

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,
KUMASI, GHANA**

**VIEWS AND EXPERIENCES OF DOCTORS, NURSES AND EXITING
PATIENTS ON OVERCROWDING AT THE ACCIDENT AND EMERGENCY
CENTRE, KOMFO ANOKYE TEACHING HOSPITAL, KUMASI.**

BY

NTOW MARIE (BSc. NURSING)

PG 6022811

**A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH,
COLLEGE OF HEALTH SCIENCES IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE AWARD OF MPH DEGREE IN HEALTH
SERVICES PLANNING AND MANAGEMENT**

SEPTEMBER, 2014

DECLARATION

I, Ntow Marie, hereby declare that, except for references to other people's works, which have been duly acknowledged, this work is the result of my original research. I hereby also declare that this work has neither in whole nor in part been presented for any degree elsewhere.

SIGNATURE..... DATE.....
NTOW MARIE (PG 6022811)

SIGNATURE..... DATE.....
K. BEDU-ADDO, PHD
DEPT OF PHYSIOLOGY (SMS)
SUPERVISOR

SIGNATURE..... DATE.....
DR. ANTHONY EDUSEI
HEAD OF DEPT, COMMUNITY HEALTH SCIENCES

DEDICATION

I dedicate this thesis to my husband, Dr. Dominic Otto Awuah, my parents, Mr. and Mrs. Ntow and my siblings for their prayer and support.

KNUST



ACKNOWLEDGEMENTS

This study has been possible through the contributions of many people, and am grateful to them all. However, I will like to convey my deepest gratitude to my academic supervisor, Dr. Bedu-Addo for his invaluable guidance and constructive comments throughout the study. Additionally, I would like to acknowledge the help and support of clients and health care providers at the Accident and Emergency Unit, KATH.

KNUST



ABSTRACT

Overcrowding in hospital emergency departments (EDs) has become a major focus for public concern in recent years with consequential effects on patients care and general health outcomes. This study assessed the extent of effects of overcrowding on health providers as well as clients seeking healthcare at the Accident and Emergency unit at the Komfo Anokye Teaching Hospital (A&E, KATH), Kumasi.

The cross-sectional study involved health clients (above 17 years) who were not in severe pain and had been admitted to the A & E unit at the KATH. A total of 200 clients as well as 150 health staffs were recruited for the study. Data were collected through interviewing using semi-structured questionnaires. Data were coded and analyzed with STATA 11.

Majority of health respondents in this study believed the accident and emergency unit was overcrowded. Overcrowding at the ED causes stress (95.2%), irritation (81.9%) and tiredness (90.5%) among health respondents and leads to medical errors. Inadequate medical equipment, bed space, theatre and main ward space as well as inappropriate referrals contributed to overcrowding at the A&E department. On the other hand, most patients in this study did not consider the A&E to be overcrowded.

Expanding of infrastructure to minimize overcrowding should go along with improving the district hospital facilities to handle emergency cases. This will help minimize referrals to the accident and emergency unit and reduce overcrowding at the unit.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background	1
1.2 Problem Statement	3
1.3 Rationale of Study.....	4
1.4 Research Questions	4
1.5 Study Objectives	4
1.5.1 General Objective.....	4
1.5.2 Specific Objectives.....	4
1.6 Conceptual frame work.....	5
CHAPTER TWO	6
LITERATURE REVIEW	6
2.1 Introduction.....	6
2.2 Effects of Overcrowding on Patients	8
2.3 Effects of Overcrowding on Health Staff	14
2.4 Causal factors of overcrowding	15
CHAPTER THREE	18
METHODOLOGY	18
3.1 Study Methods and Design	18
3.2 Data Collection Technique and tools	18
3.3 Study Area	18
3.4 Study Population	19

3.5 Study Variable	20
3.6 Sampling technique.....	21
3.7 Sample size estimation.....	21
3.8 Pretesting.....	22
3.9 Data Handling	22
3.10 Ethical Consideration.....	22
3.11 Limitation of the Study	22
3.12 Assumptions.....	23
CHAPTER FOUR.....	24
RESULTS	24
4.1 Socio-demographic characteristics of respondents.....	24
4.2 Perceptions and experiences of health staff on overcrowding at the A & E unit	26
4.2.1 Experiences and views of clients on overcrowding in the A&E	28
4.3 Views on causes of overcrowding and ways of minimizing it	33
CHAPTER FIVE	35
DISCUSSION	35
5.0 Introduction.....	35
5.1 The influence of overcrowding on patients	36
5.2 To determine the influence of overcrowding on health care providers	37
5.3 Factors contributing to overcrowding at the emergency department.....	38
CHAPTER SIX	40
CONCLUSION AND RECOMMENDATIONS	40
6.1 Conclusion	40
6.1.1 Influence of overcrowding on patients	40
6.1.2 Influence of overcrowding on health providers	40
6.1.3 Factors contributing to overcrowding at the emergency department.....	40
6.3 Recommendations	41
REFERENCES.....	43
APPENDICES	46

LIST OF TABLES

Table 4.1: Background characteristics of health staff.....	25
Table 4.2: Socio-demographic characteristics of clients	26
Table 4.3 Results of experiences and views of health staff on overcrowding at the A&E 27	
Table 4.4 Results of experiences and views of patients on overcrowding in the A&E.....	29
Table 4.5: Patients’ experience of privacy with various aspects of care at the A & E unit	31
Table 4.6: Patients’ waiting times at various sections in the facility.....	32
Table 4.7 Responses on causes of overcrowding in the A&E.	33
Table 4.8 Ways of minimizing overcrowding	34



LIST OF FIGURES

Figure 4.1: Respondents reasons why health staff was enough at the A & E.....30

Figure 4.2: Clients’ rating of overall care at the A & E unit30

KNUST



CHAPTER ONE

INTRODUCTION

1.1 Background

Emergency department overcrowding is defined as ‘a situation in which the demand for emergency services exceeds the ability and capacity to provide quality care within a reasonable time’. Emergency departments (EDs) are a vital component in our healthcare safety net, available 24 hours a day, 7 days a week, for all who require care. There has been a steady increase in the volume and acuity of patient visits to EDs, now with well over 100 million Americans receiving emergency care annually. This rise in ED utilization has effectively saturated the capacity of EDs and emergency medical services in many communities. (Committee on Pediatric Emergency, 2004) The resulting phenomenon, commonly referred to as ED overcrowding, now threatens access to emergency services for those who need them the most. (Committee on Pediatric Emergency, 2004)

Hospital EDs hold a very strategic position in the continuum of care in our society. Accessible and always open, the ED remains one of the few institutions available to aid all persons. Services are provided regardless of economic or social status and without an appointment. Overcrowding has direct effect on services received at the hospital. It is the leading cause of concern over patients’ safety and the care rendered to patients by health care providers (Carrus *et al.*, 2010). Doctors and nurses want change, saying the current system is "at breaking point" (Derlet *et al.*, 2002). Studies have suggested that a significant proportion of morbidity and mortality cases are attributed to delays in Emergency Department diagnosis and treatment. As Emergency Department overcrowding has become a challenge facing emergency care providers across the globe,

many studies have been designed to explore the causes and develop interventions to solve this problem.

The most significant issues that face us, not only today, but well into the future is the state of our healthcare. One big issue that has come to the fore in recent months is the current and future state of the hospital's Emergency Departments. An article in the Kansas City Star has stated that an emergency is erupting in the Emergency Room (Derlet et al., 2008). The early warning signs began in 2006 with a report by the Institute of Medicine that found from 1994 to 2004, the number of emergency visits in the United States increased in range of 18% to 26% while the number of emergency departments dropped in the range of 9% to 12% (Karash, 2008).

The Emergency departments in the public sector in South Africa are burdened with overwhelming patient numbers, inadequate staff and hence increased patient waiting times. (Gottschalk *et al.*, 2006); Bruijns *et al.*, 2008)

The National Department of Health is, hence, focused on decreasing waiting time in hospital Emergency departments among other solutions like the South African Triage Scale which is currently employed nationwide to help reduce overcrowding. (Gottschalk *et al.*, 2006); Bruijns *et al.*, 2008

In 2007 the American Hospital survey of hospital leaders showed that the Emergency Departments at 65% of urban hospitals and 73% of teaching hospitals were either at or over capacity. As Emergency Rooms become more crowded, all resources become strained, including hospital revenues, community taxes designed to help pay for health services, and ultimately health-care premiums (Karash, 2008). The overcrowding at the Accident and Emergency Centre results in patient diversion; which is risk of poor patient

outcomes, prolonged pain and suffering, long patient waits, patient dissatisfaction and increased frustration among medical staff. There is the loss of revenue from the diversion of potential patients (Schuelen, 2008).

As may have been noticed above, numerous studies have been done in countries with an integrated health structure and might not necessarily and adequately reflect the situation in Ghana specifically the Komfo Anokye Teaching Hospital. This is attested to by Lambe *et al.*, 2003 and Hoot *et al.* 2008 who asserted that Emergency Department crowding depends on country and hospital status among others.

Thus, there was the need for research into the influence of overcrowding on quality health care delivery in Ghana, in order to identify the causes specific to our setting and develop ways to address them appropriately.

1.2 Problem Statement

The definition of overcrowding is based on the number of patients versus the number of available ED treatment stations (beds) or the forced use of non treatment areas (e.g., the ED hallway) to care for or hold ED patients.

Even though, the bed capacity of the ED, Komfo Anokye Teaching Hospital (KATH) is 37, on a typical day, the average number of patients at midnight is 120 patients. The rest of the patients lie in the hallways instead of the inns and they call out to whoever approached for bedpan, water and ask when they would be seen. Those who have been seen and waiting to go to the main wards or home complain of their intravenous infusion getting finished or when they would get their drugs and bills which makes the situation very chaotic. This makes the doctors and nurses frustrated.

The overcrowding situation leads to treatment errors, patient dissatisfaction and patient leaving without being seen. This leads to overall poor quality of care.

1.3 Rationale of Study

The study was conducted in order to elicit the challenges that come about at the instance of ED overcrowding.

These challenges which may include long boarding hours, inappropriate admission, health staff dissatisfaction and patient dissatisfaction would be identified and recommendations made to policy makers to address them.

1.4 Research Questions

- What is the influence of overcrowding at the emergency department on health care delivery?
- What is the influence of overcrowding on patients?
- What is the influence of overcrowding on the health care provider?
- What are the factors contributing to overcrowding from the perspective of the health care provider?

1.5 Study Objectives

1.5.1 General Objective

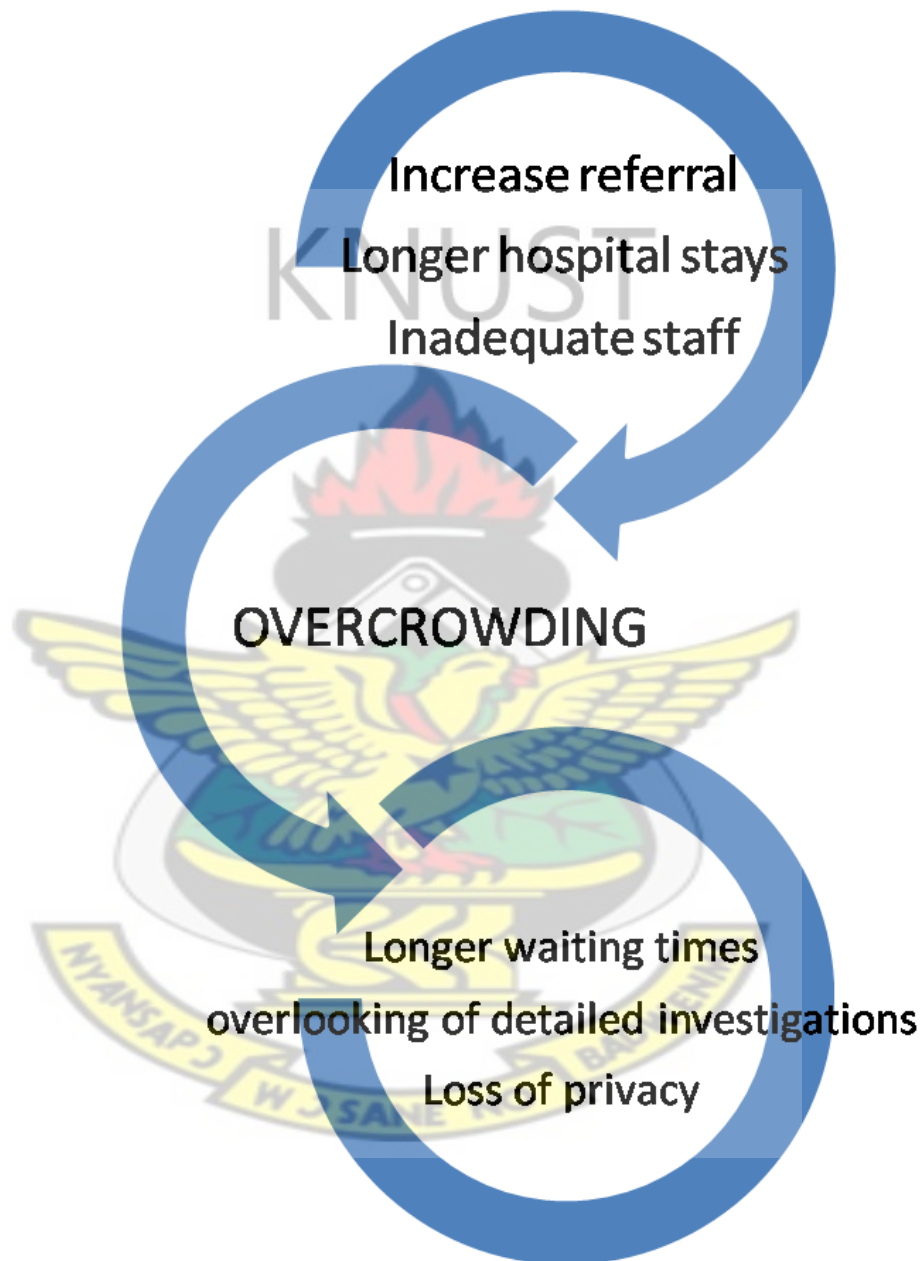
To determine the influence of overcrowding on health care delivery at the emergency department

1.5.2 Specific Objectives

- To determine the influence of overcrowding on patients at the Accident and Emergency Unit, KATH from doctors, nurses and exiting patients.
- To determine the influence of overcrowding on health care providers at the Accident and Emergency Unit, KATH

- To identify the factors contributing to overcrowding at the emergency department

1.6 Conceptual frame work



CHAPTER TWO

LITERATURE REVIEW

This chapter reviews literature on the effects of overcrowding on health care delivery. The literature was reviewed based on the objectives set. The objectives are the influence of overcrowding on patients at ED (KATH), the influence of overcrowding on the health workers at ED (KATH) and factors accounting for overcrowding at EDs.

During the search of literature, it was realized that there have not been any published work of overcrowding in Ghana so most of the literature was from the United States of America.

2.1 Introduction

In recent years, overcrowding in hospital emergency departments (EDs) has become a major focus for public concern (Van de Bogart, 2000). 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 (Van de Bogart, 2000; Derlet and Richards, 2000) most of which are beyond the control of ED staff (Richards *et al*, 2000). 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) ((Van de Bogart, 2000; Richards *et al*, 2000; Lenahan, 1999; Boushy and Dubinsky, 1999).

Emergency Department (ED) overcrowding 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 of care is increased (Carrus *et al.*, 2010). Acute illnesses and accidents sometimes occur outside hospital hours hence there is the need for emergency services round the clock (Sharon, 2008). The overlying problem is that often in any emergency room there is only one physician for dozens of people. The nurse-to-patient ratio is usually about fifty to one, counting those in the waiting room. Thus, it is not possible to take care of everyone without making people wait for several hours (Sharon, 2008).

Although the subjective assessment that a particular ED (or any public facility) is overcrowded may be inherently obvious to the average observer, objective and generalizable indicators of ED capacity and precise patient volume or acuity thresholds consistent with saturation of ED resources have proven to be difficult to define scientifically (Committee on Pediatric Emergency, 2004). Overcrowding in the ED seems to be a common phenomenon all around the world and not just Ghana even though there are more EDs in the advanced countries.

The Australasian College for Emergency Medicine (ACEM) defines ED overcrowding as the situation where ED function is impeded primarily because the number of patients waiting to be seen, undergoing assessment and treatment, or waiting to leave exceeds the physical and/or staffing capacity of the ED (Fremantle, 2002). In Canada, overcrowding is defined as a "situation in which the demand for emergency services exceeds the ability of a department to provide quality care within acceptable time frames" ((J. Drummond, 2002)).

A recent survey conducted by the American Hospital Association reported that the percentage of large hospital EDs that are consistently operating “at or above capacity” has reached 90% (Cowan and Trzeciak, 2005). Although no strict definition exists, ED overcrowding refers to an extreme volume of patients in ED treatment areas, forcing the ED to operate beyond its capacity. (Cowan and Trzeciak, 2005)

2.2 Effects of Overcrowding on Patients

The potential dangers of ED overcrowding have recently garnered national attention in the United States. Numerous reports in the lay press have reported an unsafe environment in EDs because of overcrowding. Although no one definition exists, ED overcrowding refers to an extreme excess of patients in the treatment areas, exceeding ED capacity and frequently necessitating medical care to be provided in ED hallways and other makeshift examination areas. Survey data in the literature have documented the broad scope of ED overcrowding in the United States. According to a 2002 national US survey, more than 90% of large hospitals report EDs operating “at” or “over” capacity (Trzeciak and Rivers, 2003).

There has been increasing discussion regarding the ability of EDs to provide timely care to patients with emergency medical conditions. A study of California EDs found that 90% had overcrowded conditions and that this problem was shared in both urban and rural areas of that state. The inability to provide timely service results from overcrowded conditions and has been implicated in poor outcomes for patients with certain medical problems (Cowan and Trzeciak, 2005)

The international crisis of emergency department (ED) crowding has received considerable attention, both in political and lay venues. In 1986 the Emergency Medical Treatment and Labor Act mandated that all patients who present to an ED in the United

States must receive a medical screening examination, regardless of their ability to pay. The unique role of the ED has prompted some to call it the safety net of the health care system. Unfortunately, the increasing problem of crowding has strained this safety net to the “breaking point,” according to a recent report by the Institute of Medicine. (Hoot and Aronsky, 2008)

In survey studies, ED overcrowding has been reported to cause delays in diagnosis, delays in treatment, decreased quality of care, and poor patient outcomes. Overcrowding at health facility has been linked with increasing waiting time of clients for consultancy, laboratory investigations and other aspects of care, which is reflected in delays in diagnosis, delays in treatment, decreased quality of care, and poor patient outcomes (Lewin group, 2002). One report (Trzeciak and Rivers, 2003) linked ED overcrowding to delays in identification and treatment of time sensitive conditions such as acute myocardial infarction, acute stroke, acute surgical emergencies, and severe sepsis. At least one of these cases of delayed treatment resulted in an unexpected death. According to the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), over one half of all “sentinel event” cases of morbidity and mortality secondary to delays in treatment occur in hospital EDs, and ED overcrowding has been cited as a contributing factor in 31% of these cases (Trzeciak and Rivers, 2003).

Long waits and patient dissatisfaction

An overcrowded ED will, by definition, lead to prolonged waits for treatment and increased patient dissatisfaction. This dissatisfaction is reflected in an increasing number of patients who leave without being seen. In Ontario in 1999, there was an increase of 2% in the number of patients who left the ED without having been assessed by a physician (Lyver, 2001). For patients who are admitted into the floor of the ED, there is growing challenge of compromise in patient privacy and confidentiality in overcrowded EDs. This

is because in overcrowded EDs, patients are in hospital corridors and hallways where privacy and confidentiality are likely to be compromised (Fylkesnes and Siziya, 2005).

The consequence of this is the potential for seemingly minor medical problems to become more serious from delay in care. The myth that patients who "leave without being seen" usually have minor, insignificant illness has recently been dispelled (J. Drummond, 2002)

Prolonged delays in the treatment of pain and suffering

With increasing waiting times, patients are kept on stretchers when they should be in beds, and in chairs when they should be in stretchers. Pain relief and improvements in physical, mental and emotional well being are delayed beyond acceptable limits (Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001)

“Boarding” in the ED

Many urban EDs are forced to hold patients in the ED for several hours (perhaps greater than 24 hours) when inpatient beds are unavailable. “Boarding” in the ED has become a significant barrier to specialised inpatient care. Even critically ill patients have been reported to wait extraordinarily long periods of time in the ED until an inpatient critical care bed is available (Trzeciak and Rivers, 2003). For all hospitals in the US, the average waiting time for an inpatient acute or critical care bed is over three hours, but the average waiting time is hours in hospitals with overcrowded EDs. Boarding in the ED could subject critically ill patients to treatment delays when time sensitive interventions are necessary. In disease states such as severe sepsis, early specialized goal directed therapy within the first six hours can decrease mortality up to 16%. Therefore, boarding critically ill patients in a non-ICU setting could cause treatment delays at a pivotal point in the hospital course, potentially resulting in poor outcomes.

Boarding causes the ED to be filled beyond capacity with the highest acuity patients. The ED is neither designed nor equipped to provide longitudinal care, and patient safety may be compromised when there is not enough staffing in the ED to give a severely ill patient undivided attention over a long period of time. In addition, these patients may be so labour intensive that other ED patients cannot receive the necessary attention from ED staff (Trzeciak and Rivers, 2003).

Ambulance diversion

Ambulance diversion is another indicator of capacity constraints. When EDs are overcrowded, ambulances are diverted to other institutions, and emergency medical service (EMS) crews are instructed to “bypass” an overcrowded ED even if it is the closest. Ambulance diversion has become so severe in many urban areas that EDs may be on bypass as much as 20%–50% of the time. When all hospitals in a region are simultaneously on bypass, all ambulance diversions are overridden. In this scenario, nothing can be done to relieve overcrowded EDs. Timely emergency care is frequently predicated on rapid ambulance transport, and diverting to an alternative hospital may endanger patients by delaying treatment. The inability to find an open ED will also delay an EMS crew in returning to duty and responding to other emergency calls. In effect, ambulance diversion endangers anyone who could potentially depend on EMS prompt response time (Trzeciak and Rivers, 2003).

One third of all hospitals experienced “ED diversion,” with more than half of the urban hospitals reporting some time on diversion. One third of urban hospitals reported being on ambulance diversion at least 10% of the time, with 1 of 8 reporting time on diversion at 20% or greater. Lack of available, staffed critical care beds was the number one reason cited by hospitals for ED diversion. (American Academy of Pediatrics, 2004).

The incidence of ambulance diversion has increased, especially in urban areas. The consequences of these diversions are significantly increased transport times, limitations on system-wide response times, increased emergency health service system costs, risk of traffic accidents and potential for poor clinical outcome. Patients suffer the inconvenience of discontinuity of care from their usual medical provider and separation from their medical record. Patients' families often have to travel extra distances to visit. Paramedics may be tempted to misrepresent their evaluation of the patient in order to avoid a "redirect." Of greater concern, when hospitals declare "redirect status," the system relies on the field assessment by a paramedic that the patient's condition permits the longer transport to another facility (Drummond, 2002).

Disaster preparedness and overcrowding of the ED

Another effect of overcrowding on the patient is a threat to disaster preparedness

The terrorist attacks of September 11 2001 have brought greater focus on US disaster preparedness. A key ingredient in the response to potential terrorism or bioterrorism disasters is the readiness of US EDs. Overcrowded EDs would be ill equipped to handle mass casualty victims in a disaster scenario (Trzeciak and Rivers, 2003).

Eroding reliability of emergency care system

As ED utilisation continues to rise, there is great concern that US EDs will not be able to meet the growing demand for emergency services. In many regions in America, leaders in emergency medicine have "lost confidence in the emergency health care infrastructure" because "the current resources supporting emergency care are inadequate to meet the needs of all patients at all times. ED capacity has been stretched to such an extent that the quality of emergency care is reportedly eroding, and the reliability of the entire emergency care system in the US has been called into question (Trzeciak and Rivers,

2003). Among health care providers the effect of overcrowding has been increased workload, tiredness and poor quality of care and even near misses in the ED. There is also the increased propensity for medical errors in fully boarded and crowded ED (Weisman, 2007).

Derlet *et al.* conducted a national random survey of 575 ED directors in 1998–1999 regarding the definition and extent of ED overcrowding and factors associated with it. Ninety-one percent of the responding medical directors reported ED overcrowding, with 53% reporting overcrowding occurring several times a week and 39% stating that it was a daily problem. Overcrowding problems were similar (more than 90%) in academic and private hospitals, although hospitals serving populations of greater than 250 000 had higher rates of overcrowding than did hospitals serving smaller populations (96% vs 87%). One third of the directors reported that patients had experienced poor outcomes as a result of overcrowding. Most frequently cited causes for overcrowding were high ED patient acuity, hospital bed shortage, high ED patient volume, ancillary service delays, and insufficient ED space (Derlet *et al.*, 2000).

The results on a research (McCarthy, 2011), to investigate the adverse effects of overcrowding made a compelling case for the need to improve the operational efficiency of emergency departments. Length of stay is an efficiency measure; the study shows that when emergency departments operate less efficiently, more deaths and hospital admissions occur in discharged patients. Emergency departments must be redesigned to meet patients' needs more effectively and efficiently. This includes having information systems that readily provide operational (such as patient cycle times) and clinical (such as vital signs, diagnostic test results, care plans, etc) information to clinicians to support their decision making and to allow information to flow easily between settings in a timely

fashion. Better integration of information and technology into the emergency department work flow will make care processes more timely, efficient, and reliable.

2.3 Effects of Overcrowding on Health Staff

Overcrowding in the EDs has lot consequences. These include;

Increased risk of medical errors

Medical errors are frequently a byproduct of complex hospital “system” problems. ED overcrowding 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 overcrowding is a prime example of a *system* problem creating a high risk environment for medical errors and threatening patient safety (Trzeciak and Rivers, 2003). As physicians and nurses feel rushed and overextended, the risk of error is increased, and errors could lead to adverse patient outcomes. Although largely anecdotal, recent evidence suggests that overcrowding will lead to medical errors (Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001).

Overcrowded EDs can be associated with poor patient outcomes. As physicians are seeing more complex, acutely ill patients, they often have inadequate time for proper patient assessments. This can lead to medical error, poor outcomes and increased medicolegal risk. In a study of the influence of overcrowding on health care quality provided in a university teaching hospital, there was an observed, significant, positive correlation between mortality rates and the weekly number of patient visits (J. Drummond, 2002)

Decreased nurse/physician satisfaction

Emergency physicians and nurses feel increasingly responsible to provide care that should be available in the hospital or outpatient setting. This aggravates overcrowding and has a negative effect on ED productivity and morale. As a result, recruitment and retention of experienced, dedicated emergency department staff is a growing problem in Canada(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001).

2.4 Causal factors of overcrowding

The causes of ED overcrowding are complex and multifactorial. The primary determinants of ED overcrowding are not related to patient care inside the ED but actually originate outside the ED

Increased waiting times for transfer to an inpatient bed has become the most important cause of ED overcrowding. Over the past 5 years, hospital beds in Canada have been reduced by almost 40% nationally. While some resources have been shifted to home care and long term care, hospitals are having increased difficulty admitting patients from the ED in a timely fashion.(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001).

There is a shortage of family physicians, nurse practitioners and many specialists. In addition, many primary care physicians do not provide after hour access for their patients. Community nursing resources are limited in most regions, and this situation is expected to worsen over the next 5 years. Patients seek ED care when they do not have a family physician, when they cannot see their physician within an appropriate length of time, or when the waiting time for their specialist, test or procedure becomes too long. As their

condition worsens, or if they become frustrated and worried, they seek care in the ED because they know that there is a "specialist" on call and that advanced diagnostic technology is available. Emergency departments have become the "safety net" of the system, but they are sagging under the growing weight(Murray, 2008).

There is a shortage of trained emergency physicians Experienced and dedicated nursing staff is the backbone of emergency care, but projections indicate a high likelihood of ongoing nursing shortages. Currently, many Canadian hospitals cannot attract enough nurses to staff their emergency departments. This is because overcrowding has made the ED a frustrating work environment. Increasingly, limited resources prevent emergency staff from providing the care patients need. Sick patients who need hospital beds languish on emergency stretchers, while suffering patients who need emergency care wait in hallways and waiting rooms. Less often can we provide the care our patients deserve; more often, we find ourselves apologizing for the care they receive(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001).

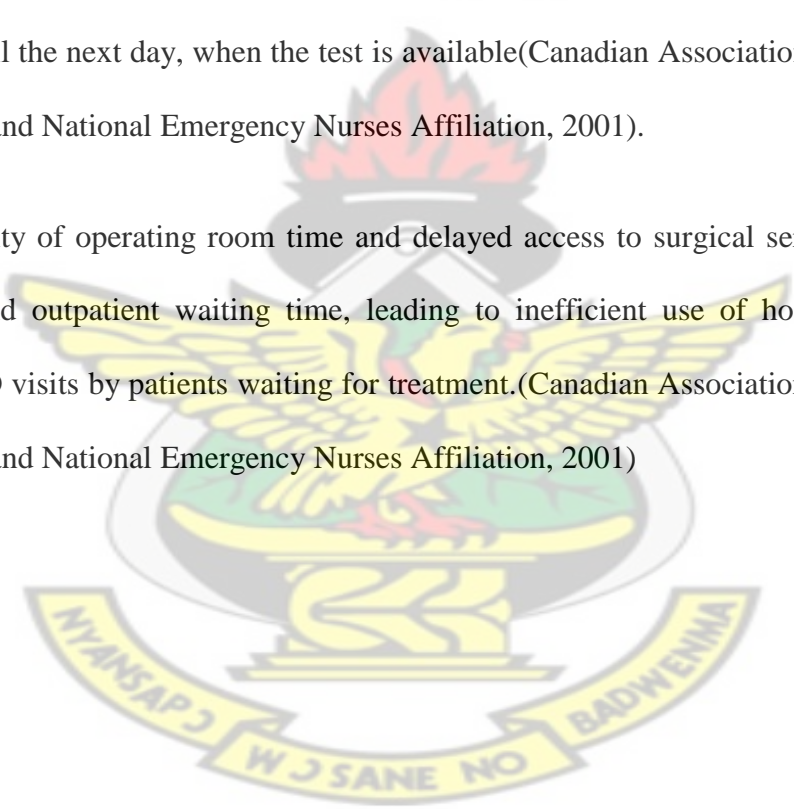
As the population ages, there is a growing number of patients with chronic conditions such as emphysema, diabetes and cardiovascular disease who require emergency services. These patients often require complex assessments utilizing advanced diagnostic technology to determine the need for hospital admission or further therapy. Emergency staff often have the responsibility to develop outpatient follow-up and management plans for patients with acute exacerbation of chronic disease.(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001)

Many people believe that non-urgent patients are a major problem in the ED. In fact, they utilize a small proportion of ED resources and contribute little to ED overcrowding. Concerted efforts to divert these patients to other settings will not solve the problem, will

increase costs elsewhere in the health care system and will divert attention from the real problems(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001)..

The lack of available advanced diagnostic testing in the community causes problems for most emergency departments. In many communities, there are long waits for tests like computed tomography (CT) scans and magnetic resonance imaging (MRI). This causes patients to come to the ED in the hopes of having their investigation done more quickly. In addition, the lack of 24-hour test availability in the ED often forces physicians to hold patients until the next day, when the test is available(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001).

Unavailability of operating room time and delayed access to surgical services increases inpatient and outpatient waiting time, leading to inefficient use of hospital beds and repeated ED visits by patients waiting for treatment.(Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001)



CHAPTER THREE

METHODOLOGY

This chapter took into consideration the study methods and design that were used to conduct the study. It also includes the study area, population and variables.

3.1 Study Methods and Design

A descriptive cross-sectional study was employed in the study.

3.2 Data Collection Technique and tools

Qualitative (Closed and open questions) and quantitative methods of data collection were used. Staffs were given self-administered questionnaire and patients had their questionnaires interpreted to them when necessary.

3.3 Study Area

In Ghana, the most established emergency department is at Komfo Anokye Teaching Hospital (KATH). The Komfo Anokye Teaching Hospital is one of four (4) teaching hospitals in Ghana. It is located in Kumasi, the Regional Capital of Ashanti Region with a total population of 3,204,609. The geographical location of the 1000-bed Komfo Anokye Teaching Hospital, the road network of the country and commercial nature of Kumasi make the hospital accessible to all the areas that share boundaries with Ashanti Region and others that are further away. As such, referrals are received from the northern, Upper East and Upper West, Brong Ahafo, Central, Western, Eastern and parts of the Volta Regions.

The study area would be the Accident and Emergency (A&E) unit, KATH in the Kumasi Metropolitan Assembly (KMA) area.

The aim of the ED was to give prompt care to patients who are critically ill. Therefore, the ED consists of laboratories, radiology department, and intensive care unit, intensive care unit for burnt patients, theatres, sterilization department, pharmacy and wards. The bed capacity of the emergency department is eighty-five (85). However the core activities of the ED take place in Red, Orange and Yellow. The department was established in May 2009, with Red (Patients who need immediate care) having the capacity to take seven (7) patients, Orange (Patients who need very urgent care) twelve (12), Yellow (Patients who need urgent care) (18) and Critical Decision Unit twenty-nine (29) beds which is a lying-in ward for patients who are waiting for a decision to admit or discharge them.

The ED provides care to surgical and medical patients only. Emergency physicians and nurses run the core units. An average of one (1) emergency physician and four (4) nurses are deployed to each of the three core units on a shift.

On a typical day, an average of eighty-four (84) patients are seen at the ED per day and an average of one hundred and twenty (120) patients would be resident at the ED by the close of mid-night.

3.4 Study Population

The study population comprised of patients exiting the emergency centre, doctors, and nurses who work at the accident and emergency centre.

Inclusion Criteria

- Patients above 17years and are not in severe pain admitted to the A&E unit would be included in the study.
- Patients who are conscious and can communicate
- All nurses and doctors currently working at the A&E unit, KATH shall qualify to be part of the study.

Exclusion Criteria

- Any health personnel who does not work within the A&E unit.
- Patients with mental illness

3.5 Study Variable

Study Variable	Operational definition	Study indicator	Scale of measurement	Objective Addressed
Work overload	Work above the capacity of health staff	Patients above the capacity health personnel can deal with	Nominal	Influence of overcrowding on health care providers
Work Fatigue	Becoming tired after few hours of work	Provoked easily	Ordinal	Effects of overcrowding on health care providers
decreased Job satisfaction	Unhappy about job outcome	Health staff staying longer in the hospital	ordinal	Effects of overcrowding on health care providers
Mistakes	Giving treatment to the wrong patient	Patient's condition deteriorating	Ordinal	Effects of overcrowding on health care providers
Rush through procedures	Not taking time to see patients	Client presenting with the same problem again	Ordinal	Effects of overcrowding on health care providers
Long waiting time	Delay in receiving care	Client wait for a long time before being seen by a physician	Ordinal	Effects of overcrowding on clients
Worsening of condition	Client's condition become worse before they are seen	Client deteriorating	Ordinal	Effects of overcrowding on clients
Poor attitudes of health providers	Inpatient health providers	Health staff talking harshly to clients	Ordinal	Effects of overcrowding on clients

3.6 Sampling technique

The emergency department of Komfo Anokye Teaching Hospital was purposively selected because it is the only facility with a well-established Accident and Emergency centre.

Doctors and nurses were conveniently selected from the health workers because they are in close contact with the patient. A total enumeration was done for the health workers (doctors and nurses) at the emergency department totaled 150 (Doctors -16 and nurses - 129).

Patients who were exiting the emergency unit were purposively selected to be included in the study. Data was collected from participants over a period of a month to ensure that there is enough spread of participants.

3.7 Sample size estimation

A total of 200 patients were sampled.

The sample size would be calculated as such

$$N = z^2 (pq) / d^2$$

Where n = sample size

z = Reliability Coefficient with 95 percent confidence certainty

p = Population variance available from previous data, where q = 1-p

d = the desired or the required size of standard error allowed

If the value of p is 0.5 (since p is unknown) and the desired standard error chosen to be 0.05 with reliability coefficient of 95 % certainty (z = 1.96)

$$\text{Then, } n = \frac{(1.96)^2 (0.15 * 0.85)}{0.05^2}$$

$(0.05)^2$

n = 196

This was rounded up to 200.

3.8 Pretesting

The data collection tools were subjected to fundamental pre-testing to ascertain the validity and consistency prior to the study. This confirmed the suitability of the tools. The questionnaire was pre-tested among the staff of the Polyclinic, KATH. Pretesting was done on August 2012 and the 20 health staffs were interviewed. The pretesting brought the rating scale for how overcrowding can be curbed to the fore because participants had varying views.

3.9 Data Handling

Every questionnaire was coded and checked for completeness before leaving the field. Data entry was done daily.

3.10 Ethical Consideration

The study protocol was submitted to the Committee on Human Research, Publications and Ethics (CHRPE) at Komfo Anokye Teaching Hospital (KATH) and School of Medical Sciences, Kwame Nkrumah University of Science and Technology (SMS/KNUST), for ethical clearance before I embarked on the study. All information collected remained confidential and used for the purposes of the survey only. Signed or thumb-printed consent forms were kept separately from completed questionnaires.

3.11 Limitation of the Study

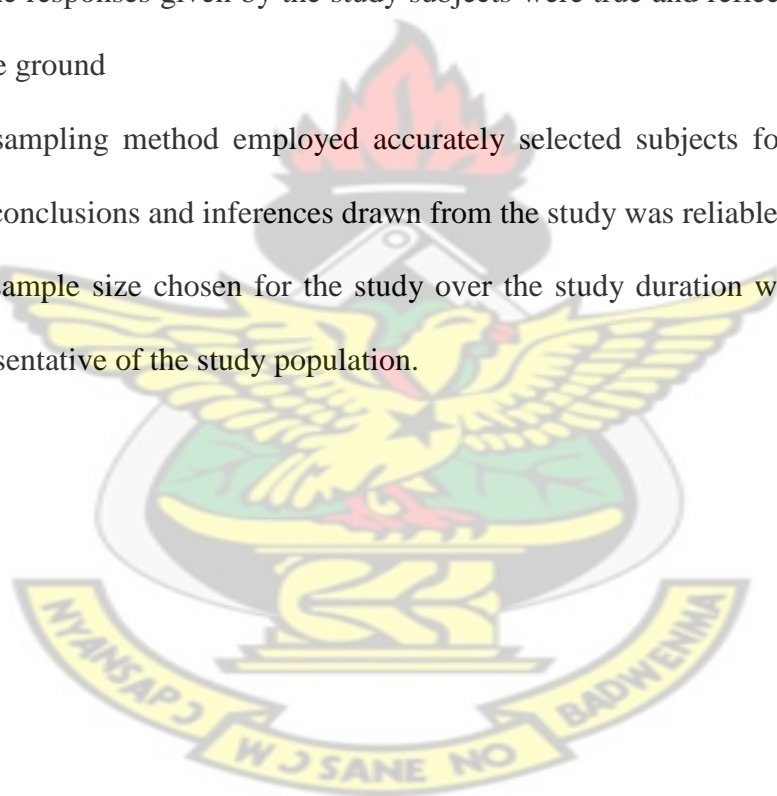
The estimates used for the study were not published hence it is difficult to verify them. The study participants were asked to give their perception about overcrowding and so

their responses reflected their subjective views. There was a language barrier between patients who could not speak Akan and research assistants however the service of an interpreter was sought.

The interviews for the questionnaire were conducted as exit interviews. Thus, there could have been the likelihood of recall bias from the respondents. This may have influenced the results of the study.

3.12 Assumptions

1. All the responses given by the study subjects were true and reflected the situation on the ground
2. The sampling method employed accurately selected subjects for the study and thus conclusions and inferences drawn from the study was reliable and valid.
3. The sample size chosen for the study over the study duration was adequate and representative of the study population.



CHAPTER FOUR

RESULTS

This chapter presents results of the study. This involved analysis of all the responses from clients as well as health staff. It involved 200 clients and 150 health staff. The presentation of the findings is in tables and figures that are followed by a narration. Description of variables were presented in tables and graphs. The results is organised as follows: the socio-demographic characteristics followed by respondents experience and views with overcrowding and quality of care at the Accident and Emergency unit of the Komfo Anokye Teaching Hospital.

4.1 Socio-demographic characteristics of respondents

Table 4.1 and 4.2 presents the background characteristics of the health staff and clients involved in this study respectively.

As shown, majority of the health staff involved in this study were 25 to 34 years (88.2%). The mean age was 28 years (SD=3.3) and only 3.1% were above 34 years. 63.5% were females and 89% were nurses. Majority of the health staff have been in the health profession and have worked at the A & E unit for more than 2 years. Thirty-eight respondents constituting 25.5% worked in only one ward whereas 30.9% worked in three wards. Only 6% worked in 5 wards.

Of the health care staff interviewed, 89.0% were nurses and 11% were doctors.

Table 4.1: Background characteristics of health staff

Variable	Frequency	Percentage
Age (n=127)		
– <25	11	8.7
– 25-34	112	88.2
– 35-44	4	3.1
Mean (SD)	28 (3.3)	
Gender (n=148)		
– Male	54	36.5
– Female	94	63.5
Profession (n=145)		
– Nurse	129	89.0
– Doctor	16	11.0
How long work in profession (n=148)		
– Less than one year	12	8.1
– 1 – 2years	29	19.6
– 2-3years	45	30.4
– 3 - 5 years	47	31.8
– More than 5 years	15	10.1
How long work in A & E (n=150)		
– Less than one year	27	18.0
– 1 – 2years	33	22.0
– 2-3years	50	33.3
– 3 - 5 years	40	26.7
How many wards do you work in? (n=149)		
– 1	38	25.5
– 2	35	23.5
– 3	46	30.9
– 4	21	14.1
– 5	9	6.0
Current ward (n=117)		
– Red	43	36.8
– Orange	27	23.1
– Yellow	17	14.3
– CDU	27	23.1
– Other	3	2.6

Source: Field data, 2013

Among the patients, 50% were from 25 to 34 years and 35% were above 34 years as shown in Table 4.2. 60% were married whereas 30% were single. 55.6 (53.2%)% had basic education with only 4.2% having tertiary education. Eighty-five percent were Christians whereas 10% were Muslims. With respect to occupation, 28% were artisans,

30% traders whereas 17% were either students or unemployed. Majority 73% accessed health care with NHIS cards.

Table 4.2: Socio-demographic characteristics of clients

Variables	Frequency	Percentage
Age (n=200)		
– <25	30	15.0
– 25-34	100	50.0
– >34	70	35.0
Mean (SD)	35 (16)	
Marital status (n=200)		
– Single	60	30.0
– Married	120	60.0
– Divorced	10	5.0
– Widow	10	5.0
Education (n=188)		
– None	20	10.6
– Basic	100	53.2
– Secondary	60	31.9
– Tertiary	8	4.2
Religion (n=200)		
– Christian	170	85.0
– Moslem	20	10.0
– Traditional	10	5.0
Occupation (n=200)		
– Student/unemployed	34	17.0
– Artisan	56	28.0
– Trader	60	30.0
– Farmer	30	15.0
– Other	20	10.0
Mode of payment of service (n=190)		
– Fee for service	50	26.3
– Health insurance	140	73.7

Source: Field data, 2013

4.2 Perceptions and experiences of health staff on overcrowding at the A & E unit

Table 4.3 shows results of health staff perceptions and experiences of overcrowding at the A & E unit. Majority, 74.5% of the health staff rated the logistics and equipment at the unit as inadequate. One hundred and forty-four respondents representing 96.6% viewed the unit as overcrowded. More than 85% also disclosed that situations of overcrowding have at some points resulted in poor patient outcomes and 88.6% also said that

overcrowding has resulted in poor patients care at the facility. According to 95.2% of respondents, overcrowding in the facility has led to stress on the job and about 91% disclosed that they easily become tired as a result of overcrowding at the facility.

Also, 69.9% reported that there have been near misses on the job due to the situation of overcrowding.

Table 4.3 Results of experiences and views of health staff on overcrowding at the A&E

Variables	Frequency	Percentage
How you rate the adequacy of equipment and logistics in relation to the patient load? (n=149)		
– More than adequate	8	5.4
– Inadequate	111	74.5
– Just enough	30	20.1
Think A&E is overcrowded? (n=149)		
– Yes	144	96.6
– No	5	3.4
Has overcrowding situation here ever resulted in an outcome for a patient that you would describe as poor? (n=148)		
– Yes	128	86.5
– No	20	13.5
Has overcrowding resulted in poor patient care? (n=149)		
– Yes	132	88.6
– No	17	11.4
Have you become easily irritable due to overcrowding? (n=149)		
– Yes	122	81.9
– No	27	18.1
Have you ever experienced stress on the job as a result of overcrowding? (n=147)		
– Yes	140	95.2
– No	7	4.8
Have there been any near misses as a direct result of overcrowding at the Accident and Emergency department? (n=143)		
– Yes	100	69.9
– No	43	30.1
Do you become tired easily as a result of overcrowding (n=148)		
– Yes	134	90.5
– No	14	9.5

Source: Field data, 2013

4.2.1 Experiences and views of clients on overcrowding in the A&E

Table 4.4 also presents perceptions and experiences of patients about overcrowding at the A & E centre of KATH. Thirty percent of the clients walked to the facility whereas 15% were brought in by an ambulance. Majority 78.9% had never been admitted to the old emergency unit at the polyclinic. Among the 21% who had ever been admitted to the old emergency unit, 55% believed that there is no difference in the quality of care at the two centres (the old casualty at the polyclinic and the A&E). Majority of the clients indicated that they were immediately seen by a doctor when they were admitted and contrary to views of health staff, 72% believed the emergency unit is not overcrowded and more than 50% described the attitude of staff as good. Sixty-three per cent (63%) also stated that there was enough health staff to handle the work load at the centre and their reasons included nurses always being available and nurses attending to them when necessary as shown in Figure 4.1.

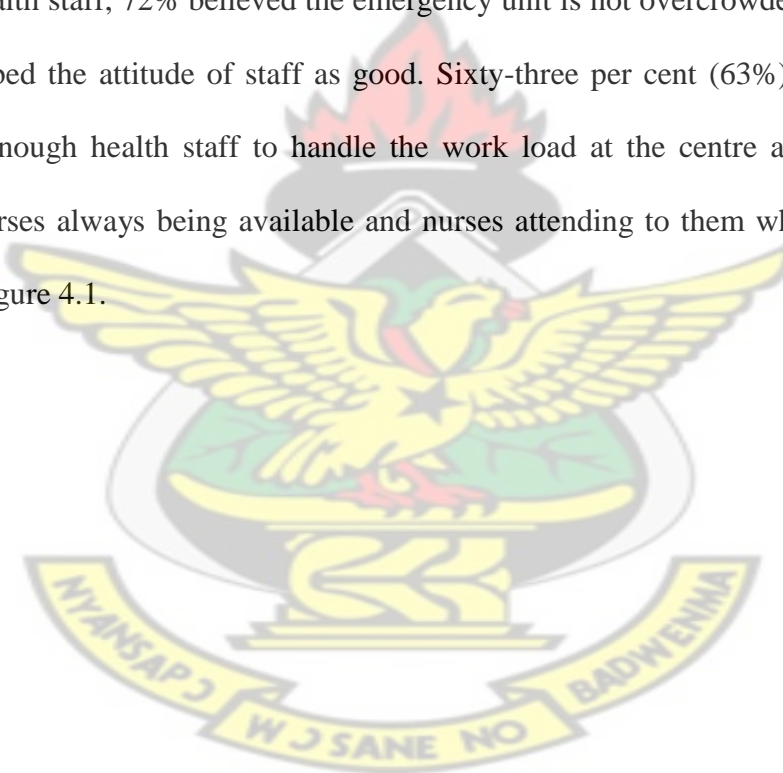
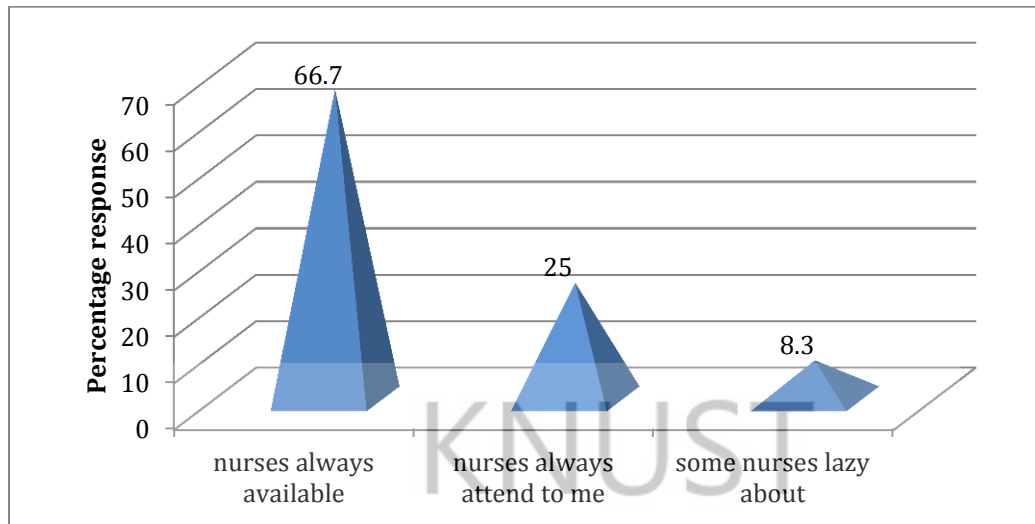


Table 4.4 Results of experiences and views of patients on overcrowding in the A&E

Variables	Frequency	Percentage
Means of reaching the facility (n=200)		
– Walking	60	30.0
– In ambulance	30	15.0
– Commercial vehicle	52	26.0
– Private vehicle	58	29.0
Admitted to old emergency unit at polyclinic? (n=190)		
– Yes	40	21.1
– No	150	78.9
If yes, has quality of care improved at A & E?		
– yes	18	45.0
– No	22	55.0
How long before seeing a doctor? (n=200)		
– Immediately	110	55.0
– 5-29minutes	22	11.0
– 30mins-one hour	24	12.0
– After an hour	6	3.0
– After two hours	28	14.0
Do you think the emergency unit is overcrowded? (n=200)		
– Yes	56	28.0
– No	148	72.0
Describe attitude of staff towards you and other patients (n=190)		
– Very good	48	25.3
– Good	100	52.6
– Very bad	32	16.8
– Bad	-	-
– Indecisive	10	5.3
Think there are enough health personnel for the work load? (n=200)		
– Yes	126	63.0
– No	74	37.0
Rate of cost at A & E (n=160)		
– Appropriate	40	25.0
– Expensive	120	75.0
– inexpensive	-	-

Source: Field data, 2013

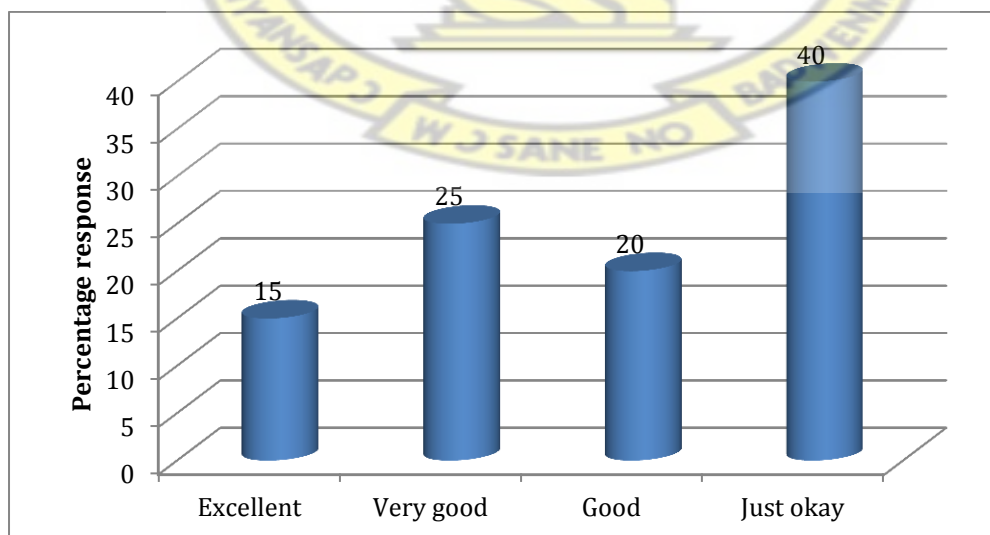
Figure 4.1: Respondents reasons why health staff was enough at the A & E



Source: Field data, 2013

Figure 4.2 presents the overall rating of clients' perception of overall healthcare delivery at the health facility. Majority of clients involved in the study had good perceptions about the overall healthcare delivery at the unit with 15% of them describing it as excellent. Twenty-five percent also believed healthcare delivery was very good whereas 40% described it as 'just okay'.

Figure 4.2: Clients' rating of overall care at the A & E unit



Source: Field data, 2013

Table 4.5 also presents clients' experience of privacy with some aspects of care at the A & E unit. As shown, more than 50% of the respondents had privacy with almost all the aspects of care with the exception of wound dressing as detailed in Table 4.5. Only 46% stated that there was privacy during wound dressing at the facility.

Table 4.5: Patients' experience of privacy with various aspects of care at the A & E unit

Aspects of care	Total responses	Experience privacy?	
		Yes	No
		N (%)	N (%)
Physical examination	200	134 (67.0)	66 (33.0)
Intravenous access	200	150 (75.0)	50 (25.0)
Intramuscular injection	200	130 (65.0)	70 (35.0)
Wound dressing	200	92 (46.0)	108 (54.00)
Urethral catheterization	200	122 (61.0)	78 (39.0)
Suturing of wound	200	150 (75.0)	50 (25.0)
Cleaning	200	130 (65.0)	70 (35.0)
Provision of bedpan	200	144 (72.0)	56 (28.0)

Source: Field data, 2013

Responses presented in table 4.6 further indicate that most of the respondents were either seen immediately or after 30 minutes after they visited the facility. Half of the respondents interviewed disclosed that they immediately got their medications whereas 28% got it after 30 minutes. Forty percent also indicated that they had their radiological examinations immediately whereas 30% had it after 30 minutes. However, some respondents went through the various procedures after three hours.

Table 4.6: Patients' waiting times at various sections in the facility

Procedures	Number of respondents	Immediately	After 30 minutes	After 1 hour	After 2 hours	After 3 hours
Getting your medications	200	100 (50.0)	68 (28.0)	10 (5.0)	-	34 (17.0)
Laboratory investigations	200	96 (48.0)	60 (30.0)	16 (6.0)	-	28 (14.0)
Radiological examinations	170	80 (47.1)	60 (35.3)	-	10 (5.9)	20 (11.80)
Getting your bills	190	40 (21.1)	100 (52.6)	-	40 (21.1)	10 (5.3)

Source: Field data, 2013

4.3 Views on causes of overcrowding and ways of minimizing it

As shown in Table 4.7, the mean responses indicated that majority of the health care providers agreed to the various causes of overcrowding outlined. About 65% strongly agreed that inadequate bed space at the A & E causes overcrowding at the facility. A total of about 66% also agreed that inadequate space in the main wards also causes overcrowding. Inadequate staff and inappropriate referrals were also indicated by majority of respondents as causes of overcrowding. About 22% however agreed to inadequate theatre space as causes of overcrowding.

Table 4.7 Responses on causes of overcrowding in the A&E.

Causes of overcrowding	Strongly Agree N (%)	Agree N (%)	Strongly Disagree N (%)	Disagree N (%)	Indecisive N (%)	Mean response
Inadequate bed space at the A&E	95 (64.6)	23 (15.6)	15 (10.2)	12 (8.2)	2 (1.4)	1.7
Inadequate daily reviews	51 (35.7)	58 (40.6)	5 (3.5)	27 (18.9)	2 (1.4)	2.1
Inadequate theatre space	44 (29.7)	50 (33.8)	15 (10.1)	33 (22.3)	6 (4.1)	2.4
Inadequate space on the main wards	97 (66.0)	42 (28.6)	2 (1.4)	4 (2.7)	2 (1.4)	1.4
Inadequate staff	69 (47.3)	47 (32.2)	11 (7.5)	14 (9.6)	5 (3.4)	1.9
Inappropriate referrals	104 (70.3)	43 (29.1)	1 (0.68)	-	-	1.3

Source: Field data, 2013

Concerning ways of minimizing overcrowding, most of the health staff believed that improving the capacity of district hospitals will minimize overcrowding at the facility as indicated in Table 4.8. Increasing number of staff, building more theatres and insisting on daily reviews were also agreed to by the health staff as ways of minimizing overcrowding. About 40% however, disagreed that expanding the unit will minimize overcrowding.

Table 4.8 Ways of minimizing overcrowding

Variables	Strongly Agree	Agree	Strongly Disagree	Disagree	Indecisive
Improve the capacity of district hospitals	132 (88.0)	16 (10.7)	-	2 (1.3)	
Expand the unit	31 (21.1)	38 (25.9)	20 (13.6)	40 (27.2)	18 (12.2)
Increase the number of staff	77 (52.0)	59 (39.9)	2 (1.4)	6 (4.0)	4 (2.7)
Expand the wards	57 (38.8)	64 (43.6)	7 (4.8)	17 (11.6)	2 (1.4)
Build more theatres	52 (35.9)	52 (25.6)	10 (6.9)	15 (10.3)	16 (11.0)
Insist on daily reviews	103 (68.7)	40 (26.7)	-	2 (1.3)	5 (3.3)

Source: Field data, 2013

CHAPTER FIVE

DISCUSSION

This chapter discusses the findings of the study. It involves the discussion of the findings of the study in relation to published literature on overcrowding at emergency department and its perceived effects on health delivery. It is outlined based on the objectives of the study.

5.0 Introduction

Emergency department (ED) crowding is a global problem that has drawn increasing international attention (Sinclair, 2007). The nature of emergency medicine (EM) has changed significantly in recent years with the advent of 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. This has led to a rise in ED utilization which in turn has effectively saturated the capacity of EDs and emergency medical services in many communities. The resulting phenomenon, commonly referred to as ED overcrowding, now threatens access to emergency services for those who need them the most (Committee on Pediatric Emergency, 2004)

Overcrowding has direct effect on services received at the hospital and has been identified as the leading cause of concern over patients' safety and the care rendered to patients by health care providers (Carrus et al., 2010). In a recent study of ED overcrowding, researchers identified numerous effects of this problem, including risk of poor outcomes, prolonged pain and suffering for some patients, long waiting times, patient dissatisfaction, more ambulance diversions, lower physician productivity and higher levels of frustration among medical staff. The problem's complexity hampers

holistic understanding and development of system-wide solutions for integrated, evidence-based health care delivery, which is the primary intent of this study. ref

5.1 The influence of overcrowding on patients

Overcrowding at the ED has consequential effects on patients care and general health outcomes. A study by Schuelen (2008) shows that, this could result in patient diversion; which increases risk of poor patient outcomes, prolonged pain and suffering, long patient waits, patient dissatisfaction and increased frustration among medical staff and loss of revenue from the diversion of potential patients.

Many previous studies have associated ED with overcrowding. Studies in America by Derlet (2002) have reported growing trends of overcrowding at a number of EDs. However, contrary to these studies most patients in this study (72%) perceived KATH ED not to be overcrowded. Only 28% of clients believed the ED is overcrowded in this study. As indicated in the results of this study, about two thirds of the respondents had privacy with almost all the aspects of care. This included physical examination, intravenous access, urethral catheterization, suturing of wounds and provision of bedpans. Clients were almost split on issues of privacy of in wound dressing; 46% thought there was privacy while 54% did not have privacy with wound dressing. This indicates that although issues of privacy were somewhat good, there was still the need for improvement.

Most of the respondents (66%) were either seen immediately or less than thirty(30) minutes after they visited the facility. According to the Lewin group (2002) study, overcrowding was found to be directly related to delays in provision of care and ancillary services. In this study, however, most clients perceived the ED not to be overcrowded and consequently experienced no delays in provision of care and ancillary services.

However, some clients waited for more than an hour or two before seeing a doctor. Other clients also went through radiological examinations and collecting medications after three hours.

5.2 To determine the influence of overcrowding on health care providers

This study assessed the influence of overcrowding on health care providers at the A & E department of the KATH. Results from this study indicate that contrary to the views of clients, more than 95% of the health providers believed that the ED is overcrowded. This is consistent with previous studies mentioned earlier in this discussion, which have reported increasing trend of overcrowding in EDs (Derlet, 2002, Lewin group, 2002).

Health providers in this study again opined that overcrowding at the EDs could result in poor patient care (86.5%) and detrimental health outcomes including death (88.6%). Boarding in the ED could subject critically ill patients to treatment delays when time-sensitive interventions are necessary. Continual overcrowding has also been reported to gradually erode the quality of emergency care as a result of overstretched ED capacity, making the entire emergency care system unreliable (Trzeciak and Rivers, 2003). The study by Drummond *et al* (2007) also found positive correlation between number of patient visits and mortality rate in an overcrowded ED setting.

Most health providers (95.2%) in this study again reported experience of stress on the job and tiredness as a result of overcrowding (90.5%) at the facility. This has the potential of creating medical errors which could have negative influence on patient's care and outcome. Regardless of the proficiency of the ED staff, ED overcrowding is a prime example of a system problem creating a high risk environment for medical errors and therefore, threatening patient safety. Majority (69.9%) of respondents disclosed that there

were near misses sometimes at the accident and emergency centres which was attributed to the overcrowding and its resulting stress and tiredness.

Consistent with this study, other previous studies on emergency care have documented the increase in medical errors associated with boarding and crowding (Weissman, 2007). Many of these are errors of omission and not commission since the emergency staff must simultaneously care for inpatients and focus on the new emergencies coming in the door (Trzeciak, 2005). According to a report by the JCAHO (Joint Commission on Accreditation of Healthcare Organizations) in the United States in 2007, 50% of sentinel events causing serious injury or death occur in the emergency department and approximately one third of these are related to crowding.

5.3 Factors contributing to overcrowding at the emergency department

The growing trend of overcrowding in EDs requires a multi-sectorial approach to find lasting solutions to this global issue. This could however only be successful with in-depth understanding of the primary causes of overcrowding at our EDS. This study sought to investigate perceptions of health providers on causes of overcrowding at the accident and emergency centre at KATH. Most frequently cited causes for overcrowding in previous studies included high ED patient acuity, hospital bed shortage, high ED patient volume, ancillary service delays, and insufficient ED space (Derlet *et al.*, 2000).

Most respondents in this study indicated that that inadequate bed space in the hospital causes overcrowding at the facility. About 65% strongly agreed to this assertion. This creates increased waiting time for transfer of a patient to an inpatient bed therefore creating overcrowding at the ED. This situation is not limited to resource-poor settings alone. Studies from emergency department in developed countries also report inadequate bed space a leading cause of overcrowding in EDs. According to the Canadian

Association of Emergency Physicians and National Emergency Nurses Affiliation (2001), hospital beds in Canada have been reduced by almost 40% nationally over the past 5 years with hospitals having increasing difficulty, admitting patients from the ED in a timely fashion. Health providers in this study attributed overcrowding in the accident and emergency unit to inadequate space at the theatre and the main wards. This could be as a result of high number of patient admission, which in turn puts pressure on limited resources at the facility. Inadequate space at the unit will also compound issues of bed inadequacy and creates delay in patient care. Health providers also indicated inappropriate referrals as a cause of overcrowding at the unit. Almost all health staff respondents in this study agreed to the issue of inappropriate referrals as cause of overcrowding in the facility. Inappropriate referrals cause delays in diagnosis and patients treatment and could have negative health outcomes as discussed earlier

On ways to tackle overcrowding in the ED, Health providers in this study strongly agreed that improving capacity of district hospitals, increasing number of staff and increased reviews of patients in the ED by physicians will help minimize the challenge of overcrowding.

Health providers at the Emergency Unit invariably agreed that expanding the wards at the unit and building more theatres will help absorb the pressure on the current emergency facility and help reduce overcrowding at the unit.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

This chapter summarizes the major conclusions of the study and makes recommendations to improve the current situation.

6.1 Conclusion

6.1.1 Influence of overcrowding on patients

In the view of patients in the ED, overcrowding was perceived not to be a problem.. It can be concluded from results and discussions of this study that most of the patients who came to the ED found the place not to be overcrowded and hence were seen immediately or before thirty (30) minutes prior to their arrival at the ED.

However, a small proportion, one third, found the place to be overcrowded.

6.1.2 Influence of overcrowding on health providers

Most of health care providers believed the emergency department was overcrowded. Overcrowding at the ED has negative consequences on health providers. Overcrowding at the ED causes stress and tiredness among health respondents and leads to medical errors which results in poor patient outcomes.

6.1.3 Factors contributing to overcrowding at the emergency department

Overcrowding at the accident and emergency unit at KATH could be as a result of inadequate bed space, inadequate theatre space, inadequate space at main wards and inappropriate referrals. Health providers further disclosed that inadequate medical equipment to offer prompt care to patients, causes overcrowding at the facility.

6.3 Recommendations

Recommendations for Ministry of health/Government of Ghana/ other stakeholders

- Inadequate bed and theatre space influenced overcrowding at the ED in this study. There should therefore be efforts to expand infrastructure to cater for increasing emergency cases and help minimize overcrowding.
- There is also the need to improve the district facilities that make referrals to the accident and emergency unit. This will help reduce the pressure on the unit and minimize overcrowding. This will also create the room for treating patients with non-urgent problems who might not need to be treated at the emergency unit.
- The health services should offer support in terms of planning and liaison of referrals between the district facilities and the accident and emergency unit. This will include training of health staff at the district facilities and the ED to properly handle referrals to curb delay in patient treatments.

Health facility

- Respondents in this study cited increased waiting times at diagnostic and examination units as a result of overcrowding at the facility. There should be increased availability and quicker turnaround times for laboratory and diagnostic imaging service, laboratory technicians and other supporting staff to handle the increasing demand from patients and hence, minimize delays.
- The emergency unit should institute periodic review of overcrowding situations at the facility to ascertain current situation and assess the effectiveness of strategies implemented to curb the situation.

Recommendations for further research

Future study should focus on the following,

- Effects of overcrowding on patient mortality at the emergency department.

KNUST



REFERENCES

- American Academy of Pediatrics (2004). Overcrowding Crisis in Our Nation's Emergency Departments: Is Our Safety Net Unraveling? *Pediatrics* 114, 878–888.
- Angela Estey, Kathleen Ness, L. Duncan Saunders, Arif Alibhai, Robert A. Bear (2003). Understanding the causes of overcrowding in emergency departments in the Capital Health Region in Alberta: a focus group study; *JCMU*; 5 (2).
- Boushy D, Dubinsky I (1999). Primary care physician and patient factors that result in patients seeking emergency care in a hospital setting: the patient's perspective. *J Emerg Med*;17(3):405-12.
- Canadian Association of Emergency Physicians and National Emergency Nurses Affiliation, 2001. Joint Position Statement on emergency department overcrowding | *Canadian Journal of Emergency Medicine* [WWW Document]. URL <http://www.cjem-online.ca/v3/n2/p82>
- Carrus, B., Corbett, S., Khandelwal, D., 2010. A hospital-wide strategy for fixing ED overcrowding - *McKinsey Quarterly* - Health Care - Hospitals [WWW Document]. URL http://www.mckinseyquarterly.com/A_hospital-wide_strategy_for_fixing_ED_overcrowding_2505
- Chalfin DB, Trzeciak S, Likourezos A, et al (2007). Impact of delayed transfer of critically ill patients from the emergency department to the intensive care unit. *Crit Care Med*;35(6):1477-1483.
- Cowan, R.M., Trzeciak, S., 2005. Clinical review: Emergency department overcrowding and the potential impact on the critically ill [WWW Document]. URL <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1175862/>
- Derlet, R.W., Richards, J.R., Kravitz, R.L., 2008. Frequent Overcrowding in U.S. Emergency Departments - Derlet - 2008 - *Academic Emergency Medicine* - Wiley Online Library [WWW Document]. URL <http://onlinelibrary.wiley.com/doi/10.1111/j.1553-2712.2001.tb01280.x/abstract>
- Derlet RW (2002). Overcrowding in emergency departments: increased demand and Decreased capacity. *Ann Emerg Med*;39:430–2.

- Derlet RW, Richards JR, Kravitz R (2001). Frequent overcrowding in US emergency departments. *Acad Emerg Med*;8:151–5.
- Derlet RW, Richards JR (2000). Overcrowding in the nation's emergency departments: Complex causes and disturbing effects. *Ann Emerg Med*;35:63–8.
- Derlet RW, Richards JR (2002). Emergency department overcrowding in Florida, New York, and Texas. *South Med J*; 95:846–9.
- Hider P, Helliwell P, Ardagh M, Kirk R (2001). The epidemiology of emergency department attendances in Christchurch. *N Z Med J*;114(1129):157-9.
- J. Drummond, A., 2002. No room at the inn: overcrowding in Ontario's emergency departments | Canadian Journal of Emergency Medicine [WWW Document]. URL <http://www.cjem-online.ca/v4/n2/p91>
- Joint Commission. Sentinel Event Alert, June 17,2002; <http://www.jointcommission.org/sentinelevents/statistics>. Accessed 4 June 2007.
- Lewin Group (2002). Emergency department overload: a growing crisis. The results of the American Hospital Association Survey of Emergency Department (ED) and Hospital Capacity. Falls Church, VA: American Hospital Association, 2002
- Lenahan GP (1999). ED short staffing: It is time to take a hard look at a growing problem and strategies such as standard nurse–patient ratios. *J Emerg Nurs* 1999;25(2):77-8.
- McCarthy, M.L., 2011. Overcrowding in emergency departments and adverse outcomes | BMJ [WWW Document]. URL <file:///C:/Users/Marie/Desktop/Overcrowding%20in%20emergency%20departments%20and%20adverse%20outcomes%20%20%20BMJ.htm>
- Medicine, C. on P.E., 2004. Overcrowding Crisis in Our Nation's Emergency Departments: Is Our Safety Net Unraveling? *Pediatrics* 114, 878–888.
- Menec VH, Roos NP, Nowicki DL, MacWilliam L, Finlayson G,Black C (1999). Seasonal patterns of Winnipeg hospital use. Winnipeg: Manitoba Centre for Health Policy and Evaluation; 1999 Oct.

- No room at the inn: overcrowding in Ontario's emergency departments | Canadian Journal of Emergency Medicine [WWW Document], 2012. . URL <http://www.cjem-online.ca/v4/n2/p91>
- Richards J, Navarro M, Derlet R (2000). Survey of directors of emergency departments in California on overcrowding. *West J Med*;172(6):385-8.
- Sharon, T.A., 2008. Standards of Care in the Emergency Room: The Emergency Waiting Game [WWW Document]. URL <http://legalnurseconsultanttom.com/archives/205>
- Sinclair D (2007). Emergency department crowding – implications for paediatric emergency medicine. *Paediatr Child Health*; 12:491-4.
- Standard terminology. [Emerg Med (Fremantle). 2002] - PubMed - NCBI [WWW Document], 2002. . URL <http://www.ncbi.nlm.nih.gov/pubmed/12549431?dopt=Abstract>
- Trzeciak, S., Rivers, E.P., 2003. Emergency Department Overcrowding in the United States: An Emerging Threat to Patient Safety and Public Health. *Emerg Med J* 20, 402–405.
- Van de Bogart L (2000). Crisis in the emergency department: contributing factors and potential solutions. In: *Hallway medicine*. Toronto: Insight Press; 2000.
- Weissman JS, Rothschild JM, Bendavid E, et al (2007). Hospital workload and adverse events. *Med Care*;45(5):448-455.

APPENDICES

APPENDIX 1: QUESTIONNAIRE FOR PROVIDERS.

Introduction

Good morning/afternoon. I am a student at School of Medical Sciences, KNUST. I would like to find out your views and ideas about “The influence of overcrowding on care delivered to patients at the Accident and Emergency centre, KATH”. Your opinions are highly essential and vital to this study as they will in the long run help us to improve the service we provide at the Accident and Emergency Department. . Whatever you say will be treated as confidential, so feel at ease to express your candid opinion. Be assured that your responses will not in any way be linked to your identity. You are kindly requested to answer the questions below by indicating a tick or writing as appropriate.

THANK YOU

1. 1. Date of data collection: Day..... Month..... Year.....

SECTION A: DEMOGRAPHICS

2. Age (at time of interview) in completed years
3. Sex : Male ☐ Female ☐
4. Profession

SECTION B:

5. How long have you worked in your profession?.....
6. How long have you worked in A&E?
7. How many wards have you worked in at the emergency department?
8. Please name them
9. Please tick your current ward below

Red ☐

Orange ☐

Yellow ☐

CDU ☐

Other.....

10. How do you rate the adequacy of equipment and logistics in relation to the patient load?

More than adequate ☐

Inadequate ☐

Just enough ☐

11. Do you think A&E is overcrowded? Yes..... No.....

12. What are the causes of overcrowding in the A&E.

	Strongly Agree	Agree	Strongly Disagree	Disagree	Indecisive
Inadequate bed space at the A&E					
Inadequate daily reviews					
Inadequate theatre space					
Inadequate space on the main wards					
Inadequate staff					
Inappropriate referrals					

13. Has the overcrowding situation here ever resulted in an outcome for a patient that you would describe as poor? Yes No

14. Has overcrowding resulted in poor patient care? Yes No

15. Have you become easily irritable due to overcrowding? Yes No

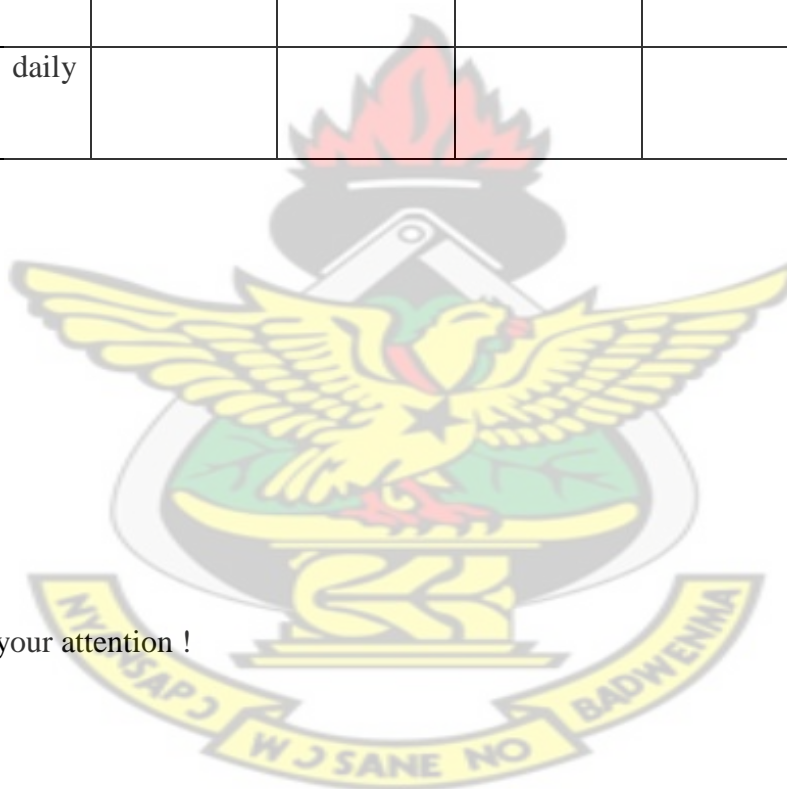
16. Have you ever experienced stress on the job as a result of overcrowding?
Yes No

17. Have you had any near misses as a direct result of overcrowding at the Accident and Emergency department? Yes No

18. Do you become tired easily as a result of overcrowding? Yes No

19. How do we curb the situation of overcrowding?

	Strongly Agree	Agree	Strongly Disagree	Disagree	Indecisive
Improve the capacity of district hospitals					
Expand the unit					
Increase the number of staff					
Expand the wards					
Build more theatres					
Insist on daily reviews					



Thanks for your attention !

APPENDIX 2: QUESTIONNAIRE FOR PATIENTS

Introduction

*Good morning/afternoon. I am a student at School of Medical Sciences, KNUST. I want to conduct a meeting to find out your views and ideas about “The influence of overcrowding on care delivered to patients at the Accident and Emergency centre, KATH”. Your opinions are highly essential at the same time vital as they will help us to improve the kind of service we provide. Whatever you say will be treated confidential, so feel at ease to express your candid opinion. Be assured that your responses will not in any way be linked to your identity. You are kindly requested to answer the questions below by indicating a tick or writing the appropriate answer as required . **THANK YOU***

A. PATIENTS PERSONAL INFORMATION

1. Date of data collection: Day..... Month..... Year.....

2. Age (As at time interview) in years:.....

3. Marital Status:

a. Single ☐ b. Married ☐ c. Divorced ☐ d. Widowed ☐ e. Other ☐

specify.....

4. Education (level of formal education attained):

a. None ☐ b. Basic ☐ c. Secondary ☐ d. Tertiary ☐

Other Specify.....

5. Mode of payment of services: a. Fee for service ☐ b. Health Insurance ☐

6. Religion:

a. Christian ☐ Moslem ☐ Traditional ☐

b. d. Atheist ☐ e. other ☐ (specify)

7. Occupation:.....

B. PATIENTS' KNOWLEDGE

8. How did you come to the unit?

a. Walked in ☐ b. In an ambulance ☐ c. By commercial vehicle ☐

d. Private vehicle ☐ Other Specify (eg don't know)

9.. Were you ever admitted to the old emergency unit at the polyclinic?

a. Yes ☐ b. No ☐

10. If YES, do you think the quality of care has improved at the A&E?

a. Yes ☐ b. No ☐

11. If YES, in what way?

.....

C, CARE RENDERED

12. When did you arrive? (Day and time)

13. When were you assessed by the nurse and given a colour code? (Day and Time)

14. How long did you wait before seeing a doctor?.....

a. Immediately ☐ b. 5-29 minutes ☐ c. 30minutes-One hour ☐

d. After one hour ☐ e. After two hours ☐

15. Do you think the emergency unit is overcrowded? a. Yes ☐ b. No ☐

16. If Yes, what did you otherwise expect?.....

17. Do you think your privacy was respected in carrying out the following procedures?

	YES	NO
Physical examination		
Intravenous access		
Intramuscular injection		
Wound dressing		
Urethral catheterization		
Suturing of wound		
Cleaning		
Provision of bedpan		

18. How long did you wait before the following the procedures

	Immediately	After 30 minutes	After one hour	After two hours	After three hours
Getting your medications					
Laboratory investigations					
Radiological examinations					
Getting your bills					

19. Describe the attitude of staff towards you and other patients

- a. Very good ☐ b. Good ☐ c. Very bad ☐ d. Bad ☐
- e. Indecisive ☐

20. Do you think there are enough health personnel for the work load?

- a. Yes ☐ b. No ☐

21. If Yes, give reason(s).....

22. If No, give reason(s).....

23. How do you rate the cost of care at the A&E

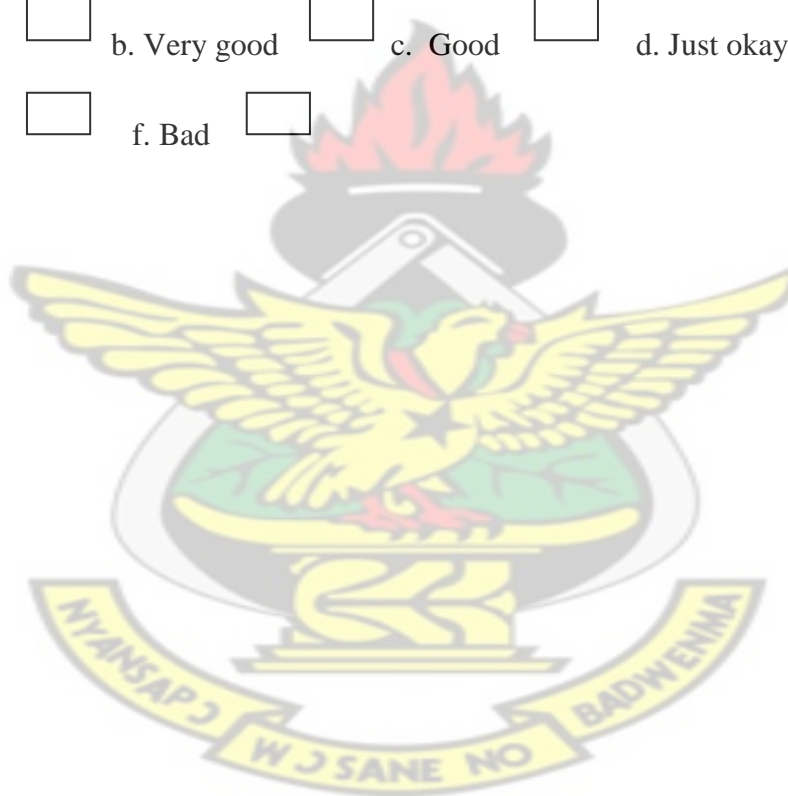
a. Appropriate b. Expensive c. Inexpensive

24. How long did you wait after your discharge or transout?.....

25. If more than one hour, what caused the delay?.....

36. How do you rate the overall care?

a. Excellent ☐ b. Very good ☐ c. Good ☐ d. Just okay ☐
e. Very bad ☐ f. Bad ☐



THANKS FOR YOUR ATTENTION !