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DEVELOPING A PATIENT-HOSPITAL COMMUNICATION SYSTEM TO ADDRESS A GROWING PUBLIC HEALTH CONCERN AT KOMFO ANOKYE TEACHING HOSPITAL

BY

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DECLARATION

I hereby declare that this submission is my own piece of work and except for references made from other works which are duly acknowledged,neitherin whole nor in part has this work beenpreviouslysubmitted for the award of any degree from this University or elsewhere.

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DEDICATION

This work is dedicated to my entire family.

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Firstly, I want to give glory and honour to God Almighty for making this study a success.

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ABSTRACT

Communication systems in the Ghana health care system remains a public health challenge. The issue of the nearest hospital, type of services available, availability of physicians, availability of beds in referring hospitals and a reminder system among others remains a daunting challenge for patients and providers of the health service. In other settings, Information, Communication and Technology (ICT) have been used to efficiently manage communication in healthcare settings (among users and staff at all levels). This present study sought to review the existing healthcare communication structures, (mediums, perspectives and challenges) among patients, staff and management members at the KomfoAnokye Teaching Hospital. A cross-sectional study with a mixed method approach was used in this study. A multilevel sampling method was used to select 304 patients, 303 health workers and 45 Hospital Directorate Managers to participate in the study. A structured questionnaire was used concurrently with an interview guide to collect data from respondents. Quantitative data was captured electronically using Open Data Kit and was analyzed using STATA version 12. Qualitative data was recorded using a tape recorder supported by field notes. This was transcribed and analyzed thematically. The study found that patients and Health providers had a general understanding of what hospital communication meant and the structures available. Majority (72.6%) of the patients made a direct communication to the hospitals of which 13.2% were booking of appointment. Among the health workers (62.0%) of them communicates with management in daily base of which such communication were mainly official. They however mainly communicates casually or informally with their colleques. Less than half (34.3%) of the staff respondents were satisfied with the current communication between staff and management. More than half of the management respondents agreed that there existed internal communication in the hospital. Majority (59.9%) of management's respondents shared the view that the current communication system was not an effective system and had little room for feedback

mechanisms. Staff communicated mainly (64.4%), through meetings and face to face (89.8%) respectively among management and colleague staff respectively. Staff communicated to patients predominantly (97.4%) through face to face medium. Majority (83.50%) of the staff interviewed agreed that challenges existed in the current hospital communication system. The need for a digital communication platform was cited by 75.6% of patients and 93.1% of staff respondents. Currently, no system exists to offer prior information to patients who intend to assess the referral facility. Also, no official system exists for digital appointments and other means of patient-staff interaction outside the hospital environment. It was observed that hospital staff used social media for communicating among themselves but meeting were held to communicate with the hospital management. Management of the hospital communicated with the general public using letters and office memos. Concerns such as dissatisfaction with delayed information flow and little feedback were expressed by managers and staff of the hospital respectively. All the various groups studied welcomed the prospect of a digital mobile application system to offer efficient communication within and outside the hospital. Although some challenges were anticipated as the digital app is expected to offer a superior alternative to the current communication system in the hospital.

CHAPTER ONE

1.0 INTRODUCTION

1.1. Background

Effective healthcare delivery which is patient-centered is a major contributor towards the achievement of the 'one health for all' concept. In this regard, patients and their relatives constitute a vital part of the care group coming together with health professionals in making informed choices on the available clinical services and means of accomplishing these choices. (Snyder et al.,2011). One of such effort is the adoption of the an effective technological communication system, which uses the Information and Communication Technology (ICT). These systems have been employed globally by most developed and developing countries for hospital communications and information dissemination particularly on the available services in various health facilities to ensure effective healthcare delivery.

A communication system using ICT tools enhances self-care by improving access to information as well as communication between patients and healthcare professionals, and supporting social services (Demiris *et al.*, 2008). About 34% of patients who visited the Out Patient Department (OPD) prefer using ICT applications such as social media to communicate with caregivers (Zare and Jebraeily, 2018). Communication systems can be seen to comprise of the official and casual communication structures, channel or mediums used, and the kindofmessages carried along(Coiera, 2006).Again, an excellent system of communication must include individuals, the information been communicated, the mediums being used in the interactions and enabling facility structures that ensure the achievement of these interactions (Chetley *et al.*, 2006).

With regards to the definitions given by Coiera, and Chetley et about good communication system, many countries across the globe have laid down appropriate policies and strategic plans that will make it possible to transform their health economy into an information and knowledge-based economy of which

Ghana in the Sub-Saharan nation is not an exception (Gog, 2003). Such policies help bring out clearly how a communication system or network should be implemented within organizations.

Despite the available policies,there are still major questions that are been asked; where can the nearest hospital be located? What kinds of services are available at the facility? At what time will a doctor be available? How does a healthcare provider easily communicate to a referral facility before referring a patient? These and other questions have been a major challenge for both patients and healthcare providers in the health system.

New Zealand, a WHO member state, has initiated a smoking cessation program (Txt2Quit) using text message as a possible solution to combat smoking and to enhance compliance to treatment. This initiative after trial, has been adopted by other countries as a means to end smoking by sending text messages to consumers in an attempt to make them quit smoking. This has increased out-patient attendance to 317 per month.

Furthermore, findings from a study by Nikolic *et al.,* (2018) even indicates that Victorian hospitals have come out with communication apps which are extensively used, from students to consultants, with WhatsApp being the primary app for internal communication. Evidence from this study also shows that an average of 12 messages is shared per day among staff including a variety of patient' information. Most staff depend on these apps for patient' information sharing clinical settings. However, there have been concerns about the privacy implications of sharing patient' information using the apps (Nikolic *et al.*, 2018).

Most sub-Saharan regions have been noted to as the poorest in operating a robust and non-interactive communication system. Reports have indicated that about 15-30% outpatient non-attendance rates are due to lack of information about available services at the facility (McLean *et al.*, 2016), poor

communication systems affecting patients in rural communities and high health illiteracy (Covell, Uman and Manning, 1985). Again,there has been a notable challenge in communication during referrals. Referral notes are sometimes given either been handwritten in the patient's folder or on a typed piece of paper accompanying the patient. In a few occasions, a phone call is received from the referring hospital by the referral centre, or there is sometimes absolutely no documentation in the company. However,few peripheral hospitals are able to send messages during referrals to tertiary hospitals, which pre-inform the receiving facility in a timely manner. These communication obstacles sometimes may result in ineffective delivery of care to patients as well-as missed patient followed-up after discharge adding to the cost burden imposed by disease complications and increased prevalence of ill-health in the country (Covell, Uman and Manning, 1985).

In West African regions, communication systems using ICT tools substantially do not get the necessary attention and the adoption of a more complex phone messaging or electronic mailing system has not yet been an option in numerous health facilities in the Ghanaian healthcare system and therefore their effect cannot be measured. Snyder et al. (2006) stated that it is most demanding for both patients and health providers in the health systems to recognize information using an effective medium that offers highquality care delivery.

Generally, in Ghana, mediums for communication and information search have been known to be positive tools among professionals and users in organizations most especially during service delivery. Due to this positivity, interventions such as the mHealth have recently been tested and proven effective in the Ghanaian health system;however, little effort has been made by the government in funding and fully adopting the system in the country.

Komfo Anokye Teaching Hospital is one of the major health delivery centres in Ghana known to be constrained with a functional hospital-patient communication framework or system that allows for

effective patients-staff interactions for efficient service delivery within and outside the facility.The resulting consequences these challenges pose to patients and staff are worth investigating.

1.2. Problem statement

In recent times, people's attention has been drawn to their health due to improvements in Health Promotion. To render effective and efficient health service, a communication system such as the Ehealth is lately seen by Chetley et al (2006) as the best substitute for the orthodox or traditional way of communicating at the health centre.

Communication systems lead to a lot of data sharing and a consistent system with effective mediums are immediately needed in hospitals to help distribute and exchange such information (Chetley *et al.*, 2006). In the hospital, information that is relevant to patient-care should be made available and accessible at each point/level within the health service delivery using communication systems that are simple and user-friendly.

A communication medium like mobile phones for information sharing across the healthcare divide is not new in health delivery systems (Ventola, 2014; Kim *et al.*, 2016). For health experts, there is quick development in the improvement of such medical communication systems. It has hence facilitated better communication and information sharing at the wards (Ventola, 2014; Kim *et al.*, 2016).

Despite the recognizable impact that communications systems have in the hospital services and on health, concerns have been raised on the effectiveness and capacity of such system in ensuring successful application in the health sector,particularly in developing countries. Although such bottlenecks exist, a system designed to manage the interaction between the rural or urban consumers of health care and their providers will be a major milestone achievement with the potential of serving the information needs of all regardless of proximity.

Currently, in some Sub-Saharan African countries, the communication systems lack elements that feed consumers with the information necessary for decision making.Even in Sub-Saharan countries where such systems exist, about 23-34% of hospital appointments are missed annually (McLean *et al.*, 2016).In 2010 Parikh et al, named it the "no-show" phenomenon, which results in time wasting, reduced efficiency, and greater use of capital.There have been several instances where patients referred to KATH for specialist care travel over 500 km to KATH only to be told that such specialist does not work on that day. This resulted in the woman incurring a cost of about USD 30 for a "no-show" situation. Such instances are very common at the referral hospitals particularly during clinical care visits.

Improving the current hospital communication systems stands to offer the potential to enhance delivery of quality health servicesin the future whichconsequentlywillresult in improved patient' satisfaction of health service outcomes. As technological servicessuch as the internet and mobile phones are adopted the ultimate choice for information dissemination in the coming years, the choice of services offered by the hospital willobviously become the sole responsibility of the seeker. The decision of buying their own healthcare will not only offer patients the satisfaction needed but also reduce the possible costs associated with missed appointments, delays and the "no doctor" syndrome.

Efficient hospital operations partly relies on factors including effective communication among staff and the general public(Coiera,2006). The levels of communication depend largely on the size of the institution. In a tertiary institution like Komfo Anokye Teaching Hospital with a total human capacity of over 4000, there is urgently the need for practical and user-friendly system that would enable convenient usage and efficient information sharing.

Effective and reliable communication among the 12 clinical directorates and the non-clinical directorate has been a major desire of the hospital management team of the Komfo Anokye Teaching Hospital. Important information like duty schedules, standard operating procedures and contact numbers of staff

are very difficult to access at the hospital. The huge number of staff coupled with the amount of information generated at the hospital requires the development of an efficient and reliable platform that will accelerate information sharing and service delivery.

The KomfoAnokye Teaching Hospital as a multi-purpose health care institution has serious challenges with communication and information sharing among both the clinical directorates andthe non-clinical directorates. The public finds it difficult accessing vital information needed for seeking health care,hence the need for this study.

1.3. Research questions

1. What are the perspectives of patients and healthcare providers on the patient-hospital communication system in KATH?
2. What are the current patient-hospital communication structures in KATH?
3. What are the communication mediums/channels used by patients and healthcare providers for interactionin KATH?
4. What challenges do patients and healthcare providers face inthe use of existingcommunication mediumsduring interaction at KATH?

1.4. Overall and specific objectives of the research

1.4.1. Overall objective

To assess the current client (patient)-healthcare provider communication system in KomfoAnokye Teaching Hospital (KATH)

1.4.2. Specific objectives

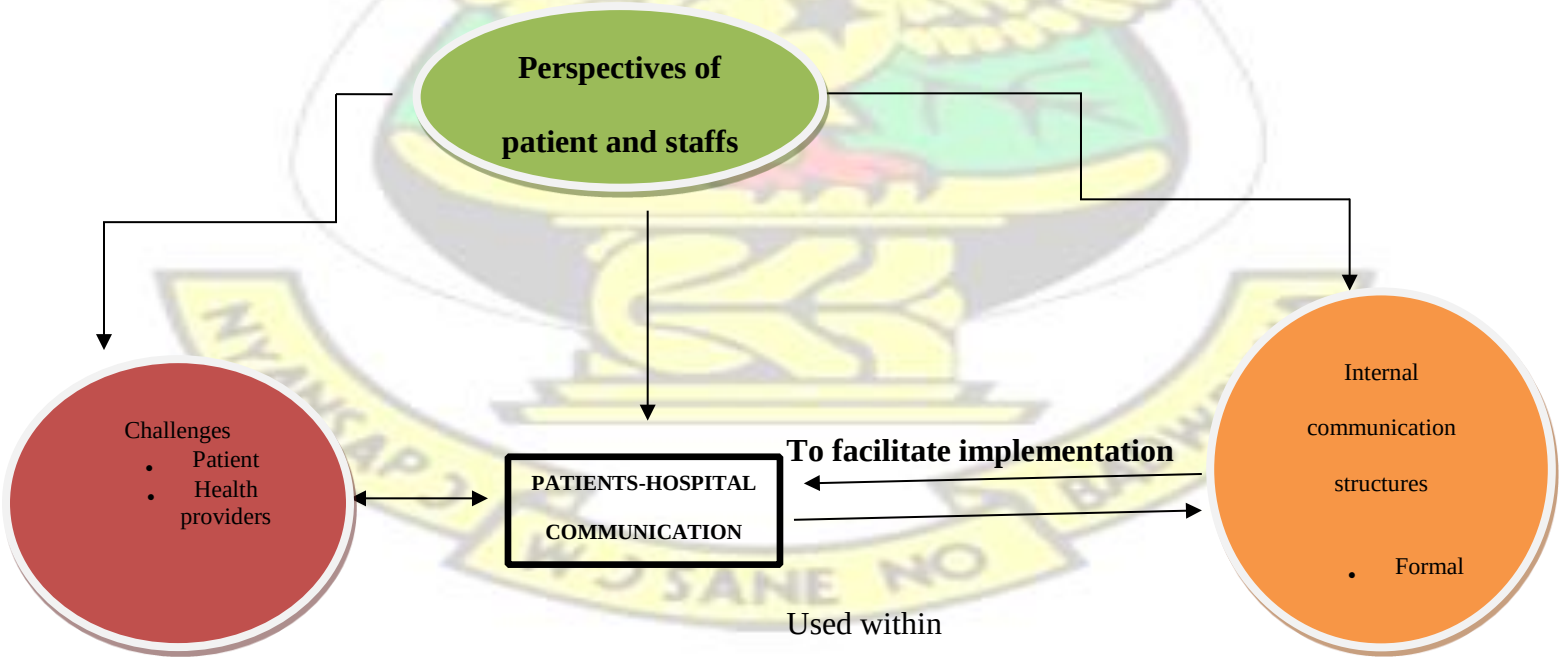
1. To explore patients and health providers perspective on the patient-hospital communication system in KATH.

2. To identify the internalpattern of communication used among patients,staffsand managementin KATH.
3. To examine the mediums used by patient and healthcare providers for interaction in KATH.
4. To identify the challenges patients and healthcare providers face during the use of communication mediums for interaction at KATH.

1.5. Conceptual Framework

The study intends to investigate the communication system at the KomfoAnokye Teaching Hospital. Participant's perspectives will be sought on the current communication system that is used at the hospital. Results from the perspectives will inform the study to obtain quantitative data on some of the mediums and challenges noted within the current patients-hospital communication systems.The study will further investigate the internal communication structures in the hospital and how these structures intend to facilitate the implementation of a new ICT-driven communication system.

Figure 1.1: a conceptual framework forthepatient-hospital communication system



Source: Authors construct 2018

1.6. Organization of Thesis

The study is divided into five chapters with chapter one (1) addressing the background of the study. Chapter two (2) presents the literature review which contains relevant contextual, theoretical and empirical bases for the study. Chapter three (3) presents the research methodology of the study and the profile of the study area. Chapter four (4) captures the presentation of data and the analysis of the findings of the study. The final chapter presents a summary of key findings, a conclusion based on the specific objectives and gives the necessary recommendations to inform policymaking.

1.7. Profile of study area

The study was conducted at the Komfo Anokye Teaching Hospital (KATH), Kumasi, Ghana. Komfo Anokye Teaching Hospital is located in the vibrant and culturally rich city of Kumasi, the regional capital of Ashanti, with a population of about 4.7 million (2010 population census). As such referrals are received from the following region (namely Northern, Upper West and Upper East Region, Brong Ahafo, Central, Western and Eastern Regions). Kath was established in 1955 and became a Teaching Hospital for the training of medical students from the Kwame Nkrumah University of Science and Technology (KNUST) in 1975.

It is the second largest Teaching Hospital in the country, and the only tertiary institution in the Ashanti Region. It serves as a major referral centre in the northern sector of Ghana. At present, it is a training centre for Ghana Post Graduate College of Physicians and Surgeons. The hospital also provides training for nurses and midwives from Kumasi Nurses and Midwifery Training College and nurses from other nurses training colleges in the metropolis as well as Pharmacy and Medical laboratory scientist students

from the KNUST. The hospital has (12) clinical directorates, and (2) non- clinical directorates namely surgery, Obstetrics and Gynaecology, Child Health, Medicine, Polyclinic, Diagnostics, Emergency Medicine, Traumatology and Orthopaedics, Oncology, Anaesthesia and Intensive care, EENT, Oral health, Domestics and Technical Services. The hospital has a staff population of 3,909 who fall under these categories, Doctors (9.4%), Top Management (0.2%), Nurses and Midwives (42.2%), Certified Registered Anaesthetist (1.3%), Pharmacist and Pharmacy technicians (3.8%), Administration and Finance (6.6%), Clinical support (10.9%) and Allied Health (5.6%) (KATH Annual Report, 2013).

1.8. Abbreviations/Definitions of Terms

Abbreviations/Terms	Definitions of Terms
Communication systems	official and casual communication structures, channel or mediums used, and the kind ofmessages carried along
E-health	Electronic health
ICT	Information and Communication Technology
OPD	Out PatientDepartment
Patients-hospital communication system	official and casual communication structures, channel or mediums used, and the kind ofmessages carried along for patients and hospital communications
WHO	World Health Organization

CHAPTER 2:

2.0 INTRODUCTION

Effective communication between hospitals and patients is a critical component to healthcare delivery. Proper information dissemination between the two parties ensures efficient service delivery at health facilities. The strong patient-hospital relationship is built to address the medical needs of clients through adequate information sharing and effective communication systems.

2.1. Patient-Hospital Communication Systems

In theory,a system can be defined as a cluster of structures which complement each other to attain a goal

(Bertalanffy, 1972). Michael Kuhn (2006) also describes Communication as "the interactions that take place between two or more elements".Coiera, E. (2006) defined communication system as the interaction of structures officially or casually using channels or mediums to carry messages across and obtain a feedback.

There are communication systems in organizations that ensure sharing of information among workers and customers within the institution. The big question that comes to the fore is that, how are these systems perceived by these interest groups? Literature review was done on the understanding of the management of clinical directorates, health workers and patients on communication system that can improve patient-health provider interactions.

2.1.1. Patient Perception of Communication Systems

Patient-centred communication has become an important factor in the interaction with patients on healthcare (Porto, Guimarães and Costa, 2012).In regard to this information, most health facilities have adopted the technology-based communication systems such as the "call light systems" to interact with patients. This system has been used as the primary means to facilitate internal communication between patients and caregivers in some developed countries (Galinato *et al.*, 2015; Montie, 2017). Evidence from the above study has shown a positive response from patients to the use of technological communication systems such as "the call lights"due to easy retrieval of stored patient' information and its prompt notifications. Again, a study conducted by Varsi (2016) indicates patients' perception on availability of a good communication system as important in contacting their care providers. However, some patients did not prefer using technology-driven communication systems in the hospital. Some sported reasons influencing non-usage included: (1) such system is not needed and because patients had alternative sources of accessing health information, (2) other communication mediums such as the

telephone or face-to-face contact with care providers were preferred, and (3) stress associated with the login problems (Varsi, 2016).

In assessing the perception of patients on the use of communication mediums such as secure e-mail for patient-care giver interactions,some concerns were raised on the use of the medium. Reed *et al* (2015) investigated those concerns and reported that 56% of care seekers contact their providers through emails, with 46% out the 56% seeing such medium as their preferred method of sending information. Reed and colleagues continued that,42% reported that emails reduced the number of phone contacts made, 36% reported reduced in-person office visits and 32% reported e-mailing improved their overall health (Reed *et al.*, 2015).

From the above studies, it can be concluded that patients are likely to use e-mail as a primary medium for communicating with providers and patients in curring a high cost for in-person visits are more likely to choose e-mail as first contact medium.There is however lack of literature supporting other mediums used in the communication system. Patak *et al,* therefore, advocated the need to assess patient communication system (i.e. literary, cultural, behavioural, and physical barriers) to ensure effective patient-provider communication for health care delivery. Apart from communication assessment, getting patient views on the various mediums uses will help in effective communication (Patak *et al.*, 2010).

2.1.2. Health Workers Perception of Communication Systems

Methodologies and strategies to study health worker-patient interaction and communication keep on changing. Health workers hold a significant place in the society in fulfilling the communication needs of patients (Fleischer *et al.*, 2009).

This discussion is in relation to seeking the understanding of health professionals and their perception on the communication system as a means of sharing information with patients in the hospital. Health

professionals share information at various points of healthcare; at pre- and post-admission, internally among staff and even between peripheral health facilities during referrals.

As stated by Michael Kuhn (2006), a communication system is defined as the use of equipment or electronic devices such as computers in communicating and sharing of information between two or more entities. Health workers, therefore, engage in the use of this equipment for communicating and sharing of information and hence it is necessary to study their perception on these equipment and other structures that make up a communication system.

Studies such as that conducted by Niemi and colleagues have indicated that, computers, electronic mediums and communication skills among health workers were at an averagely good perceive level (Niemi, Hupli and Koivunen, 2016). In that study, health workers were seen to have the most experience in the use of ICT in sending email, text messages and the use of electronic devices at all stages of their practices for communicating. However, promoting and hindering factors such as user-related factors, technology and organizational related factors and nursing related factors are challenges that will prevent one from using an electronic communication system (Niemi, Hupli and Koivunen, 2016).

In reviewing this study one can conclude that, electronic devices are necessary and valuable mediums in patient interaction, and it will benefit both the health workers interactions with patients. Again, patients' physiognomies and information security problems were perceived in the study as the most important deterring factors and need to be addressed before a successful implementation. Again, in terms of intentions for the usage of a communication system, its central premises comes to the point of a trusted system. In view of this, a study investigated; "perceived usefulness, perceived ease of use, attitude towards usage, and usage intentions on an "Electronic Health communication and Records system" (EHCR) which is an example of a communication system. It extended with trust and risk-related factors such as physicians' perceptions of institutional trust, perceived risk, and information integrity". (Mea *et al.*, 1996) The results of this study indicated the significance of attitudinal elements (attitude

towards utilization and perceived institutional trust) and psychological instrumental procedures (effectiveness) in deciding doctors' expectation to utilize such a system. The impression of institutional trust demonstrated a solid direct impact on doctors' apparent value, perceived convenience, and state of mind towards the utilization of the EHCR system. Therefore, the implementation and the sustainability of an effective communication system in an organization depends on the knowledge and the trusted employee have on the use of such a system.

In the management point of view, an article by Bert Markgraf, (2018) indicates that gathering and distributing information is a key function, and communication systems can make this process more efficient by allowing managers to communicate rapidly. He added that Email is an example of such a medium which is perceived to be quick and effective,and managers can use such mediums even more efficiently by sharing information with employees who need the information. Markgraf added in his article that, this sort of communication gives workers a chance to team up by conveying extra information on changes the organization may require whiles supervisors can gather the sources of information and sends the recently updated data to the intended interest group (Bert Markgraf, 2018).

2.2. Hospital internal Communication Structures

A communication structure is the forms of interaction or communication that exist in every social system. (Crossman, 2017). According to Crossman, communication structure can either be internally, within your own organization or group, or externally to your entities that could be one of the variousstakeholders; example the patients accessing the care facilities. This review will be concentrating on the internal communication structures more than the external ones.

Internal communication structures are a significant factor for the progress of employee engagement. It helps in conveying standards of practices of an institution to the employees and other stakeholders

(Welch, 2007). Due to the vital role it plays in the organization, Crossman, Jackson *et al* (2007) came out with a definition of internal communication as a form or style of communication; which can be used to communicate organization's policies, supervisors instructions to internal stakeholders like the staffs and present customers, so as to elevate commitment to an institution with the methods for belongingness, mindfulness and comprehension of objectives. In 2010, Cornelissen also came out that, Internal communication structures in hospital organizations can be seen as corporate communication. He defines corporate communication as " the methods or systems used to share information. He further said that this method or system could be formal or informal.

2.2.1. Formal internal communications structure

The formal methods of communication are seen as the most official way of communication. More often, official lines of information sharing inside an institution relate intimately with the lines of authorities. The most formalized flow of information is from management to staff. In such conditions, the flow of information descends from people in authority to others in the institution. Information transmitted through a descendingorder,by and large, serves at least one of the accompanying capacities; determines an assignment to be performed, give directions about how to carry out instructions or give information about the reasons to a specific errand that should be performed, and also gives information about the institution and its central goal.

Then again, by Berger (2008), it must be noticed that information flow inside an institution can sometimes be directed from subordinates to bosses, that is from people in departments, offices, or divisions to people possessing administrative rights which are called an upward information flow.

Upward communication has a few qualities, including; giving a contribution to basic leadership, exhorting about subordinate information needs, and also giving information with respect to the subordinates levels of receptivity to data, fulfilment and confidence. It can again give a conceivably

productive outlet to complaints and dissensions and enable bosses to evaluate the impacts of past descending communications.

But which ever direction of dissemination information, management and staffs do communicate between themselves at all levels of their working activities to attain set targets. The flow specifically involves, the transmission of information through mediums like; reports, memorandums, records, letters, sales presentations, advertising and publicity. etc. within the organization. Such information can be in the form of orders, instructions, and other messages from the authority structure. These main channels should not just happen, they ought to be carefully thought out and changed as the needs of the business change.

2.2.2. Informal internal Communications structures

Parallel to the formal style or form of communication, as per Lesikar et al (1996) is the casual style or type of communicating, an optional style comprising essentially of individual casual interactions. Similarly, as the formal system resembles the arteries, the casual one resembles the veins. It involves the heaps of individual communications that happens in an organization. Such communications do not pursue a set pattern; they follow a consistently changing and vastly complex structure connecting every one of the individuals from the organization.

The intricacy of this casual style, particularly in bigger organizations, can't be overemphasized. Commonly, it is truly not a solitary system, but rather a complex relationship of gatherings information of individuals. The relationship is made much more unpredictable by the way that these individuals may have more than one gathering and that such gathering keeps on changing through a lot of channels or mediums.Mediums use within this informal network of communication are; social media, face-to-face, telephones calls, body languages etc.

Despite all these methods, of internal communications structures and their importance, a research by Hammond (1986) on organizational communication, found that some staffs, especially the junior

members did not fill the impact of communication flow from managers and felt that the liaisons (public relation officers) who deliver information from managers serve the interest of top management and not the cooperate body. As per her discoveries, worker communications with management turned out to be full of issues. To correct the circumstance, she proposed that management ought to perceive their worker's entitlement to sharing of information and easy communication. Since worker involvement is a fundamental instrument to any effective association or organization, Hammond (1986) additionally recommended that suggestion boxes, attitude studies, Durbars and in-house distributions, for example, bulletins and house magazines ought to be acquainted with bridging the communication gap.

2.3. Communication mediums/channels

A communication channel as indicated by Coeira (2006), is the 'pipe' along which a message is passed on. He included that, there is a wide range of communication channels, from the fundamental face-toface personal discussion to the phone or email, to the medical record. Channels additionally have properties like limit and noise, which decide their suitability for various undertakings. At the point where two people involve in conversations over a channel in the same time, this is known as synchronous communication. It is normal of synchronous communication that, it is interruptive, and these interferences may negatively affect people who have high cognitive loads. For instance, a bustling clinician may neglect to do a clinical assignment since he/she has been engage by a phone call even though occupied. Conversely, when people can be isolated in time, they may utilize a nonconcurring channel to help their communication. Since there can be no concurrent talk, discussions happen through a progression of message exchanges. This can be notes left on a partner's working desk, to advanced electronic communication systems. A communication system is a heap of various parts, and the utility of the general system is dictated by the propriety of the considerable number of segments coming

together. In the event that even one component of the system package is improper for the setting, the correspondence framework can fail to meet expectations (Coiera, 2006).

2.3.1. Nature of patient-health worker interaction

Berger (2008) also cites other researcher's observations on the subject and for instance, refers to Harris & Nelson, 2008, who is a write up had noted that Communication is one of the most dominant and important activities in organizations. Primarily, there seems to be a correlation between interactions and communication, and as Berger, (2008) puts it, there is a fundamental relationship and added that relationships grow out of communication, and the functioning and survival of organizations is based on effective relationships among individuals and groups.

Jones et al., 2004, mentions that organizational capabilities are developed and enacted through "intensely social and communicative processes". So, from the above, it is clear that communication helps individuals and groups coordinate activities to achieve goals, and it's vital in decision-making and problem-solving among others, to help organizations such as a hospital to achieve desirable results. Hence the study to actually ascertain how staffs communicate and to find out what channels does exist for such a purpose.

2.3.2. Communication between a hospital and primary care facilities/other health partners.

Hospitals, primary health facilities and other health partners are recognized as the players in the delivery of healthcare. Most of the health facilities either; primary, secondary, tertiary level and the other healthcare partners, work hand-in-hand for a better delivery of care.The dream of effective health care, delivery will not be achieved without proper communication between the hospital as a major player and the other players like; health facilities in the peripherals, Non-profit organization, other donor partners and stakeholders in health. These players are expected to consult each other during patient management or to referrer patient when treatment is beyond the health facility level. However, consultation or proper

referrals cannot happen without communication. There is the need, therefore, to put in proper referral systems through communication to ensure effective healthcare delivery.

Similarly, the referral system is a necessary aspect of the health care system. In public health facilities, an excessive range of patients' turn out through self- reporting and referrals have to lead to a massive burden on the secondary and tertiary level of the care system in the aspect of workers, equipment and resources. Despite the massive expenditure on health care in most developing countries, health results and services remain poor. For example, Public health in South Africa consumes around 11% of the government's total budget. The nation contributes about 40% of all expenditure on health; the public healthcare is beneath pressure to supply services to about 80% of the population. Research available give insights into reasons that poor communication system is a major contributing factor for this disparity.

In controlling this some hospitals have added "Tele-medical systems" where it serves as another means of caring for their patient no matter how far the distance is. Such systems have also saw, to actively explored at the interface between hospital-based specialist services and essential care delivery. Similar issues exist between small hospitals or primary care facilities, which may additionally no longer have get entry to the incredibly specialized personnel that can be determined in large institutions like teaching hospitals. Indeed, with the growing number of sub-specialties in clinical medicine, it is now unlikely that any one institution has a representative of every viable medicalsub-specialitywithin their institution. For this reason, there is a want and need to share tremendously specialized information through out unique hospitals services, occasionally involving large distances.

There is additionally a clear need for patient records to exchange between hospitals and primary care medical doctors upon admission to and discharge from the hospital. The use of existing procedures like the postal system to supply such statistics has been regularly criticized for tardiness and unreliability. In

contrast, speedy communication of health facility discharge records using electronic health records mechanisms has been shown to be advisable for all medical practitioners (Branger *et al.*, 1992).

Hospital discharge summaries have always been recognized as a vulnerable point between primary care facilities and hospitals, both due to the fact of the tardiness of their arrival, and the high-quality of the information they contain. Discharge summaries arrive by a range of ability such as the post, fax, and email. A randomized clinical trial in Canada compared discharge summaries created automatically from medical information to summaries created through voice dictation and proven that the automatic service can give a speedier completion of the summaries at no reduction in the quality (Maslove *et al.*, 2009). Criticism is again regularly made of communications that originate in primary care facility care, especially referral letters accompanying patients to the emergency room, or specialists. Simple interventions such as the structured change might also enhance the pleasure of such communication (Luu *et al.*, 2016), however the broad variant in the kinds of the message such as letters would possibly comprise may additionally require more complex, computer-assisted techniques.

In moving forward, there has been efforts in advertising methods that permit practitioners in primary care services to care for patients whom they would usually have referred to more advancedhealthcarecentres, by means ofassisting them with access to farawaymedicaladvice. In one study, direct phone access to a hospital-based cardiac monitoring centre was once supplied to primary care practitioners. They had been in a position to seek advice from with a heart specialist as needed, as and also as transmit a 12-lead ECG (Molinari *et al.*, 2002). Possible results of the issue had been that the practitioner persevered to control the patient, that the patient was once referred to a cardiology clinic, or in the case of suspected myocardial infarction, rapidclinic admission wascontacted with pre-warning of high health facilitymedical teams. A trial of 2563 patients over 18 months indicated that the provider serviceused to be perceived to be valuable, but no comparative cost-benefit evaluation was performed. In a pilot of video-meeting for dermatological issues, the primary care physician can talk about patient

disease conditions intuitively with a dermatologist, with the patient being around for the dermatologist to see him. Over a portion of the patients could then be managed by the general professional instantly after video-conference.(Jones *et al.*, 1996) Experts in the use of such system of communication sees this form of communication services as a useful way of screening patients prior to being arrival communication with experts, especially if travelling will be a barrier. but, in this context, the patients suggest that they preferred an initial face-to-face consultation with the professional dermatologist and that the teleconsultation could have been better used for subsequent assessment of their progress.

Similar studies in Norway have identified other benefits to this type of remote telemedical consultation. The skill level of isolated practitioners was raised through repeated interactions with remote specialists and through having to manage cases that were previously referred (Akselsen and Lillehaug, 2015). This may arise through the dynamics of the relationship between a remote practitioner and specialist. Unlike most educational settings, both are motivated to form a coach and apprentice relationship for the immediate management of a patient.

It is as yet unclear in what exact conditions video-based meetings are generally proper. While there are a few advantages in getting to hard-to-reach expertise, there are confinements to the present technology. It is notable for instance, that when there is an encounter with clinicians, most of the information exchange amongst specialist and patient is non-verbal (Marcinowicz, Konstantynowicz, and Godlewski, 2010). The manner of speaking, outward appearance, and posture all nonverbally send some signals that are interpreted by the patient. Technology can help the patient in this interpretation. At times, this may be advantageous. A patient might be less upset about how they cannot get signs that the specialist is stressed over their condition. Similarly, a patient may be worried if they are having signals that they are misjudged in light of the fact that they are new to the elements of the video interview. These impacts will change with the kind of communication channel used and the specialist's abilities at using the channel. Having a decent 'video communication manners' may well soon be as critical as having

2.4. Challenges of Communication Systems

Many individuals involve in the caring for a patient and all are expecting to share persistent data and discuss the management of the patient. As an outcome, there is expanding enthusiasm for, and utilization of, data and communication innovations in the communication network to help health services (Coiera, 2006).

Pager and telephone interferences can prompt fragmented discussions and the need to repeat the striking purposes of the case. The issue isn't with the calls, however the way in which they are replied. Normal politeness would direct that, when appropriate, calls ought to be replied outside the room where a group is meeting, outside the patient's hospital room, or far from the founding group. The utilization of cell phones, pagers with messaging capacities are developed technologies which will mitigate—however not absolutely eliminate—a portion of the "call activity" that penetrates group discussions (Coiera, 2006).

The written word is another wellspring of poor communication. Poor handwriting may prompt confusion of diagnosis notes or negligence for suggestions. Clarifying inadequately written treatment recommendation can squander 25 significant times. The reception of electronic medical records has tackled the bunch of issues presented by poor handwriting (Ponte, 2011).

As indicated by Coiera (2006), the sheer scale and multifaceted nature of these communication inside the health care system put an overwhelming weight on the procedure of correspondence, and miscommunication can have awful outcomes. Not exclusively is the communication space, huge as far as the aggregate information exchanges and clinician time, its distortion is likewise a wellspring of critical morbility and mortality of patients. Communication failures are a substantial supporter of antagonistic clinical occasions and results (Coiera, 2006). In a review survey of 14,000 in patient's death, communication blunders were observed to be the main source, twice as successive as mistakes because of deficient clinical aptitude. Further, about half of every single adverse events identified in an

investigation, doctors were related with communication challenges (Coiera, 2006). Looking above the numbers, the clinical communication space is inclined to intrusion, has poor communication system and poor practices. At the administrative dimension, the poor communication of information can have generous financial outcomes. It is currently clear, for instance, that the health care system endures tremendous wasteful aspects due to the low quality of communication system that are frequently set up.

CHAPTER THREE

METHODOLOGY

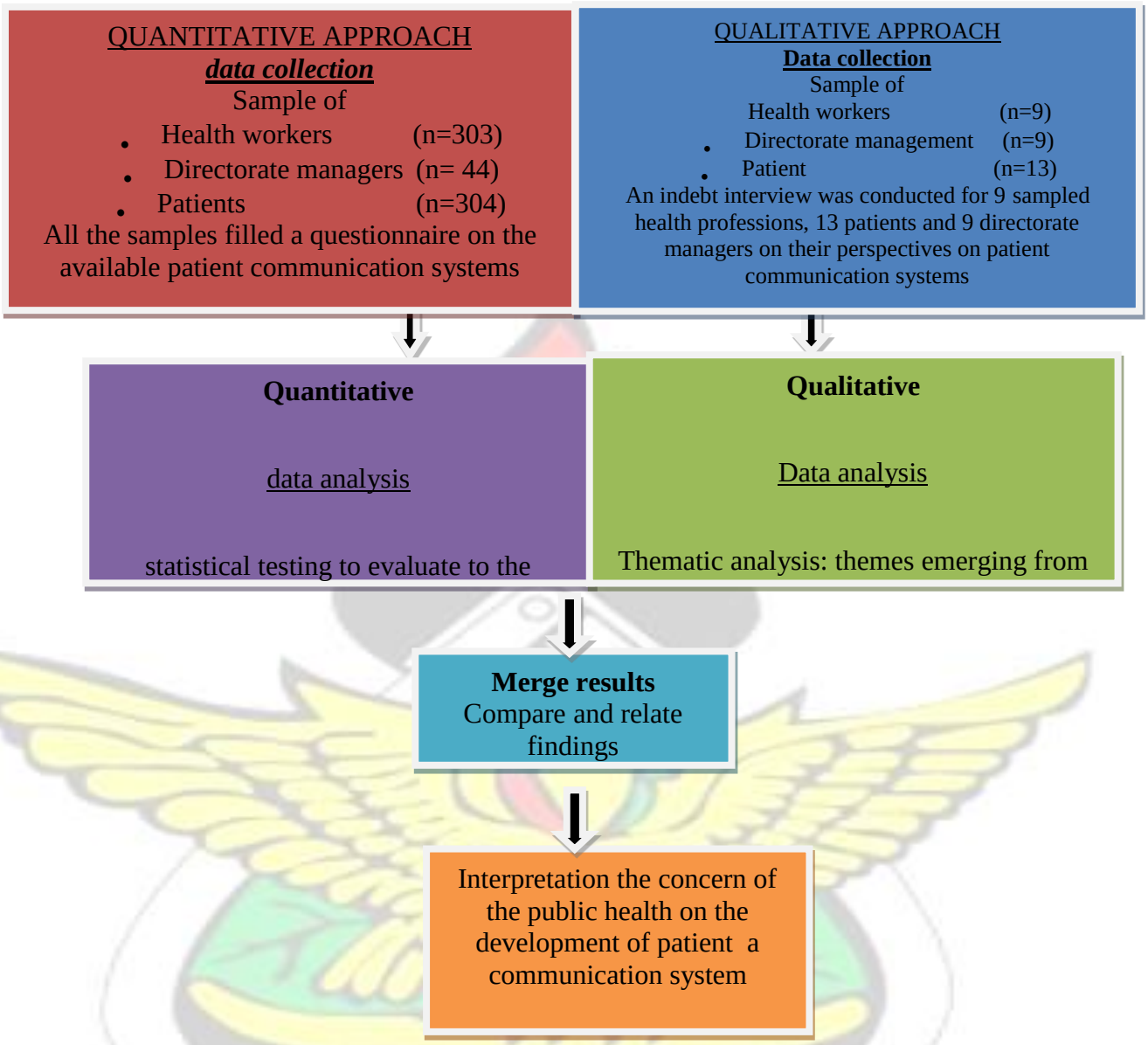
3.0 Introduction

The chapter has been structured to give an overview of the research design along with the data collection techniques and tools. The latter part of the chapter gives an overview of the chosen study population, variables studied, the sampling technique, data collection methods, data handling and analysis of the data obtained. Also included in this chapter isthedescription of how the study was pre-tested.

3.1 Study type and Design

The study employed a cross-sectional design using mixed method approach. Cross-sectional design because the study aimed at finding out the major factors affecting the communication system by taking a snapshot of all major components of communication at the hospital (health workers and patients). This helped to obtain an overall picture of the communication system of KATH at the time of the study. Again a mixed method approach because“ it focused on collecting and analyzing both mixed quantitative and qualitative data in a single phase, merged results of the two strands and then looked for convergence, divergence, contradictions or relationships between the two data sets”. Its central premise is that using quantitative and qualitative approaches in combination provides a better understanding of research problems than employing either of them. (Meissner *et al.*, 2011), Martens (2015) added that both quantitative and qualitative methods can be used to answer research questions in a single study, as well as studies that form part of a larger research program (Donna, 2015).Below is a diagrammatic representation of the study design in figure 3.1.

Figure 3.1: Convergence mixed method study design



The quantitative data collection method was used to obtain numerical information of specific variables (i.e. the patient-hospital internal communication structures, communication mediums, challenges faced by patients and healthcare providers in patient-hospital communication). Simultaneously, the qualitative methods inquired about the complexity of patient-hospital communication system, and understanding of patients and healthcare professionalsofthis system in the healthcare environment. This helped to answer questions such as why patient-hospital communication system, what perception do participants have about the communication system and what relationships exist between these perceptions and the

current communication systems at the Komfo Anokye Teaching hospital. The two approaches were merged in order for the study to be truly a mixed method approach as recommended in other studies (Plano, 2010).

3.2 Study Population

The study population was drawn from healthcare providers and directorate managers in Komfo Anokye Teaching Hospital. However, another sample was drawn from the patients visiting the hospital for health care. The annual report for 2017 indicated a total workforce of 3,895 at KATH in the year 2016. This comprised Staff – 3,519, House Officers – 175, Residents from other institutions – 138 and KNUST Staff – 63

In the 2017 anuual report 44.9% of the total staff were Nurses and Midwives, 10.1% Doctors, 10.4% Clinical Support staff, 3.5% Pharmacists and Pharmacy Technicians, 5.1% Allied Health Staff, 17.4% Support staff, 2.4% Administrative staff and 4.0% Finance. In the same year 2017, the aggregated outpatient utilization for the period between January and December 2017 was 339,105. This aggregated OPD performance was 5% above the expected output of 321,432 set for the year 2017. The figure below shows the detailed OPD performance of the various clinical directorates in the year 2017.

Included in the study were health workers such as doctors, nurses, pharmacists, Allied health staff, clinical support staff and directorates managers, who have worked at KATH for at least five years. These categories of staff were included because they had direct communication with the patients at diagnosis, treatment, client service satisfaction as well as payment of services rendered. This is to emphasize that, at least five years of work measures a reasonable number of years one has observed or examined, has enough knowledge on patient-healthcare provider communications and interactions and would have attained a professional promotion at KATH. Again, another set of participants who were included in the

study were patients present in the outpatient department in various directorates. This category of patients was included because they were assumed to be in their conscious state and would give reasonable responses on the communication system at KATH.

Staffs who were neither involved indirect provision of health care to clients nor involved in the daily administrative activities of the clinical directorates in relation to patient care was excluded from the study. Patients who did not voluntarily consent to be part of the study and those who were not present at the clinical directorates during the survey were also excluded from the study.

3.3 Sample Size

Three key populations (Directorate managers, health workers and patients) participated in the separate data collection approaches at each of the ten (10) clinical directorates.

3.3.1 Sample Size for QuantitativeData

The sample size was estimated using a statistical formula developed by Sullivan (2012) that had a confidence interval (CI) of 95% (α =0.05), which was used as the standard to make statistical inferences (Frankfort-Nachmias&Nachmias, 2008). This sample was calculated from the study population of health workers, directorate managers and patients using the following formula for dichotomous outcomes Where **z** is the value from the standard normal distribution for the CI used (e.g. z = 1.96 for 95%); ***E*** is the desired margin of error (i.e., **0.5**); and ***p*** is the population proportion which is approximate to **0.5.** The approximation was necessary because no previous knowledge of ***P*** was known from any studies. This formula was considered appropriate for the study with the intent to estimate the proportion of successes in a dichotomous outcome that involves a single population (Sullivan, 2012). Incalculating the desired sample size by applying the formula for each of the three populations, the estimation was done as follows;

3.3.1.1The sample size for health workers n

$= 0.5\ (1\text{-}0.5)\ (1.96/0.5)^2 = 384$

To estimate for non-respondences and incomplete data, 10% was included to approximate to 422.

3.3.1.1 The sample size for patients

$n = 0.5\ (1\text{-}0.5)\ (1.96/0.5)^2 = 384$

To estimate for non-respondences and incomplete data, 10% was includedto approximate to 422.

3.3.1.2 The sample size for directorate managers

The sample size was calculated using an estimated number of managers selected from 10 directorates with an estimation of N=50. All the 50 were purposively selected.

3.4 Sampling Procedure and Techniques

Since the study is a mixed method design, the two methods (i.e. quantitative and qualitative approaches) the two distinct approaches were used in selecting participants for the study.

3.4.1 Quantitative Approach

For sampling in the quantitative approach, a purposive sampling technique was used to select 10 directorates based on the provision of out-patients services.Within these 10 clinical directorates were various groups of health professionals (doctors, nurses and midwives, Pharmacist, allied health, clinical support staff) and patients visiting the directorates for health services. To get the estimated total sample from each category of health workers, and patients, a proportion to sample size method was employed to estimate the number of participants to be selected in each of the included directorates.

3.4.2 Qualitative Approach

For the qualitative approach, the study employed a purposive sampling method to select the categorized participants in each directorate to respond to questionnaires on patients-hospital communication systems. The size of each category of the three populations were; 20 health workers, 20 patients and 15 directorate managers. A total to 55 interviewswere obtained among all the 10 directorates where the study wasconducted.

Purposeful sampling because it is a technique widely used in qualitative research for the identification and selection of information-rich cases for effective use of limited resources (Patton, 1990). With the existence of the numerous purposeful sampling designs as acknowledged by Palinkas et al (2015), this study will employ the selection of participants who have extreme knowledge on a patient-hospital communication system for the purpose learning from their manifestations of the phenomena of interest(Palinkas *et al.*, 2015).

Interviews were conducted among these selected participants to get their in-depth knowledge of patienthospital communication systems. The interview was necessary because it was anticipated that various participants might hold different views about patient-hospital communication systems, which were not captured in the quantitative approach.

3.5 Data collection techniques and tools.

3.5.1 Quantitative data collection

The study used a written questionnaire as a tool with both open-ended and closed endedquestions to collect data on three research questions. That is

1. What is the current internal communication structure for patient-health provider communication?

2. What are the available mediums for communicatingat KATH?
3. What are the challengespatients, health workers and management face during patient-hospital communications at KATH?

Three different questionnaires were used. Each was used independently on the three different populations (health workers, patients and directorate managers). The reason wasthat, each category has different ways of interacting in the hospital hence the different measuring tools. The technique used to administer the tool was to gather all of the respondents of the different categories at one place at a time, giving oral and written explanations and instructions, and allowing respondents to fill out the questionnaires.

3.5.2 Qualitative data collection

Concurrent with the quantitative approach was a semi-structured interview guide along with a tape recorder used to collect data from respondents. As recommended by Pollit and Beck, (2012) the interview guide contained probing questions in a list form and gave the healthcare professionals the freedom to share their views (Pollit& Beck, 2012). The questions asked were designed to come out with a rich description of participants'perception of patient- hospital communication systems at KATH.

The reason for the technique employed in using the interview guide for the qualitative data was that purposively selected participants based on their experience and knowledge on patient-hospital communication systems were contacted during the quantitative approach. Participants' voluntary consent was sought to conduct an interview to seek their in-depth knowledge on the subject matter. After consenting, an information leaflet containing detailed information on the procedure was handed over to them. The Leaflet was read out to patients who could not read themselves. The interview lasted ten to twenty minutes and was concurrent with the quantitative data. The site for the interview was selected at

KATH. Participants were reminded to end the interview at any time they wish. The interviews were recorded using an audio recorder that was placed out of sight in order not destruct the participants' attention.

3.6 Study variables

Table 3.1: Description of variables

Variables	*Measuring variables*	*Statistical tools used*
Perspective on patient-hospital communication systems	*Interviewsconducted using an interview guide*	MicrosoftWord
The current internal communication structure	*A questionnaire with both closed and open-ended questions*	*Stata*
Patient-health providers interaction and mediums used	*Aquestionnaire with both closed and open-ended questions*	*Stata*
Challenges patients and healthcare providers face in communication at KATH	*A questionnaire with both closed and open-ended questions*	*Stata*

3.7 Pre-Testing

Study tools were pre-tested at the Kwame Nkrumah University of Science and Technology (KNUST) Hospital, one of the largest hospitals in the study region. At the hospital, a sample of five (5) staff, 5 patients and 2 managers were used for the pre-testing.

3.8 Data handling

All questionnaires for the quantitative approach were labelled numerically to differentiate the completed questionnaires. The completed questionnaires were retrieved on site. Data extracted from the forms was computed and stored on a hard disk; the research document was encrypted to prevent unauthorized access to the stored information. Audio recordings by means of interviews were converted into text, computed and stored in a hard drive

3.9 Data Analysis

3.9.1 Quantitative Data Analysis

To help answer the research questions on the current internal patient-hospital communication structures, the mediums used for such communications and the challenges both patients and healthcare providers patient-care provider communications in KATH, a univariate analysis was performed using STATA V.14.0 to describe the counts on each research question and the average responses to each question. This helped the study to get the general picture on the frequency of responses to each research question.

3.9.2 Qualitative Data Analysis

The interview guideexplored in-depth into the same concepts examined in the survey, including perceptions of patient-hospital communication systems. The interviews were audio recorded, transcribed, and analyzed as follows;

1. Each interview transcript was analyzed to identify key themes.
2. A code book was developed based on the key themes identified in the transcripts using Microsoft word.
3. The code book was used to code every statement in each transcript.

4. Pattern coding analysis was used to organize major themes under the concepts and explanations given.

3.10 Ethical consideration

Initially written approvals to conduct this study was obtained from the Komfo Anokye Teaching Hospital and Committee of Human Research Publications and Ethics (CHRPE) of the Kwame Nkrumah University of Science and Technology respectively. Study was not begun until permission was granted from these two institutions. Participants were informed about the need for conducting this research and were made known that, it was a requirement for a graduate degree being pursued at Kwame Nkrumah University of Science and Technology, Ghana.

The participants were health workers and patients read, understood and signed an informed consent to be part of the study. The consent form contained detailed information of the study such as; brief background information of the study, the amount of time needed to complete the questionnaires and participant's right to participate and withdraw from the study without coercion and any consequence. Refusal to participate in the study or early withdrawal from the study was not in any way going to affect the study. Participants were finally made aware of no or minimal risks or benefits associated with the study and were assured of protection of their privacy and confidentiality of their data.

CHAPTER FOUR

ANALYSIS AND INTERPRETATION OF RESULTS

4.0 Introduction

The findings of the study are presented in this chapter. The presentation of the findings is in tables and are preceded by a narration. It is organized by health workers demographic characteristics, identified internal communication structures, examination of communication mediums, identified challenges with

communication system by the three independent groups studied (Health workers, patients and directorate managers). The analysis and interpretation of data are carried out in both qualitative and quantitative phases for the three groups.

4.1 Demographicsof Health Workers

Table 4.1 below shows details of background characteristic of respondents. An estimation of 384 health professionals participants were targeted for the study however a total of 303 respondents participated in the study, comprising of both clinical and non-clinical staff. The reason for this drop is to the fact that, those respondents were not around to answer the study questions. Of those that were present, more than half 52.15 (n=158) were nurses/midwives. 24.4% (n=74) of respondents were medical doctors (medical officers, specialist and consultants) while 4.42% (n=14) of respondents were pharmacists. Among nonclinical staff included in the study, 8.91% (n=27) were allied health professionals and 9.9% (n=30) clinical support staffs.

Table 4.1: Category of staff involved in the study

Category of staff	**Freq. (303)**	**Percentage (%)**
Allied health staff	27	8.9
Medical Doctors	74	24.4
Nurse & Midwife	158	52.1
Pharmacist	14	4.6

Clinical support staff	30	9.9

4.2. Patient and health providers perspective on the patient-hospital communication system

Seven major themes emerged during the qualitative data analysis: understanding of hospital communication, knowledge about internal hospital communication structures,current communication mediums in use, communication challenges and means of addressing them and management view on current ICT in the hospital and how they envisage an ideal hospital communication.

4.2.1 Participants understanding of hospital communication structures

Health workers had a general understanding of what hospital communication meant. Most staff gave an account of hospital communication as being either staff to staff or staff to patients' interaction. Some basic understandings of hospital communication were given by some staff as follows;

…My understanding on hospital communication is how we share information between our superiors or the high authorities and also sharing information among ourselves.--**Out-patient department Nurse**

… I also understand it to be how we interact with each other, our patients and even people outside the hospital--**General Surgeon**

...My understanding of communication in the hospital is sharing of information among ourselves, between administration and staff- **Clinical Support staff**

Others expressed their understanding of communication as the flow of information from management to staff by saying;

...Duty rosters for preceding months are made before the end of the current month and staff easily adhered to it.-**ASenior Consulting Room Nurse**

...Immediately one starts work in the hospital, he is given a job description document to provide him or her with information on the work--**ConsultantSsurgeon;Ear Nose and Throat**

4.2.2 Knowledge about hospital internal communication structures

The concept of hospital internal communication was something most health workers had little or no knowledge about. Few respondents explained hospital internal communication structure as;

…Getting informed aboutservice conditions. We get informed about service conditions and this is usually done through memos.--**Resident Medical Officer**

…One can be called on the phone and informed on a situation at a particular point and asked if he or she can come for a duty. --**Emergency Staff Midwife**

4.2.3 Communication media currently in use in the hospital

After the assessment of the current communication media used in the hospital, it was evident that social media was the commonly used and most preferred medium for communication by staff in the hospital. Some of the responses obtained are as follows;

... There is a WhatsApp platform with which information is shared among ourselves. --**Amidwiferyofficer at labor ward**

.... Yes, WhatsApp is highly used."Pharmacist"

...There is a common Whatsapp platform where issues are discussed.--**Physician specialist**

Next to social media is verbal which happens to be the most commonly used medium of communication by staff in their day to day activities.

....verbal medium isbasically used between me and other clinical staff.--**PrincipalNursing Officer** *...we do communicate to patients and colleagues verbally.*--**Emergency Nursing Officer**

Other communication media used at the hospital were memos, letters, notice boards and circulars. Some staff expressed it as follows;

... Memos or notice boards are used at times. --**Clinic support staff**

...letters are sometimes sent to the various units/departments."Microbiologist"

…notice boards are also in use but as to whether people check on them is another question. **--Senior staff Midwife at delivery ward**

4.2.4 Internal hospital communication challenges outlined by patients and health staff

Staff expressed frustrations concerning the challenges encountered in internal hospital communications. In most cases, participants/staff were dissatisfied with the inadequate or delay in the flow of information from superiors. Participants registered their grievances as follows;

…taking the challenges faced from the managerial level, feedback from heads of units to the subordinates after managerial meetings is usually delayed.**--Senior PaediatricNurse officer**

…one is sometimes fed with information from other staff who had the chance to attend such meetings. You can bear with me that such information flow is always not the best, as some colleague staff may not provide the whole story of the meetings or conferences.—**A general out-patient nurse**

…well, sometimes it is difficult to figure out what superiors really want from their instructions given.Superiors may give strict instructions and one cannot really lobby his/her way out. **--An outpatient department Nurse**

4.2.5 Heath worker-patient communication

Participants/Staff gave an account of communication between themselves and their patients. In many instances, verbal communication was used to carry information across.

…for the patients, communication is always verbal. **--a senior Biochemist**

Other means of communication indicated by participants were health education and daily Out-patient department (OPD) talk. Participants explained as follows;

…before start of duty early in the morning, we talk to the patients and assure them we are there for them. **--A general Nurse Officer**

…in the course of providing any services, we explain or communicate to patients before any procedure is carried out. **--Nurse Officer at the out-patient department**

4.2.6.Ways of addressing communication challenges

In as much as participants expressed satisfaction with various communication media used, participants suggested some ways of resolving the challenges pointed out as follows;

…well, I think that meetings should be used as means of communication more often as we use the WhatsApp.--**senior specialist in gynecology**

…. I suggest that strong WiFi should be provided at the hospital so that information can easily be shared even if there is short of credit on the phone.--**Physician specialist**

Other participants suggested that the flow of information from meetings should be effective and WhatsApp messaging should also be encouraged.

...I think that meetings should be used more often for sharing information just as the WhatsApp is being used. --**registered general Nurse Officer**

4.2.7.Managerial perspective on current Information Communication Technology (ICT) use in the hospital.

Management generally expressed optimism and preparedness to welcome the outcomes of the study and its interventions or recommendations. In more particular with the introduction of a web-based ICT platform to facilitate internal and external hospital communication, most senior staff of the hospital and at management level were keen to see a system that will move them from the manual to an ICT driven platform. Some of the optimistic opinions showcased in their responses went like;

…it will be nice. It will facilitate communicating with staff and the public. --**Deputy Director of nursing services**

...with experience from Canada, I have realized most hospitals use such systems in the country and it helps in easy sharing of information internally and externally. --**Senior management member**

Other respondents expressed their willingness to support such intervention and were eager to see it in operation.

…my team and I are ready to support it. **--Head of Department of surgery**

…that will be better than the letters we have been carrying around. The e-information thing will be better. It will help send information quicker than using hard copies. **--Head of department familymedicine**

…it is the order of the day. **--Nurse Manager at Ear, Nose and Throat department**

…it is high time we updated ourselves….if I am in control of the facility, I will enforce it as a policy when it starts to operate.--**Nurse Manager**

The high optimism expressed did not prevent other management members from responding otherwise. Some respondents from management did find the inadequacy of ICT skill for staff in the hospital as worrying. A senior management member questioned

…going digital is not the issue, but how do people with little knowledge in technology use such a system? "**Head of PharmacyofOnchology**"

…it is a perfect idea but not everybody is computer literate. **--Head of Department**

Few among the management staff of the hospital questioned the need for an ICT driven communication technology at this time. Their concerns were informed by the hospital' inability to address the current and more pressing ICT issues. Questions about sustainability and value for money were cited as reasons for their opposition to any such invention.

A management member intimidated;

…there are better things to use the money for. Let' better the current system and all will be fine. **--Head of a Department**

Another shared the opposing view that;

…You have not solved issues of the old systems and you want to create another one? I don't think it is sustainable.--**Nurse manager at the oral health department**

4.2.8Management's view of an ideal ICT drove hospital communication

The idea of ICT driven hospital communication was visualized by management members as an innovative approach to bridge the current communication gap in and outside the hospital. Most management members envisaged that development of the mobile app would facilitate easy flow of information across all sectors of service delivery. Some of the visions by management members were expressed as;

…I want a system that with a click of something will get me information on staff and the hospital departments so easily. --**Nurse Manager**

…I want to one day see electronic billboards in the main gates of the hospital been used to communicate to the public.--**Nurse Manager**

In anticipation of the ICT-innovated hospital communication system, management members expressed their opinion on how the software should be designed. The management expressed their opinions as;

…it shouldlink every department and units together. One should be able to book appointment easily, retrieve patient information easily and on a timely fashion and lastly, I want to have a system that can record notes in a digital way.--**Head of Department**

… I want a system that with a click of a button gets information on staff and the hospital departments so easily.

On the other hand, some management members were of opposing views despite the prospect of ICT in improving hospital communication. The system is currently not ready to accommodate such an innovation; hence, we should go the traditional way.

A management member commented;

...I pray that one day this hospital will go the digital way but as it stands now our maintenance culture is bad. So am afraid of it now. So, let go the traditional ways of communicating.**—a Head of Department**

4.3 Identified Communication Structures

4.3.1 Identified Internal Communication Structures by Patients

Table 4.2 depicts the patient identification and assessment of the internal communication structures of KATH. 46.2 % of study patients were aware of whiles 53.8% were not. Among those that were aware, 69.9% indicated they were not aware of the communication structures before coming to the hospital whiles 30.0% indicated they were already aware.

Again 72.6% pointed out that they only had a direct communication with staffs when they were at the hospital whiles 27.4% indicated that they did not have such direct communication. Also, 37.9% indicated that they contacted the hospital before coming but 62.0% specified that they did not contact the hospital before coming. 30.0% respondents did indicate they had a direct communication with the hospital after treatment.

Among respondents who contacted the hospital before coming, 13.0% contacted for an appointment, 16.2% as referrals.

When types or forms of communications or interaction were assessed, 28.4% respondents said they engage in formal or official communication, 41.9%were casual or informal communications and 29.7% used both forms communications. Again 17.8% respondents were very satisfied, 52.8% satisfied and 89 29.4% very dissatisfied about the various forms or types of communications used in the hospital. Among respondents who were not satisfied, 5 suggested there should be training on forms of communication for health workers, 7 suggested customer care training, 2 suggested implementation of an enquiry system, 3 suggested the need to improve referrals system in the hospital and 4 said the hospital needs to develop new communication channels in the hospital. However, 93.0% respondents gave no suggestions even though they were not satisfied.

Table 4.2: Identified Internal Communication Structures by Patients

Variable	Freq. (303)	Percent
Awareness of communication structures		
- NO	163	53.8
- YES	140	46.2
Awareness of communicationformsusedbefore coming		
- NO	212	69.9
- YES	91	30.0
Direct communication in hospital		
- NO	83	27.4
- YES	220	72.6
Direct communication after treatment		
- NO	212	69.9
- YES	91	30.0
Contacted hospital before coming		
- NO	188	62.0
- YES	115	37.9
Direct contact for Appointment		
- NO	263	86.8
- YES	40	13.2
Direct contact as a referral		
- NO	254	83.8
- YES	49	16.2

Forms/types of communication used -		
official/formal	86	28.4
- casual/informal	127	41.9
- Both	90	29.7
Satisfaction with forms of communication used -		
very satisfied	54	17.8
- satisfied	160	52.8
- very dissatisfied	89	29.4
Suggestions for improvement of forms of communication used -		
training on forms of communication	5	1.65
- customer care training	7	2.31
- implement an enquiry system	2	0.66
- improve referrals system	3	0.99
- develop new communication channels	4	1.32
- no suggestion	282	93.1

Source: Field Data 2018

4.3.2 Identified internal Communication structures by health workers

Table 4.3 and 4.4 below depicts; the awareness of the staffs on the communication structure, forms or types of communication and the satisfaction level of staff who participated in the study. On the awareness of the communication structures or procedures, 74.9% of respondents were aware of the available communication structures whiles 25.1 % were not aware of it.With respect to communication forms or types used by participants to communicate with management, colleague staffs and patients, more than fifty percent (62.1%) of the respondents indicated they communicate formally or officially with management, whiles a few (5.6%) communicates casually/informally with management.

For communicating with colleague staffs, a high proportion (54.5%) used both forms of communication (formal and informal) whiles a smallproportion (8.6%) communicate with colleagues staffs officially. For staff to patient communication, less than fifty percent (47.9%) of the participants indicated they use the informal form of communication.

For management communication to staff on current issues of the hospital, duty schedules and patients related issues, 14.5% of the participants responded that, management never communicates to them on current issues of the hospital, 75.6% says management sometimes communicate to them and 30 (9.90%) says management always communicate to them. On duty schedule, 56.8% again said management sometimes communicate to them about duty schedules whiles 38 said management never communicate to them on that. Again 59.1% indicated that management sometimes communicates to them on patientrelated issues whiles 16.2% said management never communicate to them on patient-relatedissues. For satisfaction rate of participants on the forms of communication used in the hospital communication system, 29.4% were neutral and 1.9% were very satisfied with the various forms of communication with management. On staff-to-staff communication, 1.9% participants said they were very dissatisfied whiles

54.1% were satisfied. 46.9%said they were satisfied with staff-to-patient communication with 3.6% been very dissatisfied. 2.6%respondents were very dissatisfied with the mediums used for all kinds of communication whiles 38.9% remained neutral.

3: Identified Internal Communication Structures by Health workers

Variables	**Frequency (n=303)**	**Percentages (100%)**
Communication-forms awareness		
- Yes	227	74.9
- No	76	25.1
Staff-to-management communication-forms		
- Official/formal	188	62.1
- Casual/informal	17	5.6
- Both	98	32.3
Staff-to-staff communication-forms		
- Official/formal	26	8.6
- Casual/informal	112	36.9
- Both	165	54.5
Staff-to-patients communication-forms		
- Official/formal	58	19.1
- Casual/informal	145	47.9
- Both	100	33.0
Management communication on Current Issues		
- Always	30	9.9

Table 4.

- Sometimes	229	75.6
- Never	44	14.5
Management communication on Duty Schedules		
- Always	93	69.3
- Sometimes	172	56.8
- Never	38	12.5
management communication on Patient related issues		
- Always	75	24.8
- Sometimes	179	59.1
- Never	49	16.2
Satisfaction on staff-to-management communication forms		
- Neutral	89	29.4
- Very Dissatisfied	28	9.2
Dissatisfied	82	27.1
- Very Satisfied	6	1.9
- Satisfied	98	32.3

Source: Field Data 2018

4:Identified Internal Communication Structures by Health Workers (Continue)

Variables	**Frequency (n=303)**	**Percentages (%)**

Satisfaction on staff-to-staff communication forms		
- Neutral	72	23.7
- Very Dissatisfied	6	1.9
- Dissatisfied	27	8.9
- Very Satisfied	34	11.2
- Satisfied	164	54.1
Satisfaction on staff-to-patient communication forms		
- Neutral	89	29.4
- Very Dissatisfied	11	3.6
- Dissatisfied	42	13.9
- Very Satisfied	19	6.3
- Satisfied	142	46.8
Satisfaction with mediums used		
- Neutral	118	38.9
- Very Dissatisfied	8	2.6
- Dissatisfied	72	8.9
- Very Satisfied	8	2.6
- Satisfied	97	32.0

Source:Field Data, 2018

4.3.3 Identified Internal Communication Structures by Management

The Table below (Table 4.5) presents management agreement and disagreement to the available communication structures, the communication structures allowing for; formal communication between staff-management, informal communication between staff-staff, and informal communication between staffs-patients.

In attesting to the availability of communication structures, 47.7% of respondents agreed whiles 11.4% strongly disagreed with the availability of a communication structure. With the availability of communication structures allowing for formal communication between staff and management, 36.4%

Table 4.

agreed that it allows for formal communication between staff and management but few respondents (18.2%) strongly disagreed with that. Again, for structures allowing for informal communication among staff, about half of the respondents (54.6%)agreed to that whiles 6.8% stronglydisagreedwith it. A similar number of respondents, (52.3%) also agreed that the structure allows for informal communication between staff and patients whiles 4.6% disagreed.

Again in the table, 40.9% of the participansts agreed that directorate managers notify staff of changes but few (6.8%) strongly disagreedwithit.For the current communication system allowing for timely notification of the challenges to staffs, half of the management (50.0%) who participated in the study agreed to it whiles 40.9 % disagreed.

The same table also showsmanagement' view on the availability of a backup plan to notify staff in case the current ones break down, 47.7 % agreed that there is a backup plan whiles 43.2% disagreed. Reversibly 47.7% respondents disagreed that there is a back plan for public or patients interactions whiles 43.2% of them agreed.

5: Directorate management`s view on communication structures

Availability of internal communication structure	**Freq.**	**Percentages**
- Strongly agree	11	25.0
- Strongly disagree	5	11.3
- agree	21	47.7
- disagree	7	15.9
Communication structure allows formal communication between staff and management		
- Strongly agree	7	15.9
- Strongly disagree	8	18.1
- agree	16	36.3
- disagree	13	29.5
Communication structure allows informal communication between staff and staff		
- Strongly agree	4	9.1
- Strongly disagree	3	6.8
- agree	24	54.5
- disagree	13	29.5

Communication Structure allows informal communicationbetween staff and patients		
- Strongly agree	4	9.1
- Strongly disagree	2	4.6
- agree	23	52.3
- disagree	15	34.1
Directorate managers notify all staff of policy changes -		
Strongly_agree	6	13.6
- Strongly_disagree	3	6.8
- agree	18	40.9
- disagree	17	38.6
Communication structure allowstimely notification of changes -		
Strongly agree	2	4.6
- Strongly disagree	2	4.6
- agree	22	50.0
- disagree	18	40.9
A backup plan for staff notification -		
Strongly agree	1	2.3
- Strongly disagree	3	6.8
- agree	21	47.7
- disagree	19	43.1
A backup plan for patients/public interactions -		
Strongly agree	3	6.8
- Strongly disagree	3	6.8
- agree	17	38.6
- disagree	21	47.7

Source: Study data 2018

4.4 To examine communication mediums in use at KATH

4.4.1 Communication Mediums Examined by Patients

Table 4.6 below present results of some mediums patients identified for communication within the hospital. The table also presents the effectiveness of such mediums used internally in the hospital and its effectiveness before coming to the hospital. For the mediums identified for communicating in the hospital in table 13, 8 (2.64%) respondents identified emails, 248 (81.8%) chose Face-to-face, 43 (14.2%) identified meetings, 32 (10.6%) identified social media, 13 (4.3%) selected Newsletters/Letters and Telephone usage recorded 35 (11.5%).

Table 4.

The table also reveals that a similar number of patients 2.6% indicated that they used Emails to contact the hospital, 28.1% used face-to-face, 4.3% engaged in meetings, 5.3%used social media, 5.6% indicated they used Newsletters/Letters, 26.4% chose telephone as mediums patients used to contact the hospital or staff before coming.

6:Communication Mediums Examined by Patients

VARIABLE	No (n=303)	Yes (n=303)
Mediums used for communication when in hospital.		
- Email	295 (97.4)	8 (2.6)
- Face-to-Face	55 (18.1)	248 (81.9)
- Meetings	260 (85.8)	43 (14.2)
- Social media	271 (89.4)	32 (10.6)
- Newsletters/Letters	290 (95.7)	13 (4.3)
- Telephone	268 (88.5)	35 (11.6)
Mediums used to contact the hospital before coming		
- Email	295 (97.4)	8 (2.6)
- Face-to-Face	218 (72.0)	85 (28.1)
- meetings	290 (95.7)	13 (4.3)
- Social media	287 (94.7)	16 (5.3)
- Newsletters/Letters	286 (94.4)	17 (5.6)
- Telephone	223 (73.6)	80 (26.4)
- No medium used	171 (56.8)	131 (43.2)

Source: Field Data, 2018 Effectiveness of mediums used for communicating

For the effectiveness of the mediums used to contact the hospital or its staff before coming, table 4.7 below indicates that a high number of respondents 29.4% saw the mediums to be effective whiles a few 6.6%, indicated that the mediums werenot at all effective. 5.9% and 14.9% of them also indicated that

the mediums were a little and a very effective respectively. For those mediums used when in the hospital, 46.5% of the participants indicated that the mediums were effective whiles 10.2% indicated they were not at all effective. A few number of them (34, 79) also said those mediums are very and a little effective respectively.

Table 4.

7:Effectiveness of mediums used for communicating before coming to the hospital and within the hospital

Variable	Freq. (n=303)	Percentages (100%)
The effectiveness of communicationmediumusedbefore to coming to the hospital		
- very effective	18	5.9
- effective	89	29.4
- a little effective	45	14.9
- not at all effective	20	6.6
The effectiveness of mediums used for communications in the hospital.		
- very effective	34	11.2
- effective	141	46.5
- a little effective	79	26.1
- not at all effective	31	10.2

Source: Field Data, 2018

4.4.2 Communication Mediums ExaminedbyHealth Worker

Table 4.8 shows the mediums for staff-to-management communications, staff-to-staff communications and staffs-to-patient communications. Among the various mediums, more than half (56.4%) of the staff used memos while 5.9% used emails to interact with management. For staff-to-staff communications, about ninety percent (89.8%) of participants said 'face-to-face'was sued to communicate with each other. Only a few (11.6%) used Emails. When mediums for staff to patient communication were assessed, a majority of them (97.4%) indicated they used 'face-to-face' channel for communicating with patients.

8:Communication Mediums Examined by Health Workers

	YES ***n=303 (%)***	**NO** ***n=303 (%)***
VARIABLES		
Staff-to-management		
Email	18 (5.9)	285 (94.1)
Face-to-Face	152 (50.2)	151 (49.8)

Meetings	195 (64.4)	108 (35.6)
Social-Media	49 (16.2)	254 (83.8)
Letter	156 (51.5)	147 (48.5)
Telephone	128 (42.2)	175 (57.8)
Memo	171 (56.4)	132 (43.6)
Staff-to-staff		
Email	35 (11.6)	268 (88.5)
Face-to-Face	272 (89.8)	31 (10.2)
Meetings	197 (65.0)	106 (34.9)
Social-Media	166 (54.8)	137 (45.2)
Newsletter/letter	87 (28.7)	216 (71.3)
Telephone	200 (66.0)	103 (33.9)
Memo	118 (38.9)	185 (61.1)
Staff-to-patient		
Email	8 (2.4)	295 (97.4)
Face-to-Face	295 (97.4)	8 (2.6)
Meetings	62 (20.5)	241 (79.5)
Social-Media	60 (19.8)	243 (80.2)
Newsletter/letter	43 (14.2)	260 (85.8)
Telephone	129 (42.6)	174 (57.4)
Memo	20 (6.6)	283 (93.4)

Source: Field Data 2018

Health workers Ratings on the performance of communication Mediums

Table 4.9 and 4.10 below shows a detailed description of the rating of the performance of the various mediums used for communication. Face-to-face communication was rated excellent by, 35.3% of the participants, samenumber of respondents (35.3%) rated it as good. Few of them of respondents (0.9%)had a poor rating for face-to-face communication. Meeting, social media and telephone were

Table 4.

rated as good by 41.9%, 33.3% and 36.3% respondents respectively. Memos performance was evenly distributed 30.0% respondents rated it as good, 14.5% as excellent while 8.6% respondents rated it as poor.

9:HealthWorkers Ratings on the Performance of Communication Mediums

VARIABLES	FREQ (n=303)	PERCENTAGE (%)
Email		
- Excellent	12	(3.9)
- Very good	23	(7.6)
- Average	21	(6.9)
- Good	86	(28.4)
- Poor	161	(53.1)
Face-to-Face - Excellent	107	(35.3)
- Very good	75	(24.8)
- Average	59	(19.5)
- Good	107	(35.3)
- Poor	3	(0.9)
Meetings - Excellent	18	(5.9)
- Very good	60	(19.8)
- Average	89	(29.4)
- Good	127	(41.9)
- Poor	9	(2.9)
Social-Media - Excellent	10	(3.3)
- Very good	51	(16.8)
- Average	71	(23.4)
- Good	101	(33.3)

Table 4.

- Poor	70	(23.1)

Source: Field Data 2018

Table 4.10:HealthWorkers Ratings on the Performance of Communication Mediums (Continue)

VARIABLES	FREQ (n=303)	PERCENTAGE (%)
Newsletters/Letters		
- Excellent	18	(5.9)
- Very good	51	(16.8)
- Average	74	(24.4)
- Good	110	(36.3)
- Poor	50	(16.5)
Telephone - Excellent	22	(7.3)
- Very good	65	(21.5)
- Average	86	(28.4)
- Good	102	(33.7)
- Poor	28	(9.2)
Memos		
- Excellent	44	(14.5)
- Very good	52	(17.2)
- Average	91	(30.0)
- Good	90	(29.7)
- Poor	26	(8.6)

Source: Field Data 2018

4.4.3 Communication Mediums Examined by Management

The table 4.11 and 4.12 below shows a detailed description of management`s views on the mediums or channels used for communication. 50% of the management agreed to the current mediums notifying staffs of changes in the hospital, with few (31.8%) disagreeing.For the mediums notifying the public and patients on the available services, 47.7 % of management agreed to that, whiles 38.6% disagreed.45.5% also agreed that messages are relevant through the mediums whiles 38.6% disagreed to that. Again for messages been consistent through the mediums, more than half of the management (63.6%) agreed to that, with only 38.8%disagreeing.In terms of mediums carrying credible messages,

almost half of the management (47.7%) agreed to it whiles 38.6% disagreed. The table also shows that 47.7 %of the management who participated in the study disagreedthat,feedbackis gathered through survey whiles 36.4 % agreed that it is done through surveys. Again 52.3 % of them also disagreed that feedbacks are gathered through Anonymous response cards but 34.1% agreed to that fact. On feedback been gathered through direct contact with supervisors, more than half (63.6%) of the management agreedonthat, whiles 18.2% disagreed. 40.9% also disagreed that feedbacks are gathered through suggestion boxes,while 38.64% agreed to such means of gathering feedback.Furthermore, whiles 45.5% agreed that the hospital analyses feedbacks, about 6.8% of the participants strongly disagreedwiththat.In terms of the effectiveness of the feedback, 56.9% of the participants disagreed that feedbacks are effective, while 34.1% agreed that they were effective.

Variable	Freq. (n=44)	Percentages
Mediums notify staffs of changes		
- Strongly agree	8	18.2
- agree	22	50.0
- disagree	14	31.8
Mediums notifypatients/public about available services		
- Strongly agree	3	6.8
- Strongly disagree	3	6.8
- agree	21	47.7
- disagree	17	38.6
Messages are relevant through the mediums		
- Strongly agree	5	11.4
- Strongly disagree	2	4.6
- agree	20	45.5
- disagree	17	38.6
Messages are consistent through the mediums		
- Strongly agree	3	6.8
- Strongly disagree	1	2.3
- agree	28	63.6
- disagree	14	38.8
Messages are credible using the mediums		
- Strongly agree	3	6.8
- Strongly disagree	3	6.8
- agree	21	47.7
- disagree	17	38.6
Feedback gardered/survey		
- Stronglyagree	1	2.3
- Stronglydisagree	6	13.6
- agree	16	36.4
- disagree	21	47.7
Feedback gardered/Anonymous response cards		
- Strongly agree	2	4.6
- Strongly disagree	4	9.1
- agree	15	34.1
- disagree	21	52.3
Feedback gathered/ direct contact with supervisors		
- Strongly agree	7	15.9
- Strongly disagree	1	2.3
- agree	28	63.6
- disagree	8	18.2

Table 4.11: Communication Mediums Examined by Management

Table 4.12:Communication Mediums Examined by Management (Continue)

Variable	Freq.	Percentages
Feedback gathered/suggestion box		
- Strongly agree	3	6.8
- Strongly disagree	6	13.6
- agree	17	38.6
- disagree	16	40.9
hospital analyzes all employee feedback		
- Strongly agree	4	9.1
- Strongly disagree	3	6.8
- agree	20	45.5
- disagree	15	38.1
feedback is effective		
- Strongly agree	3	6.8
- Strongly disagree	1	2.3
- agree	15	34.1
- disagree	25	56.9

Source: Field Data, 2018

4.4.4 Management Ratings on the performance of communication Mediums

Table 4.13 and 4.14 below shows participants' assessment of the effectiveness and efficiency of various communication mediums used in the hospital. From the table, more than half (54. 5%) of participants said Emails are sometimes effective for communication whiles 31.8% said it is not effective at all.

For Face-to-Face, 45.5% of them said it is effective all the times but a few of them (11.4%) said, it is not at all effective. For meetings used as a channel, more than half (68.2%) of the participants saidthat, it is sometimes effective whiles a very few of them (4.6%) said that it is not at all effective. Again 61.4 % of participants also endorsed that social media is sometimes effective whiles 18.2 % said it is not at

all effective. For Newsletters, 45.5% of them said it is effective, whiles a few of them said it is all the time effective. 61.4% also said telephone usage is effective but 13.6% said it is not at all effective.For efficiency of the mediums, 56.8% of the participants said Emails are sometimes efficient for communication whiles 11.4% said it is not efficient at all.For Face-to-Face, 45.5% of respondents said it is sometimes effective but a few of them (20.5%) said, it is not at all efficient.

In terms of the efficiency of meetings as a channel, more than half (59.1 %) of the participants said that it is sometimes efficient, whiles a small number of them (18.2%) said it is not at all efficient. Again 56.8% of participants also endorsed that social media is sometimes efficient, whiles 15.9 % said it is not at all efficient. For Newsletters, 52.3 % of them said it is efficient, whiles a few of them (4.8%) said it is not at all efficient. 65.9 % also said telephone usage is efficient sometimes, but 11.2 % said it is not at all efficient. The efficiency of Memos was also assessed with 61.36% of the participants saying that it is efficient, whiles 6.8% saidit is not at all efficient. 38.6% of the participants rated the general performance of mediums used in hospital as good whiles a few of them (9.1%) rated the mediums as poor.

VARIABLE	Freq. (n=44)	Percent
Effectiveness of Email as a channel		
- All thetime	6	13.6
- Not atall	14	31.8
- sometimes	24	54.5
Effectiveness of Face-to-Face as a channel		
- All thetime	20	45.4
- Notatall	5	11.4
- sometimes	19	43.2
Effectiveness of Meeting as a channel		
- All thetime	12	27.3
- Notatall	2	4.55
- sometimes	30	68.2

Table 4.13: Management rating of various communication mediums in the hospital

Effectiveness of Social Media as a channel		
- Allthetime	9	20.5
- Not atall	8	18.2
- sometimes	27	61.4
Effectiveness of Newsletters as a channel		
- All thetime	10	22.7
- Not atall	16	45.4
- sometimes	18	40.9
Effectiveness ofTelephone as a channel		
- All thetime	11	25.0
- Not atall	6	13.6
- sometimes	27	61.4
Emails are Efficient		
- All thetime	5	11.4
- Not atall	14	31.8
- sometimes	25	56.8
Face to Face is Efficient		
- All thetime	15	34.1
- Not atall	9	20.4
- sometimes	20	45.4
Meetings are Efficient		
- All thetime	10	22.7
- Not at all	8	18.1
- sometimes	26	59.1
Social media is Efficient		
- All thetime	12	27.3
- Not atall	7	15.9
- sometimes	25	56.8

Source: Field Data 2018

Table 4.14:Management rating of various communication mediums in the hospital (continue)

VARIABLE	Freq. (n=44)	Percent
New letters are Efficient		
- All thetime	8	18.2
- Not atall	13	4.8
- sometimes	23	52.3

Telephone use is Efficient		
- All thetime	10	22.7
- Not atall	5	11.2
- sometimes	29	65.9
Memo is Efficient - All thetime	14	31.8
- Not atall	3	6.8
- sometimes	27	61.4
General performance of mediums		
- excellent	5	11.4
- good	17	38.6
- poor	7	15.9
- very Good	11	25.0
- very Poor	4	9.1

Source: Field Data 2018

4.5 Identified challenges with the current Patient-Hospital communication System

4.5.1 Patients on challenges of the current communication system

Table 4.15 shows a detailed description of challenges identified by patients with the current communication system. 32.7% respondents accepted that there are challenges, whiles majority of (67.3%, n=204) indicated there are no challenges. 36.6% of respondents indicated challenges with communicating before coming to the hospital, whiles more than half (63.4%) of the participants said there are no challenges with communications before coming.In locating service point within the hospital, the majority (62.7%) of respondents identified no challenges, whiles 37.3% indicated that it is a challenge.

Furthermore, the majority of the participants (75.6%) expressed theneedfor digital communication system, whiles a few (24.4%) indicated they do not need such a medium for communicating. Again

37.3% of respondents said they have ever used a digital communication system before, while the majority of respondents (62.7%) said they do not use such system.Also,(54.5%) respondents admitted an anticipated challenge with a digital communication usage in the hospital, whiles (45.5%) said they do not anticipate any challenges.

56.4% of the patients said they are going to pay for the digital communication system if implemented, whiles 43.6% of them said they would not pay for it.For the preferred payment method, the majority (34.7%) of respondents indicated health insurance should bear the cost, 25.7% said they will pay in physical cash (Pay as you use), 16.5% said through co-payment whiles 14.5% and 8.6% said payment should be monthly and yearly subscriptions respectively.

Table 4.15: patients' views on the challenges of the current communication system

VARIABLE	**Freq. (n=303)**	**Percentages**
Challenges with the current communication system in the hospital		
- no	204	67.3
- yes	99	32.7

Challenges with communicating before coming to the hospital		
- no	192	63.4
- yes	111	36.6
Challenges in locating service point in the hospital		
- no	190	62.7
- yes	113	37.3
Nature Of Challenge		
Need digital communication system - no	74	24.4
- yes	229	75.6
Ever use digital communication system		
- no	190	62.7
- yes	113	37.3
Anticipate challenges with the digital communication system - no	138	45.5
- yes	165	54.5
Willing to pay for a digital communication system		
- no	132	43.6
- yes	171	56.4
Preferred payment method By		
insurance	105	34.6
Co-payment	50	16.5
Monthly subscription	44	14.5
Pay as you use	78	25.7
Yearly subscription	26	8.6

Source: Field Data 2018

4.5.2 Communication Challenges by health workers

Table 4.16 shows a detailed description of communication challenges. Almost all the participant (83.5%) indicated there are challenges with the current communication system. In giving out some of the challenges, less than fifty percent (40.0%) said poor communication is an issue, whiles others

indicated poor mediums, poor feedback and poor communication network as some of the challenges. Majority of the respondents (93.1%) did indicate the need for a digital Mobile App as a medium of communication. Almost all (265, 284, 217) of respondents were in support of the Mobile App as a means of improving communication among management and staffs, staff to staff and staff to patients respectively.

The table also shows that almost all the participant (93.1%) said they need a digital App as a medium for communication. The majority (265, 284, 217) also indicated the digital App will improve communication between management and staffs, staff to staff and staff to patients respectively.

Table 4.15: Challengers with current communication system

VARIABLES	**YES** *n=303 (%)*	**NO** *n=303 (%)*
Communication challenges	(83.5)	(16.5)
	Freq. (n=253)	**Percentages**
Challenges Examples		
- Poor communication	121	40.0
- Poor mediums	54	18.0
- Poor feedback	23	7.6
- Poorcommunication networks	55	18.2
-		
Recommended mediums	**(n=303)**	
- Need A Digital App	(93.1)	(6.9)
Aware of A Digital App	(56.1)	(43.9)
DigitalAppwillimprovecommunication		
- Betweenstaffandmanagement	(87.6)	(12.5)
- Betweencolleagues staff	(93.7)	(6.3)
- Between staff and patients	(71.6)	(28.4)

Source: Field Data 2018

4.5.3 Identified challenges by Directorates Management of the current communication system

Tables 4.16 indicates barriers or the challenges of the communication system, an equal number of participants (43.2

% and 43.2%) agreed and disagreed respectively that, there are communication barriers. In employee feedback analysis to solve communication barriers, more than half (54.6%)of the participants agreed that, is the way to solve the barriers whiles about 30.0% of them disagreed to it as a solution.56.8% of also agreed that they are concerned about improving the communication system with the employee, whiles 2.3% strongly disagreed.The table also indicates that 56.8% of the participant agreed that poor communication is a source of stress in the hospital whiles a few of them (11.4%) strongly disagreed with that.

Table 4.16: Management views on barriers/challenges of the communication system

VARIABLE	Freq(n=44)	Percentages
presence of communication barriers		
- Strongly agree	4	9.1
- Strongly disagree	2	4.6
- Agree	19	43.2
- Disagree	19	43.2
Employee feedback Analysis/communication barriers		
- Strongly agree	6	13.6
- Strongly disagree	1	2.3
- Agree	24	54.6
- Disagree	13	29.6
Concerns about improving communication with employees		
- Strongly_agree	5	11.4
- Strongly_disagree	1	2.3
- agree	25	56.8
- disagree	13	29.6
Poor internal communication is a source of stress		
- Strongly_agree	2	4.6
- Strongly_disagree	5	11.4

- Agree	22	50.0
- Disagree	15	34.1

Source: Field Data 2018

CHAPTER FIVE

DISCUSSION

5.1 Patient and health providers perspective on the patient-hospital communication system

The study has revealed important provider perspective about hospital communication that is worth noting, considering the need to improve on patient-hospital communication system in developing countries. Especially when Information Technology is currently advanced in developed countries to improve on patient care.

Knowledge on hospital communication system was generally high among respondents signaling a basic knowledge of hospital communication among the staff. The concept that the hospital communication system encompasses information sharing, interaction with patients, staff and managers of the hospital and information flow from managers and staff of the hospital demonstrates that the participants understandthe hospital communication system.

The use of social media such as WhatsApp through a common platform was the order of the day with regards to staff interactions.The efficiency of this communication practice was evaluated by Ellanti et al.,(2017) in a six months review of the impact of WhatsApp communication use among non-consultants. In the study by Ellanti et. al., several communication events relating to patient care such as images of radiographs and wounds were shared to obtainexperts' opinions. This resulted in efficiency (easy, inexpensive, and reliable) of communication within the surgical team (Ellanti *et al.*, 2017). This observation also compares to an exploratory study conducted in India. The study found that the use of WhatsApp was a productive communication tool that can be used by clinical teams to disseminate information and prompt action to improve the quality of care (Pahwa, Lunsford and Livesley, 2018).

The observation that the staff duty rosters have over the years been in a paper form reflect the absence of technological innovations in rostering processes in the health system. This approach poses challenges such as logistics constraints which are well researched by Simic et al. (2014).

These challenges have necessitated other health systems around the world to initiate the electronic medium of communication. One of such system is the call light system which was launched as part of a

National Institutes of Health (NIH)-funded study titled "Advancing Patient Call Light Systems to Achieve Better Outcomes". This system aims to primarily act as a means by which patients can communicate with caregivers internally in the hospital and was operationalized in some states in the USA (Montie et al 2017; Galinato et al. 2015).

A qualitative review of the call light systems showed a mixed reaction by the respondents. The call light system assisted patients in several means. As remarked by a respondent, 'At a push of a button somebody responds to you personally to see what your issue, the person can be a nurse'. Others also indicated that the call light system aided in an appointment system as well as making requests for medicines.

Participants also complained of challenges including medico-legal issues particularly privacy concerns (A respondent indicated 'Some things you don't want people to know, especially in the hospital. You don't want people to know your chronic illness or whatever it may be). Other challenges such as communication barrier in some cases and technological issues have also come up. (Montie, 2017). These reviews suggest to a large extent that there is no perfect system even in developed countries. In this present study, we explored staff feelings of the present communication system in the hospital. We noticed frustrations among some staff as they shared their grievances. The current practice of WhatsApp in our the hospital system is very liberal system with no policy or guidelines on the sharing of patient

materials on the platform. This major limitation observed from the study is of critical concern to privacy and confidentiality of the patient.

The disconnection among the staff and management identify by the study brings to light the gap in communication between the hospital management and staff. The current system of communication has been in existence for decades with very not significant technological improvement. The question of efficiency of information management is critical in this situation. The volume of information generated on a daily basis and the share number of health staff operating within the multilevel hospital structural system call for an efficient information flow.

What was more interesting and reassuring was the extent of managerial support and the willingness to welcome such digital information and communication platforms in the other management members. Despite the unflinching support, some management members hinted of some possible difficulties that can derail the project. Key among them were questions about sustainability, ICT readiness and confidentiality of patient information. These are genuine concerns which are consistent in criticisms found in other studies.(Coiera, 2006; Montie et al., 2017). This issues indicated in this baseline study will offer an important clue in the development and implementation of the KATH mobile application which aims at improving internal and external communication.

5.2 The internal pattern of communication used among patients,staffs and directorates managers during communication in KATH

At the staff level, official or formal means was cited by most staff as the common form of communication. But the observation that most patients are unaware of any communication structures in the hospital brings to light the essence of designing a structured communication system in the hospital. A more worrying trend was observed in this study where the majority of the patients are unable or does

not contact the hospital before visiting. KomfoAnokye Teaching Hospital being a tertiary hospital and a referral hospital operate special clinics on designated days. With no system available to patients to contact the hospital prior to visit may cause financial and other resource constraints. This finding reechoes a systematic review by McLean et al., (2016) which found that 23-34% of hospital appointments are missed annually. The McLean et al. study explored the effectiveness of implementing a reminder system for promoting hospital attendance, cancellations, and rescheduling of appointments across all healthcare settings. The main reminder and scheduling technologies explored in the review were telephones (manual and automated), voice messaging and email communication. These technologies proved to be efficient and improves treatment outcomes. (McLean *et al.*, 2016). In a related study conducted in 2010 by Parikh et al., the act of missed appointmentwas referred to as a "no-show" phenomenon which could result in time wasting, reduced efficiency, and greater use of capitals (Parikh *et al.*, 2010). The situation can be worse in KATH where appointment system is run in almost all the clinical directorates with no technological approaches used. Patients have had to report in person, book appointment and return to their respective towns to await a clinic day. This can be improved with the introduction of a system designed to cater for appointments for clinic attendance.

The observation that majority of the patients does not make any contact with the hospital even in a case of referral further worsens the national "no bed" crisis. In a recent report, the biggest hospital in Ghana rejected critical referrals.(Shaban, 2018) The big questions then arise: Was there no means of knowing that there was no bed in the hospital? What will be the state of the health condition of these patients having to be subjected to this gamble? This unpleasant situation can be avoided with a technology that links all facilities with information on their capabilities or resources and a reliable telecommunication access to inquire prior to reaching a point of care. A similar system known as the Asante Health System was developed and used in some communities in Southern Oregon and Northern California. The Asante health system runs a referral network through affiliations with independent physician practices and

community hospitals. This seamless approach has resulted in sharing patient information with affiliates and has resulted in better physician relationships and improved patient outcomes.(Imaging technology news, 2016)

The communication systems vary by geographical settings. In the advanced countries such as the United Kingdom, the health service has set up a communication system referred to as the National Health Service direct. This system provides information to users of healthcare services and also act as a system to triage patients. The system is also designed such that it can interact with the patients using different electronic mediums such as web presence, information kiosk and a call centre. This communication intervention improved health seeking as well as a reduction in hospital attendance and hospitalization since most primary cases were dealt with even thoughthemobile phone.(Jones and Playforth, 2001) As good as this may sound, review of the program unveiled a number of difficulties in its operations. Key among the reported challenges were the complexity of the service and reduced demand on emergency services (Coiera, 2006).

In our study, respondents suggested developing new communication channels, implementing systems for enquiry and improvement in referral systems as ways of improving the communication system in the hospital.

5.3 Medium/channels used by patient-providers for interaction in the communication structures used in KATH

Face to face medium of communication in the hospital is worrying in this 21st century. The challenge with a face to face approach in official correspondence is known for a number of challenges.

The present study further observed a decreased use of electronic communication medium (ranging from 2 to 11 percent) such as emails of staff respondents. This observation is in contrast to a recent study by Niemi et al. (2016) where health workers were observed inmaking use of ICT in communication through

emails, text messages in their routine work. In the study by Niemi et al, the reasons for factors for choosing electronic mediums such as emails ahead of others included the ability to revert to pending tasks ("Writing or receiving e-mail is not tied to the clock. Likewise, you can take care of matters by email when it's convenient for you.") and as a matter of convenience ("You can take care of the matter at a time that suits you, and the patient/client is not tied to the phone at a specific time waiting for the call").

The communication medium mostly used among staff and patients wereverbal via face to face. Although this medium appears to be an ideal and a rational means of communication, it does not adequately address the communication gap in the health system. Over the years, plans are being discussed worldwide in efforts to promote communication among patients with difficulty in speech and hearing (The case of death and dump). (Buck, 2016). Respondents in the Niemi et al. conducted in 2016 indicated that the approach to resulting to electronic medium seeks to enhance communication among persons with this disability ("Patients unable to communicate through speech can keep in touch through e-mail and SMS"). The real burden of using the inefficient medium of communication and its challenges to persons with a disability was not covered under the scope of this study and should be investigated further. This revelation reinforces the need to incorporate the electronic system in the current health workforce in Ghana.

5.4 challenges faced by patients and healthcare providers regarding the mediums for patient-care provider communication at KATH

Patients are obviously disadvantaged with the existing communication medium as it does not offer an opportunity to contact the healthcare facility prior to their visit. Although few patients indicated difficulties in locating service delivery points in the hospital, the reason could be that they might be

subsequent attendees. First-time users are mostly faced with the difficulty of locating a service delivery point.

A study by Mollerup (2009) outlined five common reasons why wayfinding in hospitals are challenging; The first cause was the fact that the hospital is a complex environment. He indicated that rebuilding and adding structures to the hospital makes it more complicated in knowing where a service point is located. Being a first time user of the hospital was identified as the second cause why many patients and visitors encounter challenges in finding their way in hospitals. He added the fact that some delivery points are often relocated due to either space or any other reason post-initial visit also adds to the difficulty. The third cause of challenges in wayfinding in the hospital had to do with the inability to read and understand the names of units or departments. He mentioned reduced capacities (visual impairment, reduced mobility, reduced mental capacities) by patients as the fourth cause of difficulties in finding ways within the hospital. The last cause mentioned was anxiety by either patients or visitors (Mollerup, 2009). The effort to improve the wayshowing in hospitals is observed as beneficial to the stakeholders by reducing mental stress and physical efforts, but also to the overall efficiency of the hospital. Hospitals have tried several approaches to solving wayfinding problems in hospitals. In the study by Mollerup, he indicated that the standard cure for wayfinding problems is more signage adding that the directional signs should be used as medicine to solve wayfinding problems. The use of information technology means in this regard cannot be underestimated. Some institutions in trying to remedy the situation have used digital maps placed at the major entrances of the hospital. Also, a mobile application which serves this purpose will be ideal considering the increasing use of mobile phones. A mobile application tool (e-Visits) has been developed as an innovative tool which is facilitating interaction between patients and physicians at the University of Pittsburgh Medical Center in Pittsburgh, USA. This intervention has improved significantly patient safety, satisfaction and quality of care (Williams, 2012). It is reassuring to note that the majority of the patients interviewed welcomes a digital communication system in KATH. Although

about half anticipate some challenges, it offers the proponents of such apps the opportunity to fix such possibility at the developmental stages. One key observation made was the willingness by over half of the respondents to pay for the digital platform. Although their most preferred method of payment being insurance is not feasible, it gives policy makers a sign that they require more than what is being offered. One critical question to explore in future research is the relevance of health current health insurance if patient communication to health providers remains challenging.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSION

Perspectives on the patient-hospital communication system

- Patients perceived the current patient-hospital communication system not to be user-friendly for communications during referrals from peripheral health facilities, as they are not aware of the structure and mediums of communication used when referred to a hospital. Within the hospital, most patients use verbal means for communicating with staff but are worried about the feedback from staffs during these interactions. The current communication system has few directional signs in locating service centres and due to that, patients prefer a digital communication system for communicating before and after service provision.
- Health workers generally understand patients-hospital communication. It is evident that social media is commonly used for most internal communications and most staff preferredusing it internally. However,most staff use verbal communication as a means for communicating with patients. Most staff are frustrated with the current internal hospital communication system as they expressed dissatisfaction with the inadequate or delayed flow of information from directorates managers. Staff also need a common platform which is ICT integrated where all

hospital management and staff can share ideas and problems, although not all of them are ICT inclined.

- Managers are optimistic and prepared to welcome a web-based ICT platform to facilitate internal and external hospital communication and backing it with a policy. They are against the available channels or mediums used in the system currently as it is not reliable for staff and patients engagements.

Internal communication structure used among patients, staffs and directorates managers during communication

Knowledge on the available communication structure is high. Staff communicates to management in the formal way only, whereas with colleagues, they engage in both formal and informal interactions.

Patients who visit the hospital are not aware of the existing structure of communication in the hospital before coming but are only informed of them when in the hospital.

Examined medium/channels used by patient, providers and managers for interaction within the communication structures

The mediums patients use for enquiries from the hospital are mainly telephones. Within the hospital, they are mainly verbal via face-to-face.

Management use memos more often to communicate with staffs and they communicate with colleagues and patients verbally by face-to-face.

The current mediums of comunication allow management to notify staffs of relevant administrative changes and other information in the hospital. However getting feedback through the same mediums seems poor.

Challenges patients and healthcare providers face with the mediums for communication

Health workers are dissatisfied with the delay of information flow from management where as management are also worried about the delay of feedback from staff due to the poor mediums used. There are no directional signs to direct patients to service centres.

There is the general need to design an alternative system such as the digital communication system that will be open for effective and efficient communication. These results are evident that communication cannot always be effective as long as people insist on using poor mediums for communication in the healthcare sector. Any such attempt of not choosing a reliable medium for communication will inevitably lead to poor communication and default in health service delivery. I believe that this research despite the few criticisms received, makes an important contribution to providing the needed guidelines for improving the health communication system.

6.2 RECOMMENDATIONS

The recommendations of this research are directed at key stakeholders: The Ministry of Health, Ministry of Innovation and Technology, Management of KATH, Information and Technology Department of KATH, the staff and patients accessing services from KATH.

1. **Ministry of Health**

   - The study recommends a policy that seeks to digitize referral systems. A seamless approach where referring facilities can identify bed availability and or service delivery availability at the receiving health facilities. The system can be designed to constantly notify the receiving health facility of the case being referred and the estimated time of arrival.

- In consultation with the Ministry of Technology, the ministry should come out with operational guidelines to implement telemedicine in all the major healthcare facilities in Ghana (particularly from district hospitals through to tertiary hospitals). This will help reduce the number of referrals.

2. Ministry of Technology and Innovations

- The study recommends that the Ministry of Health drive the telemedicine agenda. The Ministry of Health, Ghana Health Service and Millennium Villages Project (MVP) have piloted the telemedicine innovation in some communities in Ghana.
- Should develop a digital application that connects all the hospitals/health facilities in the country with their capacities in human resource, infrastructure and services delivered. This will assist physicians in a facility in referring clients and patients to make a choice of the preferred health facility.

3. Management of KATH

- Should place a digital map at the main entry points of the hospital to assist patients in finding the location of service delivery centers. - Should in consultation with civil society and the IT department of KATH digitize some administrative procedures such as leave applications and duty roster dissemination in the hospital - Ensure a well-functioning quality assurance unit of the hospital. Although the unit is present, the study has revealed that patients go through difficultiesdailyin seeking care at the hospital. Quality assurance should be improved in line with the best practices.

4. Information and Technology department of KATH

- The department should ensure an improved functionality of the hospital website as this can be a good source of information to patients, staff and management of the hospital.
- Develop anefficient intranet in the hospital where staff can communicate effectively among themselves. ○ Ensure timely maintenance of information and communication equipment such as the internal telephones (Intercoms) as this will facilitate communication among staff in different offices/units

5. Staff of KomfoAnokyeTeaching Hospital

- The study recommends ICT training for staff as an important aspect of Continuous Professionals Development (CPD). This should be a necessary requirement by bodies such as the Allied Health Council, Medical and Dental Council, Nurses and Midwives council that regulate professional staff.

6. Recommendation to patients

- The study recommends that patients are encouraged to request a medium (by email, telephone, etc.) to communicate with physicians or nurses.

7. Patients and relatives should request for a medium to communicate with the next level facility during referrals to ascertain date or time the service needed will be provided. This will reduce the "no show" phenomenon as revealed by the study.

8. Recommendation for future research

- The study recommends a future interventional study such as a mobile application with in-built maps, following its findings, to address the navigational challenges in hospitals.

- The study recommends a post-interventional study using this study as baseline/comparator to access the impact of the effected interventions based on the recommendations.

REFERENCES

1. Abdur Rahman Alfa Shaban (2018) *Lack of beds forces Ghana's main hospital to reject critical referrals | Africanews*.
2. Akselsen, B. Y. S. and Lillehaug, S. (2015) 'Teaching and learning aspects of remote medical consultations', (3), pp. 42–47.
3. Bert Markgraf (2018) *Importance of Information Systems in an Organization | Chron.com*, *Human Resource Information Systems*. Available at: http://smallbusiness.chron.com/importance-information-systems-organization-69529.html (Accessed: 16 June 2018).
4. Bertalanffy, L. V. (1972) 'The History and Status of General Systems Theory.', *Academy of Management Journal*, 15(4), pp. 407–426. doi: 10.2307/255139.
5. Branger, P. J. *et al.* (1992) 'Electronic communication between providers of primary and secondary care.', *BMJ : British Medical Journal*, 305(6861), pp. 1068–1070.
6. Buck Claudia (2016) *Deaf people encounter troubles with medical care | The Sacramento Bee*.
7. Chetley, A. *et al.* (2006) 'Improving health, connecting people: the role of ICTs in the health sector of developing countries A framework paper', *Infodev*, (7), pp. 1–65. Available at: http://www.infobridge.org/asp/documents/3254.pdf.
8. Coiera, E. (2006) 'Communication systems in healthcare.', *The Clinical biochemist. Reviews*. The Australian Association of Clinical Biochemists, 27(2), pp. 89–98. Available at: http://www.ncbi.nlm.nih.gov/pubmed/17077879 (Accessed: 3 November 2017).
9. Covell, D. G., Uman, G. C. and Manning, P. R. (1985) 'Information needs in office practice: are they being met?', *Annals of internal medicine*, 103(4), pp. 596–9. Available at: http://www.ncbi.nlm.nih.gov/pubmed/4037559 (Accessed: 4 November 2017).

10. Crossman, Ashley. 'Communication Structure.' ThoughtCo, Mar. 2, 2017, thoughtco. com/communication-structur.-3026149. (no date) *Communication Structure*. Available at: https://www.thoughtco.com/communication-structure-3026149 (Accessed: 12 January 2018).
11. Demiris, G. *et al.* (2008) 'Patient-centered applications: use of information technology to promote disease management and well ness', *Journal of the American Medical Informatics Association : JAMIA*, 15(206), pp. 8–13. doi: 10.1197/jamia.M2492.Introduction.
12. Ellanti, P. *et al.* (2017) 'The Use of WhatsApp Smartphone Messaging Improves Communication Efficiency within an Orthopaedic Surgery Team.', *Cureus*. Cureus Inc., 9(2), p. e1040. doi: 10.7759/cureus.1040.
13. Fleischer, S. *et al.* (2009) 'Nurse-patient interaction and communication: A systematic literature review', *Journal of Public Health*, 17(5), pp. 339–353. doi: 10.1007/s10389-0080238-1.
14. Galinato, J. *et al.* (2015) 'Perspectives of Nurses and Patients on Call Light Technology.', *Computers, informatics, nursing : CIN*. NIH Public Access, 33(8), pp. 359–67. doi: 10.1097/CIN.0000000000000177.
15. Gog (2003) 'the Ghana Ict for Accelerated Development', *Economy and Society*, (June), pp. 1–85.
16. Imaging technology news (2016) *Asante Health System Extends Patient Record to Build Referral Network | Imaging Technology News*.
17. Jones, D. H. *et al.* (1996) 'Teledermatology in the Highlands of Scotland.', *Journal of telemedicine and telecare*, 2 Suppl 1, pp. 7–9. Available at: http://www.ncbi.nlm.nih.gov/pubmed/9375077 (Accessed: 5 February 2018).
18. Jones, J. and Playforth, M. J. (2001) 'The effect of the introduction of NHS Direct on requests for telephone advice from an accident and emergency department.', *Emergency medicine journal : EMJ*, 18(4), pp. 300–1.
19. Kim, M. S. *et al.* (2016) 'Exploring the Usability of Mobile Apps Supporting Radiologists' Training in Diagnostic Decision Making', *Journal of the American College of Radiology*. Elsevier, 13(3), pp. 335–343.

20. Luu, N. P. *et al.* (2016) 'Provider-to-Provider Communication during Transitions of Care from Outpatient to Acute Care: A Systematic Review', *Journal of general internal medicine*, 31(4), pp. 417–425. doi: 10.1007/s11606-015-3547-4.
21. Maslove, D. M. *et al.* (2009) 'Electronic Versus Dictated Hospital Discharge Summaries: a Randomized Controlled Trial', *Journal of General Internal Medicine*. Springer-Verlag, 24(9), pp. 995–1001. doi: 10.1007/s11606-009-1053-2.
22. McLean, S. *et al.* (2016) 'Appointment reminder systems are effective but not optimal: results of a systematic review and evidence synthesis employing realist principles', *Patient Preference and Adherence*, p. 479. doi: 10.2147/PPA.S93046.
23. Mea, V. Della *et al.* (1996) 'Telepathology using Internet multimedia electronic mail: remote consultation on gastrointestinal pathology', *Journal of Telemedicine and Telecare*, 2(1), pp. 28–34. doi: 10.1258/1357633961929132.
24. Meissner, H. *et al.* (2011) 'Best Practices for Mixed Methods Research in the Health Sciences', *Methods*, 29, pp. 1–39. doi: 10.1002/cdq.12009.
25. Mertens, D. M. (2005) 'Research and Evaluation in Education and Psycholoy: Integrating Diversity with Quantitative', *Qualitative, and*. 4th editio, pp. 1–9. Available at: https://books.google.com.gh/books?hl=en&lr=&id=VEkXBAAAQBAJ&oi=fnd&pg=PP1&dq=mixed+methodology+qualitative+and+quantitative+approaches&ots=4_bFIeafri&sig=ihpD2dZAoloP1B-txgpSFZ7XBRo&redir_esc=y#v=onepage&q=mixed methodology qualitative and quantit (Accessed: 21 February 2018).
26. Molinari, G. *et al.* (2002) 'The role of telecardiology in supporting the decision-making process of general practitioners during the management of patients with suspected cardiac events', *Journal of Telemedicine and Telecare*. SAGE PublicationsSage UK: London, England, 8(2), pp. 97–101. doi: 10.1258/1357633021937541.
27. Mollerup, P. (2009) 'Wayshowing in hospital', *Australasian Medical Journal*, 2(10), pp. 112–114. doi: 10.4066/AMJ.2009.85.
28. Montie, M., Shuman, C., Galinato, J., Patak, L., Anderson, C. A. and Titler, M. G. (2017) 'Conduits to care: call lights and patients' perceptions of communication.', *Journal of multidisciplinary healthcare*. Dove Press, 10, pp. 359–366. doi: 10.2147/JMDH.S144152.
29. Montie, M., Shuman, C., Galinato, J., Patak, L., Anderson, C. A. and Titler, M. (2017)

'Conduits to care: call lights and patients' perceptions of communication', *Journal of Multidisciplinary Healthcare*. Dove Press, Volume 10, pp. 359–366. doi: 10.2147/JMDH.S144152.

30. Niemi, A., Hupli, M. and Koivunen, M. (2016) 'The use of electronic communication for patient - professional interaction – nursing staff ' s point of view', *FinJeHeW fininish journal of eHealth and eWelfare*, 8(4).
31. Nikolic, A. *et al.* (2018) 'The Use of Communication Apps by Medical Staff in the Australian Health Care System: Survey Study on Prevalence and Use.', *JMIR medical informatics*. JMIR Medical Informatics, 6(1), p. e9. doi: 10.2196/medinform.9526.
32. O'Cathain, A., Murphy, E. and Nicholl, J. (2010) 'Three techniques for integrating data in mixed methods studies.', *BMJ (Clinical research ed.)*. British Medical Journal Publishing Group, 341, p. c4587. doi: 10.1136/BMJ.C4587.
33. Pahwa, P., Lunsford, S. and Livesley, N. (2018) 'Experiences of Indian Health Workers Using WhatsApp for Improving Aseptic Practices With Newborns: Exploratory Qualitative Study.', *JMIR medical informatics*. JMIR Publications Inc., 6(1), p. e13. doi: 10.2196/medinform.8154.
34. Palinkas, L. A. *et al.* (2015) 'Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research.', *Administration and policy in mental health*. NIH Public Access, 42(5), pp. 533–44. doi: 10.1007/s10488-013-0528-y.
35. Parikh, A. *et al.* (2010) 'The Effectiveness of Outpatient Appointment Reminder Systems in Reducing No-Show Rates', *American Journal of Medicine*. Elsevier Inc., 123(6), pp. 542–548. doi: 10.1016/j.amjmed.2009.11.022.
36. Patak, L. *et al.* (2010) 'NIH Public Access', 39(9), pp. 372–376. doi: 10.1097/NNA.0b013e3181b414ca.Improving.
37. Patton, M. (1990) 'Qualitative Evaluation and Research Methods', *Qualitative Evaluation and Research Methods*, pp. 169–186. doi: 10.1002/nur.4770140111.
38. Plano Clark, V. L. (2010) 'The Adoption and Practice of Mixed Methods: U.S. Trends in Federally Funded Health-Related Research', *Qualitative Inquiry*. SAGE PublicationsSage CA: Los Angeles, CA, 16(6), pp. 428–440. doi: 10.1177/1077800410364609.

39. Porto, C. C., Guimarães, E. M. de B. and Costa, E. F. de A. (2012) 'Semiologia do Idoso', *Semiologia Médica*, (6ª Edição), pp. 159–196.
40. Reed, M. *et al.* (2015) 'Patient-Initiated E-mails to Providers: Associations With Out-ofPocket Visit Costs, and Impact on Care-Seeking and Health', *Am J Manag Care*, 21(12), pp. e632–e639.
41. Simic, D. *et al.* (2014) 'Challenges for Nurse Rostering Problem and Opportunities in Hospital Logistics', *Journal of Medical Informatics & Technologies*, 23.
42. Snyder, C. F. *et al.* (2011) 'The role of informatics in promoting patient-centered care.', *Cancer journal (Sudbury, Mass.)*. NIH Public Access, 17(4), pp. 211–8. doi: 10.1097/PPO.0b013e318225ff89.
43. Varsi, C. (2016) *Implementation of eHealth patient–provider communication tools into routine practice Facilitators and barriers from the perspectives of patients, middle managers and health care providers*. Available at: https://www.duo.uio.no/bitstream/handle/10852/53265/Cecilie-Varsi-2016PhD.pdf?sequence=1.
44. Ventola, C. L. (2014) 'Mobile devices and apps for health care professionals: uses and benefits.', *P & T*, 39(5), pp. 356–64.
45. Williams, J. (2012) 'The value of mobile apps in health care: learn how mobile applications and technologies are improving quality of care, patient satisfaction, safety, and convenience--and reducing costs', *Healthcare Financial Management*. Healthcare Financial Management Association, 66(6), pp. 96–102.
46. Zare, Z. and Jebraeily, M. (2018) 'Patients' Perceptions of Applying Information and Communication Technology Tools in Self-care and Factors Affecting It.', *Acta informatica medica : AIM : journal of the Society for Medical Informatics of Bosnia & Herzegovina : casopis Drustva za medicinsku informatiku BiH*. The Academy of Medical Sciences of Bosnia and Herzegovina, 26(2), pp. 102–105. doi: 10.5455/aim.2018.26.102-105.

APPENDIX

Appendix I: Ethics approval

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF HEALTH SCIENCES
SCHOOL OF MEDICAL SCIENCES / KOMFO ANOKYE TEACHING HOSPITAL
COMMITTEE ON HUMAN RESEARCH, PUBLICATION AND ETHICS

Our Ref: CHRPE/AP/591/18

26th October, 2018.

Prof. Daniel Ansong
Department of Child Health
School of Medical Sciences
KNUST-KUMASI.

Dear Sir,

LETTER OF APPROVAL

Protocol Title: ***"Developing a Patient Hospital Communication System to Address a Growing Public Health Concern at Komfo Anokye Teaching Hospital."***

Proposed Site: ***Komfo Anokye Teaching Hospital.***

Sponsor: ***Principal Investigator.***

Your submission to the Committee on Human Research, Publications and Ethics on the above-named protocol refers.

The Committee reviewed the following documents:

- A Completed CHRPE Application Form.
- Participant Information Leaflet and Consent Form.
- Research Protocol.
- Questionnaire.

The Committee has considered the ethical merit of your submission and approved the protocol. The approval is for a fixed period of one year, beginning 26th October, 2018 to 25th October, 2019 renewable thereafter. The Committee may however, suspend or withdraw ethical approval at any time if your study is found to contravene the approved protocol.

Data gathered for the study should be used for the approved purposes only. Permission should be sought from the Committee if any amendment to the protocol or use, other than submitted, is made of your research data.

The Committee should be notified of the actual start date of the project and would expect a report on your study, annually or at the close of the project, whichever one comes first. It should also be informed of any publication arising from the study.

Yours faithfully,

Osomfo Prof. Sir J. W. Acheampong MD, FWACP
Chairman

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Appendix II: Budget

Budget Element	Cost GH Cedis
Travel Cost	200
Training and workshop cost • Research materials/ advertisement • Focus Group meetings • Training/seminars for data collectors • Per-dem for data collectors Total	 200 200 400 200 1000
Data management • Data management software (NVIVO) • Tape recorder • data analysis • hard drive for storage Total	 2000 500 200 150 2,850
Peer learning (publication, dissemination, communication) • Attending 3 management meetings (present results) • Media engagements • Publication in peer reviewed journals(1) • Educational posters/thesis final print out Total	 100 150 150 200 600
Total Budget	**4650**

Appendix III: Data collection tools

Interview Guide for Health Workers

The patient-hospital communication system is one of the most vital and important systems needed in every health organization. Through this process, exchange or transference of information, ideas and understanding from one person, group or place to another takes place. Such systems for Communication may be within the organization (Internal) or it may be used for interaction between the organization and the outside world (External).

The communication system binds health consumers together and other systems in a healthcare setting cannot work without an effective and efficient communication system. Basic functions like information sharing, instruction, control, feedback, routine orders are all conveyed through communication networks.Your hospital is a big sized organization which is primarily a patientoriented where communication plays a very vital and important role.

Here is a questionnaire on communication system of your hospital. You are requested to cooperate in giving your response to some simple questions.

Designation/Occupation :_____ Rank:_____

Department/Unit :_____

How long have you worked in this hospital (a state in completed years) …….

1) What is your understanding of communication in the hospital
……..……..
2) How is this communication done in your unit (probe)
   a. Among you and other clinical staffs……
      ……..
   b. How is done between you and patients……
      …….
3) How well are you informed about;
   a. Your duties…….
      ……. b. Services
      conditions……
      ……..
   c. Organizational HR policy……. d. Patient/client
      satisfaction……
      ……
      .....
4) How do you view adherence to duties and responsibilities schedules among staffs in various departments (where you have worked)

1st Department…….,,,,,,,,,,,,, 2nd Department……..,,,,,,,,,,,,,

3rd Department …….,

5) Are you aware of existing forms of communication media used currently in the hospital?
A. Yes b. No

6) If Yes, What are the usual communication mediums used among management and staff (Tick appropriate)

#	Communication medium	YES	NO
a	Manuals/Handbooks		
b	Circulars/memos		
c	Verbal/oral/unwritten co ımunication		
d	Noticeboard		
e	Meetings		
g	Published materials		
h	Emails		
i	Whatsapp platform		
j	Other (Specify)		

Explain briefly how the communication medium mentioned above works a. Between and among hospital staff

……
……

i. How is it used

b. Between and among patients

……
……..

7. Is the communication media you indicated officially accepted by the hospital
   a. Yes b. No c. Do not know

8. If yes Tell us about the directives
   ……..
   ……..

9. What communication challenges do you face in this hospital as related to
   a. The flow of information……..
      ……
      ……
   b. Instructions from superiors……
      ……
      ……

c. Ideas and suggestions……..

10. Suggest ways of improving the communication systems of the hospital
    a. Among……
    b. Between staff and patient……

Place:

Date: Signature

INTERVIEW GUIDE FOR PATIENTS

Questions	Probing
1. What brings you to this facility?	Why not another hospital? How were you informed of the facility of choice? Where did you hear it? Through what medium?
2. How did you get to know about the hospital?	
3. Were you aware of any communication procedure within the hospital	Through what medium
4. Did you communicate to the hospital before coming?	If yes, how?
5. How did you locate the directorate you receive or/ will be receiving treatment.	Did you find any difficulties in locating the point of care?
6. Tell me the experiences you encountered in locating this department	Was there any directional sign? Did you ask for direction? Who? What happened?
7. Have you had an experience of not meeting a Doctor?	What happened? Did you have to go back unattended to? what were you told? Did it affect you in any way? (Health/cost/etc.) What do you want the authorities to do about this challenge?
8. Did you try enquiring about the services provided by the hospital?	If yes, what was the nature of the enquires you made? How satisfied were on the enquires? If no, why?
9. What is your opinion of the hospital using ICT to direct you to various departments and the services they provide?	How? Any experiences? Why?
10. Will you like the hospital to contact you after and before the clinic to educate you.	What should you be contacted How do you want to be contacted.(text,whatsapp

11. Are you willing to pay for such communications services?	how will take care of the bill?
12. How familiar are you in using technology for communications such as; a. Calling…… …… b. Text message…… ……. c. Whatsapping/browsing…… ……	
d. Use of images…… …….	
13. Have you ever used such systems to contact the hospital or seek information on your health?	Can you mention which one you used? What was your experience?
14. In your opinion, what do you think are some of the challenges you may encounter when the information technology systems are introduced in the hospital.	
15. How should the design of your ideal of patient-hospital communication system be like?	

Interview Questions for Hospital management

Questions	probes
In brief, tell us your understanding of patient-hospital communication	Do you feel is an important issue to be looked at? Do you feel is managed well in the hospital?
Can you also tell us your understanding of communication system (e.g. patient-hospital communication systems) …….,,,,,,,,,,,,,,,,, …….,,,,,,,,,,,,,,,,, …….,,,,,,,,,,,,,,,,,,	Do the hospital have a system like that If yes, is known to both staff and the public If no why? How is it managed/intend to be managed
In brief, tell us about the current mediums of communications in this hospital …… …… ……..	Do you feel it efficient Do you feel it is effective Do you feel communications are secured with this system

How is the current communication system used for interaction with; a. Staffs on work-related issues? .....…….. ……. b. Patients on the available service…….. …….	Does the message get to the target persons (groups)
How is feedback handle after such communication…….... ……. ……. …….	How do you measure that? Do you feel it was secured?
In details tell us about the challenges in the current communication systems in the hospital.…….... …….. …….	How did you handle that? Will you need a new communication system to handle it next time?
What is your view on incorporating Information Communication Technology (ICT) in the current communication system?..... …….	Currently is that the case in the hospital?
	Have you ever experience such before? Can you share with us?
What is your opinion about the hospital adopting a digital system to manage all communication among its stakeholders (patients, staffs and the public)	If introduce do you think it will be effective and efficient? Any plans to operationalize it (acquisition, use, ownership, maintenance, etc) Are you ready to make general a policy in the hospital
If you find the need for the hospital to integrate a digital system into its operation, What should be the nature of the design of the digital system to be used or adopted by the hospital?	

Do you perceive any challenges if the hospital is to use a digital communication system for all interactions among staffs and patient? …… …… ……	
How do you want your ideal digital patient-hospital communication system to look like? …… …… ……	

Instructions:

Part 1:

1. Do you know the various forms of communication within the hospital;		**yes**	**No**
a. Within the hospital?			
b. Before coming to the hospital			
2. Have you ever been involved in direct communication with a health worker related to seeking care?		**Yes**	**No**
a. In the hospital			
b. Before coming to the hospital			
i. Was it an appointment			
ii. Was it a referral			
c. After treatment from a hospital			
d. What was the pattern of the communication	Official/formal ☐	informa l ☐	Both ☐

3. How satisfied were you during those interactions?	**Very Dissatisfied**	**satisfied**	**Very satisfied**
4. If not satisfied, briefly state what you expected/anticipated…… ……..			
5. Are you aware of any medium used in communications		**Yes** ☐	**No** ☐
6. If yes can you give us some examples…… ……..			
7. Which of these mediums did use in communicating			
a. When in the hospital	…… ……		
b. Before coming to the hospital	…… ……..		

8. How will you rate the effectiveness of your chosen media in communicating with	**Not at all effective**	**Effectiv e**	**A little effective**	**Very effective**
a. Before coming to the hospital				
b. The period spent within the hospital				

SURVEY TOOL FOR PATIENTS

9. Have you ever face any challenge in communicating with staff;	**Yes**	**No**	
a. within the hospital			
b. before coming to the hospital			
10. Locating a service delivery point			
11. What was the nature of the challenge …….			
12. How was such a challenge handled…… ……..			
13. Currently, do you think the hospital needs a digital communication system like a mobile App to facilitate communications	**Yes**	**No**	
14. Have you ever used such a tool before?			
15. Tell us about your experience when you used it……			
16. Do you anticipate any challenges if the hospital is to implement such a system	**Yes**	**No**	
17. Are you willing to pay for a service fee in subscribing to such a hospital communication digital device implemented by the hospital			
18. How much should be paid for subscribing to a hospital digital communication that provides client information needs			
19. Who should bear the service charge for using a hospital digital communication media that addresses client personalized health information needs			
20. What should be the nature of the payment medium if clients are to pay for such a hospital digitized communication media for health seekers			
21. Which of these might be a preferred payment medium for patience subscribing to a KATH hospital digitized communication media for client health information needs	By insurance		
	Co-payment		
	Monthly subscription		
	Pay as you use		
	Yearly subscription		

Survey ToolFor Hospital management

What is your position……

Part 1: Internal communication structures

	Strongly disagree	disagree	Agree	Strongly agree
1. The hospital has an internal communicationstructure for communicating on care related matters				
2. The current internal communication structures allowfor ;				
a. Formal communication between the hospital administration and staffs				
b. Informal communication among staff s				
c. Informal communication between staffs and patients				
3. The current communication mediums in my department/hospitalnotify;				
a. staffs of changes in the department/organization				
b. Patients/ public available services				
4. Messages through these mediums were seen as;				
a. Relevant				
b. Consistent				
c. Credible				
5. If the current system of notification is disabled, there is a well- known backup plan for communicating;				
a. with employees				
b. With patients/public				
6. Employees at my hospital are notified timely with much detail when changes are taking place (protocols, HR information, etc.)				

7. At my hospital, feedback from emplo ees are best gathered by:				
a. Surveys				
b. Anonymous response cards				
c. Direct contact with supervisors				
8. The current communication feedback approaches are effective				
9. Communication barriers exist in my hospital				
10. Communication barriers at my hospital could be addressed by analyzing employee feedback				
11. My hospital is concerned about improving communication with employees				
12. My hospital analyzes all employee feedback				
13. Poor internal communication is a source of stress for me (employees) in this unit				
14. At least, department managers should notify all employees of hospital changes				

Part 2 mediums and their quality

15. At the hospital/directorate, the following communication methods are effectively used	**NOT AT ALL**	**SOMETIMES**	**ALL THE TIME**
Email			
Face to face			
Meetings			
Social Media			
Newsletters			
16. At the hospital/directorate, the following methods of communication are efficient:			
Email			
Face to face			
Meetings			

Social media						
Newsletters						
17. How will you rate the current communication mediums in the hospital?	**Very Poor**	**Poor**	**good**	**Very good**	**neural**	**excellent**

Survey Tools For Health Workers

Instructions: please tick where applicable and write where necessary in the spaces provided.

Part 1:Internal communication structures/Forms

What is your position? .....

1. Are you aware of the various forms of communication to be used in the hospital?	**YES** ☐	☐	
2. In what form do you communicate with;	**OFFICIALLY ONLY**	**UNOFFICIAL/ CASUA .LY ONLY**	**BOTH**
a. MANAGEMENT	☐	☐	☐
Which Medium/channels were used for such communication			
Email ☐ Face to face ☐ Meetings ☐ Social media ☐ Letters ☐ Telephone ☐ Memo Other…….			
b. COLLEAGUE STAFF	☐	☐	☐

Which communication Email Face to face Meetings Social media Letters Telephone Memo Other…….	☐ ☐ ☐ ☐ ☐ ☐ ☐	***Medium/channels were used for such***			
c. PATIENTS					
Which Face to face Meetings Social media Letters Telephone Memo Other…….	☐ ☐ ☐ ☐ ☐ ☐ ☐	***Medium/channels were used for such communication*** Email			

3. How do you rate the medium/Channels below?	**Poor**	**Good**	**Average**	**Ve y good**	**Excellent**
Email					
Face to face					
Meetings					
Social media					
Letters					
Telephone					
Memo					

4. How satisfied are you with;	**Very dissatisfied**	**Dissatisfied**	**Neutral**	**Satisfied**	**Very satisfied**
a. Management to staff communications					
b. Staff to staff communications					
c. Patients to staff communication					
d. Mediums for communication					

5. How often do management contact you on;	**Always**	**Sometimes**	**Never**
a. Current issues about the hospital			

b. Your duties & schedules			
c. Patient-related issues			

	Yes	No
6. A. Are you aware of any Mobile App for communication?	☐	☐
B. Will you wish for a mobile App for communication in the hospital?	☐	☐
7. Do you think a Mobile App will improve communication between you and; a. Management	☐	☐
b. Your colleague Staff	☐	☐
c. Patients	☐	☐
8. Are there challenges with the current communication system in the hospital	☐	☐

a. If **yes** state them……..

b. If **not,**suggest measures to improve the current system……