problems. ED congestion causes an environment in which quality of care may be compromised as the ED staff is pressured by the simultaneous needs of patients boarding

in the ED and new patients continuously arriving. Regardless of the proficiency of the ED staff, ED congestion is a prime example of a system problem creating a high risk environment for medical errors and threatening patient safety.

**Research question 3: What are the strategies that will help in curbing congestion in emergency department?**

Table 5 indicated that most of the respondents 20(40%) supported that providing care only to patients with emergencies is a way of ameliorating ED congestion. This agrees with West's (2008) who pointed out ten solutions for ED crowding which includes expand hospital capacity, stop regulating hospitals to the extreme, provide care only to patients with emergencies, provide alternatives for primary care of the uninsured, stop boarding admitted patients in the ED, expand the role of ancillary ED staff and hallway care among others.

**Research Hypothesis 1:** There is significant relationship between large sized Emergency Department and ED congestion. Meaning large size ED has significant influence on ED congestion, this is supported by (African Journal of Emergency Medicine, 2014), which reported insufficient care beds in the emergency, limited space to cope with the load of patients accessing the emergency centre, admitted patients staying in the emergency centre longer than expected, stretchers always being occupied because there are not enough to cope with the emergency centre patient load, a culture of poor prioritization of urgent cases in the emergency centre, inadequate numbers of emergency centre nurses on duty, an excessive number of non-urgent investigations requested, doctors taking longer to complete consultations for various reasons as well as

laboratory and radiological delays as causes of ED congestion.

This is also in agreement with Hostetler, Mace and Brown, (2007), finding stated insufficient inpatient beds, time spent in assessing patients and size of ED as causes of congestion and findings of Emergency Medicine Journal (2005) where inadequate inpatient capacity was identified as the main cause of congestion in ED treatment areas.

**Research Hypothesis 2:** There is significant relationship between inadequacy and inefficiency of emergency staff and ED congestion. This means inadequate emergency staff has significant influence on ED congestion, this is in accordance with findings of a study carried out by West (2009) on congestion and delivery of healthcare in EDs.

**Conclusion**

Congestion has changed the nature of practice of emergency medicine, the fundamental issue being the availability of inpatient beds. There is sufficient evidence to conclude that there is a relationship between congestion and poorer patient outcomes. Emergency staff especially nurses have a role to play in maintaining the standard of patient care in the face of congestion, but most of the solutions to congestion and resultant poor outcomes will lie outside the ED.

**Summary**

This research work was carried out to examine the causes, implication and management of congestion in the emergency department as perceived by emergency department nurses in UITH, Ilorin, Kwara State. From the findings of the study it was observed majority of the respondents 20(40%) agreed that too much time spent by emergency staff in assessing patients causes ED congestion, 20(40%) of the respondents were of the opinion that increase

in medical errors is a consequence of ED congestion and that providing care only to patients with emergencies is a way of ameliorating ED congestion.

Test of formulated hypothesis revealed a significant relationship between large size and ED congestion. A significant relationship between inadequacy and inefficiency of emergency staff and ED congestion was also observed.

### **Implications for Nursing**

Emergency nurse practitioners should adopt a good and effective prioritization and triaging technique on seeing patients in the ED and consultants should be notified immediately. Nurses should be able to report to the administrations when the capability of the ED is exceeded and suggest ways to reduce this congestion since they are the ones faced with this situation.

### **Recommendations**

In view of the findings, the following recommendations are made:

### **To the nurses**

- (i.) Emergency nurses should adopt a good prioritization culture.
- (ii.) They should also be prepared at any time to receive patients and functional equipment prepared as well.
- (iii.) They should increase collaboration to influence policymaking that will improve patient care.

### **To the Hospital Management**

The various hospital management should:

- (i) Increase administrative commitment to address the issues that affect EDs
- (ii) ED nurse staffing must be determined by the number of patients attended to especially on monthly basis.
- (iii) Implement and sustain the needed technology for improve patient care in ED.
- (iv) Create a culture that recognizes ED nurses' practice and promotes interdisciplinary collaboration and open communication.
- (v) Initiate and sustain incentive programs for professionals in the ED in order to motivate them.

## References

- Brandon C, Sephen C & Deepak K (2010). A hospital wide strategy for fixing emergency department overcrowding. Insights and publications, McKinsey's Knowledge support.
- Derlet, R., Richards, J. & Kravite, R.(2009). *Frequent overcrowding in U.S. emergency departments*. Acad Emerg Med 8(2):151 - 155
- Trzeciak S, & Rivers E.P (2006). *Emergency department overcrowding in the United States: an emerging threat to patient safety and public health*. Emergency Medicine Journal. 20(5):402 - 405
- Fatovich, D.M., Nagree, Y.& Sprivilis, P.(2005). *Access block causes emergency department overcrowding and ambulance diversion in Perth, Western Australia*. Emerg Med. J. 22(7):532
- Hostetler, M.A., Mace, S. & Brown, K, Finkler J, Hernandez D, Krug S.E, Schamban N, (2007). *Emergency department overcrowding and children*. Pediatr Emerg Care. 23(7):507 -515
- Hoot N.R, Aronsky D, (2008). Systematic review of emergency department crowding: causes, effects and solutions. Ann Emerg Med.2008
- McCabe, J.B. (2001). *Emergency department overcrowding: A national crisis*. Acad Med. 76(7): 672 - 674
- Sinclair D.(2007). *Emergency Department Crowding- implication for paediatric emergency medicine*. Paediatr Child Health. 12(6): 491 – 494
- Tallesi Z, Hosseinienejad S.M, Goli K, Bozorgi F, Gorji AH, & Gorji MH (2014). The effect of new emergency program on patient length of stay in a teaching hospital emergency department of Tehran. Nigerian Medical Journal.55(2):134 - 138
- West, J. (2009). *Ten solutions for Emergency Department Crowding*. J Emerg Med. 9(1):24 – 27