KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI, GHANA

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICAL SCIENCES

DEPARTMENT OF COMMUNITY HEALTH

WORKLOAD AND NURSING CARE: A CASE STUDY IN SOME SELECTED HOSPITALS IN THE BRONG-AHAFO REGION OF GHANA

BY

BENNIN JUABIE DOURI

BA NURSING AND PSYCHOLOGY

A THESIS SUBMITTED TO THE DEPARTMENT OF COMMUNITY HEALTH, COLLEGE OF HEALTH SCIENCES IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF PUBLIC HEALTH IN HEALTH SERVICES PLANNING AND MANAGEMENT

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DECLARATION

I hereby declare that this submission is my own work towards the MPH and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the university, except where due acknowledgement has been made in the text.

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(Head of Department)

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Date

DEDICATION

This thesis is dedicated to my wife Jemila Titi Adam for her unflinching support and encouragement.
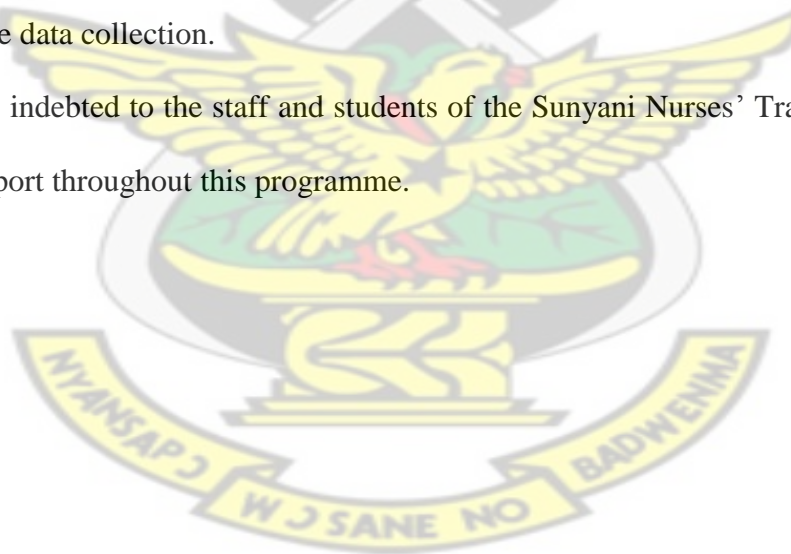
ACKNOWLEDGEMENT

ABSTRACT

Nurses since time immemorial have often cited workload as one of the main reasons for their inability to provide holistic care to their patients. The nurse-patient ratio has often been the most frequently used measure of workload at the unit- level. Not much has been studied into the effect of the unfavourable nurse-patient ratio in Ghana as a whole and the Brong-Ahafo Region in particular. This study investigated workload and nursing care in some selected hospitals in the Brong-Ahafo Region of Ghana by determining the daily nursing workload, the factors that contributed to workload, the effects of workload on nurses and the quality of care delivered. The study used mixed sampling techniques - 0in selecting the respondents. A cross sectional survey was then employed by administering questionnaire to 375 bedside nurses with 350 of them responding giving it a retrieval rate of 93%. Interviews with five nurse managers (hospital matrons) were recorded and transcribed. The results from the questionnaire were analyzed using SPSS (version16) which were subsequently triangulated with that of the in depth interview. The findings of the study revealed that, the nurse- patient ratio was 1:9 as compared with the ideal of 1:4; an indication that there was increased workload in the study area. In general, nursing care was either delayed or not done an indication that quality of care was not the best."Borrowed" procedures carried out by nurses were more pronounced in the government owned hospitals as compared with the Christian Health Association of Ghana (CHAG) hospitals with taking of patient samples showing appreciable level of significance(P=0.049). Some of the nurse factors which were found to have an association with increased workload included: staff absenteeism (p=0.0279), colleagues resting at nurses' station (p=0.0235), reporting to work late (p=0.009), clarifying doctors' orders (p=0.051) and unavailability of keys to open logistics room (p=0.000).
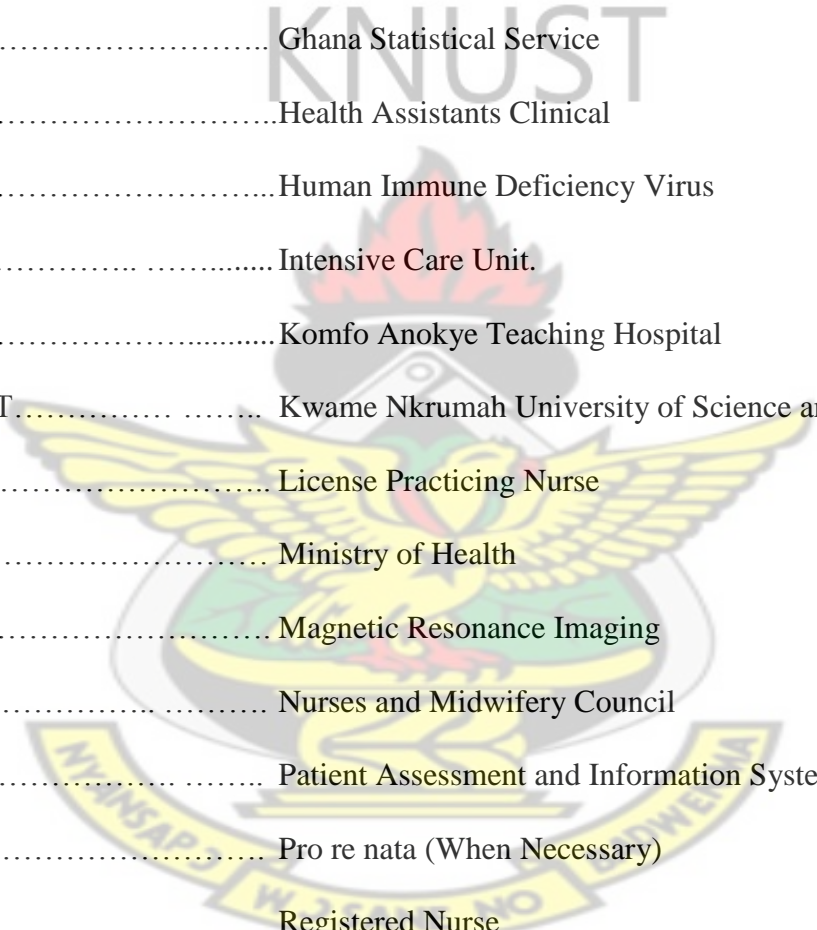
Doctors' response to calls however was statistically insignificant to increasing workload (p=0.239).

The commonest reason why nurses missed work was found to be physical illness. This research recommends that, ward in-charges should conduct effective daily supervision to ensure nurses deliver quality of care to their patients. The Ministry of Health (MOH) in collaboration with the Nurses and Midwifery Council (NMC) could also establish more nurses' training Colleges to reduce the nurse- patient ratio.

LIST OF ABBREVIATIONS/ACRONYMS

CHAG…………….............. Christian Health Association of Health

DRG………………. …….. Diagnostic Related Groups

CT………………… …….. Computer Tomography

EN ………………….. ……….Enrolled Nurse

GHS……………………….Ghana Health Service

GSS……………………….. Ghana Statistical Service

HAC……………………….Health Assistants Clinical

HIV………………………...Human Immune Deficiency Virus

ICU…………….. ….........Intensive Care Unit.

KATH………………...........Komfo Anokye Teaching Hospital

KNUST…………… …….. Kwame Nkrumah University of Science and Technology

LPN……………………….. License Practicing Nurse

MOH……………………. Ministry of Health

MRI ……………………….. Magnetic Resonance Imaging

NMC…………….. ………. Nurses and Midwifery Council

PAIS……………. …….. Patient Assessment and Information System

PRN……………………. Pro re nata (When Necessary)

RN………………………. Registered Nurse

TBA……………. …………Traditional Birth Attendant

SPSS……………………… Statistical Package for Social Sciences

SRN……………….......... State Registered Nurse

T P R & BP……………….. Temperature, Pulse, Respiration and Blood Pressure

USA ……………………….United States of America.
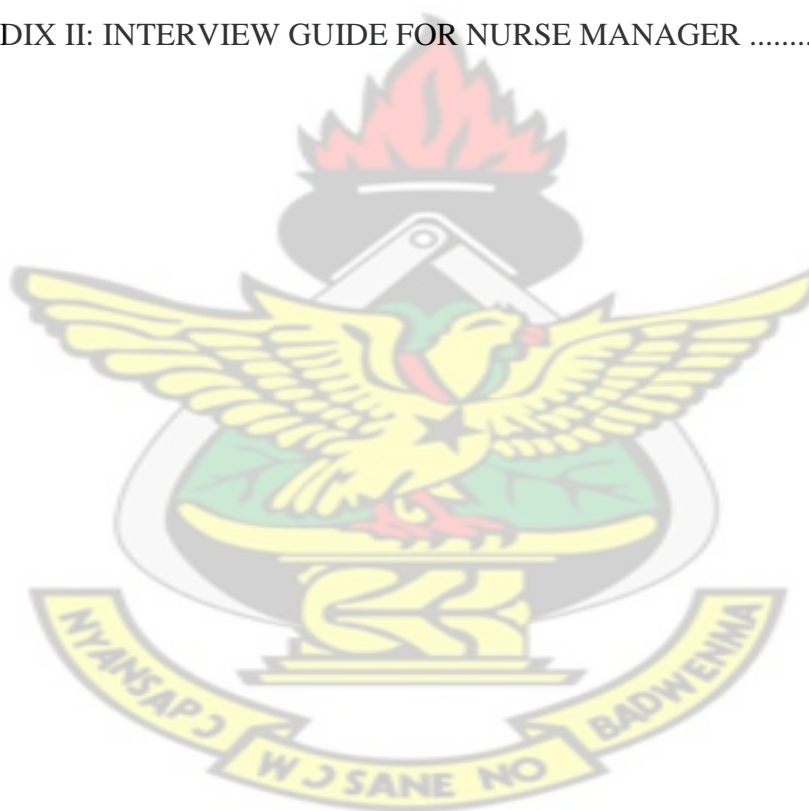
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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

Florence Nightingale is recognized the world over as the founder of nursing. Her work in promoting the science and art of nursing set her apart from all others in nursing and in health care quality. Nightingale challenged an authoritarian and male-dominated society in England to change healthcare practices in the Crimean war. Her influence helped to save thousands of lives, and changed healthcare for better. Basic sanitation and strict adherence to decreasing the spread of infectious organisms, coupled with statistical analysis and graphical presentation on the causes of death, brought scientific evidence to nursing and a face to quality care. This work earned Nightingale her place in history and brought quality care to the forefront of nursing science.

During the same time that Nightingale's work in nursing and healthcare quality began reaching a peak, physician Earnest Codman entered the scene. In 1914, Codman called for a compilation and analysis of surgical outcomes. He believed that studying what happened to a patient would provide insight into better processes and practices. Codman kept a pocket-sized card, which he called an end results card, on which he recorded each patient's case number, preoperative diagnosis, names of operating team members, procedures and results. He used the cards to study outcomes, the basis for quality improvement. He encouraged his peers to do the same. Through his effort and vision, he had planted a seed that helped initiate the American College of Surgeons and their focus on quality care (Neuhauser, 2002).

Even though, quality healthcare has been the focus of many since time immemorial, it is still of much concern in all health sectors across the globe. For instance, a report on *myjoy* on line had it that, a 37 year old pregnant woman died at Shama hospital in the Western region of Ghana where she went to deliver. According to the news, the nurses gave little attention to the client leading to her death and her unborn child. (Ghanaweb: myjoyonline.July 2012.).

In a related development, a DAILY GUIDE's report also had it that, a child was sent to the Bimbilla Government Hospital in the Northern region of Ghana on April 12, 2012 as he suffered from dysentery, and was admitted. He was supposed to be administered a number of infusions but the nurses' inability to track his veins to enable him take the infusions allegedly caused his hand to swell and later develop into a sore. The patient was subsequently referred to the Tamale Teaching Hospital when it was realized that the sore was infected and this subsequently led to the amputation of the patient's arm. The source alleged that it was due to the negligence of the nurses (Daily Guide, 28/4/12).

In order to maintain and improve upon the quality of care in health facilities across Ghana, the Ghana Health Service (GHS) and the Ministry of Health (MOH) introduced quality assurance programmes. However, quality is yet a challenge upon all the interventions due to inadequate resources.

Since individuals and organizations have to pay for the services provided, they have often asked for quality care. It is in this vein that the consumer driven group of Fortune 500 companies, developed the Leapfrog Group and its guidelines requiring evidence of safe, quality practice before purchasing healthcare for their employees. In Ghana, the National Health Insurance Authority pays for the healthcare of their subscribers and this has subsequently led to an increase in the patients seeking health care in the health

facilities. The net effect of the increase in the number of patients to the health facilities is an increase in the workload of nurses.

Hospital nurse staffing is therefore of a major concern because of the effects it can have on patient safety and quality of care. Regardless of the many allegations of poor quality healthcare delivery against nurses, ironically they hold the key to achieving quality care for patients. Globally, there are shortages in all categories of health work force. Nurses form the majority of health human resource though with shortage accounting for unfavorable nurse-patient ratio. In an effort to survive the nursing shortage and the socio-economic forces, administration has restructured the work force to establish quality of nursing care for patients. Matching available caregiver resources with the complex needs of patients poses a challenge (Houser, 2003). The most commonly used unit-level workload measure is the nurse-patient ratio. The nurse-patient ratio can be used to compare units and their patient outcomes in relation to nursing staffing. Previous research provides strong evidence that high nursing workloads at the unit level have a negative impact on patient outcomes (Lang, Hodge & Olson, 2004). Factors that contribute to poor patient outcomes include the acuity level during a patient's length of stay, the quality of care provided by nursing staff, and the patient's perception of the care received (Stanton, 2004).

In Ghana the nurse-patient ratio currently stands at 1: 1,451(GHS Annual Report, 2010) as against an ideal ratio of 1:4 (Aiken et al, 2002). The nurse-patient ratio in the Brong-Ahafo is currently 1:1,099 (Regional Annual Report, 2012). To confirm this unfavorable ratio and its influence on quality healthcare Aikens and others conducted a study in California, and observed that when a nurse is assigned to more than four patients, the risk of death goes up by 7% for each additional patient. So if the risk of death for each

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patient is 7% when a nurse is taking care of five (5) patient at a time, that risk goes up to 42% for each patient when that nurse's workload goes up to ten patients (Aikens et. al.,2002).

Evaluation of the nursing workload and consequently of the patient care needs, is a prerequisite for the adequate allocation of staff in hospitals. It is also important to note that the assessment of nursing workload is relevant for planning nursing care and tailoring such services to meet the patient needs.

1.2 Problem statement

Nursing is a stressful career as many studies have reported on the relationship between nursing work and stress. Many factors in the work environment contribute to this. Shortage of nurses is one of those factors that lead to the increase of nurses' workload. Quality of patient care, as well as adverse nurse outcomes, is directly affected by nurses' workload (Aiken, Clarke, & Sloane, 2002). Insufficient staffing leads to difficulties in meeting patient needs and places nurses under increased pressure at work (Hegney, Plank, &Parker, 2003). Heavy workload adversely affects nurses by threatening physical safety, lowering job satisfaction, and causing burnout (Clarke, Sloane, & Aiken, 2002). Understaffing makes nursing care more task-oriented, giving less time for the human side of patient care (Hart, 2003). Increased frequency of nursing interventions and being rushed place nurses at risk for violence from patients and injury. According to Curbow (2002), healthcare workers who are rushed due to workload may not have the time to step back and reflect on the type of interaction style that is needed with a particular patient.

Nurses have often reported about how workload impedes their effort in performing nursing care activities. The extent to which workload impedes nursing care is less

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investigated especially in Ghana. In fact, the lack of evidenced-based data will result in the over-estimation or under-estimation of what is really needed to improve patient care. This study therefore endeavors to take a first step in addressing that problem by assessing the extent of the effect of workload on nursing care activities.

1.3 Rationale

The Ghana Government in its quest to address the shortfall of nurses in health facilities has rolled out several policies over the years. Some of which include; the establishment of straight midwifery training colleges and health assistants training schools, increase in the enrollment of nurse trainees into the nurses training colleges and the re-engagement of retired nurses. This study may discover additional factors which contribute to increased workload other than just the unfavourable nurse-patient ratio. It is hoped that the findings will inform hospital management to revise their strategies to solve the perennial work overload among nurses that contribute to poor quality nursing care. It has also been very challenging to come across researches which have been carried out on workload of nurses within Ghana in particular and Africa in general. This research could therefore be used as reference document by policy makers such as the Ministry of Health and the Nurses and Midwives Council.   It may also be used as basis for further research and add up to available literature on the subject and as well serve as reference material for other researchers interested in the topic and related issues.

1.4 Conceptual Framework

Figure 1.0: Conceptual framework
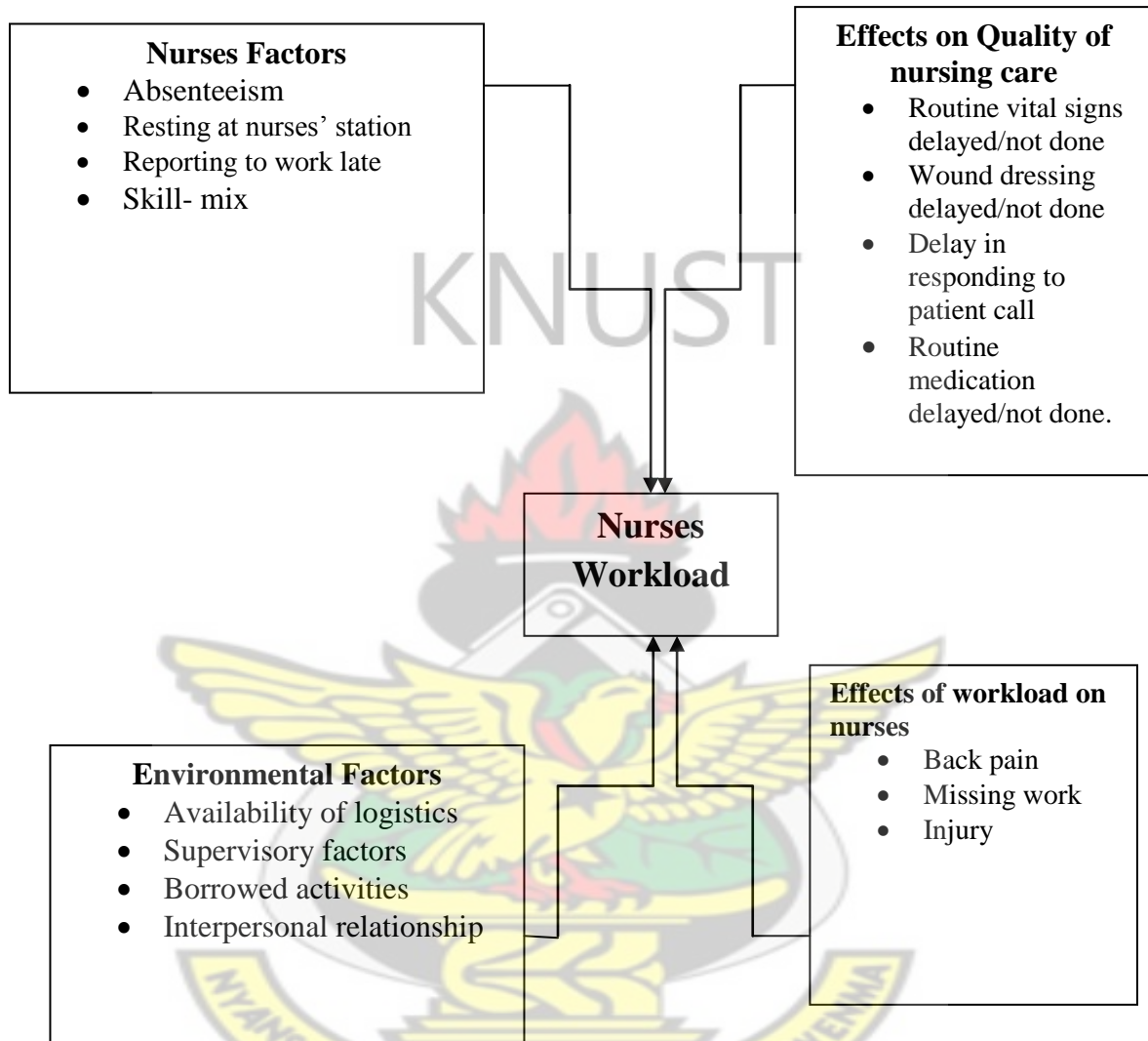
Source: Author's Own Construct, 2013

1.5 Narration of the Conceptual Framework

There are three main categories of factors that affect the workload of nurses in clinical setups. These include the nurse, the patient and the environmental factors. However, in this study, the focus is on the nurse and environmental factors. Some of the important nurse factors that affect workload include routine work of the nurse as well as the attitude of the nurse. The attitude of nurses manifests itself in absenteeism and lateness.

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Such behavior has the capacity to increase the workload and subsequently, negatively affect the quality of care. In addition, resting at the nurses' station can increase the workload of colleagues who are carrying out procedures at the ward. Skill-mix can also affect the workload of the nurse. For example having many registered nurses with a few enrolled nurses on duty could help reduce the workload as compared with many enrolled nurses or even inexperience nurses and few general nurses. Also, the absence of nurse specialists to take up specialized nursing activities may compel general nurses to engage in areas that are outside their expertise. In such situations, the time needed to complete a task or procedure will increase.

Environmental factors also contribute to the workload of nurses. One such environmental factor is the availability or absence of logistics or equipment. For example the improvision of logistics increases the workload of nurses as work is not done effectively and efficiently. Another factor is the "borrowed'' activities that nurses do rather than concentrate on their professionally mandated duties. It is often the case that nurses take on the work of other health members such as doctors, laboratory technologist and to some extent porters (orderlies). Such "borrowed'' activities translate into increased workload.

The effects of workload find manifestation in the quality of nursing care. Quality nursing care may be compromised, as nursing care may not meet the expectation of patients. It can also result in missed nursing care, a situation where certain nursing care interventions are not carried out for a particular patient. Physical manifestations of the workload can be examined from the following dimensions; the effect on patient and the effect on nurse. For instance, the denial or delay in the provision of certain nursing care to patients can result in patients suffering from certain complications.

The effect of workload on the nurse may manifest in illness, injury or even missing work.

1.6 Research questions

1. What is the daily nursing workload?

2. What are the factors contributing to the workload?

3. What are the effects of workload on the quality of nursing care?

4. What are the effects of workload on nurses?

1.7 Objectives

1.7.1 Main objective

To assess the effect of workload on nursing care activities.

1.7.2 Specific objectives

1. To determine the daily nursing workload.

2. To identify the nurse and environmental factors contributing to workload.

3. To examine the effects of workload on the quality of nursing care

4. To examine the effect of workload on nurses

1.8 Organization of Report
This study is divided into six chapters. The first chapter looks at the introduction to the study while chapter two deals with the literature review using available researches. The methodology for the study is described in chapter three whereas chapter four looks at the results from the study. Chapter five deals with the discussion of the results and the final chapter which is the sixth, gives the conclusion and the recommendations of the study.

DEFINITION OF TERMS

1. **Workload……………** Taking care of more than four patients by a nurse in a shift.

2. **Quality nursing care……………..** Performing routine nursing care on the right patient at the right time.

3. **Nurse factors……………………** The behavior and attitude of nurses which add more work to colleague nurses on duty during a shift.

4. **Environmental factors……………………** Administrative, interpersonal relationships and borrowed procedures that increase workload of nurses.

5. **"Borrowed" procedures ………………** Activities that are carried out by nurses which are not within their job description.

6. **Vital signs……………………** Temperature, pulse, respiration and blood pressure

7. **Resting at the nurses' station……………** this is when nurses sit without doing any work during working hours.

8. **Ward rounds…………..** this is when Doctors come into the wards to examine patients with nurses.

9. **Doctors' response to nurses' call…………………** Calls made to doctors by nurses to attend to patients in the ward.

10. **Samples………………………** specimens such as blood, urine, stools, Sputum and wound swabs taken   from patients.

11. **Routine Care activities…………..** these are nursing duties which are performed on all patients irrespective of their conditions e.g. taking of vital signs and giving medication.

12. **"Chart free"…**………… recording vital signs without checking them.

13. **Cases…………………** Patients who are admitted to the ward

14. **Unavailability of keys………….** Absence of keys to open logistics room

CHAPTER TWO

2.0 LITERATURE REVIEW

Introduction

This chapter reviews related literature on workload. In addition, it covers how workload is measured and the effects of workload on quality of nursing care, physical outcomes on patient and the nurse as well as the factors contributing to workload. The chapter concludes with a summary of the literature review.

2.1 Determining the Daily Workload

With the introduction of the National Health Insurance Scheme into the health care delivery system in Ghana where potential clients pay premiums and subsequently access health care when they are ill, the hospitals have reported an increase in the number of clients seeking medical care. For instance, in 2006 the total number of active registered members on the National Health Insurance scheme was 2,422097. This number increased to 11,132981 in 2009. (Blanchet et al., 2012). This has subsequently put a lot pressure on the few medical staff to care for the increasing number of patients. The clients have also demanded value for money that is, insisting that they get quality of care. This has further increased the workload of nurses.

It is imperative to understand the differences between nursing workload and nursing work. Nursing work describes the functional tasks such as assessment or medication administration that the nurse carries out to benefit the patient. In contrast, nursing workload is best described as "the amount of performance required to carry out those nursing activities in a specified time period" (Morris et al., 2007). Increase workload can basically be due to the following factors:

➢ Shortage of professional nurses

> ➤ increase in patient turnover due to increase in awareness of health

> ➤ ageing nursing population.

Workload of nursing can be categorized under 4 levels (Carayon & Gurses, 2005)

  i) Unit level,

  ii) Job level,

  iii) Patient level

  iv) Situation level.

Unit level

The unit level is best determined by the patient-nurse ratio. Research have shown that the lower the ratio, the better the care given to the patients. In other words, increasing the number of nurses in the ward and decreasing the number of patients will reduce the workload of nurses and subsequently increase the quality of nursing care in the ward. This is confirmed by Aikens others (2002) after observing that when a nurse is assigned to more than four patients, the risk of death goes up by 7% for each additional patient. So if the risk of death for each patient is 7% when a nurse is taking care of five(5) patient at a time, that risk goes up to 42% for each patient when that nurse's workload goes up to ten(10) patients (Aikens et al., 2002).

Job level

The job level as a determinant of workload has to do with the job description of the professional. For example, LeBlanc and others conducted a research among Intensive Care Unit (ICU) nurses and operating room nurses and observed that the ICU nurses were more prone to burn out.

Patient level

Patient level workload measures workload using patient condition. It however recognizes that, other factors such as ineffective communication, inadequate supplies also affect quality of nursing care.

Situation level

Situation level workload explains how the following factors contribute to workload: Poor physical structures in the (wards) hospitals, many family needs, and ineffective communication.

According to Aiken and others, fewer License Practicing Nurse (LPN) hours may place additional burdens on the Registered Nursing (RN) staff. This is because, when LPNs are not available to provide patient care and to fill a supportive role in patient-care delivery, the RN will have to in addition to her professional duties perform other auxiliary duties (Aiken et al., 1996)

Several studies have also been carried out to find the relationship between nurse staffing and quality nursing care. The results of such studies have been inconsistent. For example, several early studies that included nurse staffing as a hospital characteristic found that higher levels of nurse staffing were associated with reduced mortality (Hartz and others, 1989; Kuhn and others 1991; Manheim and others 1992). This assertion was contradicted by Silber, Rosenbaum, and Ross (1995) when they concluded that when there is a higher number of registered nurses (RNs) as compared to the number of patients it rather led to an increase in the number of patients who experienced more complications and injury due to falls.

A mandated nurse-patient ratio is a method that has been proposed to improve quality outcomes in hospitals and keep nursing workload at a manageable level. Some

researchers feel that mandating nurse-to-patient ratio alone, without ensuring that other work environment characteristics are considered, is short-sighted (Smith, 2002; Stone and others 2003). They argue that the stakes are high, not only because of the potential for poor patient outcomes, but also because having nurses who are overworked and overloaded may lead to even greater erosion of quality care.

Stone and others after conducting a research concluded there is an inverse relationship between RN staffing levels and the incidence of postoperative urinary tract infection, pneumonia and antibiotic resistant organisms in intensive care unit (Stone et al., 2003).

When reducing the overload, it should be kept in mind that underloads also can be detrimental to performance. Both overloads and underloads are therefore important to consider for improving performance (De Lucia et al., 2009).

Nursing workload can be complex and difficult to measure. However, variables that can easily be measured include: the number of admissions, patient census, procedures, turnover, case mix, and average age of the clients. Less easily quantifiable factors with a direct impact on nursing workload at the point of care include environment, the institution's philosophy of nursing, the type of staffing (e.g., primary care or team nursing), the individual characteristics of the nursing staff (e.g., education, experience, and skill level), and the patterns of medical treatment (Hegney, Plank,& Parker, 2003; Stone et al., 2003).

In the early 1980s in Australia, Patient Assessment and Information System (PAIS) was introduced into Victoria Hospital, Australia (Hovenga, 1996). The resources required (hours of nursing) for a given PAIS category had been developed from a number of work sampling studies which included time for administrative work and indirect nursing care activities (Goodwin & Hawkins, 1990; Hovenga, 1996). These nursing care

activities include direct patient care and indirect nursing care such as documentation. Within the PAIS model, patients are classified on a per shift, daily, weekly, monthly, random or adhoc basis to reflect the workload at a particular point in time. Software packages, such as E-care (Goldstein, 2003) and Trend Care (Trend Care Systems Pty Ltd, 2004), involve nurses using care plans or clinical pathways, determining the time necessary for each unit of care and establishing patient requirements from these parameters.

Nursing workload can be impacted by many factors such as the number of case types (Diagnostic Related Groups [DRGs]) nurses have to care for (Diers & Potter, 1997); the degree of patient turnover and churn (movement of patients between and within wards) (Duffield and others. 2007); the increased throughput of patients (Unruh &Fottler, 2006); staff shortages (Buerhaus, 1997), their patients length of stay and acuity (Birch, O'Brien-Pallas, Aiken, Murphy, & Thomson, 2003).

Diers and Potter (1997) presented a case study of an overspent and difficult to manage ward. It became apparent that a large number of different DRGs (case mix) contributed to the apparent disorganization. Some studies argue for similar patient types to be organized on specialized wards to enhance expert nursing care. The argument is that it is unreasonable for nurses to be expert in all manner of patient types or specialties. It therefore concludes that by narrowing the demands on their expertise; they would work more efficiently and improve patient care.

2.2 Factors that Contribute to workload

There are several factors that contribute to workload. In this study however,

environmental and nurse factors are considered.

2.2.1 Nurse and Environmental factors that contribute to workload

Ball and others described a positive work environment as one which consists of cordial relationships between staff, team work, autonomy, job satisfaction and low risk of burnout (Ball et al., 2013).

The nursing work environment, and consequently nursing workload, has changed considerably over the past few years. Globally, there is a serious shortage of nurses. One reason for this shortage is due to the work environment in which nurses practice. In a recent review of the empirical human factors and ergonomic literature specific to nursing performance, nurses were found to work in generally poor environmental conditions. De Lucia, Otto, & Palmier (2009) concluded that the profession of nursing as a whole is overloaded because there is a nursing shortage. Individual nurses are overloaded. Also due to technology and efficiency policies that target length of stay, nurses have a more complex patient load (Baumann, Giovannetti, et al., 2001; Birch et al., 2003).

The increased turnover of patients or "churn" intensifies the nursing workload further. Birch (2003) found that after hospital restructuring in Ontario (Canada) patient throughput increased by 12% and inpatient episodes per bed increased by over 25%. Unruh & Fottler (2006) found that patient turnover (in their sample of up to 205 hospitals) significantly increased from 1994 to 2001. Admission and discharge of patients mean extra documentation, patient education, general nursing and organizational duties, thereby increasing nursing workload. The movement of patients within wards is also a factor in nursing workload. However some wards will have systems of management whereby it is necessary to move patients from one area to the other on a regular basis (e.g. from high to low acute areas). Nurses are also called upon

to assist when transferring patients between wards, and, depending on resources, they can be required to move the bed themselves. Morrow and others (2005) observed that insufficient lighting, illegible handwriting by doctors, colleague nurses and other paramedicals as well as poor labeling designs all increase workload of nurses. Nursing workload can be further increased by nurses needing to accompany patients for investigations in other departments (e.g. CT or MRI scans), leaving their allocated patients in the care of a colleague who already has his/her own patient load. Additionally, nurses undertake procedures which are "borrowed" or imported from other professionals within the health team. To confirm how such procedures add to the workload of nurses, Duffield and others investigated such common procedures and presented the results for a sample of 612 shifts as follows: delivering/retrieving patient meal trays/bowls (34%), arranging discharge referrals and transport (30%) however transport alone stood at (9%) and setting of intravenous infusions (38%). (Duffield et al., 2009).

A factor impacting on nursing workload is a general shortage of allied health professionals (DEWR, 2006). This includes occupations such as physiotherapists, occupational therapists, speech pathologists, radiographers and pathologists. This shortage of staff may cause delays in patient treatment, and an increased workload as nurses try to incorporate into their duties the types of care patients should ideally receive from these professionals.

About one-third to more than two-thirds of nurses in Canada and Germany reported cleaning rooms or transporting food trays and patients. At the same time nursing care activities such as oral care, skin care, and patient teaching were left undone (Aiken et al., 2001)

2.3 Effects of workload on nurses

Nurses work under physical overload due to long work hours and patient handling demands which lead to a high incidence of musculoskeletal disorders among them (Morrow et al., 2005),

This is further explained by a research conducted by the University of Wisconsin in which they concluded that out of the 38% of nurses studied 12% of them considered leaving the profession due to back injury. This automatically translates into shortage of nurses which subsequently brings about increased workload.

It is estimated that about 600,000 - 800,000 needle stick injuries occur annually in the United States. It is further estimated that, 30 worker needle stick injuries per 100 beds per year occurs in an average hospital in the United States of America. Most reported needle prick injuries involve not only nursing staff, but laboratory staff, physicians, housekeepers, and other healthcare workers are also injured. Some of these injuries expose workers to blood borne pathogens, including Hepatitis B, Hepatitis C, and HIV. Infection with any of these pathogens is potentially life-threatening.

In a research conducted by Oosthuizen and others about 35.7% of the respondents reported they did not get adequate support from more experience nurses which led to increase stress levels (Oosthuizen et al., 2000). This was found to be true by Gowell and Boverie (1992) when they concluded that, years of experience and a supportive supervisor could reduce the stress of nurses. The most reason for missing work was investigated by Duffield and others who found out that, of the 200 respondents, 87% of them reported missing work with the most common reason being physical illness (66%) and the least being the inability to get requested day off (1%) (Duffield et al., 2009).

2.4 Effects of Workload on quality care

The definition of quality nursing care vary from one place to the other and even so among stake holders. In Thailand for example, quality of care is viewed as the degree to which the patient's physical, psychological and extra care needs are met (Kunaviktikul et al., 2001). Australian nurses perceive quality care as the effectiveness of therapy (Williams, 1998). Patients on the other hand, view quality of care as effective communication, listening, kindness and responsiveness of their nurses. Nurse Managers also focus on organizational elements of efficiency and cost effectiveness as yardstick to measure quality of care. Nurses however, evaluate quality of care by assessing the effectiveness and skill with which treatments and medications are delivered.

Donabedian (1987) defined Quality health care as "that kind of care which is expected to maximize an inclusive measure of patient welfare, after one has taken accounts the balance of expected gains and losses that attend the process of care in all its parts"(Donabedian, 1987).

Related to his definition of quality health care, Donabedian described ways to evaluate the quality of health care in three areas: structure-the physical and staffing characteristics of caring for patients; process-the method of delivery; and outcome-the results of care (Malawi Medical Journal, December, 2010).

Nursing is a stressful career. Many factors in the work environment contribute to this. Shortage of nurses is one of those factors that makes hospitals short-staffed and increases nurses' workload. Studies have established an irrefutable link between shortage of nurses, workload, and job stress. Strachota, E. (2003) revealed that 46% of nurses were frustrated with the quality of care they deliver because of low staffing and increased demands. Many nurses also raise concerns about incidence of unsafe patient

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care practices and medication errors. The lower the nurses' perception of the quality of care provided on the unit, the higher is their level of job pressure, job threat, and role tension (Hall & Doran, 2001).

In a related study Chodzazar and others investigated Service providers' perception of the quality of emergency obstetric care provided as well as the factors which affect the provision of quality care. The results revealed that the health workers' overall perception of the quality of emergency obstetric care provided was poor. The poor quality of care was related to client factors and facility/staff factors. Client factors which emerged as contributing to poor quality care were; the client delay in seeking care: reliance on Traditional Birth Attendants (TBAs), reliance on traditional medications, and lack of awareness regarding signs of an obstetric emergency. Facility/staff factors which emerged as contributing to the poor care were; inadequate resources, inadequate staffing, poor teamwork, and inadequate knowledge/supervision (Chodzazar et al., 2010).To confirm how nurses perceive the care rendered to patients Aiken and others concluded that one in nine nurses in Germany and one in three nurses in the United States of America (USA) and Canada rated the quality of nursing care they provided as excellent. However, almost half of the nurses in this same study believed that the quality of nursing care deteriorated (Aiken et al., 2010). In a study of 612 nurses Duffield and others also observed that, 88% of the respondents (nurses) rated the quality of care as excellent or good while 12 reported it as fair.(Duffield, 2009)

It is important to emphasize on the effect of missed nursing care and its effects on quality of nursing care. Missed nursing care is a newly defined concept and refers to any aspect of required patient care that is omitted (either in part or in whole) or delayed. Missed nursing care is an error of omission. The patient safety movement has identified

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two major types of errors – acts of commission (such as marking the incorrect eye for surgery) and acts of omission (such as not ambulating the patient). Ball and others identified missed care as the leading and direct indicator of quality of nursing care since it has the ability to predict high risk problems (Ball et al., 2013).

The phenomenon of missed nursing care was first identified by Kalisch (2006) in a qualitative study of missed nursing care. Twenty-five focus groups discussions were conducted with nurses, nursing assistants and unit secretaries in two hospitals. Nine elements of regularly missed nursing care were identified to include: ambulation, turning, delayed or missed feedings, patient teaching, discharge planning, emotional support, hygiene, intake and output documentation and surveillance. Also, seven themes relative to the reasons nursing staff gave for missing care included: too few staff, poor use of existing staff resources, time required for the nursing intervention, poor teamwork, ineffective delegation, habit and denial (Kalisch, 2006).

 A positive correlation has been found between increased number of registered nurses and quality of care (Needleman, 2002). It has been further suggested that when you have an increased number of registered nurses spending more time with clients it translates into quality of care and subsequently decreases client's length of stay and lowers the rates of urinary tract infections and upper gastrointestinal bleeding (Needleman et al., 2002). This is however not always the case for some activities as Ball and others indicated in their findings that, the number of registered nurses on a ward did not have a direct influence on some activities. They listed the activities to include; i) changing of patient position ii) administering medications on time iii) pain management iv) preparing patient and families for discharge (Ball et al.,2013).

In a related research that was conducted by Ball in England across 64 hospitals, it was revealed that, an average of four (4) out of thirteen (13) listed nursing care activities were not carried out during the last shift. The most common of the activities that were missed included; talking to patients (66%), educating patients (52%), and pain management (7%). The findings also indicated that the higher the nurse-patient ratio the more likely it was to report care left undone (Ball, 2000). In a similar vein, Asserhofer and others, revealed in a research conducted in twelve (12) European countries that, 9%-10% of nursing care activities (pain management and administration of medications) were left undone. However, as high as 53% of talking to patients and relatives were left undone. The following procedures were also found to be left undone; educating patient and relatives (41%), oral hygiene (34%), adequately documenting nursing care (28%) and updating nursing care plans (42%). The researchers also observed that, an average 3.6% of the care was left undone (Asserhofer et al., 2013).To buttress the ongoing discourse in relation to care left undone, Ball and others concluded that, the perception of nurses on the quality and safety of care was strongly related to the care left undone. They also found out that, with approximately six patients to one registered nurse missed care was as half minimized as compared with a situation of 12 patients to a registered nurse (Ball, 2013).

In a closely related research that Duffield and others conducted in Australian hospitals the following findings were revealed: for the over 612 shifts that data was collected, routine vital signs, medications and wound dressing were left undone on 49 occasions (8%) however, they were delayed on 165 occasions (27%). Turning patients in bed was not done on 42 occasions (6.9%) but delayed 229 times (37.4%). Medications that were given when necessary (PRN) were delayed on 141 occasions (23%). It was also

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observed that, response to patient bell delayed on 282 occasions (46.1%). The research also investigated into procedures which were necessary but left undone. The following are the procedures and the percentages that were left undone: routine teaching for patients and families (13.1%), preparation of patient and family for discharge (11.6%), comforting and talking to patient (34.3%), adequate documentation (12.6%), caring for pressure areas (19.1%) and oral hygiene (20.6%) (Duffield et al., 2009).

2.5 Summary and conclusion

It appears not much work has been done in Ghana and Africa with respect to how workload influences nursing care. Most of the studies that have been done elsewhere are also inconclusive. However, they all seem to agree that, the main cause of increased workload is due to shortage of nurses. The other factors that contribute to determine workload have also been less studied.

Quality nursing care has a direct link with education, work experience and the work environment. Better care has been experienced where there have been a greater number of registered nurses as compared with auxiliary nurses.

 Following increased workload, nurses sometimes throw caution to wind in an attempt to help their patients. This sometimes results into stress and strain on their systems.

CHAPTER THREE

3.0 METHODOLOGY

Introduction

This chapter looks at the various methods employed in undertaking the study. It focuses on the research design, profile of the study area and how respondents for the study were sampled. It further looks at the variables that were studied.

3.1 Study design

A cross-sectional survey was conducted to determine the effect of workload on nursing care activities. The study employed mixed method (both quantitative and qualitative methods).

3.2 Profile of study area

The entire region of Brong-Ahafo is the study area for this present study with Sunyani as the regional capital.

The Brong- Ahafo Region is located in the southern part of Ghana. It is bordered to the north by the Black Volta River and to the south by the Ashanti, Eastern and Western regions. To the west it is boarded by the Ivory Coast's southeastern border. The eastern part is boarded by Lake Volta.

The 2010 Population and Housing Census put the population of the region at 2,310,983 (GSS, 2011). The region is divided into 22 administrative districts with a hospital in each of the districts. There are six Christian Health Association of Ghana (CHAG) with sixteen (16) government-owned hospitals. There is however a regional hospital in Sunyani, which serves as the referral hospital for people of the Brong-Ahafo region and beyond. The region has a total land area of 39,557 km^2 (15,273 sq mi) with a population density of 46/km^2 (120/sq mi).

3.3 The study population

The study population was made up of all bedside nurses (registered general nurses, registered midwives and enrolled nurses) working in the government and Christian Health Association of Ghana hospitals in the Brong- Ahafo region. The overall number of nurses working in both the government and Christian Health Association of Ghana hospitals in the Brong-Ahafo Region was 1,099 and the bed side nurses for the selected hospitals were 507 at the time of the study.

3.3.1 Inclusion criteria

All bedside nurses working during the day and night shifts in the government and the CHAG hospitals in the Brong-Ahafo region were included in the study. In addition, the nurses should have worked in the facility for at least one year.

3.3.2 Exclusion criteria

Nurses who were on their annual leave and other official assignments and therefore not available at the time of the data collection, were excluded from the study. In addition all who fell within the sampling frame but were unwilling to participate in this study were excluded from the study. Finally all nurses who had worked in the facility for less than one year were excluded.

3.4 Sample size determination

The sample size for the quantitative aspect of the study was computed using the following formula.

$$N = \frac{Z^2 \, p \, q}{d^2} \quad \text{where,}$$

N= the desired sample size (when population is greater than 10,000)

Z = the reliability co-efficient for 95% confidence level set at 1.96

P = Proportion of population who visit the hospital when they are sick [0.6]

q = 1 − P = [0.4]

d = Degree of freedom

$$N = \frac{1.96^2 \times 0.6 \times 0.4}{0.05^2}$$

N=341

A non − response rate of 10 % (34) was added

341+34=375

The actual sample size was therefore **375**

For the qualitative aspect of the study, purposive sampling was used to recruit a nurse manager each from the five (5) health facilities due to their expertise.

3.5 Sampling procedure

A multi – stage sampling procedure involving convenient, purposive, simple random and stratified sampling techniques were employed in this study. The Sunyani Regional Hospital was purposively selected because it is the only referral hospital in the region, and also serves clients from all the districts in the region. The other hospitals were

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divided into two categories; those owned by the government and those owned by the Christian Health Association of Ghana. The lottery method was then used to select two facilities from each category. Stratified sampling was subsequently employed to determine the number of respondents from each facility. Based on the required sample size (375) the number of respondents from each stratum (hospital) was proportionately calculated using the formula: A/B X C, where A is the total number of bed side nurses in the facility, B is the total number of bedside nurses in the five (5) selected facilities and C is the determined sample size.

For example, the sample size for the Sunyani Regional Hospital, was calculated using the above formula where A=220, B=507, C=375 thus, 220/507 X 375=163

The same procedure was used to obtain the proportion of nurses in each of the selected facilities and the summary is shown as Table 3.1
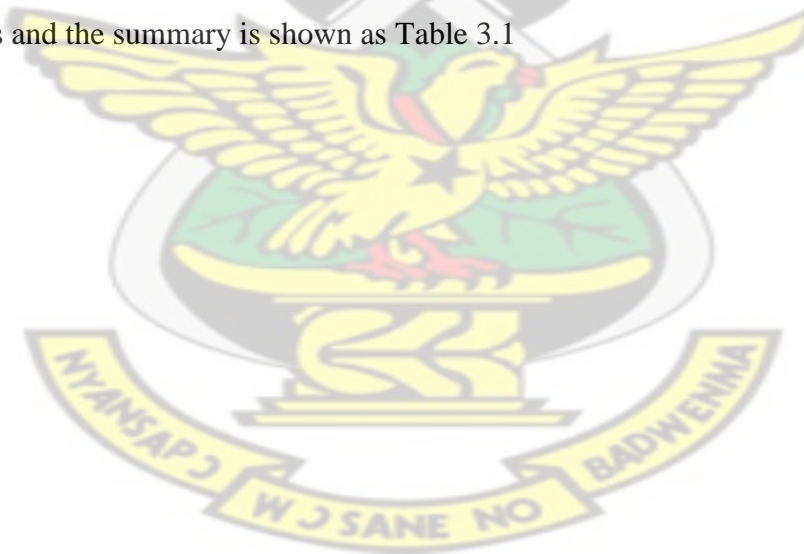
Table 3.1: Summary of proportions sampled from each facility

NAME OF HOSPITAL	POPULATION OF NURSES AT EACH FACILITY	PROPORTION.OF NURSES WHO ANSWERED THE QUESTIONAIRE
SUNYANI REGIONAL HOSPITAL	220	163
GOASO HOSPITAL	56	41
KINTAMPO MUNICIPAL HOSPITAL	66	49
DORMAA PRESBYTERIAN HOSPITAL	65	48
TECHIMAN HOLY FAMILY HOSPITAL	100	74
TOTAL	507	375

Source: Field Data, 2013

After the determination of the number to be sampled in each facility, those nurses who met the inclusion criteria were then conveniently selected based on their availability and willingness to participate. The questionnaires were administered within two weeks. This was done to prevent those in the exclusion criteria from participation and to avoid sampling bias.

3.6 Study variables

The variables for the study were categorized into dependent and independent variables.

3.6.1 Dependent variable

The dependent variable was

➢ Work load

3.6.2 Independent variable

The independent variable included:

➢ Nursing care activities

➢ Nurse factors

➢ Environmental factors

➢ quality of nursing care

➢ Effects of workload on nurses and patients.
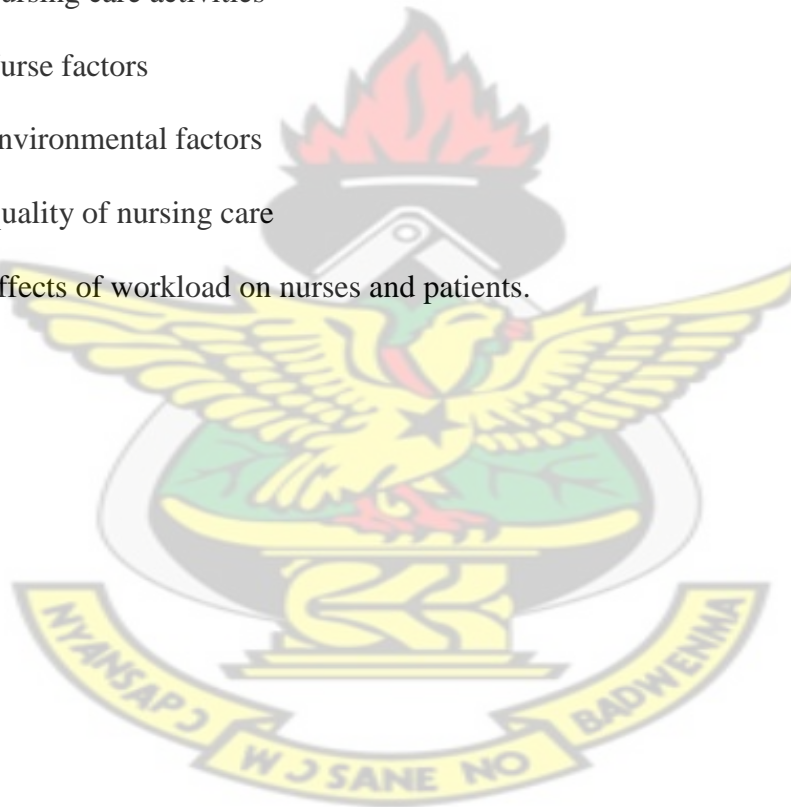
Table 3.2 Logical framework for the study

OBJECTIVE	DEPENDENT VARIABLE	INDEPENDENT VARIABLE	CONCEPTUAL DEF. OF DEPENDENT VARIABLE	SCALE OF MEASUREMENT	DATA COL. METHOD	TYPE OF STATISTICAL ANALYSIS
To determine the daily nursing workload	Daily nursing workload	Daily nursing activities	Nurse to patient ratio	Nominal and ordinal	Questionnaire, and interview guide	Descriptive
To examine the effects of workload on the quality of nursing care	Effect on Quality of nursing care	Routine vital signs delayed/not done Wound dressing delayed/not done Delay in responding to patient call Routine medication delayed/not done.	Any nursing activity which is delayed or not done.	Ordinal scale Categorical	Questionaire and interview guide. Likert's scale	Descriptive, Chi-square
To determine the factors contributing to the workload	Contributory factors.	**Nurse factors** Absenteeism Resting at nurses' station Reporting to work late **Environmental factors** Borrowed activities Logistics	Situations which either increase, decrease or produce no change in workload	Nominal scale	Questionaire, interview guide, Likert's scale	Descriptive, Chi-square
To examine the effect of workload on and nurses.	Effect on nurses.	**Effect on nurses** Back pain Missing work Injury	Any physical s hurt sustained by the nurse during nursing care.	Nominal	Questionaire, interview guide	Descriptive

Source: Author's Own Construct, 2013

3.7 Data collection tools

Structured questionnaires and interview guides were the main tools used to collect data in this study. The questionnaire had been used at the Australian Capital Territory of Canberra and Calvary Public Hospitals. It was however modified to suit the Ghanaian context. It was closed-ended whilst the interview guide allowed the interviewee (respondent) to express his/her views on the subject matter.

The questionnaire consisted of four sections which included:

1. Personal and general information on respondents and staffing in the unit

2. Workload on the shift was measured using the number of patients and nurses present during the shift (nurse–patient ratio).

   With respect to factors contributing to workload, these were categorized into environmental and nurse factors. The nurse factors were listed on a **4-point Likert scale** indicating the extent to which they increased or decreased workload. The environmental factors however, were arranged under **an 8-point item** of non nursing tasks which are commonly performed by nurses such as setting up of intravenous lines, going to pharmacy to get patient drugs, transporting and cleaning duties among others.

3. Quality nursing care was measured using an **ordinal scale ranging from poor to excellent** and a list of commonly performed nursing activities to which the respondent had to indicate whether it was performed or not.

4. To measure the effects of workload, nurses were instructed to indicate the frequency of listed adverse events that occurred in the past year. The effects on quality and the nurse were measured on a 4-point Likert scale where **1** = strongly disagree, **2** =disagree, **3** = agree, **4** = strongly agree.

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The interview guide was presented to reflect the various areas of concern in the study. This was administered to the nurse managers (matrons) in the five selected hospitals. The various presentations were subsequently organized under themes.

3.8 Pre- testing

Pre-testing of the research questionnaire was carried out at the Sunyani Municipal hospital which was not part of the studied institutions. The pre-tested facility was also located in the Brong-Ahafo and had similar characteristics in terms of staff mix, services rendered to patients and the structure of the wards. The pre-testing identified those challenges that were associated with the respondents' understanding of the questions. Through the pre-testing, it was also observed that, the questionnaire was voluminous which discouraged the respondents from answering. Therefore the questionnaire was subsequently reduced though it achieved what it was supposed to measure.

3.9 Data handling plan

Files were provided to keep the questionnaires. All questionnaires were also scrutinized to ensure consistency, accuracy and completeness. Also data were entered into the computer pending retrieval. The recorded interviews were put under key and lock.

3.10 Data analysis plan

The quantitative data were cleaned, coded and entered into SPSS (version 16) for analysis. All categorical variables were computed into percentages.

The interviews were recorded and transcribed. The results were subsequently triangulated.

3.11 Statistical plan

The Chi-square analysis was used to compare multiple variables.

95% confidence level and a margin of error of 5 % ($\alpha=0.05$) were used.

3.12 Ethical considerations.

Ethical clearance was sought from the Ethical Committee on Human Ethics and Publication of KNUST/KATH. Permission was also sought from the Regional Health Directorate and the management of the five selected health facilities in the Brong-Ahafo region. Furthermore, participants were given the free will to participate and to exit when they wanted to.

Participants were also assured of confidentiality and anonymity by using codes on the questionnaire.

Finally, all recorded interviews were carefully conducted and stored to ensure confidentiality and anonymity.

3.13 Assumptions

It was assumed that:

➢ Nurses and nurse managers (matrons) provided accurate information of the responses given.

➢ Nurses were aware of their job descriptions.

➢ The staffing situation in the sampled hospitals and wards remained the same during the period of the research.

➢ Nurses were not to embark on industrial strike in the hospitals where the research was carried out.

3.14 Limitations of the study

A major limitation was the limited published literature both locally (Ghana) and regionally (Africa) on the topic. This situation made it difficult for the researcher to compare a near situation.

Time and funds were major constraints because of the wide scope of the research. It was very difficult therefore to sponsor many research assistants for the data collection.

The researcher could not also observe the activities being performed by the nurses and this could result into the participants not answering the questions objectively.

The use of both probability and non-probability methods does not make generalization robust.

CHAPTER FOUR

4.0 RESULTS

Introduction

This chapter deals with the analyzed responses from respondents (nurses and nurse managers) which are subsequently presented largely in the form of tables and graphs, which are organized according to the objectives of the of the study. A description is made on each table and graph. Also the chapter determines the bivariate relationship and the strength of association between the study variables. The final part of this chapter deals with the responses from the in-depth interview that was granted by the nurse managers. It is observed in this chapter that, though 375 questionnaires were administered, 350 were retrieved giving a response rate of 93%.

4.1 Socio-demographic Data of respondents

Table 4.1: Socio-demographic Data (N=350)

Variables	Frequency	Percentage (%)
Sex		
Male	127	36.3
Female	223	63.7
Age (Years)		
20-29	259	74.0
30-39	54	15.4
40-49	13	3.7
50-59	24	6.9
Type of Facility		
Hospital	343	98.0
Clinic	7	2.0
Ownership		
Government	192	54.9
Christian Health Association of Ghana(CHAG)	158	45.1

Category of Nurse		
Degree	46	13.1
SRN	39	11.1
Midwife	44	12.6
EN/HAC	44	12.6
RGN	177	50.6
Marital Status		
Single	220	62.9
Married	118	33.7
Divorced	3	0.9
Widowed	5	1.4
Separated	4	1.1

Source: Field Data 2013

Table 4.1 describes the socio-demographic characteristics of the respondents which included sex, age distribution, the type of the health facility, ownership of selected health facilities, and category of the nurses, respondents' qualification and marital status.

The study revealed that, most (63.7%) of the respondents were females and 36.3% were males. The respondents were aged between 20-59 years with a larger proportion (74%) of them in the 20 and 29 age-group. Those in the 40-49 age group were the least (3. 7%). Over fifty percent (54%) of the respondents provided services in the government owned hospitals whilst 45.1% of them worked in hospitals owned by the CHAG institutions. With respect to the category of nurses, 50.6% of the respondents were Registered General Nurses (RGN). Over half (62.9%) of the respondents were single and more than quarter (33.7%) were married.

4.2: Determining the daily nursing workload

Table 4.2: Nurse-Patient ratio

		Number of patients in ward during this shift					
		3	5	7	9	11 or more	Total
How many nurses are on duty during this shift	1	8	34	42	90	8	182
	2	6	27	31	45	21	130
	3	6	11	16	2	0	35
	4 5+	0	1	0	1	1	3
Total		20	73	89	138	30	350

Source: Field Data, 2013

From Table 4.2 eight of the respondents said one nurse took care of three patients in the ward during a particular shift whilst 34 indicated that one nurse took care of five patients. It was observed that 42 of the respondents also indicated that one nurse took care of seven patients. Furthermore, ninety (90) of the respondents agreed that, one nurse took care of nine patients in the ward per shift. The least of all the nurse- patient ratios was five nurses taking care of five patients which was reported by one of the respondents. The results from the table gave the nurse-patient ratio as 1:9.

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4.3: Environmental factors contributing to workload of nurses

Table 4.3: "Borrowed" Procedures which contribute to work load

Variable	Yes (%)	No (%)
Delivering/ retrieving patient bowls/ trays	113(32.3)	237 (67.7)
Setting up IV lines	300 (85.7)	50 (14.3)
Going to pharmacy to get patient drugs	173 (49.4)	177 (50.6)
Taking samples from patients	254 (72.6)	96 (27.4)
Taking samples to the laboratory	195 (55.8)	155 (44.3)
Transporting patients to theatre/ other wards	186 (53.2)	164 (46.9)

Source: Field Data, 2013

Table 4.3 depicts some of the environmental or "borrowed" factors which contributed to workload. From the table, 67.7% of the nurses did not deliver or retrieve the bowls and trays from patients with most (85.7%) of them setting up intravenous lines during a particular shift. More than forty percent (49.9%) of the respondents also went to the pharmacy to collect medications and 72.6% took samples (blood, urine, stool, sputum) from patients. Over fifty percent (55.8%) of the respondents took samples to the laboratory and similarly, 53.2% of the respondents transported patients to the theatre and other wards.

Table 4.4: Administrative and interpersonal relationship factors which contribute to workload.

Variable	Strongly disagree N (%)	Disagree N (%)	Agree N (%)	Strongly Agree N (%)
Doctors and Nurses have a good working Relationship.	59(16.9%)	127(36.3%)	136(38.8%)	28(8.0%)
Nurses and paramedical staff have a Good working relationship.	14(4.0%)	49(14.0%)	228(65.1%)	59(16%.9)
Nurses have a good working relationship among themselves.	10 (2.8%)	34(9.7%)	206(58.9%)	100 (28.6%)
Have adequate items to help me carryout procedures easily.	77(22%)	155(44.3%)	105(30%)	13(3.7%)
Enough staff to get work done.	85(24.3%)	175(50.0%)	65(18.6%)	25(7.1%)
Administration that listens and responds to nurses' concerns.	65(18.6%)	124(35.4%)	135(38.6%)	26(7.4%)

Source: Field Data, 2013

Table 4.4 shows how environmental factors and the interactions among hospital workers contribute to workload. The variables were measured on a scale of 1-4, where **1**=strongly disagree, **2**=disagree, **3**=agree, **4**= strongly agree.

Whilst 38.8% of the respondents agreed that doctors and nurses had a good working relationship, a higher percentage (65.1%) agreed that the relationship between nurses and the paramedical staff was good and 58.9% agreed that the relationship among nurses themselves was good. The relationship between paramedical staff and nurses was clearly better than the relationship among nurses themselves. Less than half (44.3%) of the

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respondents disagreed that they had adequate logistics to enable them carry out procedures easily. Fifty percent (50.0%) of the respondents disagreed that they had enough staff to get work done with less than a quarter (24.3%) of them strongly disagreeing. 38.6% of the respondents agreed that administration listened and responded to nurses concerns.

Table 4.5: Nurse factors that contribute to workload

Variable	Increased Workload N (%)	Decreased Workload N (%)	Same as usual, no change N (%)	Not applicable N (%)
Scheduled ward staff absent this shift today	162 (46.3)	29 (8.3)	39 (11.1)	120 (34.3)
Colleagues staff resting at the nurses' station	147 (42)	14 (4)	47 (13.4)	142 (40.6)
Calling the doctor several times before he comes	189 (54)	13 (3.7)	34 (9.7)	114 (32.6)
Clarifying doctors' orders (due to illegible handwriting)	182 (52.0)	33 (9.4)	65 (18.6)	70 (20.0)
Doctors coming for ward rounds close to start of other nursing procedure e.g. taking vital signs	189 (54.0)	30 (8.6)	64 (18.3)	67 (19.1)

Source: Field Data, 2013

Table 4.5 presents the nurse factors that contribute to workload. This was measured on scale of **1-4** where **1** = increased workload, **2** = decreased workload, **3** = same as usual

or no change and **4** = not applicable. More than forty percent (46.3%) of the respondents indicated that absenteeism of ward staff increased workload with 11.1% indicating that absenteeism did not influence the workload. More than half (54.0%) of the nurses also agreed that delay to the nurses' call by the doctors contributed to increase the workload of nurses however, 3.7% of the respondents said calling the doctor severally before he comes rather decreased their workload. Just over half (52.0%) of the respondents stated that clarifying the illegible handwriting of doctors increased workload whilst 9.4% of them indicated that it rather decreased workload. Fifty-four percent (54%) of clients also agreed that the doctors coming on ward rounds at the same time nurses are performing their routine care increased workload whereas 8.6% said that it decreased workload.

Table 4.6: Bivariate relationship between Age and staff absenteeism (N=187)

Age group (yrs)	Increased workload N (%)	Decreased workload N (%)	P – value
20 – 29	111 (69.8)	19 (67.8)	
30 – 39	30 (18.8)	6 (21.4)	
40 – 49	9 (5.6)	2 (7.1)	0.0279
50 – 59	9 (5.6)	1 (3.5)	
Total	159 (100)	28 (100)	

Source: Field Data, 2013.

Table 4.6 shows the relationship between the age of the respondent and staff absenteeism on workload. From the table, 159 (85%) indicated that staff absenteeism increased workload. There was a statistical difference between age and staff absenteeism contributing to workload (p=0.02) with majority (69.8%) in the age-group 20 – 29 years.

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Those who said absenteeism rather decreased workload, 67.8% were in the same age- group (20 – 29 years).

Table 4.7: Bivariate relationship between Age and colleague staff resting at nurses' station (N=161)

Age group (yrs)	Increased workload N (%)	Decreased workload N (%)	P – value
20 – 29	107 (72.7)	8 (57.1)	
30 – 39	26 (17.7)	4 (28.5)	
40 – 49	7 (4.7)	1 (7.1)	0.0235
50 – 59	7 (4.7)	1 (7.1)	
Total	147 (100)	14 (100)	

Source: Field Data, 2013

Table 4.7 also suggests that there was statistical association between age and colleague staff resting at nurses' station on workload (p=0.023). Majority (91.3%) of the respondents were with the view that colleague staff resting at nurses' station increased workload. Most (72.7%) of the respondents with this assertion were between 20 – 29 years. About 8.7% of the respondents associated decreased workload to colleague staff resting at nurses' station.

Table 4.8: Bivariate relationship between Age and reporting to work late (N=194)

Age group (yrs)	Increased workload N (%)	Decreased workload N (%)	P – value
20 – 29	128 (72.3)	10 (58.8)	
30 – 39	32 (18.2)	5 (29.4)	
40 – 49	7 (3.9)	2 (11.8)	0.009
50 – 59	10 (5.6)	0 (0.0)	
Total	177 (100)	17 (100)	

Source: Field Data, 2013

From Table 4.8, 91.2% associated reporting to work late to increased workload whilst 8.8% rather said late reporting decreased workload. There was a significant relationship between age and late reporting to work on workload (p=0.009). For those who linked late reporting to work and increased workload, majority (72.3%) were between 20 – 29 years.

Table 4.9: Bivariate relationship between Age and doctors response to calls (N=200)

Age group (yrs)	Increased workload N (%)	Decreased workload N (%)	P – value
20 – 29	132 (70.2)	8 (66.6)	
30 – 39	36 (19.2)	3 (25.1)	
40 – 49	8 (4.3)	1 (8.3)	0.239
50 – 59	12 (6.3)	0 (0.0)	
Total	188 (100)	12 (100)	

Source: Field Data 2013

According to Table 4.9, there was no statistical association between doctors' response to calls and workload (p=0.239) even though 94.0% of the respondents indicated that doctors' response to calls increased workload.

Table 4.10: Bivariate relationship between Age and clarifying doctors' orders (N=208)

Age group (yrs)	Increased workload N (%)	Decreased workload N (%)	P – value
20 – 29	129 (72.5)	21 (70.0)	
30 – 39	38 (21.3)	4 (13.3)	
40 – 49	5 (2.8)	2 (6.7)	0.051
50 – 59	6 (3.4)	3(10.0)	
Total	178 (100)	30 (100)	

Source: Field Data, 2013

Table 4.10, the relationship between nurses clarifying doctors' orders and workload was statistically significant (p=0.051). Most of the respondents (85.6%) indicated that clarifying doctors' orders increased workload whilst (14.4%) said it decreased workload. For those who indicated increased workload, majority (72.5%) were between the ages of 20 – 29 years.

Table 4.11: Bivariate relationship between Age and unavailability of keys (N=181)

Age group (yrs)	Increased workload N (%)	Decreased workload N (%)	P – value
20 – 29	124 (76.1)	9 (50.0)	
30 – 39	30 (18.4)	6 (33.3)	
40 – 49	5 (3.1)	3 (16.7)	0.000
50 – 59	4 (2.4)	0 (0.0)	
Total	163 (100)	18 (100)	

Source: Field Data, 2013

Unavailability of keys to open logistics room was statistically significant to workload (p=0.000) as indicated on Table 4.11. According to the table, whilst 90% were with the view that unavailability of keys increased workload, 10% indicated that it rather decreased workload. Again, majority (76.1%) of those asserting increased workload were between 20 – 29 years.

Table 4.12: Relationship between the ownership of the hospital and "borrowed" activities

| Variable	Government		CHAG hospitals		P – value
	Yes N (%)	No N (%)	Yes N (%)	No N (%)	
Setting up IV lines	166 (47.4)	31 (8.9)	134 (38.3)	19 (5.4)	0.783
Cleaning duties	119 (34.0)	75 (21.4)	95 (27.1)	61 (17.4)	0.622
Going to pharmacy to get drugs	107 (30.6)	85 (24.3)	68 (19.4)	90 (25.7)	0.055
Taking samples from patients	124(35.4)	64(18.3)	130(37.2)	32(9.1)	0.049
Transporting patients to theatre/other wards	99 (28.3)	93 (26.7)	87 (24.8)	71 (20.2)	0.439
Delivering/retrieving patient bowls/trays	68 (19.4)	124 (35.4)	47 (13.4)	111 (31.7)	0.319

Source: Field Data, 2013

Table 4.12 shows how the ownership of the hospital suggests the proportion of "borrowed" activities to be done in the hospital. The table as well indicates the statistical significance between the ownership of the hospital and "borrowed" activities. It was noticed that, the government-owned hospitals performed more of the "borrowed" activities as compared with the CHAG facilities. However such differences between them were mainly not statistically significant. Taking samples from patients however, was carried out more in the CHAG hospitals than in the government hospitals with the difference being statistically significant (P=0.049).

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4.5: Effects of workload on Quality of Nursing Care

Figure 4.1: Rating quality of care in the ward
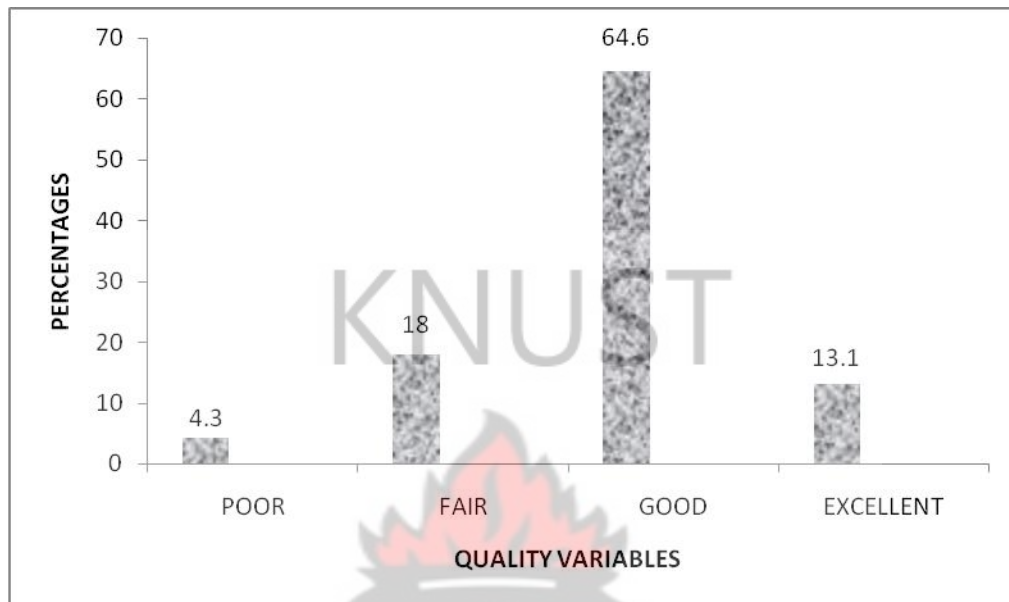
Source: Field Data, 2013

Respondents were asked to rate the quality of care on scale of 1-4 where **1** is poor, **2** is fair, **3** is good and **4** is excellent. The results from the respondents were presented in Figure 4.1.

The quality of care was reported to be generally good since 64.6% of the respondents rated it as such. 4.3% of the respondents reported that the quality of care was poor. However, only 13.1% of the respondents reported that the care they gave was excellent.

Table 4.13: Bivariate relationship of Quality by Ownership

Ratings	Government N (%)	CHAG N (%)	Total N (%)	P-value
Poor	7 (33.3)	14 (66.7)	21 (100)	
Fair	23(41.1)	33 (58.9)	56 (100)	**0.000**
Good	145 (64.4)	80 (35.6)	225 (100)	
Excellent	17 (36.9)	29 (63.1)	46 (100)	

Source: Field Data, 2013

Table 4.13 shows that 63.1% of the respondents from the CHAG hospitals reported that the quality they provided was excellent whilst 36.9% said they provided excellent nursing care in the government-owned hospitals. More than sixty percent (64.4%) of the respondents in the government hospitals rated the quality of care as good with 35.6% of the respondents asserting that the quality of care provided in the CHAG was good. It was observed that 66.7% of the respondents in the CHAG hospitals rated the quality of care they provided as poor as compared with 33.3% of the government hospitals. The table generally shows that the differences observed were statistically significant (p=0.000).

4.6: Effects of workload on quality of care

Table 4.14: summary of the effects of workload on nursing procedures, quality care and nurses.

VARIABLE	STRONGLY DISAGREE N (%)	DISAGREE N (%)	AGREE N (%)	STRONLY AGREE N (%)
Some nursing procedure are sometimes delayed as a result of workload	20 (5.7%)	21 (6%)	155(44.3%)	154 (44%)
Quality of care is compromised during this shift as a result of workload	22 (6.3%)	75 (21.4%)	176(50.3%)	77 (22%)
Sometimes nurses sustain injury (e.g. needle stick injury, as a result of workload	22 (6.3%)	47 (13.4%)	147(42%)	134 (38.3%)
Some patients sometimes suffer from adverse effects of drugs which have been wrongly administered due to workload	83(23.7%)	108(30.9%)	129(36.9%)	30(8.5%)
Patients sometimes fall and get injured because nurses are not able to prevent that due to workload	99(28.3%)	117(33.4%)	101(28.9%)	33(9.4%)

Source: Field Data, 2013

The effects of workload was measured on a scale of **1-4** where **1**= strongly disagree, **2**=disagree, **3**=agree and **4**=strongly agree.

As to whether some nursing procedures were sometimes delayed due to workload, 44.3% of the respondents agreed with the statement whilst 6% disagreed. Whereas 50.3% of respondents agreed that, the quality of care is compromised as a result of workload, 21.4% disagreed with the statement. 42% of respondents agreed that nurses sustained injuries due to workload, 13.4% however disagreed with the statement. The respondents who agreed that patients sometimes suffered from adverse effects of drugs due to workload were 30.9% however, 36.9% disagreed.

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4.6.2: Measuring the effect of quality of nursing care by care that is delayed or not done.

Table 4.15: Quality of Nursing Care measured by work being delayed or not done

Variable (Routine care)	Yes, n (%)	No, n (%)
Routine vital signs not done	76 (21.7)	274 (78.3)
Routine vital signs delayed	208 (59.5)	142 (40.6)
Routine medications not done	61 (17.4)	289 (82.6)
Routine medications delayed	178 (50.8)	172 (49.1)
Routine dressings not done	74 (21.1)	276 (78.9)
Routine dressings delayed	174 (49.7)	176 (50.3)
Delay in responding to patient bell (call)	169 (48.3)	181 (51.7)

Source: Field Data, 2013

Table 4.15 presents the quality of nursing care which is measured by either a procedure is delayed or not done. From the table, 21.7% of the respondents did not check the vital signs during a particular shift. On the other hand, over half (59.5%) of the respondents delayed in checking the vital signs of their patients for a particular shift. With respect to administering medications, 17.4% of the respondents did not carry out the administration of routine medication for their patients whilst more than half (50.8%) of the respondents delayed in giving medications.   Routine wound dressing was not carried out by 21.1% of the respondents whilst 49.7% percent of the nurses delayed in dressing patients' wounds. In responding to patient bell (call) almost half (49.7%) of the respondents delayed in doing so.

Table 4.16: Bivariate relationship of Nursing procedures and ownership of Hospitals

Variable	Government N (%)	CHAG N (%)	Total	P – value
Routine vital signs not done	30 (39.5)	46 (60.5)	76 (100)	**0.018**
Routine vital signs delayed	102 (50.5)	100 (49.5)	202 (100)	**0.000**
Routine medications not done	25 (41.7)	35 (58.3)	60 (100)	**0.095**
Routine medications delayed	88 (49.7)	89 (50.3)	177 (100)	**0.333**
Routine dressings not done	34 (46.6)	39 (53.4)	73 (100)	**0.225**
Delay in responding to patient bell (call)	82 (49.1)	85 (50.9)	167 (100)	**0.115**

Source: Field Data, 2013

From Table 4.16 it was observed that a higher percentage (60.5%) of the respondents in the CHAG hospitals did not carry out routine vital signs as compared with 39.5% of those in the government hospitals. Whilst 50.5% of the respondents in the government owned hospitals delayed in checking the vital signs, 49.5% delayed in checking the vital signs at CHAG institutions. Over half (58.3%) of the respondents from the CHAG hospitals reported that medications were not served whilst 41.7% of the respondents did not serve medications in the government hospitals. Delay in administering routine medications was reported by 49.7% from government hospitals and 50.3% from CHAG hospitals. Routine dressing not being done was reported by 46.6% of the respondents from the government hospitals with 53.4% of them from the CHAG hospitals. About

half (49.1%) of the respondents from the government-owned hospitals indicated that they delayed in responding to patient bell whilst just more than half (50.9%) of them reported that from the CHAG hospitals. It was generally observed that there was no statistical difference between the procedures carried out in the government and CHAG hospitals. Those procedures included; routine medications not done (p=0.095), routine medications delayed (p=0.333), routine dressings not done (p=0.225), delay in responding to patient bell (0.115). On the other hand, some of the procedures where statistical difference was observed were as the follows; vital signs not done (0.018) and routine vital signs delayed (0.000)

4.6.3: Measuring effect of workload on quality of care by procedures which were necessary but were left undone.

Table 4.17: Nursing Care that was necessary but could not be carried out as a result of workload

Variable	Yes (%)	No (%)
Teaching for patients and families	229 (65.5)	121 (34.6)
Prepare patient and family for discharge	153 (43.7)	197 (56.3)
Adequately documenting nursing care	149 (42.6)	201 (57.4)
Bathing of patient	195 (55.8)	155 (44.3)
Giving Oral hygiene to patients	213 (60.9)	137 (39.1)
Bed making	168 (48)	182 (52.0)
Feeding of seriously ill patients	156 (44.6)	194 (55.4)

Source: Field Data, 2013

Table 4.17 shows the nursing care that were necessary but the nurses could not carry them out due to workload.

More than half (65.5%) of the respondents did not carry out teaching for their patients and families with 42.6% failing to document the care they gave to their patients.

It was also observed that, more than fifty percent (55.8%) of the respondents were unable to bath their patients during a particular shift and just over sixty percent (60.9%) of the nurses could not perform oral hygiene for their patients. Over forty percent (48%) indicated that though bed making was necessary they could not do it during the shift. One of the most important nursing procedures is feeding of seriously ill patients to which over forty percent (44.6%) of the respondents could not carry out during a particular shift.

4.7: Effects of workload on nurses

Table 4.18: Common reason for missing work

Variable	Frequency	Percent (%)
Physical illness	139	39.7
Public holiday	58	16.6
Work related injury	13	3.7
Casual leave	70	20.0
Unable to get needed day off	42	12
Total	350	100

Source: Field Data, 2013

Almost forty percent (39.7%) of the respondents as shown in Table 4.18 reported that the most common reason why they missed work was physical illness whilst twenty percent (20%) indicated it was as a result of casual leave. Work related injury was the least (3.7%) reason why respondents missed work.

Workload

The in-depth interview that was conducted with the nurse managers revealed some themes which are as follows:

4.8: Definition of workload:

One of the nurse managers defined workload as ' ' *........the work available for the nurses to handle or the volume of work for the nurses to handle''* (Nurse Manager, Hospital S)

Another Nurse Manager reiterated" … *when number of nurses are far less than the patients leading to more work for the nurses"* (Nurse Manager, Hospital G)

4.9: Nurse-patient ratio

The in-depth interview carried out also supported the fact that there was increased workload in terms of the nurse-patient ratio.

The nurse manager in charge of Hospital K stated: **"…………..***It is about twenty patients to about one nurse. Every shift the least is one nurse and the most is 3 nurses"*

The assertion by the nurse manager in Hospital K was collaborated by her colleague in Hospital D when she said *"………….I am not sure for this year but looking through the ward state one can say one nurse takes care of ten patients"*

Another Nurse Manager confirmed the increased in workload of nurses with the following statement: *"…………... It is a great problem for me to know for today but it is 1:10 or 1:20 on average, according to the available statistics* "(Nurse Manager, Hospital S)

At Hospital T this was what the Nurse Manager had to say "*I think shortage of staff is the main reason why we have increased workload, For example, in the children ward*

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we have 50 beds which can sometimes be occupied yet we can have only two nurses and one ward assistant in the ward"

4.10: Determinants of workload

Another theme that emerged from the in-depth interview was the contribution of "borrowed" activities to workload of nurses. The following were what the Nurse Managers said.

From Hospital D, the Nurse Manager said **"....***apart from doctors coming around to see the patients, when a patient is to take intravenous drug which is the doctors' duty, they ask a nurse to do that. IV medications are done by nurses. Moreover, the laboratory technicians do not usually come with the doctors on ward rounds, so if a laboratory request is made it is the nurse who will take the samples*"

Another Nurse Manager collaborated "……*In addition to setting up infusions minor surgeries are also performed by nurses*" (Nurse Manager, Hospital G).

4.10.1: The relationship among health workers as a determinant of workload was also emphasized on by the Nurse Managers.

One Nurse Manager described the relationship in the following statement

 "…*... generally, when we meet at staff durbars, it is like doctors verses nurses. They often accuse each other of inefficiency and the cause of certain problems. This can sometimes get to a point that when nurses call doctors to attend to cases they either refuse or delay. Even at times some doctors will not come on ward rounds if a particular nurse is on duty. All these problems increase the work in the ward"* (Nurse Manager, Hospital K).

The Nurse Manager at Hospital S however, indicated that**,** *there is good relationship within the nurses except the midwives, who accuse each other of not doing the right things.*

4.10.2: Frequent ill-health emerged as a well-entrenched theme responsible for workload.

One of the Nurse Managers summed this in the following statement *".... very often you see a nurse looking fit or well and yet she goes for "excuse duty" one after the other. I am handling one right now, she has been away for over one month knowing very well the ward is understaffed yet she is very comfortable staying at home. When you call her she says she is still not well*". (Nurse Manager, Hospital G)

4.11: Effects of workload on quality of nursing care

In-depth interview carried out with nurse managers supported the fact that workload resulted in poor nursing care.

On this theme, this was what one of the nurse managers said *"….quality of nursing is affected because if a nurse is to attend to other things instead of doing the proper nursing, it means her performance will be poor and the patient will be affected. This may affect the patients' recovery making them stay longer in the ward. It also affects the nurses' stamina. They get tired and certainly it affects performance and goes to affect the quality of work*"-(Nurse Manager, Hospital K)

 Another Nurse Manager stated that,*"...... quality of care becomes poor because of heavy workload. For example if a nurse is supposed to do 100% of her work and she ends up doing 70% which happens most of the time then quality is poor. This is because, for quality there should be nothing less than 100%".* (Nurse Manager, Hospital D)

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The Nurse Manager for Hospital S also collaborated *"....... because of the increased workload the nurses become exhausted and sometimes they are not able to do what is expected of them. For example some nurses who are expected to give medications to patients let's say at 8pm ends up administering the medication at 9:30pm. This interval is too wide and will certainly affect the quality of care delivered"*.

In the same vein another Nurse Manager agreed with her colleague in hospital S with the following statement *"...... If it is for instance the period for medication is thrice daily that is 8 hourly it is the exact time the patient is suppose to get it. The patient most at times gets it 20mins, 30mins or even 1hr later. The nurse usually goes round giving medication and the last patient will get the drugs late because the number of patients are just more than the nurses. In that case, the patients will usually complain that they served others long ago but they are yet to be served"* (Nurse Manager, Hospital T)

The Nurse Manager of Hospital G confirmed how workload affected documentation with the following statement *"......Yes, I have seen some of the nurses not documenting and those that document upon further investigations, you notice that some of the recordings are" chart free"*. *One form of documentation which was always left undone was the patograph: they were not doing it and we have to organize a work shop for them at the labour ward. The other one was general vital signs; they will check and may not record or will not check at all but record. Sometimes I or my supervisors go round looking for the Temperature, Pulse, Respiration and Blood Pressure (TPR & BP) but will find nothing on the chart. I once had to put it before the prescribers to challenge the nurses to check and record the vital signs. Still the vital signs are not being recorded as expected. So I don't know how doctors sometimes review the cases. Other*

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documentations however are being done for example, nurses notes, Admissions and discharges"

4.12: In depth interview with the nurse managers also reveals the effect of workload on nurses.

One of the nurse managers summarized the effect of increased workload on nurses in the following statement   *"…Yes, fortunately the nurses, most of them are young so they don't really complain but those who complain about waist pains are nurses from the maternity ward because they have worked for long and are elderly. They often say it is the work because some of the delivery beds are not adjustable and they have to stoop low almost all the time"*   (Nurse Manager, Hospital S)

Another Nurse Manager said "…… *Nurses do complain a lot because of the heavy workload, some of them become tired and report sick and take excuse duty. Others break down due to stress of workload and even others report of needle pricks"* (Nurse Manager, Hospital G)
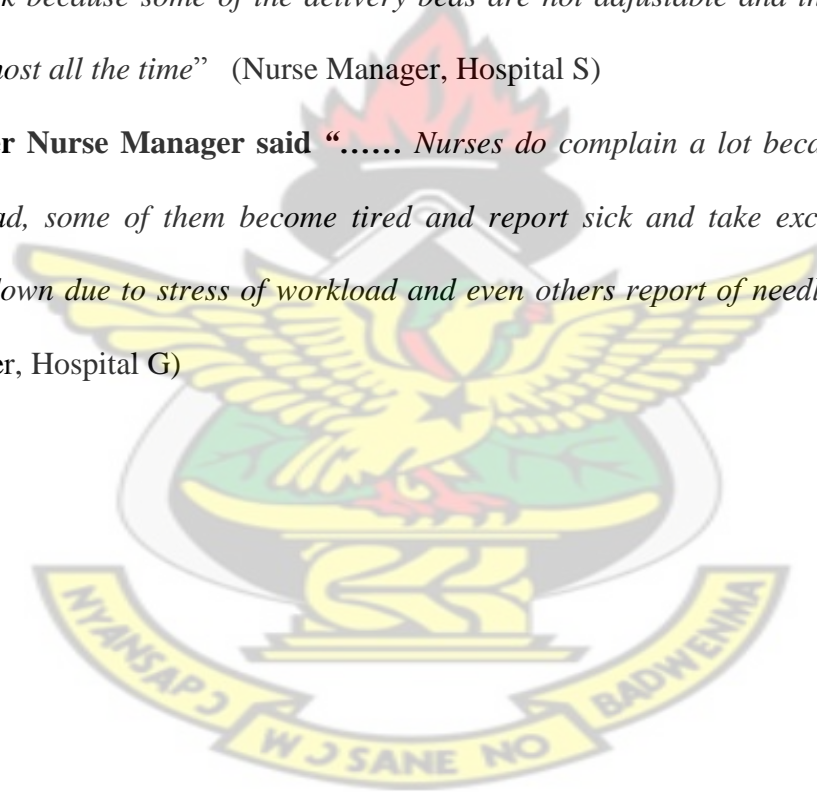
CHAPTER FIVE

5.0 DISCUSSION

Introduction

The principal objective of this study was to assess the effect of workload on nursing care activities in some selected hospitals in the Brong-Ahafo Region of Ghana. This chapter discusses the result of the study in relation to the objectives, literature review and the key variables of the research.

5.1 Determining the daily workload

Determining the daily workload of the nurse could be a complex phenomenon. However, the nurse- patient ratio was used in this research since it has a universal application. Despite the various ratios as found in this research, the most common ratio was one nurse to nine patients which was reported by 90 respondents in a single response question. This is an indication that there was increased workload. In support of that, all the nurse managers agreed that nurses were taking care of more patients than they are supposed to. That is, from one nurse to ten patients or one nurse to twenty patients. This ratio is more than the ideal standard of one nurse to four patients (Aikens et al, 2002).

 Ball, highlighted the effect of increased workload on patients by espousing that with one nurse to six registered nurses missed care is minimized but when the ratio is doubled missed care also doubles (Ball J.E., 2013).

5.2 Nurse and environmental factors contributing to workload

According to this research, more than thirty percent (32.3%) of the respondents retrieved patient bowls which is in line with an earlier research by Aiken and others which concluded that, about one- third (33.3%) of the nurses in Canada and Germany

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performed cleaning duties or retrieval of bowls (Aikens et al., 2001). Duffield and others (2009) also made similar findings when their research revealed that, more than thirty percent (34%) of the respondents delivered or retrieved bowls.

Setting up of intravenous lines by respondents in this research showed a higher percentage (85.7%) as compared with that by Duffield and others who observed that, thirty-four percent (34%) of respondents set up intravenous lines during a particular shift.

The existence of the phenomenon of "borrowed" procedures was supported by the nurse managers who indicated that doctors delegated the setting up of intravenous lines, the administration of intravenous drugs and the performance of even minor surgeries to nurses. In addition nurses had to take samples from patients and carried these samples to the laboratory.

Over fifty percent (50.4%) of the respondents in this research agreed that clarifying the doctors hand writing increased workload which confirms a previous study by Morrow and others when they reported that, insufficient lighting, illegible hand writing by doctors, colleague nurses, poor labeling designs add up to increase the workload of nurses.(Morrow et al,.2005).

In a bivariate relationship almost all the findings showed statistical differences between age and the nurse factors in increasing workload: staff absenteeism(p=0.0279), colleagues resting at nurses' station(p=0.0235), reporting to work late (p=0.009), clarifying doctors' orders (p=0.051) and unavailability of keys to open logistics room (p=0.000). Doctors response to calls however was statistically insignificant though it was reported to increase workload (p=0.239).

Similarly the relationship, between the ownership of the hospital and the proportion of "borrowed" procedures performed in the hospitals, showed that majority of the "borrowed" procedures were carried out in the government owned hospitals. The differences that existed between the two categories of owners did not proof significant in almost all the "borrowed" procedures. For example; setting up intravenous infusions,(p=0.783) cleaning duties (p=0.622), going to pharmacy for drugs (p=0.055) Taking of samples from patients was observed to be carried out more in the Christian Health Association of Ghana (CHAG) owned hospitals (37.2%) than in the government owned hospital (35.4%) and was found to be significant(p=0.049).

5.3 Effects of workload on quality nursing care

This study revealed that, over sixty percent (64.6%) of the respondents reported the quality of care provided was good. This is in agreement with Duffield and others when they concluded that over eighty percent (88%) of nurses reported their care was good or excellent. The quality of care was further subjected to a bivariate analysis to find out how the ownership of facility (government or CHAG) affected the quality of care. It was found out that more of the nurses in the government- owned facilities reported that they gave good care to their patients than those in the CHAG hospitals. This findings was said to be highly significant with a p- value=0.000.

The findings in this study revealed that, almost twenty-two percent (21.7%) of the respondents left vital signs of their clients undone with about sixty percent (59.5%) of them delayed in checking the vital signs. The researcher also found out that, 17.4% of the respondents left routine medications undone with 50.8% of them delaying in the administration of medication. The results in this study suggested a higher proportion of care was either left undone or delayed as compared to most of the previous researches.

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This is clearly demonstrated by Duffield and others. They found that eight percent of vital signs, medication and wound dressing were left undone and 27% of the same care activities were delayed. In addition, Asserhofer and others similarly found out that, 9%-10% of care was left undone which also confirmed the researchers observation that, the care left undone was less in other researches than in this current study. More than forty percent (48.3%) of respondents delayed in responding to patient call in this research which is in agreement with Duffield and others when in 2009 they also concluded that 46.1% of respondents delayed in responding to patient call. The reason that could possibly account for the high number of routine care left undone in this current study was the high nurse-patient ratio (1: 9). This observation has been confirmed by Ball (2000) who asserted that, the higher the nurse-patient ratio the more likely it was to report care left undone.

The effect of workload on quality of care was reiterated by a nurse manager when he observed that nurses get tired due to over work and this affect their work performance which leads to poor quality of care (Nurse Manager, Hospital K). To support the findings that some of the nursing care activities were left undone or delayed the Nurse Manager of Hospital T observed that serving of medications were delayed for twenty minutes to one hour. This usually led to complaints by patients about delayed care.

In a bivariate relationship between facility ownership and the proportion of care left undone, the overall observation was that most of the care either delayed or left undone was found in the CHAG hospitals as compared with the government owned hospitals. This clearly supports the researcher's earlier observation of respondents reporting that they provided better quality of care in government hospitals as compared with the CHAG institutions. In fact this demonstrates that the outcome of the rating of quality of

care was not just per chance but based on sound judgment. The chi- square test on the variables (care delayed or left undone and ownership of facility) however indicated statistical significant relationship among some variables but others were also insignificant. For example those that showed a statistical insignificant relationship included: routine medication not done (p=0.095), routine medication delayed (p=0.333), routine dressing not done (p=0.225). However, routine vital signs delayed was highly significant (p=0.000). Furthermore, vital signs not done and delay in administering pain medication were both significant with a p-value of 0.018 each.

5.4 Effects of workload on nurses.

According to this research 39.7% of respondents indicated that they missed work as a result of physical illness. This is in line with a previous research by Duffield and others which revealed that 66% of respondents reported that physical illness accounted for their in ability to attend to work. However, 12% of the nurses reported that, the inability to get a needed day off was the reason for missing work in this current study. On the other hand only 1% of the respondents according to Duffield and others indicated they missed work due to inability to get a needed day off. (Duffield et al., 2009).

Physical illness being the most common reason for which nurses missed work in this current research was contradicted when a nurse manager revealed that some of the nurses pretended to be sick and asked for excuse duties.(Nurse Manager, Hospital G).

The effect of workload has been clearly demonstrated by Aiken and others when they asserted that if one nurse takes care of more than five patients the risk of death goes up by 7%. Despite the fact that this current research was not able to establish the direct link between the nurse-patient ratio of 1:9 and its effect on morbidity and mortality, it has been clear that quality was affected in view of the fact that, some procedures were either

delayed or not performed at all. To confirm this Smith and others argued that it is risky, not only because of the potential for poor patient outcomes, but also because having nurses who are overworked and overloaded may lead to even greater erosion of quality care (Smith 2002; Stone 2002)

The researcher found out that about more than three-quarters (80.3%) of the respondents reported that they sustained injury (needle prick injury) and attributed that to workload. The finding in this study however, is very high as compared to that of the United States where the rate is 30 needle pricks per 100 beds. The needle prick injuries expose nurses to infections which could lead to physical illness. The reason for such high number of needle pricks in this research can be attributed to the increased nurse-patient ratio which makes it very difficult for the nurses to take caution during procedures (Nurse Manager, Hospital G).

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

Introduction

This final chapter elaborates on conclusions and recommendations based on the result of the study.

6.1 Conclusions

The following conclusions are drawn from the findings:

6.1.1 Determining the daily nursing workload

It was revealed in this study that the nurse patient ratio in the selected hospitals of the Brong-Ahafo region of Ghana was 1:9. The major reason for increased workload was therefore due to shortage of nurses.

6.1.2 Identifying the nurse and environmental factors that contribute to workload

Though several factors account for increased workload, those factors that at least half of the respondents indicated led to increased workload included: illegible hand writing by doctors and calling doctors severally before response. The government-owned hospitals in general carried out more of the "borrowed" procedures than the CHAG hospitals. Taking of samples from patients however, was carried out more in the CHAG hospitals as compared with the government hospitals with a statistical significance of $p=0.049$. There was an association between nurses within 20-29 years and factors that could contribute to increasing workload notably: staff absenteeism ($p=0.0279$), colleagues resting at nurses' station ($p=0.0235$), reporting to work late ($p=0.009$), and unavailability of keys to open logistics room ($p=0.000$).

6.1.3 Effects of workload on quality of care

The results from this research generally showed a higher proportion of care left undone or delayed as compared with other previous studies. Almost half of the respondents delayed in carrying out their routine nursing care: vital signs (59.5%), serving medications (50.8%), and wound dressing (49.7%) response to patient call (48.3%). More than half (57.4%) of the respondents were aware that documenting nursing care was important but did not do it due to the increased workload.

6.1.4 Effects of workload on nurses

Forty-two percent of the respondents agreed that nurses sustained injury due to workload and 38.3% strongly agreed. Nurses also reported Physical illness as the most common reason why they missed work. However, a nurse manager reported that, some nurses pretended to be ill in order to obtain excuse duties.

6.2 Recommendations

The results for this study have some implication for nurses, hospital managers, policy makers and future researchers.

Hospital managers

i) Hospital managers could ensure effective supervision in the wards to reschedule staff to wards that have high nurse- patient ratio on daily basis. This will have the effect of easing the workload of nurses who might have many patients in the ward on a particular day.

ii) Nurses who are found to be hardworking should be given motivational packages in terms of study leaves and material rewards. In service training could be continuously held in order to upgrade   the skill and knowledge of nurses in the areas of injury prevention and quality assurance.

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Nurses

i) Nurses should abide by their job descriptions to reduce their workload.

ii) Nurses should put up a positive attitude towards work to ensure quality of care is provided to patients.

Policy makers

i) The government could establish more nurses and midwifery training schools to reduce the nurse patient ratio to at most 1: 5 in order to reduce the workload and subsequently improve upon the quality of care.

6.3 FUTURE RESEARCH

From this study I recommend that in future, researchers;

i) Interested in investigating workload and quality nursing care could conduct an observational research to ascertain what actually happens in the ward rather than what the respondents report about.

ii) Could also go a little further in studying the effect of a delayed or an undone nursing procedure on a patient.

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APPENDIX I: QUESTIONAIRE FOR BEDSIDE NURSES

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF COMMUNITY HEALTH

RESEARCH TITLE: **WORKLOAD AND NURSING CARE IN THE BRONG-AHAFO REGION.**

QUESTIONNAIRE FOR BEDSIDE NURSES

INTRODUCTION
Good morning/good afternoon. I am a student at the school of Medical Sciences; Department of Community Health-KNUST.I will be having several meetings with people like you in the Brong-Ahafo Region to find out your views and ideas about workload and nursing care. Your opinions are highly essential at the same time vital as they will help to improve upon nursing care to the patients and as well improve upon the conditions under which nurses and midwives work. All responses will be treated confidentially and will not in any way be linked to your identity. You are kindly requested to answer the questions below by indicating a tick or by writing the appropriate answer when needed.

THANK YOU FOR YOUR TIME.

SURVEY QUESTIONNAIRE

SECTION 1: IDENTIFICATION

INTERVIEWEE'S CODE   IC‗‗‗‗‗‗‗‗‗‗‗‗‗

INSTITUTION'S CODE	INSTC		
RESEARCH ASSISTANT'S CODE	RACODE		
DATE OF INTERVIEW			

SECTION 2: BACKGROUND CHARACTERISTICS OF RESPONDENTS

No	Questions and filters	Coding Categories	Skip to ≠
1.	How old are you now?	1. 20-29 2. 30-39 3. 40-49 4. 50-59 5. 60+	Q1AGEGP
2.	Sex of Nurse	1. Male 2. Female	Q2SEX
3.	Type of facility?	1. Hospital 2. Clinic	Q3TYINST
4.	Facility operated by?	1. Government 2. CHAG	Q4FOP
5.	What is your religion?	1. Traditional 2. Christian 3. Muslim 4. Other (specify)...............	Q5RELIG
6.	Category of Nurse?	1. Degree Nurse 2. SRN 3. Midwife 4. EN/HAC 5. RGN	Q6CAN
7.		1. Single	Q7MARIT

	What is your marital status now?	2. Married 3. Divorced 4. Widowed 5. Separated 6. Other (specify)……….	
8	Employment Status	1. Full time 2. Part time(locum)	Q8EMP
9	Number of years since respondent started practicing as a nurse.	1. 1-5years 2. 6-10years 3. 11- 15years 4. 16-20years 5. Others (specify)……………..	Q9YEARS
10.	What is your rank	1.EN 2.Supt. EN 3.Snr. EN 4. PMO 5.SMO 6.MO 7. SM 8.DDNS 9.PNO 10. SNO 11. NO 12. SSN 13.SN 14.Others (Specify)……………….	Q10RANK

11.	What is your highest nursing educational qualification?	1. HAC 2. EN certificate 3. RGN Diploma 4. Post Basic Certificate 5. Post Graduate Diploma 6. Degree Nursing 7. Masters degree ☐	Q11HLE

SECTION 3: Determining the daily nursing workload

12	Name of ward	1. Surgical 2. Medical 3. Medical-Surgical 4. Obstetric and gnaecology 5. Orthopaedics 6. Paediatrics ☐ 7. Maternity 8. Others (specify)……………	Q12NWAD
13	What shift are you today	1. Morning 2.Afternoon ☐ 3.Night	Q13SHFT
14	How many beds are in the ward	Specify………. ☐	Q14NBEDS
15	What is the number of patients in the ward during this shift?	Specify……… ☐	Q15NPW
16	How many nurses are on duty during this shift?	Specify……….. ☐	Q16NODUT

SECTION 4: EFFECTS OF WORKLOAD ON QUALITY OF NURSING CARE

17	How would you describe the quality of nursing care delivered in your ward today?	1. Poor [ ] 2. Fair 3. Good 4. Excellent	Q17QNC
18	Which of the following situations occurred during your shift today due to time pressures? Choose the figure that corresponds to YES or NO and write the figure in the box provided. **(multiple answers are allowed)**	**Yes No** a) Routine vital signs not done.. 1 2 [ ] b) Routine vital signs delayed… 1 2 [ ] c) Routine medications not done…1 2 [ ] d) Routine medications delayed…..1 2 [ ] e) Routine dressings not done…… 1 2 [ ] f) Routine dressings delayed……. 1 2 [ ] g) Delay in administering pain medication…………………….1 2 [ ] f) Delay in responding to patient bell (call)……………………………1 2 [ ]	Q18a Q18b Q18c Q18d Q18e Q18f Q18g Q18f
19	Which of the following tasks was **NECESSARY BUT LEFT UNDONE** because you lacked the time to complete them? Choose the figure that corresponds to YES or NO and write the figure in the box provided.	**Yes No** a) Routine teaching for patients and families…………………….. 1 2 [ ] b) Prepare patient and family for discharge………………………….1 2 [ ] c) Comforting patients………….. 1 2 [ ] d) Adequately documenting nursing care…...1 2 [ ]	 Q19a Q19b Q19c Q19d

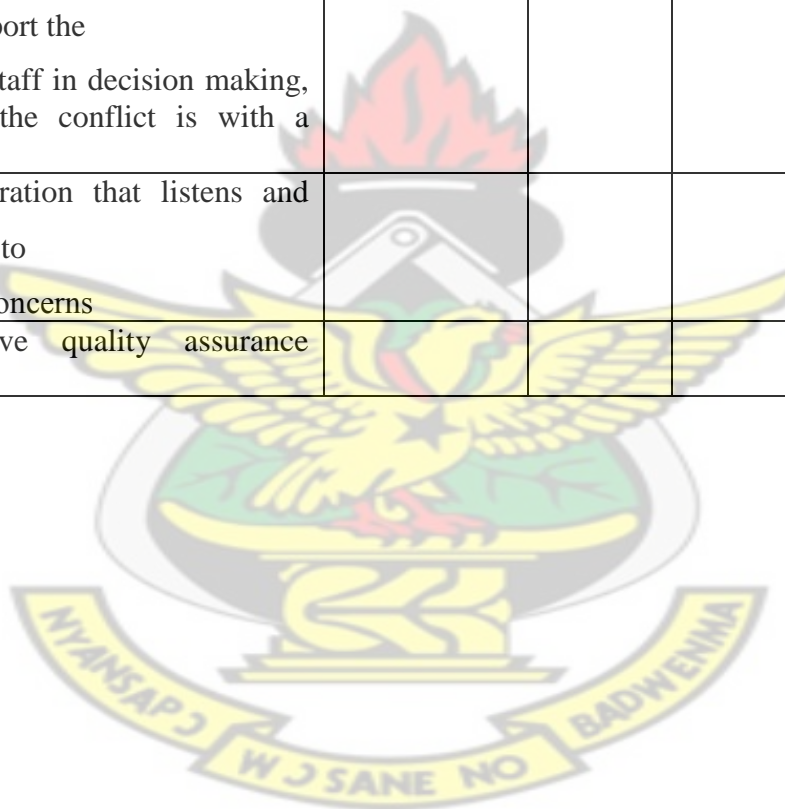|	
(multiple answers are allowed)	e) Bathing of patient………………1 2 ☐ Q19e
	f) Giving Oral hygiene to patients..1 2 ☐ Q19f
	g) Treatment of pressured areas….. 1 2 ☐ Q19g
	h) Care of hands and feet………….1 2 ☐ Q19h
	i)Routine bed making………………1 2 ☐ Q19i
	j)Feeding of seriously ill patients…. 1 2 ☐ Q19j
	Others..

SECTION 5: ENVIRONMENTAL FACTORS

For each item in this section please indicate the extent to which you agree that the following items ARE PRESENT IN YOUR FACILITY. Indicate your degree of agreement by writing the appropriate value to the corresponding statement in the space on a scale of 1-4.

i) **Administrative and interpersonal relationship factors that contribute to workload.**

STATEMENT	Strongly disagree(1)	Disagree (2)	Agree (3)	Strongly agree (4)
Adequate support services allow me to spend time with my patients				
Doctors and nurses have a good working Relationships				
Nurses and paramedics have good working relationship				
Nurses have good working relationship among themselves.				
A good orientation program for newly employed nurses				
Nursing control its own practice				
Nursing care is controlled by the doctors				
Have adequate items to help me carryout procedures easily				
Support for new and innovative				

ideas about Patient care.				
Enough registered nurses on shift (duty) to discuss patient care problems with other nurses.				
Flexible duty roster are available.				
Enough staff to get work done.				
Freedom to make important patient Care decisions.				
The nursing staff participates in selecting new equipment				
Working with nurses who are clinically competent				
A nurse manager or supervisor who support the nursing staff in decision making, even if the conflict is with a doctor				
Administration that listens and responds to nurses' concerns				
An active quality assurance program				

ii) "Borrowed" procedures that contribute to workload

		Yes No	
	Which of the following task did you perform during **THIS SHIFT**? Choose the figure that corresponds to YES or NO and write the figure in the box provided. **(multiple answers are allowed)**	a) Delivering/ retrieving patient bowls/ trays……………….1 2 ☐	Q20a
		b) Setting up IV lines ………………………………1 2 ☐	Q20b
		c) Cleaning duties (e.g. cleaning of ward)….. …………………1 2☐	Q20c
		d) Going to pharmacy to get patient drugs……………………….1 2 ☐	Q20d
		e) Taking samples from patients………………………1 2☐	Q20e
		f) Taking samples to the laboratory ……………………………1 2 ☐	Q20f
		g) Transporting patients to theatre/ other wards…………………1 2☐	Q20g

SECTION 6: NURSE AND PATIENT FACTORS

For the following please rate how each item influence your ability to provide required care for patient(s) on today's shift. Please reflect on the workload you anticipated prior to starting your shift and decide the nature of influence of each item. Did the item increase the anticipated workload, decrease the anticipated workload or have no influence on anticipated workload? Write the appropriate value which corresponds to the item in the spaces provided on a scale of 1-4.

NURSE FACTORS

STATEMENT	Increased Workload (1)	Decreased Workload (2)	Same as usual/no change (3)	Not applicable (4)
Scheduled ward staff absent this shift (today).				
Colleague staff resting at the nurses' station.				
Colleague staff reporting to work late				
Staff unable to co-ordinate and co-operate with each other to complete work within scheduled (right time)				
Calling the doctor several times before he comes.				
Clarifying doctors' orders (due to illegible handwriting)				
Doctors coming forward rounds close to start of other nursing procedure e.g. taking vital signs				
Keys for opening of cupboard for supplies not immediately available				

PATIENT FACTORS

STATEMENT	Increased Workload (1)	Decreased Workload (2)	Same as usual/no change (3)	Not applicable (4)
Language barrier with patient and family				
Patient relatives helping in the care of patients.				
Unanticipated increase in patient length of stay due to severity of condition.				
Agitated, confused or restless patients				
Extra time needed for psychosocial support for patient				

SECTION 7: EFFECTS OF WORKLOAD

Indicate your degree of agreement by writing the appropriate value to the corresponding statement in the space on a scale of 1-4.

STATEMENT	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)
Some nursing procedures are sometimes delayed as result of workload.				
Quality of care is compromised during this shift as a result of workload				
Sometimes nurses sustain injury(e.g. needle stick injury, as a result of workload				
Some patients sometimes suffer from adverse effects of drugs which have been wrongly administered due to workload.				
Patients sometimes fall and get injured because nurses are not able to prevent that due to workload.				

Effects of workload on nurses

In the past one year on how many occasions have you missed work due to illness / disability	---------- occasions			
Over the past years, what is the most common reason you missed work **(Check only one response)**	1. Physical illness 2. Public holiday 3. Work related Injury 4. Causal leave 5. Unable to get needed day off Other (specify)… ………………….. ☐			
How many times have you been injured on-the-job in the past year	1. 0 2. 1 to 2 ☐ 3. 3 to 4 4. 5+			
Have you Experience back pain in the past year	1. Yes 2. No ☐			

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INTERVIEW GUIDE FOR NURSE- MANAGERS

INTRODUCTION

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THANK YOU FOR YOUR TIME.

1) What is your understanding of quality nursing care? Probe further on standards setting, communication of standards, monitoring, complaint system

   i) What are the standards set for nurses to measure the quality of care they render to patients?

   ii) How the nurses are made aware of these standards?

   iii) How do you ensure that quality nursing care is maintained?

   iv) Describe how the complaints system operates in your facility.

2) What are the factors that contribute to workload in this facility? Probe on nurse related factors, patient related factors and environmental related factors.

   i) What are some of the nurse related factors that contribute to the increase or decrease in the workload?

   ii) What are some of the patient related factors that contribute to the increase or decrease in the nursing workload?

   iii) Describe some of the environmental related factors that contribute to increase or decrease in workload?

3) What are the typical nursing activities that are carried out in this facility? Probe further on professional activities, borrowed activities.

   i) Out of these nursing care activities which of them are described as professional and which of them are supposed to have been carried out by doctors, pharmacists, laboratory technologist or even paramedic but are done by nurses.

4) What are the likely effects of workload on nursing care? Probe further on effects on quality, patient, nurses.

   i) What are the effects of workload on quality nursing care?

ii) What are the effects of workload on patients?

iii) What are the effects of workload on nurses?

5) How do you manage such effects in your facility? Probe further

6) What are some of the ways to minimize workload? Probe further on nurse related factors, patient related factors and environmental related factors.

7) Are there other issues concerning workload and nursing care that we have not discussed and you wish to add?

THANK YOU FOR YOUR TIME!!!