EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS IN HOSPITALDESIGN: PROPOSED DANDUME GENERAL HOSPITAL

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BY

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A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE DEGREE IN ARCHITECTURE

DEPARTMENT OF ARCHITECTURE, FACULTY OF ENVIRONMENTAL DESIGN AHMADU BELLO UNIVERSITY, ZARIA NIGERIA

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DECLARATION

I declare that the work in the thesis entitled *Evolving Space Standard for Family Caregivers in Hospital Design: Proposed Dandume General Hospital* has been performed by me in the department of Architecture under the supervision of Dr. M.D. Ahmed and Dr J.J Maina The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree at any university.

Magaji, SHITU

_____ _____ _____

Name of Student Signature Date

CERTIFICATION

This thesis titled EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS IN HOSPITAL DESIGN: PROPOSED DANDUME GENERAL HOSPITAL by Magaji SHITU meets the regulations governing the award of the degree of Master of Science in Architecture of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literacy presentation.

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DEDICATION

I dedicate this thesis to my beloved parents, Alh. Shitu Aliyu and Hajiya Halima Shitu.

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Praise is to Allah, the One and only, cherisher, the creator and the originator of the universe for sparing my life up to this memorable period of penning down a research thesis on my area of research interest, Alhamdulillah.

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ABSTRACT

Due to our socio-cultural peculiarities, patients in this part of the world need (apart from formal caregivers) informal caregivers who are often family members of the patients that stay with them almost every hour of their hospitalization. These family caregivers play important role in patients' recovery process. Patients depend on family caregivers for assistance with activities of daily living and communicating with health care professionals. In addition, their stay with the patients help the patients feel like at home. In spite of the well-established role of family caregiving in hospitals of particularly North-Western geopolitical zone of Nigeria, the architecture of hospitals and the process involved in the design centred around patients and Health care professionals, to the total exclusion of family caregivers. As a result, hospital planning and design in this geopolitical zone and elsewhere where the practices of family caregiving exist have produced hospitals that function at variance with ambient cultural practices. This study evolves spatial needs and space standards for family caregiving activities in the design of general hospitals. Survey research method was employed where a total of 80 questionnaires were administered to 80 pairs of respondents that comprise of family caregivers and patients in six general hospitals chosen from 3 out of 7 states that constitute the North-Western part of Nigeria. The data collected were analysed using descriptive statistics. The study established the following as the main space needs for family caregivers; sleeping, food preparation eating, storage of belongings, toilets and laundry facilities, relaxation areas, and finally a medical check-up facility. It also established that, the aforementioned spaces would be best located within the patients facilities and some in close proximity to the in patients facilities. Therefore, it is recommended that architects and allied professionals exploit findings

from this research, for it will help and guide them in coming up with a more successful and functional hospital design that will, to a large extent, satisfy the needs of the people that partake in family caregiving activities.

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1.0 INTRODUCTION

1.1 Background of Study

Family caregivers also referred to as informal caregiversare people that provide needed care on a long term basis to a care recipient,who is most often a relative, friend, or neighbour without receiving monetary compensation for their caregiving services. Long-term care often involves assisting the care receiver with personal hygiene, getting dressed, using the bathroom and so on (Rathge, 2002)

Hospital can be defined as an institution that is built, staffed and equipped for the identification, diagnosis of disease and the treatment, both medical and surgical, of the sick and injured or an in-patient establishment that delivers healthcare. It may be public or private; it is characterized by its large capacity and its variety of specialties and workforce. The basic services that hospitals offer include: short-term hospitalization, emergency room services, general and specialty surgical services, X-ray/radiology services, laboratory services and blood services.

Family caregivers play important role in providing an unpaid care assisting people with functional limitations or people in chronic conditions and need assistance with personal care, health care and other services that is why some scholars describe them as valuable members of health care system. Family care caregivers or informal caregivers as some scholars called them, help patients manage many activities of daily living ranging from bathing, toileting, dressing, taking meal, taking medications and so on. For example Linda Naiditch and Lisa Weber-Raley (2009) presented a report that majority of caregivers assist their patient with at least activity of daily living ranging from getting in and out of beds and chairs, getting dressed, bathing, toileting, dealing with

incontinence, feeding, taking medications, communicating with health care professionals, performing medical therapies or treatments. In case of children, additional activities are; monitoring the child's condition, communicating with health care providers on behalf of the child, preparing special diet. Reinhard *et al* (2011) identified the family care giving activities and classified them as those that are complex and stressful and those that are not; those that are not stressful are: bathing, toileting, brushing, dressing, taking medications, preparing meals, feeding, transferring from one surface to another. While ability to make decision on behalf of patients who are unable to do so and supervising patients with chronic illness and observing the signs of side effects of medications are complex and stressful because they are activities strange to the caregiver.

However, in the process of executing these activities, caregivers tend to face or encounter so many challenges. For example, Jensen & Given (1993) reported that caregivers are at risk for fatigue and sleep disturbances, lower immune functioning, altered response to influenza shots, slower wound healing, increased insulin levels and blood pressure, altered lipid profiles, and higher risks for cardiovascular disease, also Dern& Heath (2003) said that, the challenges caregivers face today is that their life is vulnerable to injury, depression and other stress-related conditions because of overwhelming physical, emotional and financial demands. National Alliance for Caregiving and AARP: Caregiving in the US(2004) Also found that the great challenge of caregivers is that, caregiving can cause decline in healthof the caregivers because of the burden attached to it, and that can negatively affect their ability to provide care.

Another challenge identified by Chan *et al*, (2009) is that many family caregivers do not have knowledge and skills necessary to take on the caregiving responsibilities, thus unable to cope with caregiving responsibilities.

Burton, Newsom & Schulz(1997) concluded that if caregivers are to be able to continue to provide care, relief from distress and demands of maintaining the required care must be considered.

As a result, scholars have studied and identified the importance and value of the family caregivers' role thereby suggesting solutions which if followed, will improve the caregivers' ability to continue to provide care. Chan (2011) suggests that, health care professionals should assist caregivers at critical times, their roles and contributions should be recognized and they should be socially and emotionally supported.Considering the significance of social support for patients' successful recovery, hospitals should plan for greater involvement of the family in the care of their patients.

A study by Kaira *et al* (2004) found that training caregivers and involving them in the patient's rehabilitation resulted in improved patient outcome.Karla *et al* (2004) also found that if patientsare given a simple task oriented rehabilitation program which could be easily understood and followed through by the family members during the patients stay in hospital and after discharge and if there is active participation or involvement of the family members, then, the patient could regain normal function without being disabled.

Van Der Waldt & Mothabeng(2009) also suggested that the involvement and training of family members in the rehabilitation of stroke patients has a potentially positive impact on rehabilitation outcome and subsequent quality of life of the patients.It is

therefore important to prepare the immediate familyfor living with their patient(Van Der Waldt & Mothabeng,2009)

Despite all the above, space management is one of the important elements that can ensure that an organization's activities run smoothly. It is particularly important for hospital management, because of increasing patient needs (Yusoff, 2013). The healthcare industry is constantly influenced by technological improvement, demography, new medical methods or approaches, political changes, human needs and so on (Heng*et al*. 2005). Therefore, patients' needs for ward space and equipment in hospitals increase year by year (Yusoff, 2013).Observation made in government hospitals is that, most government hospitals face the problem of patient overload. This occurs because of the shortage of ward space and equipment in hospitals.The term 'equipment' here does not include medical equipment but rather refers only to patient equipment in relation to ward space (Yusoff, 2013). All the spaces provided in hospitals have their own users. This depends on the type of services provided. Patients are the main users of ward space and equipment, then staff and visitors. Many patients also have to spend nights in the wards when receiving healthcare services. Therefore, the equipment that the hospital provides must be suitable for all users, especially patients, and must make them comfortable(Wheeler, 1964).

It has now been established that involving family caregivers in health care planning is of great importance,of which the space they are to stay with patient in the hospital has not been created for them. It is therefore the intention of this research to evolve a standard space that will comfortably accommodate them without causing inconveniences to the designed space of the patient and the staff in general.

1.2 Statement of the Problem

Due to our socio-cultural peculiarities, patients need, apart from formal caregivers, family caregivers that will stay with them at almost every hour of their hospitalization. These family caregivers or sometime referred to as informal caregivers can be family relations of the patients any or other person that will render continuous assistance to them.

However, looking at the studies on history of hospitals, the design and allocation of spaces in hospitals pays attention to the patients, official caregivers and other health personnel but excludes family caregivers. Today our hospitals find themselves in a situation where bythose spaces designed mainly for patients andhealth care professionals are shared with family members or family caregivers who insist on staying with their sick kin. This is largely because our socio-cultural peculiarities play important role in patients' rehabilitation,but hospital designs have not actually taken them into consideration.

Space is very important in patient recovery. Reducing the space designed to accommodate each and every patient will definitely result in affecting the rate of recovery of the patient

Therefore, since there is need to involve family caregivers in health care planning, there is also need to create a space for them to live. It is therefore the intention of this research to evolve a standard space that will comfortably accommodate them without causing inconveniences to the designed space of the patient and the staff in general.

1.3 Aim and Objectives

The aim of this study evolve spatial needs and space standards for family caregiving activities in the design of general hospitals. The objectives of the study are:

I. To identify the nature of the family caregivers
II. To identify the nature and condition of the patients
III. To identify the extent of caregiving activities and the burden of care
IV. To identify the caregivers spatial needs
V. To propose a model that will guide in the design of caregivers' oriented hospitals.

1.4 Research Questions

Since the research is meant to create space for family caregivers, then, it will be expected to answer the following questions:

I. What is the nature offamily caregivers?
II. What is nature of the patients?
III. Whatis the extent of caregiving activities?
IV. What are the caregivers' spatial needs?
V. How to provide what the caregivers need?

1.5 Justification

Space plays a very important role in patient recovery that is why congestion in hospitals should be avoided to help the patients recover in good time. However, researchers are now suggesting caregivers to be incorporated in hospital settings of

which their space has not been incorporated in hospital design.As a result there is need for their space to be designed.

1.6 Scope of the Study

Nigeria is so large in terms of landmass as well as the population size to the extent that it is difficult for the researcher to carry out a research on all the caregivers in all the hospitals across the whole country. However, different studies from different parts of the globe concerning family caregiving activities have revealed that the main activities involved are almost the same everywhere regardless of race, culture, tribe or geographical locations of the people involved.

Looking at this study, the determinant factor or the predictor of the space required is the activity involved in family caregiving; as a result the study is delimited to caregivers in the general hospitals within the seven states of the North-Western geopolitical zone of Nigeria.

2.0 LITERATURE REVIEW

2.1 Preamble

According to Issa (2003) in Issa (2004)literature review, as the name implies involves the collation of ideas, views, positions and opinions, expressed in the writings of recognized authorities as well as findings of previous researchers in one's area of investigation.Similarly, Akinwumiju (2000)describes the review of related literature as involving the systematic identification, location and analysis of documents containing information related to the research problem. It aims at providing information about what had already been done; how they were done and with what results. Therefore, for this study Evolving Space for Family Caregivers in Hospital Design, the literature review is discussed as follows.

2.2 Family Caregivers

Rathge (2002) describes family caregivers as informal caregivers and defines them as "people that provide the needed care on long term basis to the care recipients without receiving monetary compensation. To his definition, informal caregivers do not include those caregivers that provide care on a voluntary basis through an organization (such as a church group). According to Rathge long term care as mentioned above involves assisting the care recipients with personal hygiene, getting dressed, using the bathroom, preparing meals et cetera. According toReinhard, Given, Petlik, & Bemis (2011)family caregiverscan be defined asSecondary or hidden patients who provide an unpaid care and at the same time need to be cared, deserve to be protected and guided because their caregiving demands place them at high risk for injury and adverse events. These family caregivers can be relatives, friends, or even neighbours of the care recipients, assisting the patient in managing a variety of tasks, ranging from bathing, dressing, and taking

medications to tube feeding and ventilator care Glasser, Prohaska &Gravdal, (2001)describes family caregivers as unpaid health workers who become an integral part of the health care system and work in partnership with the patients and health care professionals in such a way that the patients depend on them for support with activities of daily living and also in communicating with the health care professionals since they are incapacitated.

Therefore from the above definitions it can be deduced that a family caregiver is anyone who can sacrifice his time, energy and money in assisting someone who is either physically, spiritually oremotionally unfit and need helps without thinking of something in return from the person receiving the care.

Family caregivers are found within each of the two genders, that is to say, there exist male and female caregivers depending on the relationship, the patients or the availability of the caregiver. Also the role the caregivers play varies depending on the nature of impairment associated with patients.Moreover, family caregivers experience stresses and so many challenges depending on the nature of the care recipient, how knowledgeable the caregiver is, and how enlightened the health care professionals are in recognizing the values of the family caregivers.

2.2.1 Basics of the family caregivers

Family caregivers cut across each gender. Research has shown that males and females participate in caregiving activities depending on the nature of the caregiver. An example ofsuch is a research conducted by Rathge (2002), to gain insight into the barriers of family caregivers in order to assist policy makers in exploring ways of improving the lives of family caregivers. The research demonstrated that more than 93 % of the family caregivers provide care without receiving monetary compensation for

their caregiving services. Most of them admit that it is difficult for them to accept support or assistance when caregiving because it is their duty to provide the patient with the needed care. Also the result showed that more than half of the caregivers are female while male caregivers taking a relatively small percentage and approximately 73 % of the caregivers are married or living with a partner. Moreover, more than 43 % of the caregivers are caring for their spouse.

Furthermore, the result indicated that approximately 58 % of the caregivers live with the patient or care recipient and 82 % of them live less than 20 minutes away from the care recipient. More than 25 % of the caregivers said that they spend a minimum of sixteen hours (16 hrs.) in a week living with the patients. Some of the caregivers (more than 23%) said that they had experience of caregiving because they have been providing care for than 3 years. Also the result showed that some of them went to school, and some are even employed while some are retired and a great percentage of them are adults that is 18 years and above.

Another research conducted by Linda Naiditch and Lisa Weber-Raley (2009) in an attempt to present the picture of family caregivers in the U.S showed that, within a year an estimated 65.7 million people served as family caregivers in U.S and out of this number 66 % are female with an age average of 46 years. Majority of them (86%) take care of a relative, 36 % give care to parent and 14 % provide care to their own child. Contrary to the other report, this report indicates that family caregivers spend an average of 20-39 hours giving care to their patients in a week with female caregivers spending much time in giving care than the male care givers. According to the research, the reason why female participate more in caregiving than the male is that, people who

are not employed are more likely to help with the activities of daily livings than those already employed and males are more employed than the females.

In Nigeria, a research carried out by Okoye (2011) to ascertain the caregiving and caregiving stress among family caregivers of Nigerian elderly found that, approximately 57.3 % of family caregivers were female with an average age of 27, even though 51.8 % of them are in the age group 20-29. In age classification, the result unveiled that teenagers accounted for 7.3 % of the caregivers. Of the total number of caregivers studied 23.6 % of them are married while widows accounted for 4.5 %. Occupationally, the result indicated a higher proportion of student which constituted 56.4%, while civil servant occupied 16.4 %, the remaining were neither. Majority of the caregivers 65.5 % have higher level of education while 2.7 % have low level of education and 70.9 % are within the low-income group.

Consequently, Chan (2011) concluded that caregivers are more likely to be women in many parts of the world. For example, in the United Kingdom, about 58% of the caregivers are women (Nolan, 2001). Asian studies found about 70% of family caregivers are females (Chan *et al*., 2009; Cheng & Chan, 2005). In Nigeria 57.3% of family caregivers are females (Okoye, 2011). And The World Federation of Mental Health (2010) estimated that globally, about 80% of the caregivers are women. They could be the mother, wife, or daughter of the care recipientsand are usually with low income. Nevertheless, The World Federation of Mental Health (2010) also suggests that additionalcaregivers will be needed worldwide in the future, therefore more males are likely to become caregivers. Taking on a caregiving role could mean a role reversal, a change in traditional gender roles within the family in many cultures. At present,

there is a lack of research on the male caregiving role, and little is known about the number and the condition of male caregivers.

2.2.2 Family caregiving activities

Caregivers spend a substantial amount of time interacting with their care recipients, while providing care in a wide range of activities,Reinhard *et al* (2011) identified those activities as, (i) those that are complex and stressful and (ii) those that are not complex and stressful. According to the research; assisting the patient with bathing, dressing, toileting, brushing, taking medications, preparing meals, eating, transferring from one surface to another and so on are activities of daily livings and are not complex and stressful because the activities are normal to the caregiver; on the other hands, the activities that the researchers termed as complex and stressful are: ability to make correct decisions on behalf of the patients who are unable to do so is stressful because it is something strange not normal role of the caregiver, for example supervising patient with chronic illness and observing the signs of side effects of medications is stressful because the caregivers are often unable to interpret the meaning of the urgency.

Family caregivers often feel unprepared to provide care, have inadequate knowledge to deliver proper care, and receive little guidance from the formal health care providers. As a result coping with the new situation is also stressful. Another stressful aspect of caregiving activities identified byGiven *et al* (1994) is that, inadequate knowledge and skills of the caregivers may cause them not knowing the type and the amount of care needed.

Linda Naiditch and Lisa Weber-Raley (2009) report presented the statistic of the family caregivers of adult patients' activities as: Majority of the caregivers help their patient with at least one activity of daily living. 40 % of caregivers said they help their patients

get in and out of beds and chairs, 32 % help the patients get dressed, 26 % assist with bathing, 24 % assist with toileting, 18 % assist in dealing with incontinence while 19 % help feed the patient. The research revealed that female caregivers are more likely helpful than male caregivers especially in assisting the patients to get dressed (36% vs. 24 %) and in bathing (31 % vs. 17 %). Other types of supportive activities carried out by caregivers include communicating with health care professionals and performing medical therapies or treatments (22 %). In case of family caregivers of children, the result showed that, caregivers of children with special needs help their patients with 5.6 out of nine Caregiving Support Activities, on average. These include monitoring the child's condition (85 %), communicating with care providers on his/her behalf (72 %), performing emotional or behaviour treatments or therapies (65 %), giving medicines or injections (64 %), dealing with financial issues (63 %), giving physical or medical therapies (44 %), preparing a special diet (40 %), or arranging/supervising outside services (39 %). Male caregivers of children with special needs are more likely than female caregivers to help with financial issues (76 % vs. 57 %) and to advocate on behalf of the child (85 % vs. 67 %).

From the above studiess it can be seen that family caregiving encompasses a lot of duties and responsibilities that if care is not taken they can affect the personal health of the caregivers.

2.2.3 Stress and burden of caregiving

Caring for people with chronic conditions requires tireless effort, energy and understanding. This in turn affect the daily lives of the person providing the care. A report issued by World Federation of Mental Health (2010) in (Chan, 2011)gathered that, in an attempt to balance work, family and caregiving activities, the physical and

emotional health of the caregivers is often ignored. In combination with the lack of personal, financial and emotional resources, many caregivers often experience tremendous stress, depression, and/or anxiety in the year after caregiving begins. Caregiver burden is defined as the negative reaction to the impact of providing care on the caregiver's social, occupational, and personal roles (Given, Given&Kozachik, 2001) and appears to be a precursor to depressive symptoms (Clybum, Stones&Hadjistavropoulos, 2000). According to them it is the patient's functional, cognitive and emotional conditions that dictate the caregiver burden and depression which may be manifested in feelings of loneliness and isolation, fearfulness, and being easily bothered, as the demands of caregiving limit their personal time. Kurtz, Given& Kurtz, (1994) found that family caregivers experience significant negative physical consequences as the patient's illness progresses. Some studies have also shown that elderly husbands and wives caring for spouses who have been hospitalized for serious illnesses face an increased risk of dying prematurely (Christakis & Allison, 2006)

Caregiver burden and strain have been related to the caregiver's own poor health status, increased health-risk behaviours (such as smoking), and higher use of drugs (Beach, Schulz, & Yee, 2000); Jensen& Given (1993) reported that caregivers are at risk for fatigue and sleep disturbances, lower immune functioning, altered response to influenza shots, slower wound healing, increased insulin levels and blood pressure, altered lipid profiles and higher risks for cardiovascular disease.

Burton, Newsom & Schulz(1997)examined the relationships between provision of care by family members and their health behaviours and health maintenance. These researchers found that, with a high level of caregiving activities, the likelihood of the caregiver not getting rest, not having time to exercise, and not recovering from illness

were also high. In addition, caregivers were more likely to forget to take their prescriptions for their own chronic illnesses. Providing care poses a threat to the overall health of caregivers, which can compromise their ability to continue to be caregivers. The researchers finally concluded that if caregivers are to continue to be able to provide care, relief from the distress and demands of maintaining the required care must be considered.

Notwithstanding, Lawton, Rajagopal & Brody(1992) found that, it is not always that caregiving yields negative consequences. Rather, there are also highly positive consequences of it, such as rewards and satisfaction which may cushioned the effect of the negative consequences; Picot(1995) found that the rewards perceived by the caregivers were more important than the coping.

2.2.4 Economic value of caregiving

Family caregivers remain the backbone of long term care system. Their tremendous effort and unpaid contributions they provide is really something to be looked at. For example, a report written by Houser & Gibson(2008)found that, in the year 2006 family caregivers in the United States (US) provided an unpaid care that amounted to an estimate of three hundred and fifty billion U.S dollars ($350 billion). That amount rose to an estimate of three hundred and seventy five billion U.S dollars ($375 billion) in the year 2007. This amount is more than what U.S Federal and State Government pay for the medical expenses of people who are unable to pay some or all of their own medical expenses in a year ($311 billion). Also this amount ($375 billion) is more than $1,000 for every person in the United States (302 million people as July 1, 2007).

2.2.5 Caregivers' challenges

According toDern& Heath(2003)among the challenges caregivers face today is that their life is vulnerable to injury, depression and other stress-related conditions because of overwhelming physical, emotional and financial demands.National Alliance for Caregiving and AARP: Caregiving in the US(2004)also found that, the great challenge of caregivers is that, caregiving can cause decline in health of the caregivers because of the burden attach to it, and that can negatively affect their ability to provide care.Another challenge identified by Chan *et al* (2009) is that many family caregivers do not have knowledge and skills necessary to take on the caregiving responsibilities, thus unable to cope with caregiving responsibilities.

2.2.6 Interventions

The literature above provides evidence that caregivers are hidden patients in need of protection from physical and emotional harm, therefore interventions directed to the caregiver will reduce the caregivers distress and the overall impact on their health and well-being and the interventions will also help the caregivers feel more competent and confident, providing safe and effective care to the patient, which can indirectly reduce caregiver distress by reducing their load or increasing their sense of certainty and control.

Because of that, Visser *et al*(2006) notes that, family involvement in the rehabilitation of patients is receiving increasing attention in literature. A study by Kaira *et al* (2004) found that involving caregivers and training them in the stroke patient's rehabilitation resulted in improved patient outcome. Adding to what Kaira had found Karla *et al*(2004) in Van Der Waldt & Mothabeng(2009)found that if patients are given a simple task oriented rehabilitation program which could be easily understood and followed

through by the family members during the patients stay in hospital and after discharge and if there is active participation or involvement of the family members, then, the patient could regain to normal function.

Van Der Waldt & Mothabeng(2009) also suggested that the involvement and training of family members in the rehabilitation of patients has a potentially positive impact on rehabilitation outcome and subsequent quality of life of the patients.

A research by Meleis, *et al* (2000) cited in Chan (2011) pointed out that if caregivers do not have adequate knowledge and support, they might not be able to take up the responsibilities of taking care of the ill persons, thus leading to relapse or readmission.

Many family caregivers reported not having the knowledge and skills necessary to take on the responsibilities of caregiving for their relatives. Thus, they are unable to cope with a considerable amount of the caring roles and responsibilities (Chan *et al*., 2009). As a step forward to solving the problem a research by Cheng & Chan (2005) in Chan (2011) shows that nurses can help by better assessing the family caregivers' needs in caring for the sick persons and providing education particularly to family members' understanding and expectations of the illness and care provision. Corroborated by Adika *et al* (2012) who suggested that nurses should involve in educating family caregivers of stroke patients extensively before discharge, considering the fact, that family caregiving of stroke patients will have a positive outcome with their support. The research went even further by suggesting a kind of institution that will train those family caregivers before patient discharge.

Despite individual and cultural differences in needs and concerns, studies found that a number of common needs emerge from the caregivers. They are emotional support, relief from isolation, receipt of reliable and satisfactory services, information, and

recognition of their role and contribution. These can all work well in supporting caregivers (Chan, 2011)

There is an increasing acceptance that family is the primary long-term caregiver and an important resource for persons they care for (Chan, 2011). Therefore, nurses worldwide should assist family caregivers at critical times. They could be the advocate for family caregivers by taking small and gradual steps to help family caregivers to get involved in health planning.

Considering the significance of social support for patients' successful recovery, hospitals should plan for greater involvement of the family in the care of their patients. It is therefore important to prepare the immediate family for living with their patient (Van Der Waldt *et al*., 2009)

In conclusion, the literature above suggested the involvement of family caregivers in health care planning because of the significant role they play in the rehabilitation of their patients.

2.3 Hospitals

According to Miller (1997) in Judith Healey and Martin McKee (2002) a hospital can be defined as an institution which provides beds, meals and constant nursing care for its patients while undergoing medical therapy at the hands of professional physicians. In carrying out these services the hospital is striving to restore the health of its patients. Hospital can also be defined as an institution that provides medical, surgical, or psychiatric care and treatment for the sick or the injured. According to the World Health Organization, the word hospital is defined as an institution that is built, staffed and equipped for the identification, diagnosis of disease and the treatment, both

medical and surgical, of the sick and injured or an in-patient establishment that delivers healthcare. It may be public or private; it is characterized by its large capacity and its variety of specialties and workforce. The basic services that hospitals offer include: short-term hospitalization, emergency room services, general and specialty surgical services, X ray/radiology services, laboratory services and blood services.

2.3.1 History of hospitals

According to Miller (1997), hospitals have evolved around sixth-seventh century in response to social and political changes and also changes in medical knowledge. According to him the earliest example of institutions recognized as hospitals were in Byzantium. By the twelfth century many Arab towns had a small hospital, while a large hospital was built in Cairo in 1283 and over few hundred years; the knights of Malta and the knights of Templar built across Europe (Porter, 1997). Most of the hospitals then remained small and basic and rarely offered medical care; until the twelfth century, they were just refuges for sick poor people who were admitted for shelter and basic nursing care and were also means of isolating those with infectious diseases (Granshaw, 1993)in (McKee & Healey, 2002). By the middle ages many hospitals providing medical care were attached to monasteries across Europe (Porter, 1997).

A major era of European hospital building began in thirteenth century. Hospital had a recognizable medical character by the sixteenth century, although to the public they remained places of plague (Porter, 1997). Political events in the eighteenth century following the French Revolution accelerated the secularization of hospitals. Voluntary non-religious hospitals funded by private donors were established. As effective health care developed, some hospitals began to differentiate between curable and incurable patients (Mckee and Healey, 2002).

In the nineteenth century, the state began to play a larger role, alongside the voluntary sector, in caring for the poor and the sick people. Many of today's hospitals in Western Europe had their origins in charitable institutions for the poor, while physicians treated wealthier people at home or in small private hospitals. With progress in medical care, hospitals became more 'medicalized' in a way that admission was based on medical criteria rather than the social, and by physicians instead of medical benefactors. Towards the end of the nineteenth century, all large European cities had both public and private general hospitals. Public hospitals became the sites for most teaching and research, typically visited by clinicians for several hours each week (Trohler and Prull, 1997).

The rise of hospital from the late nineteenth century to its current dominant position came with the development of aseptic and antiseptic techniques, more effective anaesthesia, development in knowledge and skills and revolution in technology (McGrew, 1985). The entire character of hospitals changed, surgeons were able to undertake more complex surgeries with higher rates of recovery by patients. In the late nineteenth century, hospitals began to diagnose ambulatory and bed-bound patients, and outpatient treatment gradually came to account for a large proportion of hospital activity (Mckee and Healey, 2002).

The latter half of the nineteenth century saw the growth of medicine as a profession, the rise of professional specialties and the establishment of specialist hospitals (Mckee and Healey, 2002). Some professional groups and hospitals "focused on body parts; some on hearts; some on diseases; some on life events; some on age groups" (Porter, 1997)

By the end of the nineteenth century, infectious diseases began to be understood. And by twentieth century hospitals began to take on their present day role. Advances in

chemical engineering laid basis for pharmaceutical industry. As the scope for clinical interventions increased, technology became more complex and expensive, hospitals began to offer cure rather than just care (Mckee and Healey, 2002).

Advances in military surgery in the Second World War had a profound impact on hospitals, with safe blood transfusion, penicillin and surgeons trained in trauma techniques. The greatest changes occurred from 1970s onwards with advances in laboratory diagnoses and ability to treat more diseases. New specialty hospitals emerged such as oncology, areas of surgery such kidney transplant and other organs and microsurgery became common (Mckee and Healey, 2002).

Most hospitals before the 1950s were places where relatively simple drugs were administered, surgical procedures were limited and the time spent in hospitals involved mostly bed rest. This created two tiers of acute care hospitals. Some hospitals usually teaching hospitals in hearts of large cities, expanded into a range of medical specialties supported by complex technology and kept abreast of new developments. The other less advanced hospitals maintained a limited range of specialties and acted as district hospitals for outer city areas, large towns and rural districts, referring more complicated cases to the tertiary care hospitals (Hillman, 1999).

By 1970s, mew technologies were diffusing out of teaching hospitals and sub specialization were increasingly emerging in district hospitals, which in many countries were playing the role of teaching and research.Thus, in many respects, hospitals have been responsible for many medical achievements (Mckee and Healey, 2002).

2.3.2 Types of hospitals

According to McKee and Healey(2002) types of hospitals can be grouped under a hierarchical classification: a) tertiary care (often national or a regional resource and

commonly linked with universities),(b) secondary care (such as district hospitals) and(c) community or rural hospitals.

2.3.2.1 Tertiary care hospitals:

Tertiary care hospitals are defined as those receiving patients referred from secondary care hospitals, they offer the most technologically complex and sophisticated services and are usually linked to a medical school and are regional level resource. Tertiary care institution may either be teaching hospital, general hospital, or specialist hospital (McKee and Healey, 2002)

i. **Teaching hospital:** This is the most sophisticated of the tertiary care hospitals and it provides for the training of undergraduate and postgraduate medical students. Teaching hospitals contain significant research facilities. Teaching hospitals also train others interested in a health care career, including nurses and laboratory specialists. In this type of hospital, number of beds does not indicate level of sophistication (Abdulrahim, 2012)

ii. **General hospitals:**A General Hospital is also a tertiary care institution that has the following operational areas: - care provision, examination, and treatment, supply and disposal, administration and technology. In addition to these, there are possibly areas for teaching and research as well as support areas for service operation. The general hospital caters for patient with various degrees of illnesses. They are called General hospital because they are large enough to provide medical services for a number of specialist services. They sometimes refer patients for completion of their treatment to specialist hospitals.

The sizes of General Hospitals are measured in terms of bedding capacity, ranging from about 200beds to well over 1000beds. The majority of the new

General hospitals are planned with between 500beds and 800beds(Abdulrahim, 2012)

iii. **Specialist hospital:**A specialist hospital is one that is devoted to one or group of related diseases, the treatment of which usually requires protracted periods. It specializes in the diagnosis and treatment of one branch of medicine. For example, Psychiatry offers highly specialized services and training in that particular branch. It serves as a referral hospital;they are sometimes affiliated to a university, e.g. National Eye Centre, Kaduna, National Orthopaedic Hospital Kano(Abdulrahim, 2012)

2.3.2.2 Secondary care (District General) hospitals:

These types of hospitals treat people for conditions that require more complex treatment than can be provided in primary care setting. These hospitals typically have between 200 to 600 beds and usually provide inpatient and outpatient care, day surgery and an emergency service. They usually include at least departments of medicine, surgery, paediatrics, gynaecology, supported by imaging and pathology services (McKee and Healey, 2002).

2.3.2.3 Community care rural hospitals:

These types of hospitals typically have 50 beds or less and provide basic diagnostic services, minor surgery and care for patients who need nursing care but not the facilities of a district general hospital (McKee and Healey, 2002).

2.3.3 Historical background of hospitals in Nigeria

According to Afolayan (2007) the historical background of hospitals or heath care system in Nigeria covers three periods: (a) Pre-colonial period (b) Colonial and (c) Post Independence

2.3.3.1 Pre-colonial period:

This is the period before the advent of Colonial government in Nigeria, during the period, traditional medicine was the system of health care delivery in Nigeria. The people that dominated the health system were: the Nigerian indigenous and traditional health care providers, divine healers, soothsayers, midwives, herbalists, spiritualist, bone-setters, mental health therapist and surgeons (Scott-Emuakpor, 2010).Thesetraditional health care providers engaged in circumcision, deliveries of babies at home, provided local security, treatment of diseases, appeasing "gods" on behalf of the people. Because of their community-based approach, they were accessible and affordable while services were paid for in cash or kind (Afolayan, 2007)

2.3.3.2 Colonial period:

This period spans through mid- 17th century up to October 1st 1960 when Nigeria got her independence. There was the infiltration of Western oriented (modern) health care, which is traceable to the arrival of European traders (Afolayan, 2007)

The British colonial government provided military establishments with their health care personnel who provided segmented health services for the expatriates and privilege few Nigerians. The period also gave rise to the missionaries e.g. Cathedral Church of England, Methodist, Roman Catholics, Baptist to develop a health care system that will take care of people at the grass root and the less privilege. With the integration of the

Army with the Colonial government, public health services originated and government offered to treat the local civil servants and their relatives (Afolayan, 2007)

According to Scott-Emuakpor (2010) the first health care facility in Nigeria was a dispensary opened in 1880 by the church missionary society in Obisi, followed by others in Onitsha and Ibadan in 1886. However the first hospital in Nigeria was sacred heart hospital in Abeokuta, built by Roman Catholic Mission in 1885(Schram, 1971)

Towards the end of 19th century when European powers were in a war with each other to get vast land in Africa, then the British Government established a military health care facility for their soldiers in Lokoja. For the civilians, St Margaret's hospital was built in Calaber in the year 1889 which was the first government hospital in Nigeria(Schram, 1971)

Towards the end of World War I (1914-1918), there were lot of military activities in Nigeria which lead to the establishment of many military health care facilities which afterward left to function as civilian hospitals. With time several Governments owned hospitals were established ranging from rural health centres to general hospitals(Scott-Emuakpor, 2010)

2.3.3.3 Post-independence:

This period spans from 1960 till date with several changing phases. The regionalized health services established in 1954 remained in operation after independence till 1967 when states were created leading to state Ministries of Health

The third National Development Plan during the regime of General Yakubu Gowon (Rtd) brought about some reforms into Health Planningbetween 1975 and 1980. The Basic Health Services Scheme (BHSS) was designed to provide comprehensive health

care that was community based with emphasis on prevention, ensure community mobilization and participation in providing health services.

The Federal Government implemented the BHSS by providing one General Hospital, four Primary Health Care Centres, 28 Clinics and four (4) Mobile Clinics in each Local Government Area of the community to provide equality in health for all. The period also brought about the zoning of the country to six geopolitical areas for the implementation of Primary Health Care. Schools of Health Technology were established nationwide to train and retrain personnel.Today, we have 36 States and FCT Abuja in Nigeria with State Ministries of Health, the Federal Ministry of Health oversees all levels while the Local Government operates Health on a departmental level(Afolayan, 2007)

2.3.4 Hospital architecture

According to Carr(2011) Hospitals are the most complex of building types. Each hospital is comprised of a wide range of services and functional units. These include diagnostic and treatment functions, such as clinical laboratories, imaging, emergency rooms, and surgery; hospitality functions, such as food service and housekeeping; and the fundamental inpatient care or bed-related function. The functional units within the hospital can have competing needs and priorities. Idealized scenarios and strongly-held individual preferences must be balanced against mandatory requirements, actual functional needs (internal traffic and relationship to other departments), and the financial status of the organization.

In addition to the wide range of services that must be accommodated, hospitals must serve and support many different users and stakeholders. Ideally, the design process incorporates direct input from the owner and from key hospital staff early on in the

process. Therefore the designer has tosupport the patients, visitors, staff, volunteers, and even suppliers who do not generally have direct input into the design. Good hospital design integrates functional requirements with the human needs of its varied users.

The basic form of a hospital is, ideally, based on its functions:

i. Bed-related inpatient functions
ii. Outpatient-related functions
iii. Diagnostic and treatment functions
iv. Administrative functions
v. Service functions (food, supply)
vi. Research and teaching functions

Physical relationships between these functions determine the configuration of the hospital. The hospital configuration is also influenced by site restraints, climate, surrounding facilities, budget, and available technology. New alternatives are generated by new medical needs and new technology.

In a large hospital, the form of the typical nursing unit, since it may be repeated many times, is a principal element of the overall configuration. Nursing units today tend to be more compact shapes than the elongated rectangles of the past. Compact rectangles, modified triangles, or even circles have been used in an attempt to shorten the distance between the nurse station and the patient's bed. The chosen solution is heavily dependent on program issues such as organization of the nursing program, number of beds to a nursing unit, and number of beds to a patient room (Carr, 2011)

2.3.5 Qualities of hospital building

According to Carr(2011)regardless of hospital location, size, or budget, all hospitals should have certain common features, which are (1) Efficiency and Cost-Effectiveness(2) Flexibility and expandability (3) Therapeutic environment (4) Cleanliness and sanitation (5) Accessibility (6) Controlled circulation (7) Aesthetics (8) Security and safety (9) sustainability

2.3.5.1 Efficiency and Cost-Effectiveness

An efficient hospital layout should promote staff efficiency by minimizing distance of necessary travel between frequently used spaces, allow easy visual supervision of patients by limited staff, include all needed spaces, but no redundant ones, provide an efficient logistics system, which might include elevators, pneumatic tubes, box conveyors, manual or automated carts, and gravity or pneumatic chutes, for the efficient handling of food and clean supplies and the removal of waste, recyclables, and soiled material, make efficient use of space by locating support spaces so that they may be shared by adjacent functional areas, and by making prudent use of multi-purpose spaces, group or combine functional areas with similar system requirements, provide optimal functional adjacencies, such as locating the surgical intensive care unit adjacent to the operating suite (Carr, 2011)

2.3.5.2 Flexibility and Expandability

Since medical needs and modes of treatment will continue to change, hospitals shouldfollow modular concepts of space planning and layout,use generic room sizes and plans as much as possible, rather than highly specific ones,be open-ended, with well-planneddirections for future expansion; for instance positioning administrative departments, adjacent to clinical laboratories (Carr, 2011)

2.3.5.3 Therapeutic Environment

Patients are often fearful and confused and these feelings may impede recovery. Every effort should be made to make the hospital stay as unthreatening, comfortable, and stress-free as possible. Some important aspects of creating a therapeutic interior are using familiar and culturally relevant materials,using cheerful and varied colours and textures,admitting ample natural light wherever feasible,providing views of the outdoors from every patient bed (Carr, 2011)

2.3.5.4 Cleanliness and Sanitation

Hospitals must be easy to clean and maintain. This is facilitated by, appropriate, durable finishes for each functional space, adequate and appropriately located housekeeping spaces, special materials, finishes, and details for spaces which are to be kept sterile (Carr, 2011)

2.3.5.5 Accessibility

All areas, both inside and out, should, comply with the minimum requirements of the accessibility standards, be designed so as to be easily used by the many patients with temporary or permanent handicaps, ensuring grades are flat enough to allow easy movement, ensuring entrance areas are designed to accommodate patients with slower adaptation rates to dark and light; marking glass walls and doors to make their presence obvious (Carr, 2011)

2.3.5.6 Controlled Circulation

A hospital is a complex system of interrelated functions requiring constant movement of people and goods. Much of this circulation should be controlled.Outpatients visiting

diagnostic and treatment areas should not travel through inpatient functional areas nor should encounter severely ill inpatients, typical outpatient routes be simple and clearly defined**,** visitors should have a simple and direct route to each patient nursing unit without penetrating other functional areas**,** outflow of trash, recyclables, and soiled materials should be separated from movement of food and clean supplies, and both should be separated from routes of patients and visitors**,** transfer of cadavers to and from the morgue should be out of the sight of patients and visitors, dedicated service elevators for deliveries, food and building maintenance services.

2.3.5.7 Aesthetics

Aesthetics is closely related to creating a therapeutic environment (homelike, attractive.) A better environment contributes to better staff morale and patient care. Aesthetic considerations include increased use of natural light, natural materials, and textures, use of artwork, attention to proportions, colour, scale, and detail, bright, open, generously-scaled public spaces, compatibility of exterior design with its physical surroundings (Carr, 2011)

2.3.5.8 Security and Safety

In addition to the general safety concerns of all buildings, hospitals have several particular security concerns protection of hospital property and assets, including drugs, protection of patients, including incapacitated patients, and staff, vulnerability to damage from terrorism because of proximity to high-vulnerability targets, or because they may be highly visible public buildings with an important role in the public health system (Carr, 2011)

2.3.5.9 Sustainability

Hospitals are large public buildings that have a significant impact on the environment and economy of the surrounding community. They are heavy users of energy and water and produce large amounts of waste. Because hospitals place such demands on community resources they are natural candidates for sustainable design (Carr, 2011)

2.3.6 Hospital spaces

Space is the core of architecture. In order to design, it is necessary to conceive and think about architectural space surrounding us by decoding its nature and discovering messages in its built forms. This kind of awareness helps architects to decide on the principles and concepts of his/her desired space(Daniel-Koch, 2009)

Space management is one of the important elements that can ensure that an organization's activities run smoothly. It is particularly important for hospital management, because of increasing patient needs (Yusoff, 2013) The healthcare industry is constantly influenced by technological improvement, demography, new medical methods or approaches, political changes, human needs and so on (Heng, McGeorge, &Loosemore, 2005)Therefore, patients' needs for ward space and equipment in hospitals increase year by year (Yusoff, 2013) Another research conducted by Hayward (2010) concluded that nursing unit space which comprises of the size of the patient space, staff support space and nursing unit support space per bed can vary due to factors like types and acuity level of patients to be accommodated, required staffing ratios, operational processes and procedures and site constraints. Observation made in government hospitals, is that most government hospitals face the problem of patient overload. This occurs because of the shortage of ward space and equipment in hospitals and the term 'equipment' here does not include medical

equipment but rather refers only to patient equipment in relation to ward space (Yusoff, 2013). All the spaces provided in hospitals have their own users. This depends on the type of services provided. Patients are the main users of ward space and equipment then the staff and visitors. Many patients also have to spend the night in the wards when receiving healthcare services. Therefore, the equipment that the hospital provided must be suitable for all users, especially patients, and must make them comfortable (Wheeler, 1964)

Now, from the studies and researches of the scholars reviewedso far above, literatures illustrated who family caregivers are, the important rolethey play in caring for their patients, their economic importance, their cultural significance and the challenges they encounter in the process of caregiving thereby suggesting that they should be formally incorporated in health care planning. However, right from the time hospital came into being till date; no literature has shown that there is space formally designed for family caregivers to live with their patients in hospital if they are to be formally involved in health care activities which is really a gap.Therefore, it will be important and interested if this research will look into ways of filling this gap.

2.4 Some Studies Concerning Family Caregivers

Linda Naiditch and Lisa Weber-Raley (2009) presented a report titled “Caregiving in the U.S 2009” the research examined the nature of caregiving activities and how caregivers are affected by their role, at work, at home, and in their health situation. The number of the respondents was 1480 and wasselected from the millions of family caregivers in the U.S using random sampling. Survey method of data collection was used with questionnaire and structured telephone interview as the instruments used in collecting the data.

Another research conducted by Rathge(2002) titled "Informal caregiving: 2002 Outreach survey" the purpose of the research was to gain insight into the difficulties of family caregiving so as to help policy makers find ways of improving informal caregiving and the lives of informal caregivers. The method used in collecting the data was survey method and the participants were 652 in number and they were family caregivers, care recipients, health care professionals and service providers.

Okoye(2011) also conducted a research titled "Caregiving and Stress: Experience of People Taking Care of Elderly Relations in South-eastern Nigeria" The study investigated the experiences of caregivers of elderly relatives. The sample size used for the study was three hundred and thirty (330) respondents. Due to the fact that the study was focusing on a specialized population (those that are caring for elderly relatives) purposive sampling method was adopted. The instrument used for data collection was the questionnaire. Result showed that there exists a significant relationship between caregiver's age and level of stress. The sex of care receiver, the level of education of caregivers, level of education of care receiver are all significantly related to the level of stress.

Another research conducted by (Yusuf, Nuhu, &Akinbiyi, 2009) titled "Caregiver burden among relatives of patients with schizophrenia in Katsina, Nigeria" the purpose of the research was to determine the nature of the burden reported by family caregivers of patients with schizophrenia. The research constituted 129 respondents employing interview and socio-demographic data collection sheet as instrument of data collection. The result showed that the level of burden experienced was significantly associated with place of residence and family size.

In all the studies mentioned above, survey research method was employed by the researchers in carrying out the studies. This has shown that it is a suitable method for evolving space standard for family caregivers because for a researcher to create a space for family caregivers there is need for the him to know the nature of the caregiving activities.

3.0 RESEARCH METHODOLOGY

3.1 Preamble

According to Issa (2004) The purpose of research methodology is to provide a detailed explanation on the procedures to be used in carrying out the research.Methodology can be seen as the master plan, tobe followed in the conduct of a study.It usuallycomprise of the following: Introduction; Research Design/Method; Population of the Study; Sample and Sampling; Techniques/Methods; Instruments for Data Collection; Procedure for Administration of Instruments; Data Analysis Procedure. This chapter discusses these aforementioned items.

3.2 Research Design/Method

According to Issa (2004) there are several Research methods used by researchers in the conduct of research; the choice of a particular research method is strictly a function of the nature of the problem being investigated. In other words, the appropriateness of a given research method is determined mainly by the kind of investigation being conducted. This, in turn, determines the kind of data that will be generated in the course of the research. However, according to Aina(2001)the following methods are identified:

(I) Social Survey Research.(II) Historical Research.(III) Case Studies Research(IV)Delphi Studies Research.(v) Bibliometric Research. (VI) Citation Analysis Research.(vii) Experimental Research.

Thus, for a research that is aimed at creating space for family caregivers in hospital design, it implies that the research focuses on a particular group of people and the design of hospitals. Therefore to collect data for this research meansthat, to seek for

information from family caregivers and probably the care recipients about the nature of family caregiving activities and their new attitudes or their new way of life; and how hospitals have been designed;the best research methods to go about it are: survey research method and case study research method. Reasons for selecting survey research and case study research methods among the research methods highlighted above by Aina (2001) are:

According to Issa(2004)where the research population run into hundreds or even thousands, survey research method is the most appropriate. In this method the opinions of individuals on a particular problem is sought, whereby the consensus of these opinions provides the needed solution to the problem at hand. According to him, one of its main characteristic is that, the researcher cannot reach each and every member of the population; as a result a sample is selected to represent the whole population. The results obtained from the sample will be used to generalize the population. Hence, there is need for the use of sampling techniques to determine the appropriateness of the sample. Thus, the questionnaire, interview and observation are often used as data collection instruments to obtain the opinions from the sample in a survey research. Isaac & Michael (1997) in Glasow(2005) also added that Survey research method is a method used to answer questions that have been raised, solve problems that have been posed or observed, assess needs and set goals, determine whether or not specific objectives have been met, establish baselines against which future comparisons can be made, analyze trends across time, and generally, describe what exists, in what amount, and in what context. Kraemer (1991) in Glasow (2005) identified three characteristics of survey research method; first, survey research is used to quantitatively describe specific aspects of a given population; second, the data required for survey research are collected from people and are, therefore, subjective; finally, survey research uses a

selected portion of the population from which the findings can later be generalized back to the population.Survey research provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population. It includes cross-sectional and longitudinal studies using questionnaires or structured interviews for data collection, with the intent of generalizing from a sample to a population (Babbie, 1990) in (Creswell, 2008)

Finally to conclude that survey research method is the most appropriate method for the research "Evolving Space Standard for Family Caregivers in Hospital Design"Pinsonneault and Kraemer (1993) also in Glasow (2005) opined that; to gather information about characteristics, actions, or opinions of a large group of peopleor to assess needs, evaluate demand, and examine impact, survey method is the best approach. Therefore, survey research method was used as a method of data collection for this research.

3.3 Population of Study

In line with the scope of the study, the population of this study comprised of about 800 family caregivers/patients in six selected General hospitals located within the North Western part of Nigeria.

3.4 Sample and Sampling Techniques

According to Burgess *et al*(2003)Sampling is a means of selecting a subset of units from a population for the purpose of collecting information for those units to draw inferences about the population as a whole. There are two types of sampling non-probability and probability sampling. Non probability sampling uses subjective method of selecting unit from a population. It provides a fast, easy, inexpensive way of

selecting a sampleandit does not require a sample frame. Non-probability sampling can be applied to studies that are used as an idea generating tool; it can be used for exploratory or diagnostic studies to gain insights into people's attitudes, beliefs, motivations and behaviours. It includespurposive, haphazard, quota, and volunteer and modified probability sampling. On the other hand,Probability sampling is a method of sampling that allows inferences to be made about the populationbased on observations from a sample. In order to be able to make inferences, the sample should not be subject to selection bias.With a probability design, a relatively small sample can often be used to draw inferences about a large population, it is more accurate than non-probability but it is more expensive, difficult and takes longer time (Burgess *et al*, 2003)

For the purpose of this research a non-probability (purposive sampling)was used because, according to Burgess *et al*, (2003) it can be used to gain insights into people's attitudes, beliefs, motivations and behaviours especially where the sample frame is not known and it is fast considering the time frame. If the study population is homogeneous it yields a very accurate result. Now, considering the nature of this study it can be seen that the population was homogeneous in the sense that they carry out same type of activity irrespective of their gender, tribe or culture.

Thus, 80 respondents (both family caregivers and patients) were selected using purposive sampling from an estimated population of 800 caregivers/patients that were found in the selected hospitals. Therefore, a sample size of 80pairs of caregivers/patientswas used for the study. The formula used to arrive at this number is (10% of the total population). The formula established that if the sample frame is not known, then a sample size of (5%-10%) is considered adequate (http://www.ReportBD.com) in (Abdullahi, 2011)

The sample was drawn from pairs of caregivers/patients in the six general hospitals chosen from three out of the seven states of the North- Western geopolitical zoneof Nigeria.

80 pairs of caregivers/patients was used as the sample from the six selected general hospitals. The hospitals are :

i. Yusuf Dan-tsoho Memorial Hospital, Kaduna (YDMH)
ii. Gambo Sawaba General Hospital, Zaria (GSGH)
iii. Sheikh Muhammad Jiddah General Hospital, Kano (SMJGH)
iv. Wudil General Hospital, Wudil (WGH)
v. Katsina General Hospitla, Katsina (KGH)
vi. Funtua General Hospital, Funtua (FGH)

13, 15, 10, 12, 16 and 14 questionnaires were administered to YDMH, GSGH, SMJGM, WGH, KGH and FGH respectively. The numbers administered were approximately 10% of the total number of beds in each hospital.

3.5 Instruments for Data Collection

During the conduct of a research several instruments are being employed for data collection depending on the context of the research. However, for the purpose of this research, Questionnaire was employed as the instrument of collecting the data for the research. Reasons for using questionnaire are highlighted below.

According to Eiselen&Uys(2005) questionnaire is an instrument use in collecting data for a research, that form an integral part of descriptive and opinion related surveys.

Questionnaire was chosen for this study because it can be used to collect information on facts, attitudes, knowledge, beliefs, opinions, perceptions, expectations, experiences and the behaviour of individuals (Parahoo, 1997) in (Brown, n.d.)

The questionnaireused for this study was adapted from Rathge, R. (2002) *Informal caregivers: Outreach Survey.* North Dakota (See appendix A).The questionnaire was made up of five sections Section A-E (See appendix B). Section A was designed to get the bio data of the caregiver while section B was to get the biodata of the patient. Section C, D and E were designed to assess the patients' conditions, caregiving activities and space needs respectively and they were designed in closed ended format.

3.6 Procedure for Administration of Instruments

First of all, introduction letters addressed to the various Medical Directors of the selected hospitals (See appendix C)were obtained from the department and submitted to each and every Medical Director, after getting approval letters (See appendix D) from them, the questionnaires were distributed by the researcher to various family caregivers. However, it is evident that some of the caregivers could not read and understand the content of the questionnaire so as to give appropriate answers, as a result the data were collected in the form of interviews assisted by the researcher to get a viable responses.

3.7 Data Analysis Procedure

The analysis of the questionnaire was conducted in a three-stage process. First, data from the surveys were entered into spread sheet (See appendix E), secondly, the data were then tabulated (See appendix F) into frequency distribution tables and finally

computed and produced in bar charts to illustrate the result obtained from the data collected.

4.0 DATA PRESENTATION AND ANALYSIS

4.1 Preamble

This chapter presents in detail how the collected data were analysed. The analysis was done in line with the research questions and it was conducted in three-stage process. First, the data from the surveys were entered into spread a sheet (See appendix XV-XIX) in order to make the analysis a little easier and it was made possible due to the fact that the questions were designed in closed ended format. Secondly, the data were summarised in a frequency table (See appendix XX-XLV) and finally, the tabulated data were computed and produced in bar chart for easy illustrations.

4.2 Details of the Analysis of the Questionnaire

4.2.1 Section A of the questionnaire

Figures 4.1 through 4.4 illustrate the analysis of section A of the questionnaire (Caregiver Bio-data) which was designed to answer research question one (What is the nature of family caregivers). It can be observed in Figure 4.1 below that majority of the caregivers (57.5%) were females while maleswere only 42.5%.The result was almost similar when looking at the hospitals individually only that in Yusuf Dan-tsoho General Hospital the result indicated otherwise of the cumulative, where the male caregivers (61.5%) were more than the female caregivers (38.5%). Wudil General Hospital had the highest percentage of female caregivers (66.7%) with also 33.3% as the lowest percentage of male caregivers (Figure 4.1)

In terms of the ages of the caregivers the result indicated that more than half (53.8%) of the caregivers are in the age range of 20-29(Figure 4.2) out of which 23.8% were females and 30% males,whilethose with 60 years and above had the lowest percentage

(1.3%). The result was not much different when looking at the hospitals individually. In terms of caregivers above 60 years of age only GamboSawaba General Hospital had 6.7% but the remaining hospitals had none; (Figure 4.2).

When the caregivers were asked about their marital status. Majority of them (62.5%) answered that they are married out of which married females accounted for 48.75% while the married males had 13.75% this indicated that more than three times the total number of married caregivers were females. A little more than one-quarter of them (30%) answered that they are yet to be married while divorced and widows accounted for 2.5% and 5% respectively. (Figure 4.3)

Looking at the area of study and the population studied, it was not surprising when the result indicated that more than three-quarter (76.3%) of the caregivers were Hausas, followed by Fulanis 11.3%, others10.0%, Yorubas 2.5% but none of them (0%) were Igbos as shown in Figure 4.4 below.

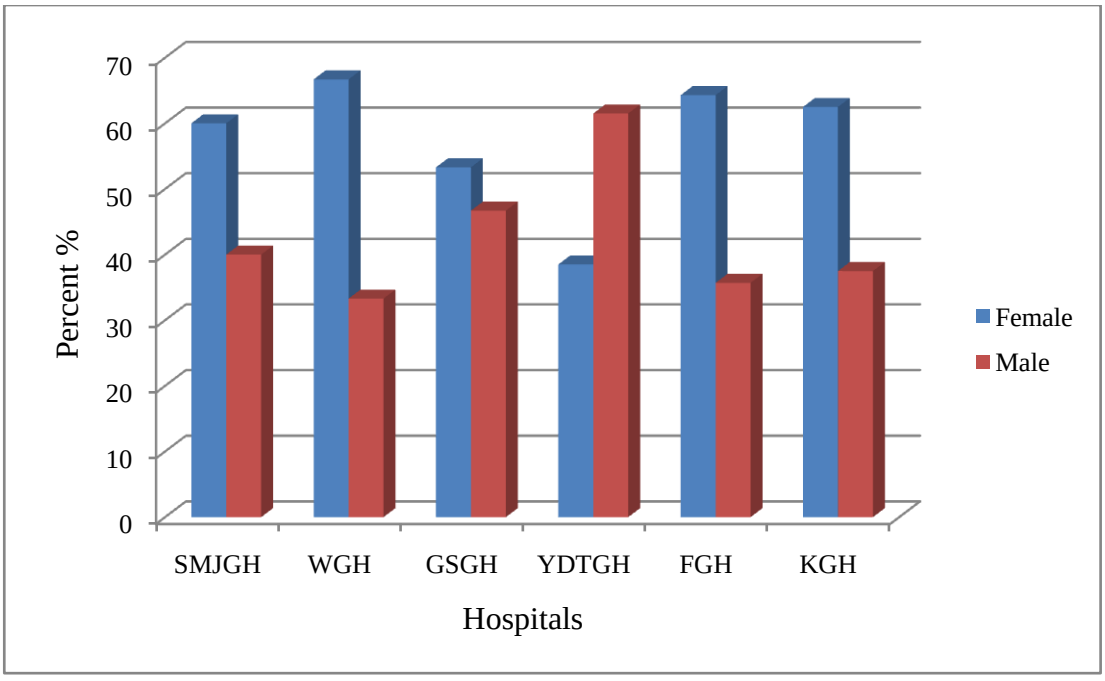


Figure 4.1Sex of the caregivers
Source: Field work 2014

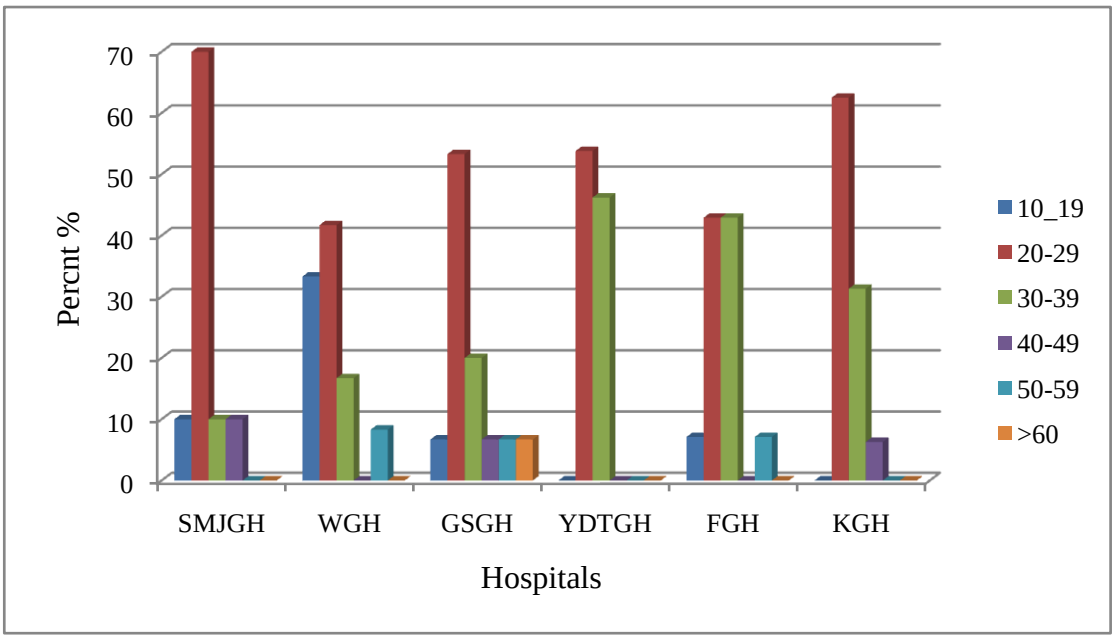


Figure 4.2: Age bracket of caregivers
Source: Field work 2014

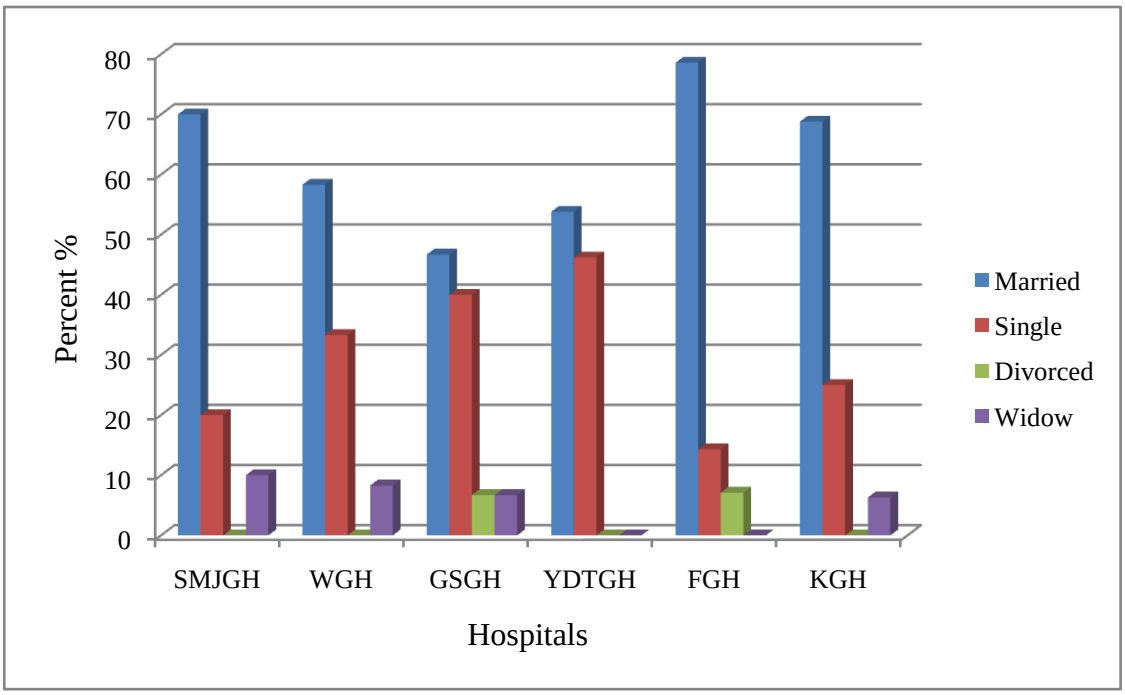


Figure 4.3: Marital status of Caregivers
Source: Fieldwork, 2014

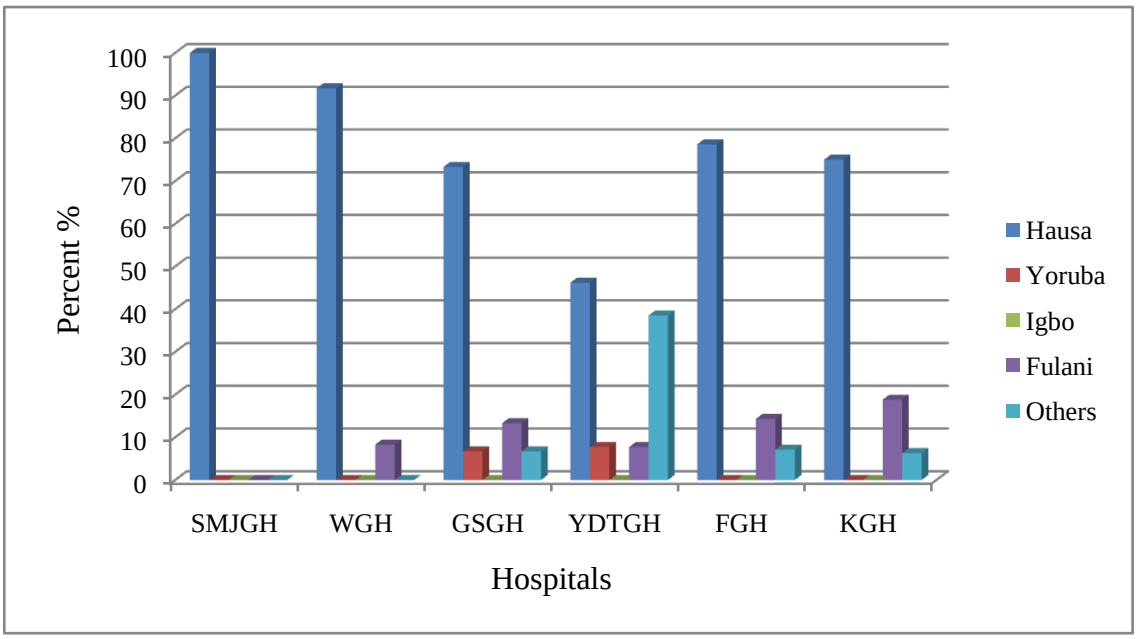


Figure 4.4: Ethnic identity of Caregivers
Source: Fieldwork, 2014

4.2.2 Section B of the questionnaire

Figures 4.5 through 4.8 dealt with the analysis of section B of the questionnaire (patients' Bio-data) which was designed to answer research question two (What is the nature of the patients). As it can be observed in Figure 4.5 below, it can be seen that52.5% of the patients were maleswhile the female patients were 47.5% which is contrary to that of the caregivers, meaning that there were more male patients than female patients but more female caregivers than male caregivers. The result was not much different when looking at the hospitals individually even though, in hospitals like Sheikh Muhammad Jiddah, Funtua and Katsina General Hospitals the result indicated equal number of male and female patients.

In terms of the ages of the patients, Figure 4.6 below revealed that about one-third (33.8%) of the patients were in the age group of 20-29, which is similar to that of the caregivers. The age classification revealed that children within the age of 0-9 and aged people above 50 years accounted for 16.3% each.

Figure 4.7 revealed that half of the patients (50%) were married out of which 30% of them are females while the remaining 20% are males, meaning that there were more married female patients than married male patients as in the case of caregivers. 43.8% of the patients were yet to be married while the divorced and widows were 2.5% and 3.8% respectively (Figure 4.7)

The ethnic identity of the patients revealed that more than three-quarter of them (76.8%) were Hausas, but none (0%) were Igbos (Figure 4.8)

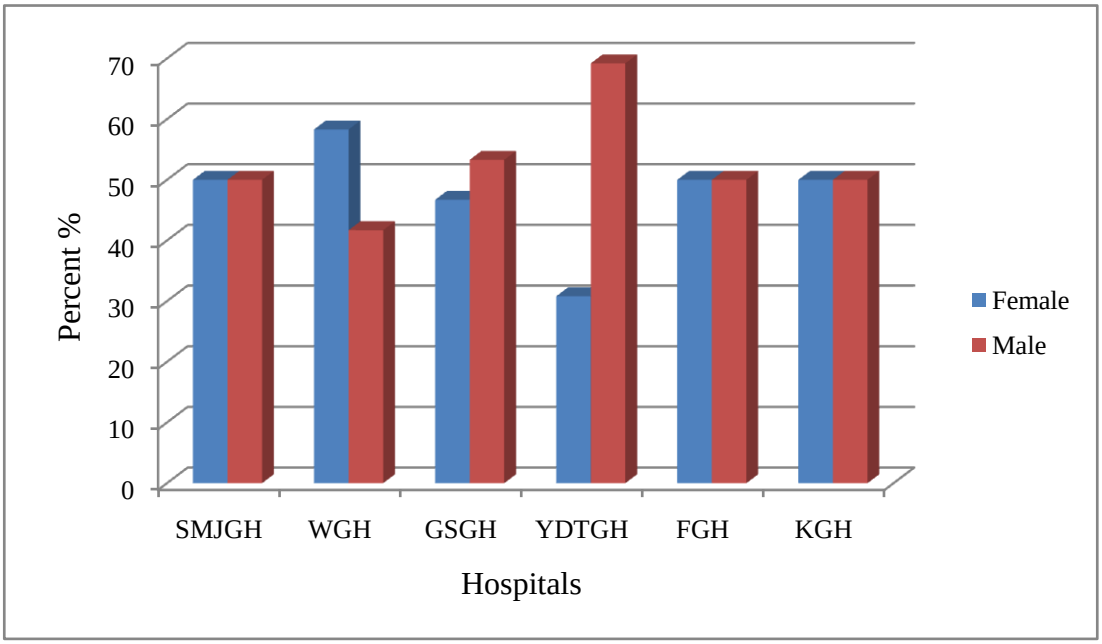


Figure 4.5: Sex of the Patients
Source: Fieldwork, 2014

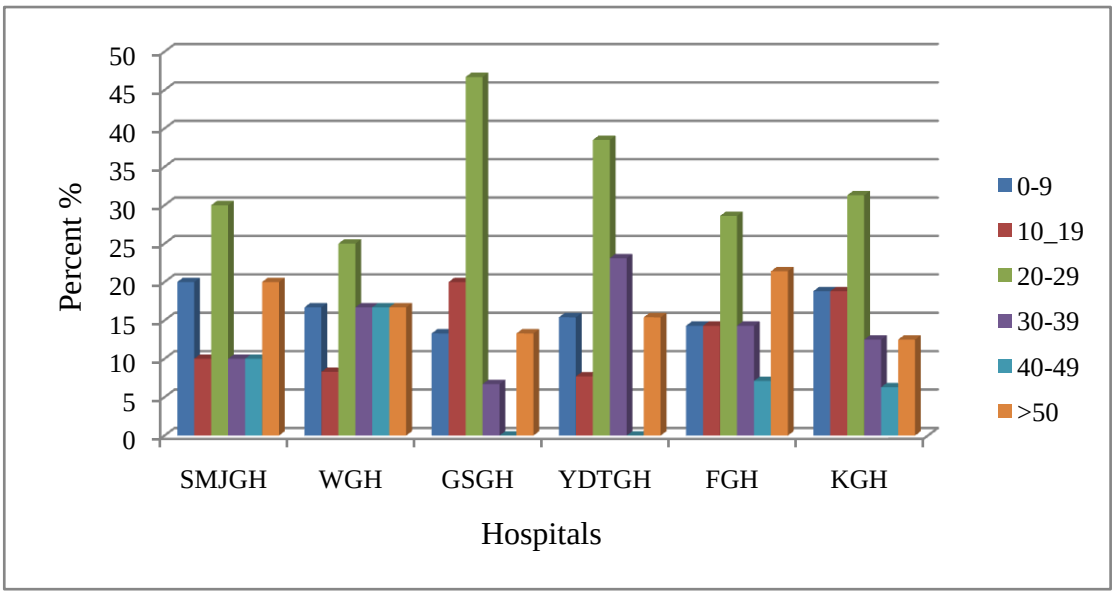


Figure 4.6: Age bracket of the patients
Source: Fieldwork, 2014

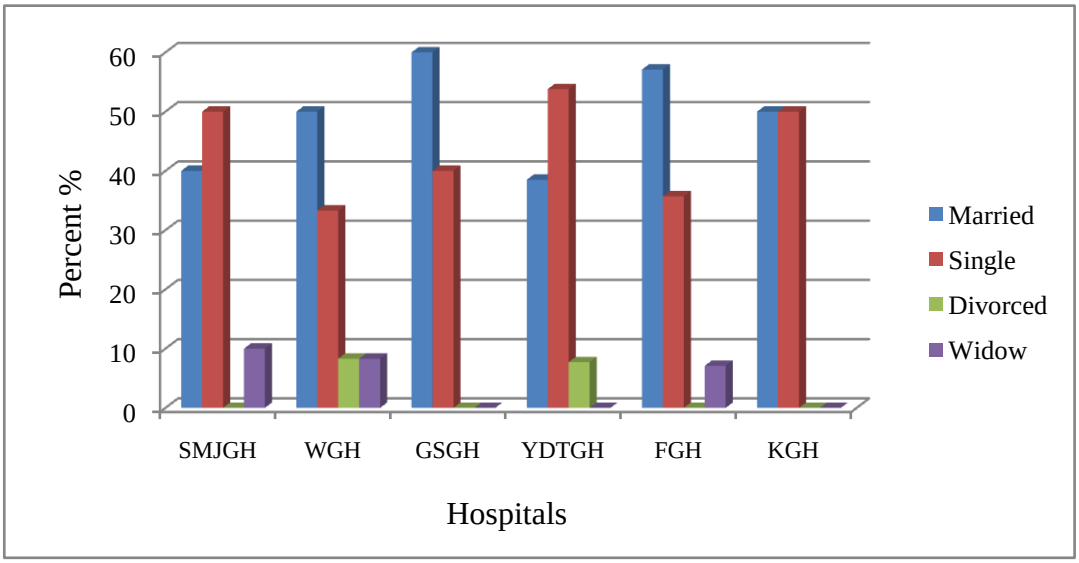


Figure 4.7: Marital status of the patients
Source: Fieldwork, 2014

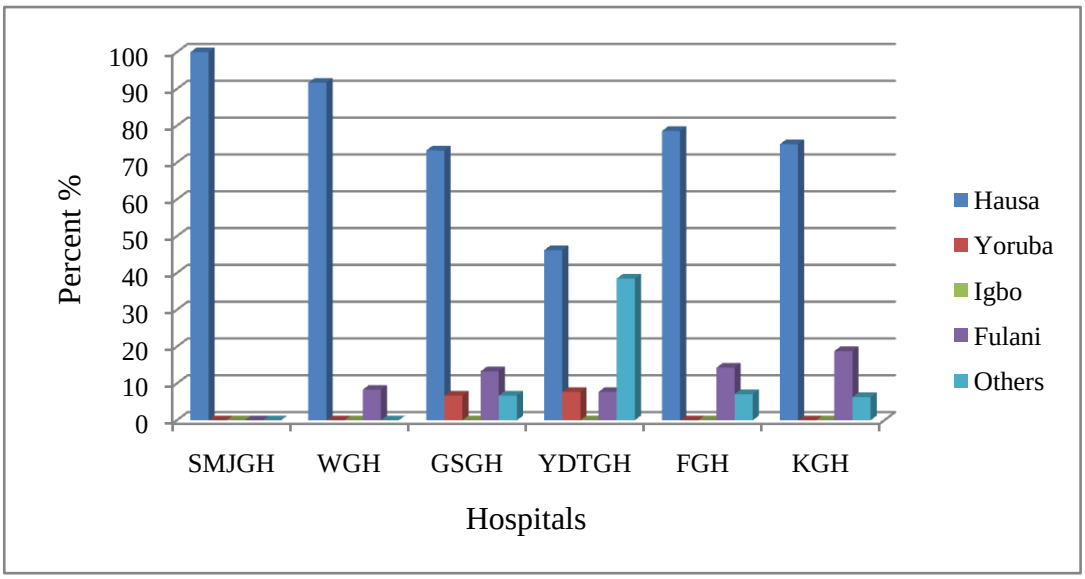


Figure 4.8: Ethnic identity of the patients
Source: Fieldwork, 2014

4.2.3 Section C of the questionnaire

Figure 4.9 below illustrate the patients' conditions. The section was designed to gain insight into the patients' condition, to know the activities the patients can or cannot do their selves. The section has been designed this way in an attempt to answer research question two also (what is the nature of the patients)

When the patients were asked whether they can carry out some activities or not, some of them answered positively that "Yes" they could do it their selves without seeking for someone's assistance but some answered otherwise, depending on his or her conditions. Some could not even respond to the questions their selves due to their condition or due to the fact that they are small babies who could not even talk, hence it was their caregivers that responded to the questions. However, some patients kept silent about some questions because, probably they were a day or few days or hours or even minutes admittedinto the hospital when the questionnaires were administered to them. Thus, the need for some activities did not arise to them.

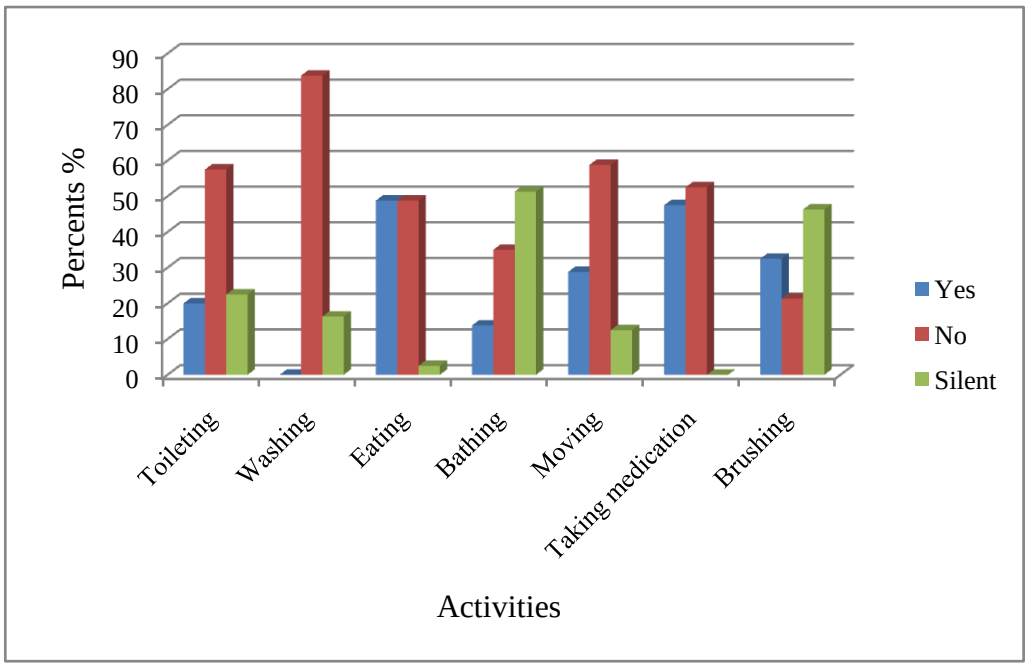


Figure 4.9: Activities that the patients can or cannot do themselves
Source: Fieldwork, 2014

Figure 4.9 above showed that 57.5% of the patients need someone to help them with toileting, 83.8% washing, and 48.8% eating, 35% bathing, 58.8% moving, 52.5% taking medication and 21.3% brushing, while 20% can do toileting their selves, but none (0%) can wash their selves, 48.8% can eat their selves, 13.8% do not need someone to help them with bathing, 28.8% moving, 47.5% taking medication and 32.5% brushing.

From the above it can be observed that apart from bathing and brushing, almost half or more than of the patients cannot perform most of the activities their selves possibly due to the condition they were in. As a result, they need someone to assist them to carry out such activities anytime the need arises.

4.2.4 Section D of the questionnaire

This section dealt with the caregiving activities, it was designed to answer research question three (What is the extent of caregiving activities?). It can be observed from the

previous section that some patients could not perform some of their daily activities unless they sought for someone's assistance.

This section (figure 4.10 through 4.19) illustrates in details those that help the patients carry out those activities, how often they do it,and the challenges they probably encounter in the process of executing those activities.

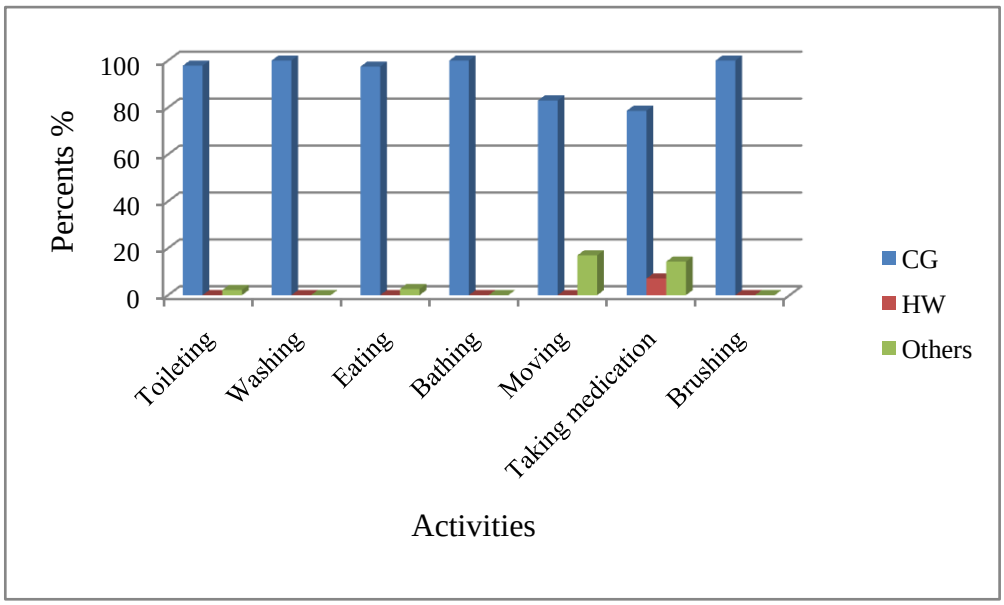


Figure 4.10: Caregiving activities (People that help the patients carry out activities they cannot do their selves) Source: Fieldwork, 2014

Figure 4.10 above indicated that, out of the total number of caregivers who responded that they could not perform some activities themselves unless they sought for someone's assistance, 97.8% of them answered that, the caregivers (CG) help them with toileting while 2.2% caregivers and health workers(HW),100% of them responded that it was the caregivers that help them with washing. When it comes to eating 97.4% of them said that the caregivers help them with only 2.6% caregivers and health workers.

All of the patients (100%) that could not take bath themselves said that it was the caregivers that help them in doing so, in moving 83% caregivers, 17% caregivers and

health workers; taking medication 78.6% caregivers, 7.1% health workers and 14.3% caregivers and health workers; brushing, 100% caregivers (Figure 4.10)

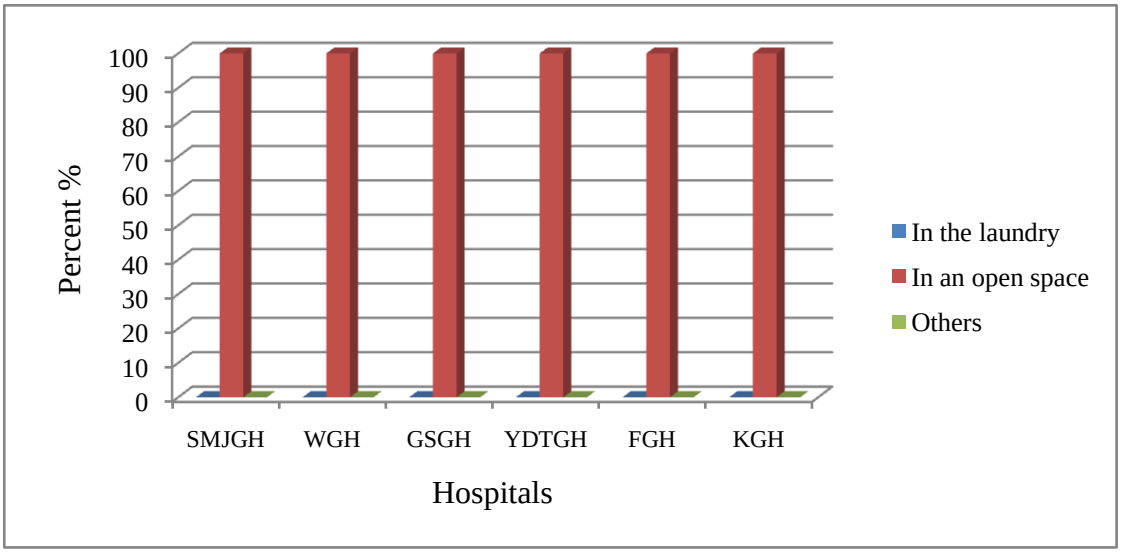


Figure 4.11: Caregiving activities (Where the caregivers wash)
Source: Fieldwork, 2014

From Figure 4.11 above, it can be observed that when the caregivers were asked where they wash the patients' clothes as well as their own, all (100%) of them in all the hospitals attended responded that they do it in an open space. Neither (0%) of them wash in the laundry nor in a different space designed for that purpose.

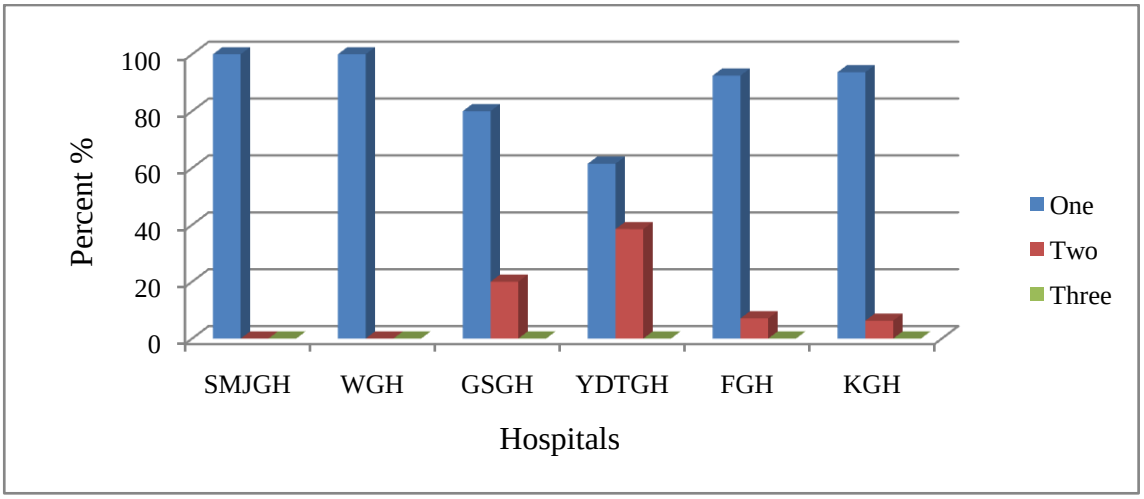


Figure 4.12: Caregiving activities (Number of caregivers at a time)
Source: Fieldwork, 2014

When the caregivers were asked how many of them stay with a patient at a time, more than three-quarter (87.5%) of them responded that only one caregiver stays with the patient at a time, 12.5% responded that 2 caregivers stay with a patient at a time, while none (0%) of the caregivers were found to be more than two (Figure 4.12). The result was almost similar looking at the hospitals individually only that in Sheikh Muhammad Jiddah and Wudil General Hospitals none of the caregivers (0%) were found to be more than one.

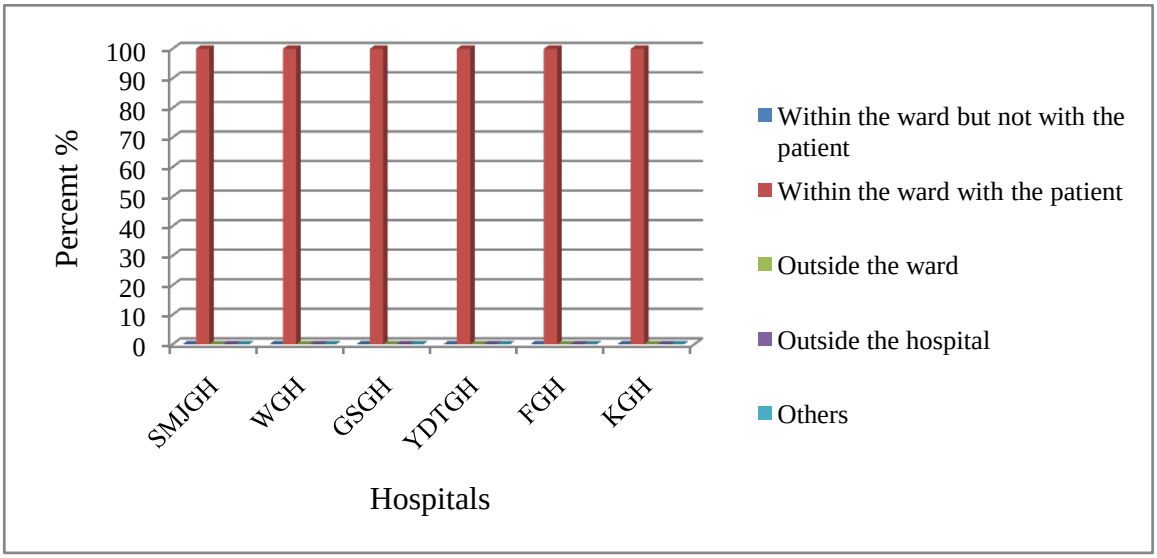


Figure 4.13: Caregiving activities (Where the caregivers sleep)
Source: Fieldwork, 2014

Out of the total number of caregivers that were asked the place they sleep during their stay with their patients, all of them (100%) in the six hospitals visited, answered that they sleep in the ward with their patients. None (0%) of them sleep outside the ward, outside the hospital, or even within the ward but not with the patient talk less of going back and sleep at home or somewhere else (Figure 4.13)

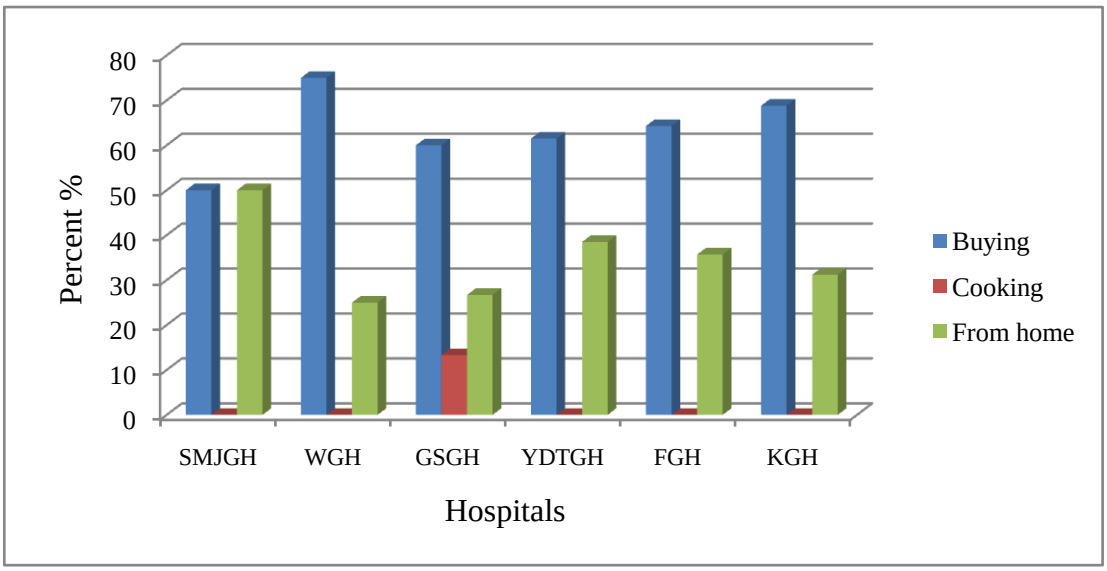


Figure 4.14: Caregiving activities (How the caregivers get food)
Source: Fieldwork, 2014

Figure 4.14 above showed that 63.8% of the caregivers buy food, 33.8% get their food from home while 2.5% of them cook. Looking at the hospitals individually, the result was not much different. None of the caregivers (0%) responded that they cook in all the hospitals visited except in GanboSawaba General Hospital where 13.3% of the caregivers responded that they get their food through cooking.

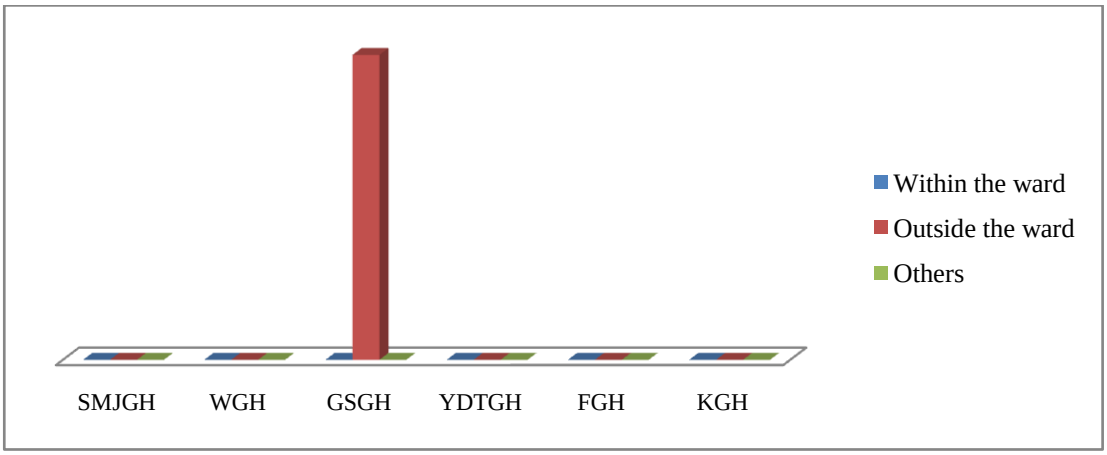


Figure 4.15: Caregiving activities (Where the caregivers cook)
Source: Fieldwork, 2014

When the caregivers that cook were asked where they do it, 100% of them responded that they cook within the hospital as it can be seen in Figure 4.15 above.

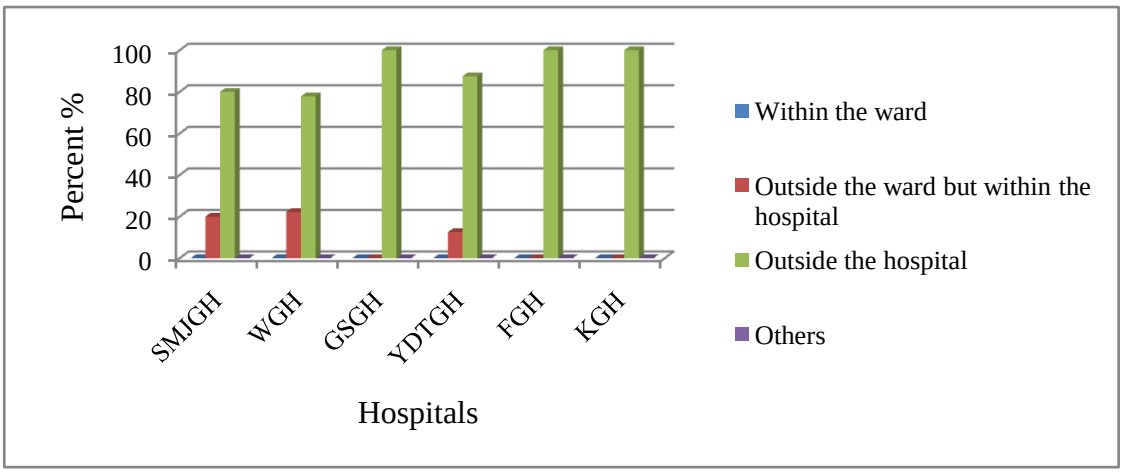


Figure 4.16: Caregiving activities (Where the caregivers buy food)
Source: Fieldwork, 2014

Figure 4.16 above illustrate where the caregivers buy food, 92.2% of the caregivers that buy food responded that they buy food outside the hospital, while 7.8% said that they buy food within the hospital. In hospitals like Funtua, Katsina and Yusuf Dan-tsoho General Hospitals it can be seen that 100% of the caregivers buy their food outside the hospital.

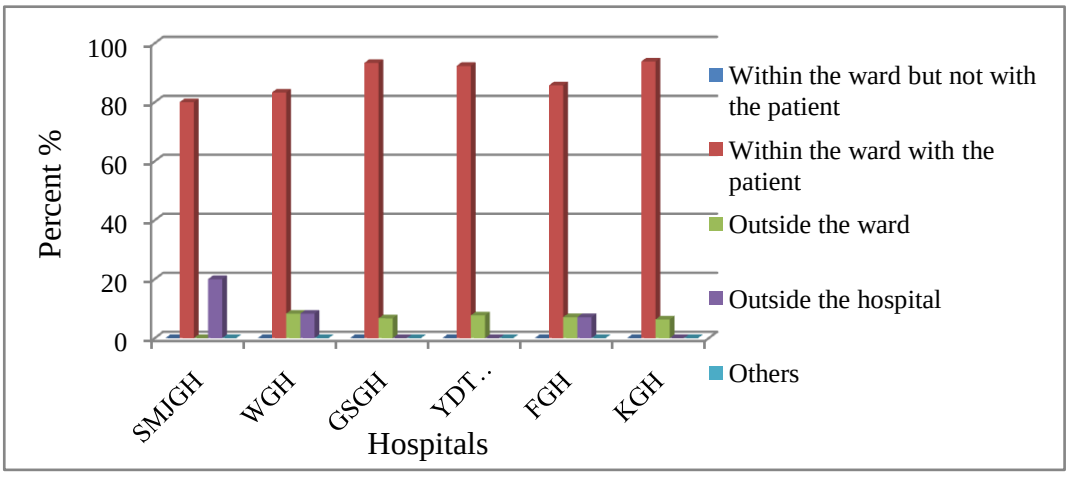


Figure 4.17: Caregiving activities (Where the caregivers eat)
Source: Fieldwork, 2014

Figure 4.17 above showed that majority (88.8%) of the caregivers eat their food within the ward with the patient with only 6.3% and 5% of them taking their food outside the ward and outside the hospital respectively.

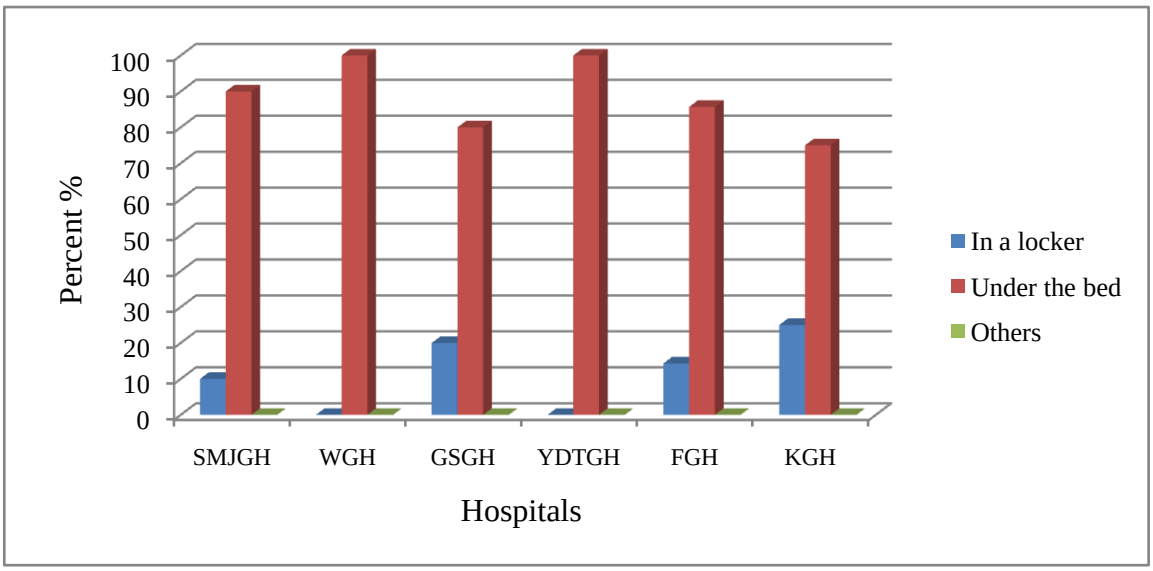


Figure 4.18: Caregiving activities (Where the caregivers keep containers after eating) Source: Fieldwork, 2014

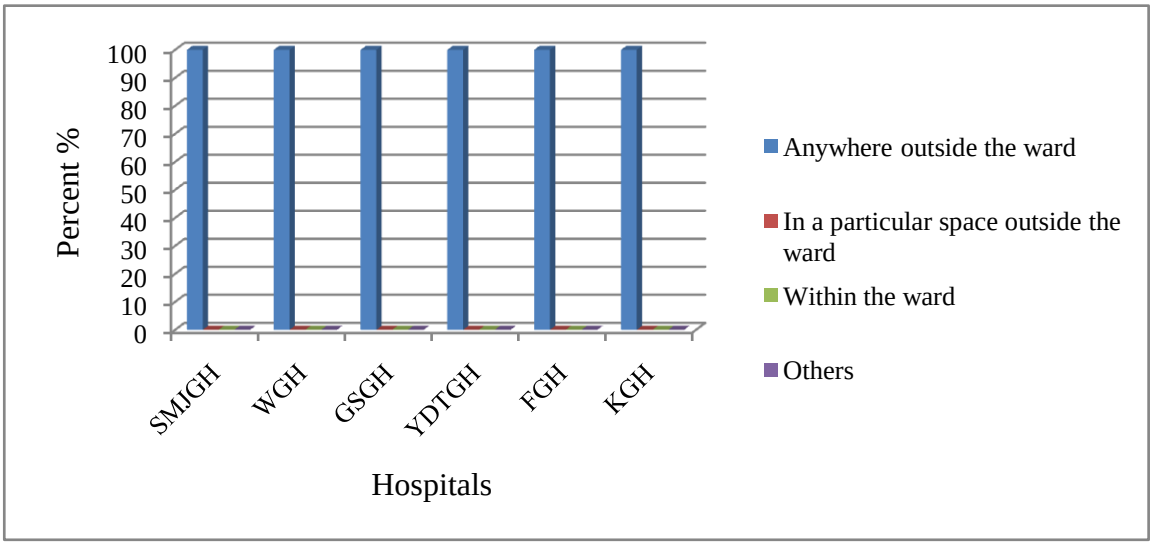


Figure 4.19: Caregiving activities (Where the caregivers stay when the ward is being washed) Source: Fieldwork, 2014

Figure 4.18 and 4.19 above illustrate where the caregivers keep containers after eating and where theystay when the ward is being washed respectively.

When the caregivers were asked where they keep containers after eating, more than three-quarter of them (87.5%) of them responded that they keep their containers under the bed while 12.5% answered that they keep their containers in a locker after eating as it was shown in Figure 4.18 above.

Figure 4.19 above revealed that all (100%) of the caregivers stay anywhere outside the ward when the ward is washed.

4.2.5 Section E of the questionnaire

Section E of the questionnaire dealt with space requirement of the caregivers and the section was designed to answer research question four (What are the caregivers' spatial needs?).

Figure 4.20 below indicated that more than half of the caregivers (58.8%) were not satisfied with the available space they have for storage. The result has been the similar in all the hospitals with exception of Sheikh Muhammad Jiddah and Funtua General Hospitals. In Sheikh Muhammad Jiddah General Hospital there were equal responses to this question where 50% of the caregivers said that they were satisfied with space they have for storage while the remaining 50% said that they were not. On the other hand (Funtua General Hospital) majority (64.3%) of the caregivers said that they were okay with the available space they have for storage.

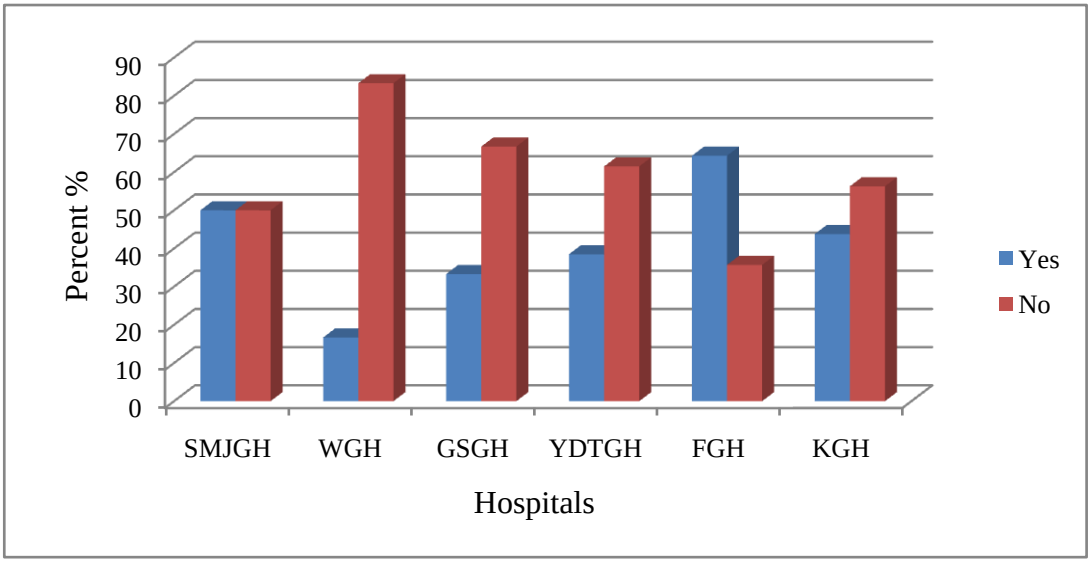


Figure 4.20: Caregiving activities (If the caregivers are satisfied with space for storage)
Source: Fieldwork, 2014

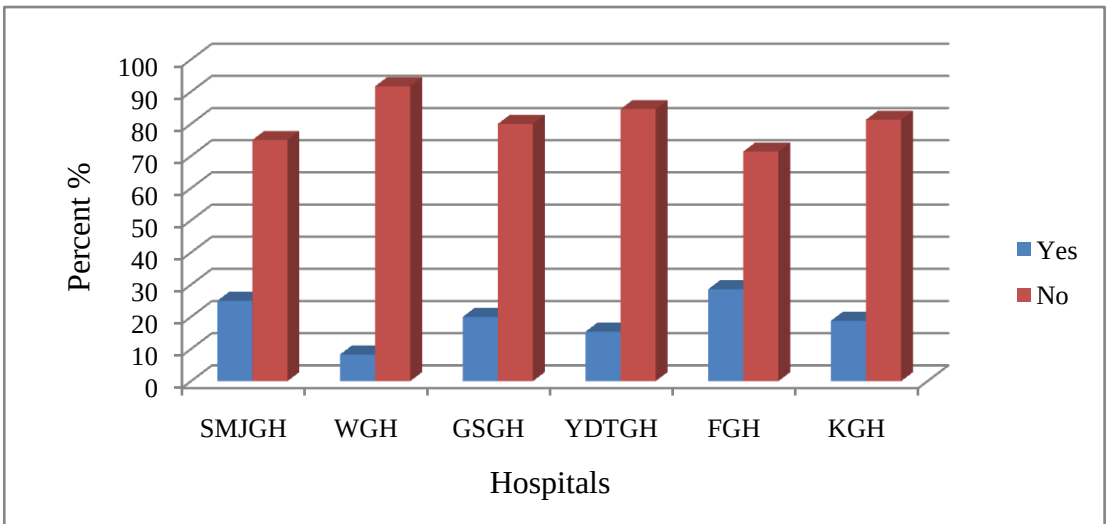


Figure 4.21: Caregiving activities (If the caregivers are satisfied with space for sleeping)
Source: Fieldwork, 2014

Figure 4.21 above indicated that 80.8% of the caregivers are not satisfied with space they have for sleeping and the result remained similar in all the six hospitals.

4.3 Case Studies

4.3.1 Case study one: Gambo Sawaba General Hospital

4.3.1.1 Brief introduction

Gambo Sawaba General Hospital was commissioned in the year 1975 by the then commissioner of police Kaduna State Alhaji AuduBako. The hospital started as a health centre which was later converted to General Hospital. It is located at Kofan Gayan Zaria city, Zaria local government, Kaduna state. The hospital comprises of different units and departments such as GOPD, accident and emergency unit, pharmacy, x-ray department, medical record, laboratory, theatre, eye clinic, ENT unit, paediatric, maternity, VVF unit, admin section, general store, generator house, and laundry/kitchen and inpatients wards. The hospital has a capacity of about one hundred and sixty (160) beds for both male and female patients being admitted into the hospital.



Plate I:Google Image of Gambo Sawaba General Hospital
Source: Google earth, June, 2014

4.3.1.2 Design and planning

The hospital is a single storey building, and the design approach was a not a mono block approach, that is to say different units and sections of the hospital were detached from each other but connected with a series of work ways only that some units were fused together in single block. For example, GOPD, pharmacy, x-ray, and NHIS units were contained in one block, but unfortunately, combining the functions together made the design so deep in a way that made it so dark even at day time, although that it might be the fault of the designer. The design was also such that some of the buildings were not properly oriented as such they are exposed to direct solar radiation. In terms of the planning, the planning of the hospital did not appropriately follow the basic planning of hospitals, that is, starting from out patient's services to diagnostic areas and finally to inpatients areas, rather the hospital was haphazardly planned, that is, it started with the laboratory to outpatients areas then to in patients wards then finally the theatre which was pushed towards the back and far from the surgical wards.



Plate II: Insufficient light in the GOPD
Source: Fieldwork, 2014

4.3.1.3 Circulation

Circulation in hospital is of paramount important; circulation here refers to movement the movement of people, goods and vehicles in and out of the hospital. Gambo Sawaba General Hospital has no clear distinction of vehicular and pedestrian circulation, although that the hospital has a generator house, general store kitchen and a small workshop or maintenance unit but provision for the supply and movement of goods for those areas was missing in the design instead only one entrance is being used for the entire activities of the hospital which of course causes interferences in the execution of the day to day activities of the hospital.

4.3.1.4 Services and facilities

Water*:*Water supply source for the use of the entire hospital was through a borehole and wells. The hospital was provided with overhead tanks which serve as the reservoir of the water from the borehole. The water from the borehole is pumped to the overhead tank which supplies water via natural gravity to various areas of water demand.

Parking spaces*:*The hospital lacks clear defined parking spaces for visitors' and even the hospital workers' vehicles, so vehicles are parked at any space found okay for

parking. The only parking spaces that can be identified in the hospital are the parking space for the medical director of the hospital and the



Plate III: The nature of parking spaces
Source: Fieldwork, 2014

Electricity:The electricity supply in the hospital was a three-phase four wire grid system. However alternative means of power supply were also available in the hospital to reduce the problem of power failure in the hospital. Those alternatives were standby generators and solar panels.



Plate IV: Solar panels as alternative source of energy
Source: Fieldwork, 2014

Means of vertical movement:Although all the structures in the hospital are single storeys, some means for vertical movement were used where necessary, for example ramps and steps were used in the general outpatient department, ENT unit and eye clinic among others.



Plate V: Ramp as a means of vertical movement
Source: Fieldwork, 2014

4.3.1.5 Building materials and structure

The materials used in the construction of the hospital were concrete, normal sand Crete blocks, aluminium roofing sheet, aluminium and casement windows, flush and steel doors, wood for roof structure and partitions, ordinary ceiling board, asphalt, paint for finishes.

4.3.2 Case study two: Funtua General Hospital

4.3.2.1 Brief introduction

Funtua General Hospital was opened on 7th march, 1975 by Miss D.M Miller, Commissioner for trade, industry and operatives Kaduna state. The hospital is located in Funtua, Unguwan Magajin Makera along Sokoto Road. The hospital comprises of

the units and departments expected of a general hospital. These are, general outpatient department, laboratory, dental clinic, eye clinic, ENT unit, admin, maternity, pharmacy, radiology department, paediatric department, inpatients' facilities, theatre, mortuary, workshops, kitchen/laundry, sickle cell unit, A & E, medical record and few others.



Plate VI: Google image of Funtua General Hospital
Source: Google earth June, 2014

4.3.2.2 Design and planning

In the planning of the hospital, some considerations regarding zoning of the facilities according to function were made. For example, outpatients' services were zoned in one area and the inpatients' services were also zoned in one area, only that some of the diagnostic facilities were separated from the others. The location of the amenity ward was somehow improper because it was located very close to the main hospital generator house as such there used to be noise disturbances from the generators. The hospital is a single storey building and different units of the hospital were detached from each other but connected with covered work ways. Some considerations were also given to the orientation of the buildings although some were not properly oriented, among which are the A&E ward, isolation ward for TB patients, gynae ward and few

others. Window openings were provided for natural ventilation. However, the openings were not adequate in some of the buildings. The design of the GOPD is somehow not good because it tends to appear dark even at day time. Some problems were also observed in the theatre and the laboratory. For the theatre, recovery room was not incorporated in the design and the orientation of the building was not good so the spaces were exposed to sun heat especially when the sun tilts to the west. For the laboratory, there was no reception/registration area so the space designed as waiting area for the patients was converted to reception/registration, hence no waiting area, the patients only find a space outside the laboratory and queue-up. The laboratory also lacks sample collection room, exit door and few other functions. As such workers found it uncomfortable in the process of carrying out their activities.

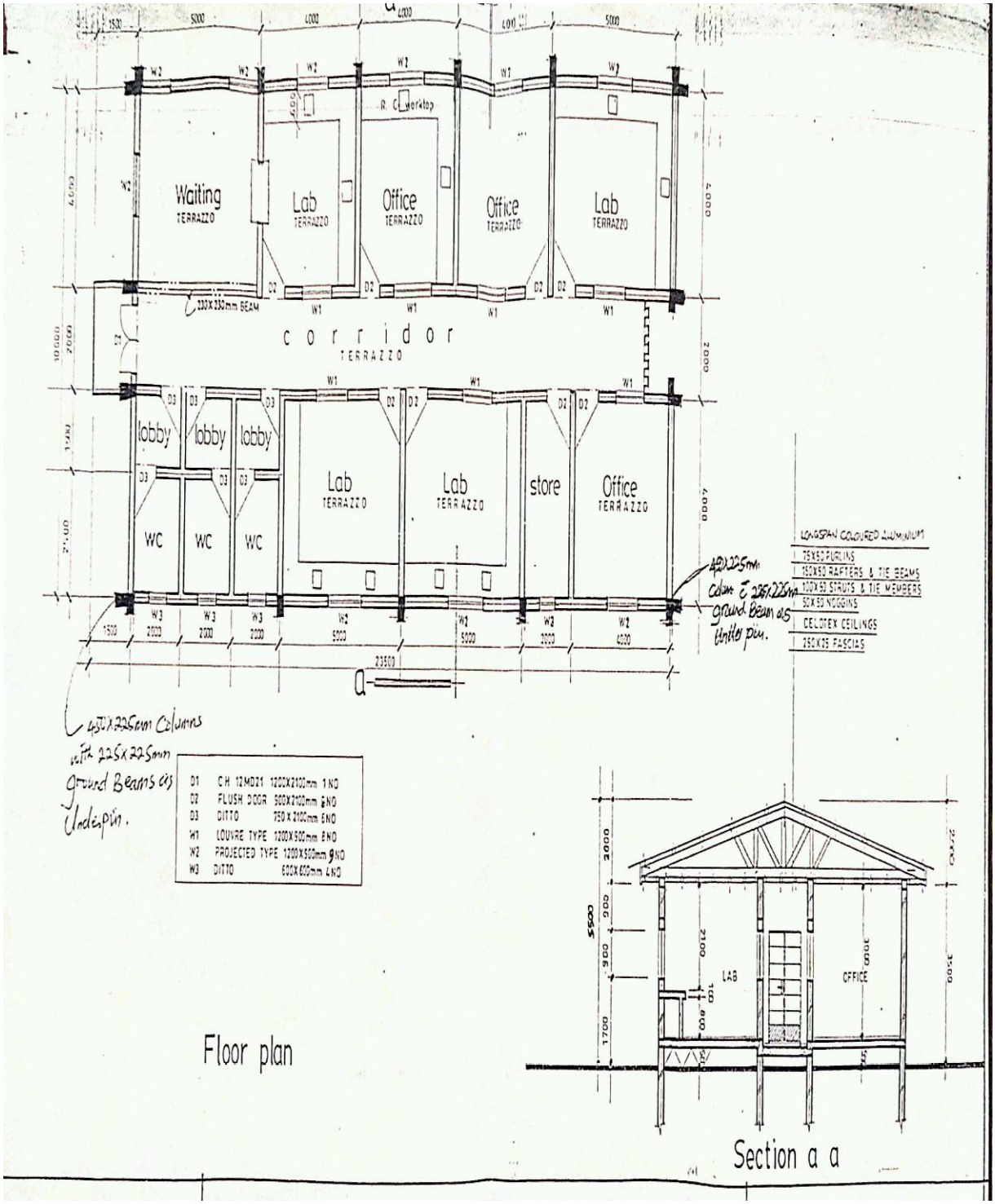


Figure 4.22: Floor plan and section of the laboratory
Source: Katsina State Ministry of Health

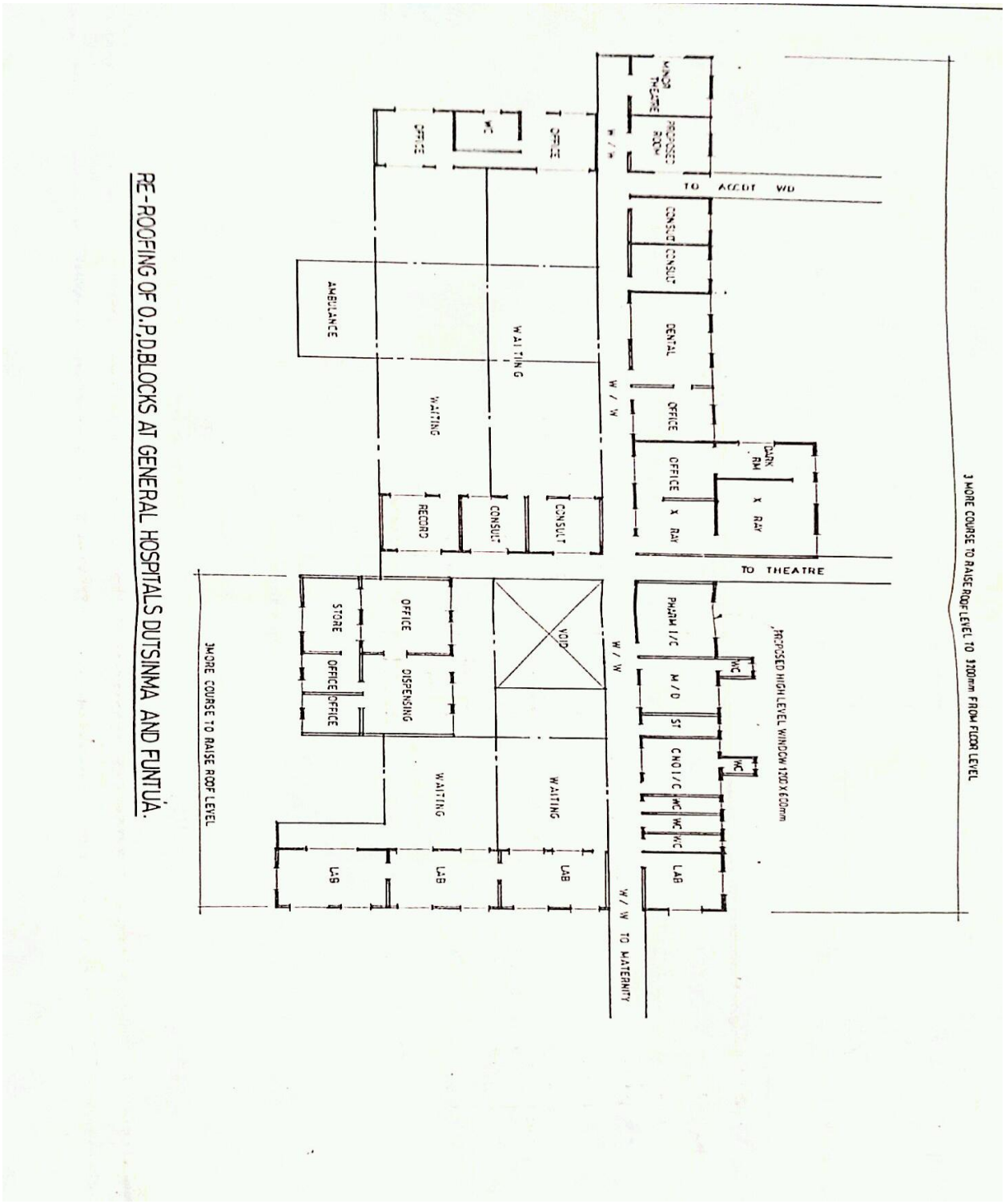


Figure 4.23: Floor plan of the GOPD
Source: Katsina State Ministry of Health

4.3.2.3 Circulation

The pattern of circulation in General Hospital Funtua can be considered average. The hospital has covered work ways adequately sized that connect many parts of the

hospital. The only problem was with the circulation of vehicles and people because there was no clear separation between vehicular and pedestrian circulation.

4.3.2.4 Services and facilities

Water: Water supply source for the use of the entire hospital is through a public water supply system and boreholes that serve as alternatives. The hospital is provided with overhead tanks which serve as the reservoir of the water from the borehole. The water from the borehole is pumped to the overhead tank which supplies water via natural gravity to various areas of water demand.

Parking spaces: The hospital lacks clear defined parking spaces for visitors' and even for the hospital workers' vehicles, so vehicles are parked at any space found okay for parking. The only parking spaces that were identified in the hospital were; parking spaces for the medical director and some key staff in the admin, then the ambulance bay in the accident and emergency unit.



Plate VII: Ambulance bay
Source: Fieldwork, 2014

Electricity: The electricity supply in the hospital was a three-phase four wire grid system. However alternative means of power supply was also available in the hospital to reduce the problem of power failure in the hospital. Those alternatives were standby generators and solar panels.

Means of vertical movement: Although all the structures in the hospital are single storeys, some means for vertical movement were used where necessary, for example ramps and steps were used in the general outpatient department, accident and emergency unit, eye clinic among others.

4.3.2.5 Building materials and structure

The materials used in the construction of the hospital were concrete, normal sand Crete blocks, aluminium roofing sheet, aluminium and casement windows, flush and steel doors, wood for roof structure and partitions, ordinary ceiling board, asphalt, paint for finishes.

4.3.3 Case study three: Wudil General Hospital

4.3.3.1 Brief introduction

Wudil general hospital started as a comprehensive health centre and was opened by the then military Governor of Kano State, Wing Commander Muhammad N. Umaru on 22nd July, 1987. The hospital is located along Dutse road Wudil, Wudil Local Government Kano State, and it has almost all the facilities of a general hospital, like theatre, laboratory, X- ray department, inpatient wards, and pharmacy among others.



Plate VIII: Google image of Wudil General Hospital
Source: Google earth, June, 2014

4.3.3.2 Design and planning

Some problems were attached with the design and planning of Wudil general hospital because of the fact that the hospital was not initially designed as general hospital. The positioning of the facilities was not in accordance with the planning of general hospitals. Also almost all the spaces were too small for the users, they were not adequate and some important spaces were even eliminated due to constraint from the size of the available spaces they have. However, the hospital has good connection of work ways that linked different parts of the hospitals together.

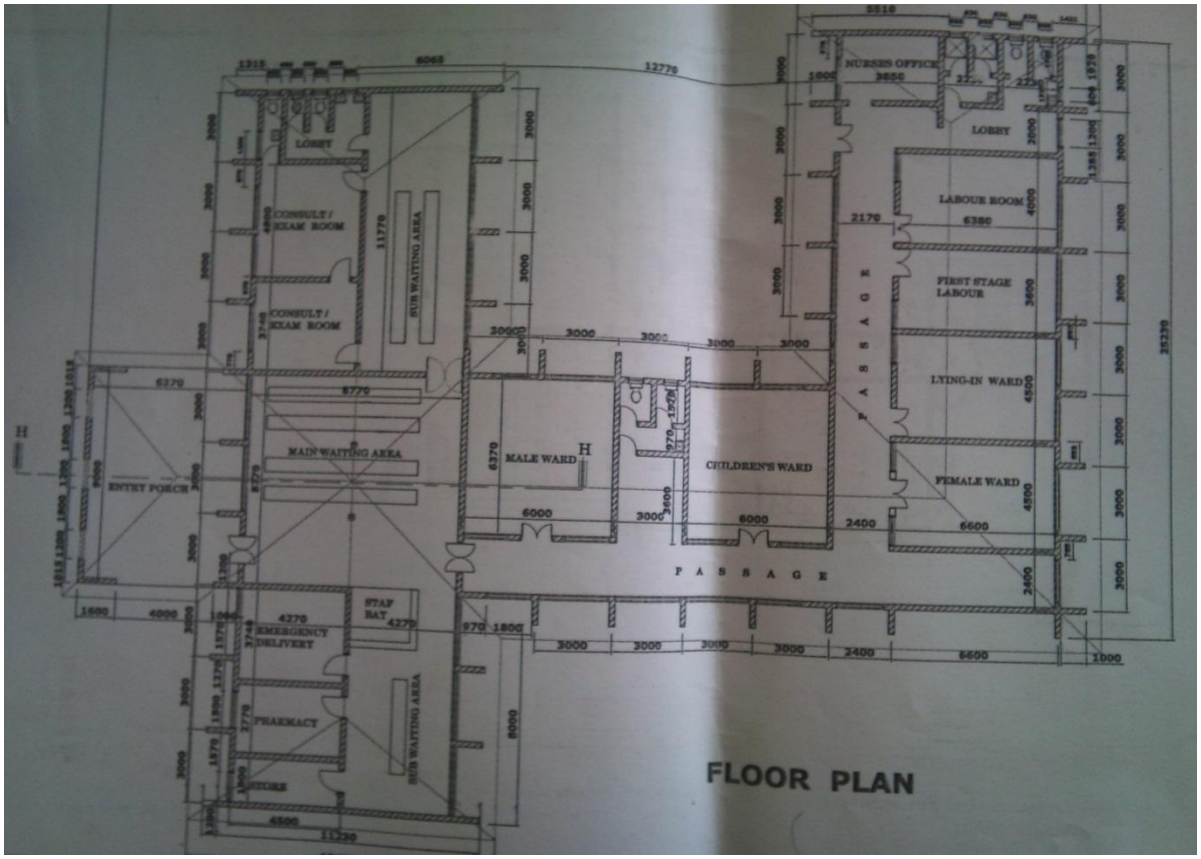


Figure 4.24: Floor plan of some parts of GOPD
Source: Kano State Ministry of Health

4.3.3.3 Circulation

The pattern of circulation in Wudil General Hospital can be considered average. The hospital has covered work ways adequately sized that connect many parts of the hospital. The only problem was with the circulation of vehicles and people because there was no clear separation between vehicular and pedestrian circulation.

4.3.3.4 Services and facilities

Water:Water supply source for the use of the entire hospital is through a public water supply system and boreholes that serve as alternatives. The hospital is provided with overhead tanks which serve as the reservoir of the water from the borehole. The water from the borehole is pumped to the overhead tank which supplies water via natural gravity to various areas of water demand.

Parking spaces:The hospital lacks clear defined parking spaces for visitors' and even for the hospital workers' vehicles, so vehicles are parked at any space found okay for parking. The only parking space identified in the hospital was; parking space for the ambulance bay in the accident and emergency unit.

Electricity:The electricity supply in the hospital was a three-phase four wire grid system. However alternative means of power supply was also available in the hospital to reduce the problem of power failure in the hospital. The alternative was standby generators placed at different units in the hospital.



Plate IX: Generator as alternative means of power supply

Source: Fieldwork, 2014

Means of vertical movement:Although all the structures in the hospital are single storeys, some means for vertical movement were used where necessary, for example ramps and steps were used in the general outpatient department, accident and emergency unit, eye clinic among others.

4.3.3.5 Building materials and structure

The materials used in the construction of the hospital were concrete, normal sand Crete blocks, aluminium roofing sheet, aluminium and casement windows, flush and steel doors, wood for roof structure and partitions, ordinary ceiling board, asphalt, paint for finishes.

5.0 RESULTS AND DISCUSSION OF FINDINGS

5.1 Preamble

This chapter gives more detailed explanation of issues relating to the data presentation and analysis which helps in articulating those issues emanating from the analysis with respect to their implications on the subject of investigation.

5.2 Discussion of Findings

Going by the first research question (What is the nature of family caregivers?); the study reveals that there are more female caregivers than the male caregivers. The result is in line with Chan (2011), who opined that caregivers are more likely to be women in many parts of the world; also World Federation of Mental Health (2010) declared that globally, about 80% of caregivers are women. Moreover, in Nigeria too, the result was not much different for example Okoye (2011) found that more than half of family caregivers are females in South-eastern Nigeria, in Northern- western particularly Katsina and South-westernpart of Nigeria Yusuf, Nuhu, & Akinbiyi (2009)and Lasebikan, (2012) respectively also foundsimilar result.

In terms of the ages of the caregivers, the result depicted that (53.8%) of the caregivers are in the age range of 20-29 out of which 23.8% were females and 30% males, while those with 60 years and above had the lowest percentage (1.3%).This is also in line with Okoye (2011) but contrary to Rathge (2002) where he found that more than half of the caregivere are 65 years of age or older.

The marital status of the caregivers shows that majority of them (62.5%) are married out of which married females accounted for 48.75% while the married males had 13.75% this indicated that more than three times the total number of married caregivers

were females. A little more than one-quarter of them (30%) answered that they are yet to be married while divorced and widows accounted for 2.5% and 5% respectively. The result is contrary to what Okoye (2011) had found. In his study, majority of the caregivers were yet to be married, with those that are married taking only 23.6%.

Considering the area of study more than three-quarter (76.3%) of the caregivers are Hausas, followed by Fulani 11.3%, others10.0%, Yoruba 2.5% but none of them (0%) were Igbos.

The preponderance of female caregivers may not be unconnected with the fact that men are always the people to go out and search for what to feed, shelter and educate the family and even settle the medical bill of any person that might fall sick within the family, as such it they may not have enough time to fully participate in caregiving activities unless when it is necessary. Furthermore, caregiving is a very difficult task and requires physical and mental fitness, which may be the reason why almost all the caregivers were adult with majority of them within the age range of 20-29. Very few of them were found to be above 60 years of age probably because, people of that age might not to be strong enough to cope with the stresses and burden involved in caregiving.

Taking the second research question, the result revealed that there are more male patients than the female patients and almost half of them are married with those that are yet to get married taking 43.8%, very few of the patients are widowed and divorced. In terms of age classification, the result revealed almost even distribution of number of patients even though there seems to be more children and aged patients.

The study also reveals that the condition of the patients was such that majority of them could not carry out some activities their selves unless they sought for someone's

assistance, which is in line with Linda Naiditch and Lisa Weber-Raley (2009), where they found that patients need assistance with at least one activity of daily living. for example, about more than half of the patients needed assistance with toileting, eating, moving and taking medication, also more than three-quarter of them needed assistance with washing. However, very small proportion of the patients needed assistance with brushing even though that a higher proportion of them did not respond to the question probably because; the need has never arisen or they were not so mindful about it.

Moreover, the proportion of the patients that needed assistance with bathing was small compared to those that did not respond to the question also, the reason may also not be unconnected with poor condition of facilities for carrying out such activity or the need for the activity has never arisen, also because the questionnaire was administered to some of the patients the day they were admitted in to the hospital.

For the third research question, the study shows that, majority of all the assistance being rendered to patients, were done by the caregivers. For example, out of the total number of patients that responded that they could not do toileting, 97.8% of the people that help the patients do it were the caregivers, likewise 100% of washing, 97.4% of eating, 100% of bathing, 83% of moving, 78.6% of taking medication and 100% of brushing.

Thus, for the caregivers that help their patients with washing, the result indicated that 100% of them do it just in an open space outside the ward without any designed space or laundry for them to do it. Even though that hospital is designed with such a facility but it was not meant for caregivers to wash their clothes and that of the patients.

The study also reveals that almost more than three-quarter of the patients had at least one person with them acting as informal caregivers and very few were found with two

caregivers, none were found not having at least one caregiver and none were found with more than two caregivers. It was learnt that even those with two caregivers were patients with a chronic illness and those with a high status either financially, politically or those from royal family even when their condition was not severe. From the study, it was also learnt that none of the caregivers sleep even away from the patients but rather 100% of them spend thewhole night with their patients.This was because the patient might need some assistance from the caregiver at any point in time, or because the patient might feel loneliness or unhappy by not seeing any of his/her relative beside him/her.

Furthermore, in the course of caregivers' stay with their patients, the study also reveals that, most of them (63.8%) get their food by buying, some get it from home because the hospital is within their area of living or they have relatives around that help them with it and some even cook (this has to do with nature of the patient's illness). It was also learnt that for those that buy food, majority of them (92.2%) do buy it outside the hospital because the hospitals were lacking a designed facility where patients, caregivers, visitors and even the health workers can buy food. For the caregivers that cook, the study reveals that 100% of them just cook in a space outside the ward. However, no matter how the caregivers/patients get the food, majority of the caregivers eat their food within the ward with the patients, very few of them eat outside the ward or outside the hospital may be due to their patient was not in critical condition they can leave him/her alone for some minutes or hours or because they can cannot eat within. It was also found that more than three-quarter of the caregivers keep containers under the bed after eating, meaning that they do not have proper space for storage or there is but not adequate for them.

The caregivers stay almost every hour with their patients. However, it was learnt that any time cleaners come for washing the ward; the caregivers will be asked to go out of the ward in which the study reveals that there has not been space designed for them to go and relax for a while before they will asked to enter again. In fact, it was learnt that some caregivers are even happy with that period because it gives them opportunity to be off the stresses and burden of caregiving for a while, because some patients are worrisome. They disturb the caregivers with unnecessary complains even when their conditions was not severe especially aged patients; they always want see their caregiver all the time with them, they do not allow him/her to have rest. Those caregivers use that opportunity to go out and relax.

For the fourth research question, the study reveals that most of the caregivers/patients have in adequate space for storage, and majority of the caregivers are not satisfied with the available space they have for sleeping.

5.3 Summary of Findings

I. The study reveals that each and every patient has at least one among his relatives who acts as family caregiver and staying with the patient almost all the time during their stay in the hospital.

II. The findings of the study also reveals that family caregivers stay and spend their night with their patients and sleep within the ward with the patients, none of the caregivers sleep away from the patients even if it is within the ward. However,spaces in the ward were designed basically for the patients and official caregivers, hence the space need to be increased to accommodate those informal caregivers.

III. Also, apart from sleeping with the patients, the study reveals that the caregivers eat their food within the ward with the patients, they do not have enough space for storage of the equipment they use for eating and washing, and there is no space designed for the caregivers to wash their clothes/equipment and that of the patients even though hospitals were designed with laundries but they are not meant for that purpose. Thus, the size of the laundries needs to be increased or additional laundries for patients/caregivers need to be created.

IV. The study also reveals that when the caregivers want to go out and relax so that they are relieved of the stresses of caregiving, they do not have good place for doing such, they just go sit anywhere outside the ward.

V. It has also been deduced that hospitals are not designed with places where patients/caregivers, visitors and even the health workers could go and get food without necessarily going out of the hospital so there need for such facility to be officially incorporated into hospital design.

VI. The study also found that some caregivers do cook their own food because of the fact that a patient can be hospitalized for a long period of time, so they could not afford to be buying food if they are hospitalized away from their home town and even if they are, their relatives could not afford to be bringing food to them. So they had to be cooking and there has never been such provision in architecture.

VII. Finally, the study found that there is need for caregivers' clinic where the caregivers will be going for medical check-up.

6.0 DESIGN REPORT

6.1 Preamble

This chapter reveals Comparative study of some selected hospitals individually as a single unit, under these headings: Brief introduction,design and planning, circulation, services and facilities, building materials and structure.

6.2 Design Framework

According to Carr (2011), the design and planning of hospitals considers outpatient related functions, Diagnostic and treatment related functions, Administrative functions, teaching and research related functions, Inpatients related functions and finally services related functions.

However, a research titled *"Evolving space standard for family caregivers in the design of hospitals"* revealed that caregiver related functions also need to be incorporated in to the planning and design of hospitals thereby changing the model to outpatient related functions, Diagnostic and treatment related functions, Administrative functions, teaching and research related functions, Inpatients related functions, services related functions and finally caregiver related functions. Figure 6.1 below gives schematic illustrations of the framework of the design.

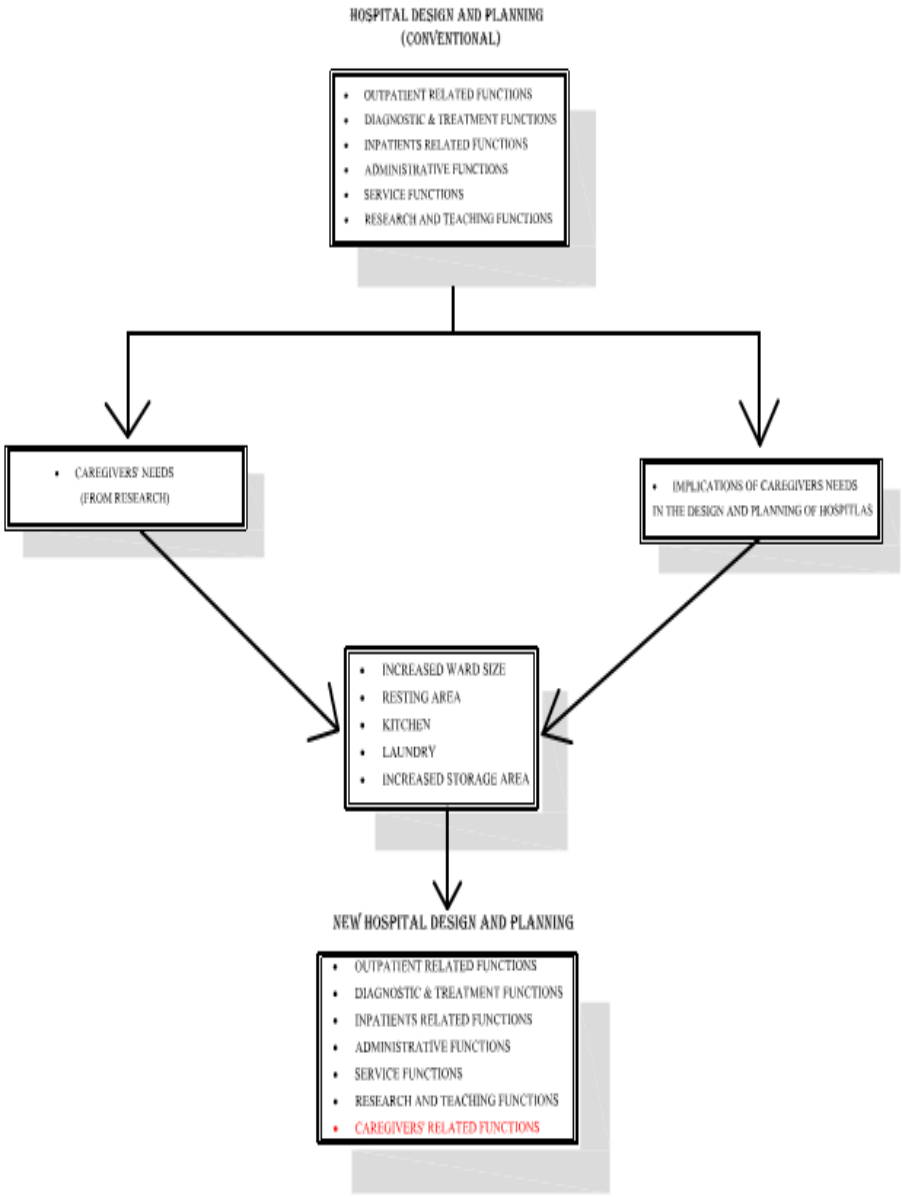


Figure 6.1: Schematic diagram of the design framework
Source: Fieldwork, 2014

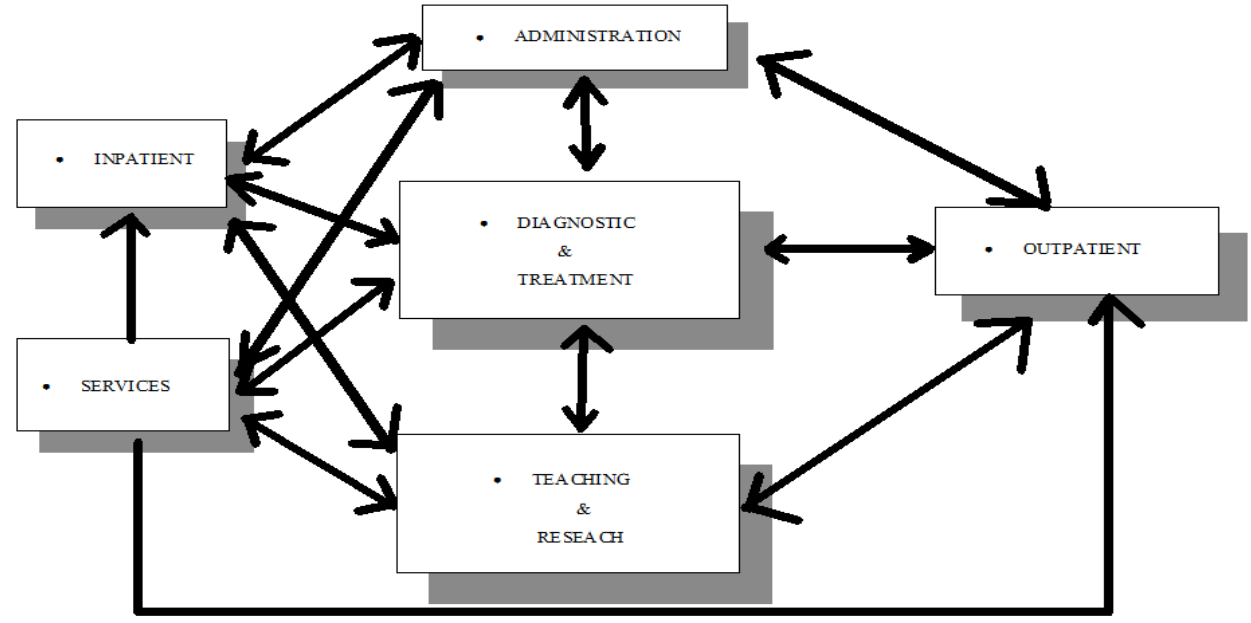


Figure 6.2: Conventional design and planning of hospitals
Source: Carr, 2011

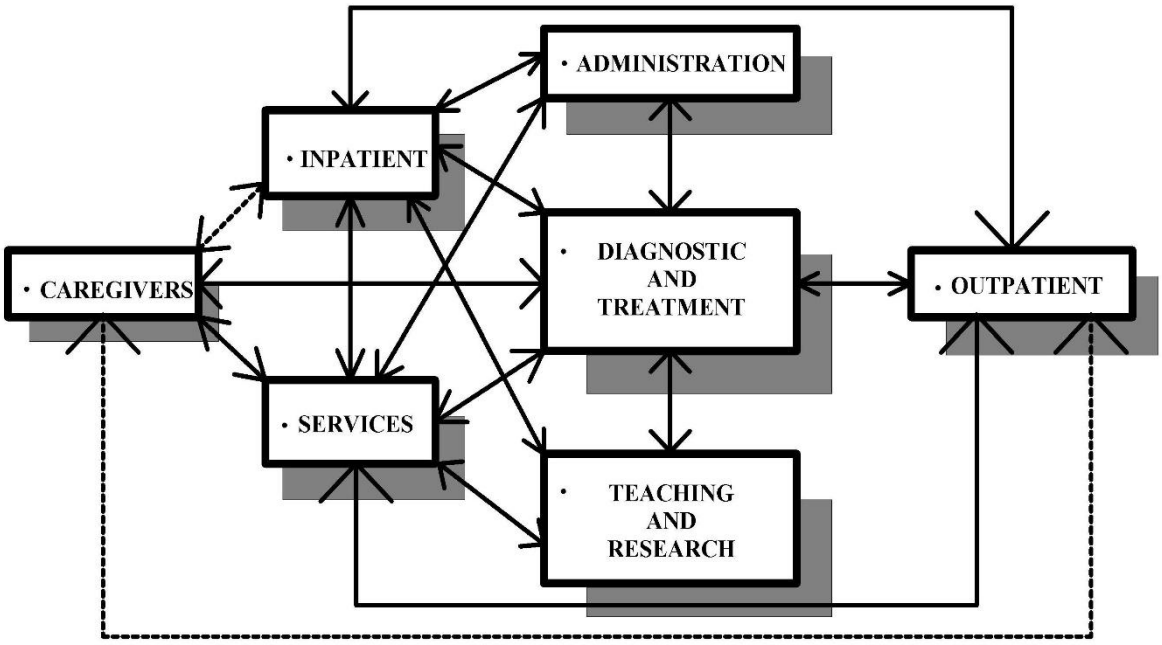


Figure 6.3: Caregiver oriented design and planning of hospitals
Source: Fieldwork, 2014

6.3 Design Brief

Due to the increase in the demand for new hospitals as a result of the increase in number of population; the researcher proposed to design a 300 beds capacity general

hospital to be located in Dandume town, Dandume Local Government Katsina state; the reason is, to improve the allocation of medical resources, match the provision of health care with social and economic demands, coordinate the urban and rural health service development and ease social contradictions. The design will take into consideration the current issue of family caregivers and also incorporate all that is needed in a general hospital.

6.4 Study Area

The study area is Dandume town, the capital of DandumeLocal Government area of Katsina state. Dandume is located within latitude 11°27’30’’N (degrees, minutes and seconds) and longitude 7°07’37’’E (degrees, minutes and seconds) in the southern-most part of Katsina, covering an area of approximately 422km² andaccording to 2006 census, Dandume Local Government has a population of about 145,735 with a growth rate of 3%.

The Local Government shares common boundaries with Funtua to the east, Sabuwa to the west, Faskari to the north and Giwa south. It is located within the Sudan savannah region of Northern Nigeria with two distinct climates as recorded in the Northern Nigeria – Rainy season and dry season. Rainfall starts from the month of April and ends in October. During this time temperature range between 35°c – 40°c in the afternoon and comes down to20°c – 25°c in the night. The dry season begins in the month of November when the northeast winds bring harmattan dust and the temperature falls to about 18°c during the day and could be down to 14°c – 15°c at night. The weather is generally favourable all year round.

Vegetation is typically that of the Sudan Savannah, characterized by isolated baobab and locust bean trees and shrubs. However, the original vegetation has been greatly altered by human activities such as clearance for cultivation and firewood.



Figure 6.4: Map of Dandume Local Government

6.5 Hospital Site Selection

Hospitals are one of the most important infrastructural objects. The increasing population, especially in developing countries, increases the demand for new hospitals. Hospitals are usually funded by the public sectors, by profit or nonprofit health organizations, charities, insurance companies or even religious orders. No matter who funds the project, where to locate a new hospital is an important question to ask (Lina Zhou , 2012)

Hospital site selection plays a vital role in the hospital construction and management. From aspect of the government, appropriate hospital site selection will help optimize the allocation of medical resources, matching the provision of health care with the social and economic demands, coordinating the urban and rural health service development, and easing social contradictions. From aspect of the citizen, proper

hospital site selection will improve access to the health care, reduce the time of rescue, satisfy people's medical needs as well as enhance the quality of life(Lina Zhou , 2012)

For the purpose of this study, two sites were chosen both of which are located in Dandume town; the capital of Dandume Local Government.

The two sites were assessed under selection criteria specific to hospitals in order to get the most suitable and viable site for the intended facility.The criteria are highlighted below.



Plate X: Google image of site 1
Source: Google earth, June, 2014



Plate XI: Google image of site 2
Source: Google earth, June, 2014

6.5.1 Selection criteria

Depending on the size and scale of the hospital, a broad range of site selection criteria has been recommended by medical authorities or researchers (Soltani & Marandi, 2011)

These criteria have beenestablished to compare the relative viability of each site to house the proposed facility.

Below is an itemized list of the criteria outlined by (Lina-Zhou , 2012), along with specific questions that were considered when evaluating each variation and option. After each question was answered, a relative score was assigned to each criterion and recorded on the scoring sheet summary below. Scores were awarded using a range of 1 – 5, as follows:5 = excellent, 4 = above average, 3 = average, 2 = below average, 1 = poor

This will result in a relative comparison where the higher the score, the more desirable the site.

Criterion 1 – Existing hospitals: How far is the site from existing hospitals? What are the anticipated impacts on existing hospitals? (The further away from the existing hospital the better)

Criterion 2–Residential area: How far is the site from the residential areas? (The nearer, the better)

Criterion 3- Accessibility: How far is the site from the access road? (The nearer, the better)

Criterion 4 - Lot Size: Is the site capable of reasonably providing for the Building's Future Expansion, and Outdoor Access? Is there space to accommodate safe Vehicular and Pedestrian Circulation, Roads, Parking, and Loading Facilities?Is there adequate frontage/Access for sight distances?

Criterion 5 – Site Physical Characteristics: Is the site flat, rolling, or does it have steep grades?Are the soils well drained?Is there any rock or ledge outcroppings?Does the site configuration lend itself to the proposed development?

Criterion 6 – Utilities: Is municipal water and sewer available? Is there adequate electrical service?Is Natural gas available?Is telephone and televisioncable available?Is there a storm water utility or provisions for municipal storm water disposal?

Criterion 7 – Neighbourhood: Is the site located in an Institutional area?Is the site located in a Residential area?Is the site located in a mixed-Use area?Is this a rural, suburban or urban setting?Are there view opportunities?

Criterion 8 – Construction Issues: Are there existing buildings on site that need demolition?Are there construction impacts on existing facilities?Are there existing facilities that need to be replaced?

Criterion 9 – Quality of Program/Service: Can the site accommodate a fully integrated facility?Is integration possible for clinical and medical services?

Table 6.1: Site selection criteria scoring sheet

S/N	Criteria	Site 1	Site 2	Remarks
1	Distance from existing hospitals	5	5	The two sites are of almost equal distance from the existing hospitals
2	Distance from residential areas	5	5	The sites are of almost equal distance from the residential areas
3	Accessibility	3	4	Site 2 is more accessible from the access road
4	Lot size	2	4	Site 2 is more spacious, has better potentials for future expansion.
5	Site physical characteristics	4	3	Both the sites have almost same physical features only that site 2 is more sloppy than site 1
6	Utilities	1	2	Site 1 has none of the utilities while site 2 has only electrical services
7	Neighbourhood	3	4	Site 2 has better view opportunities
8	Construction issues	3	4	Site 1 has obstructions of buildings that need to be demolished
9	Quality of programme/service	3	5	Site 2 has better potential to accommodate a fully integrated facility
Total		29	36	Site 2 is best suited for the intended facility

6.6 The Proposed Site

The site for the proposed facility is located in Dandume town the capital of Dandume Local Government. The site is located along Funtua- BirninGwari road at the outer reaches of the town. As one is coming from Funtua the site is the first point if contact before entering the main Dandume town gate.To the north of the site is the Funtua – BirninGwari road with some new constructed buildings by the side while to the south is just a bare land. To the west is a small stream with dense population of mango trees and finally some few residential buildings to the east.

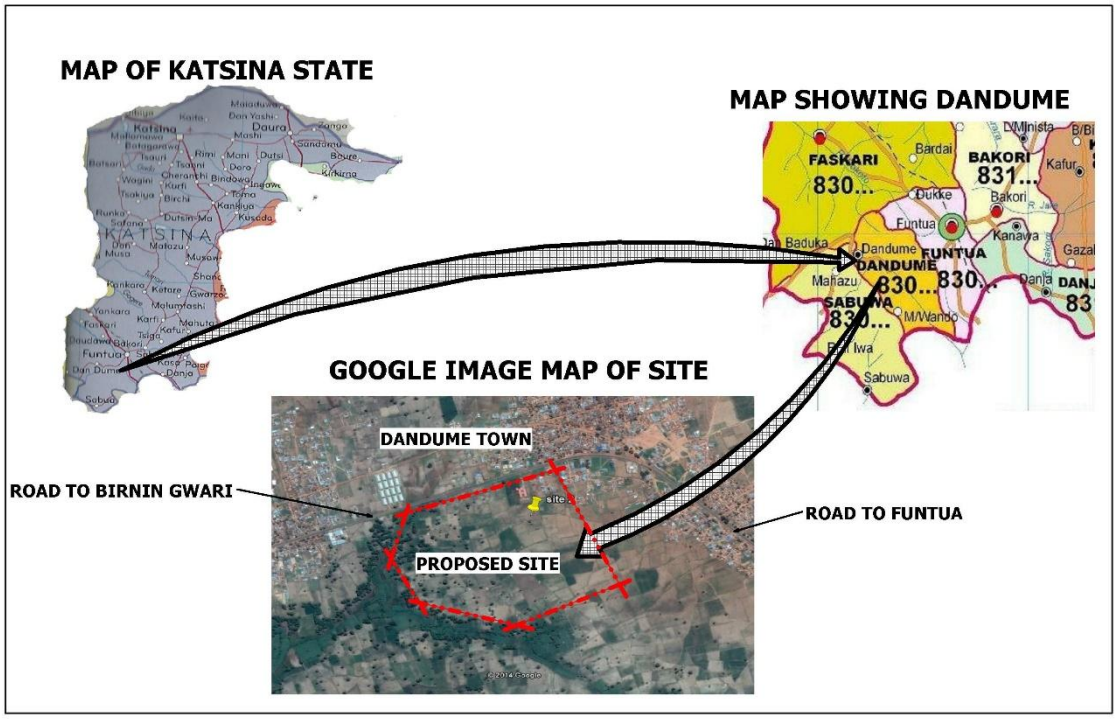


Figure 6.5: Site location
Source: Author's work, 2014

6.6.1 Analysis of the Site

6.6.1.1 Topography

Considering the size of the land, the site can be said to be relatively flat. However, the lowest level on the site is -1000mm to the west of the site and the extreme end of the north-west while the highest level is 7000mm towards the east side of the site. There is also a little depression to zero level towards the centre of the site.

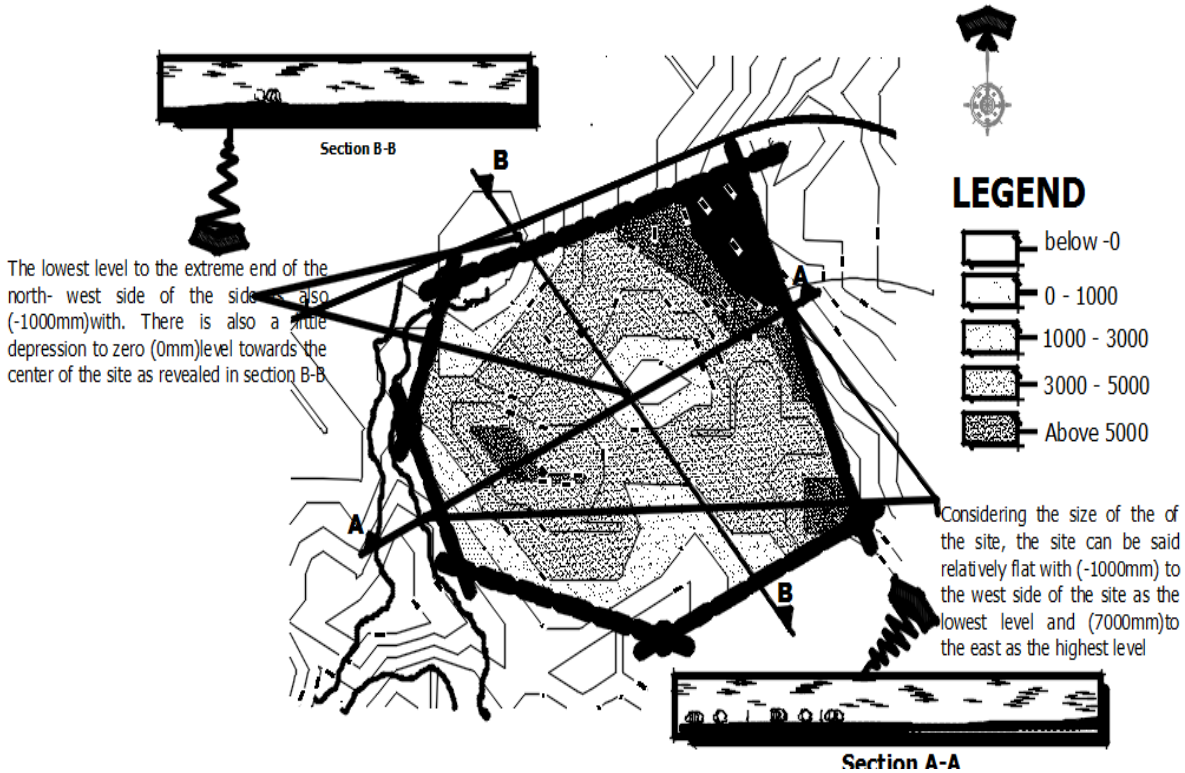


Figure 6.6: Topographical analysis of the site
Author's work, 2014

6.6.1.2 Vegetation

Vegetation of the site is typically that of the Sudan Savannah, characterized by isolated baobab and locust bean trees and shrubs. However, the original vegetation has been greatly altered by human activities such as clearance for cultivation and firewood. More than half of the land is bared with little or no grasses during the dry season but dominated with grasses during the rainy season. However, the western, north-western and south-western part of the site is densely populated with mango trees. Inpatients ward will be best located toward this side.



Plate XII: View of the site vegetation
Source: Fieldwork, 2014

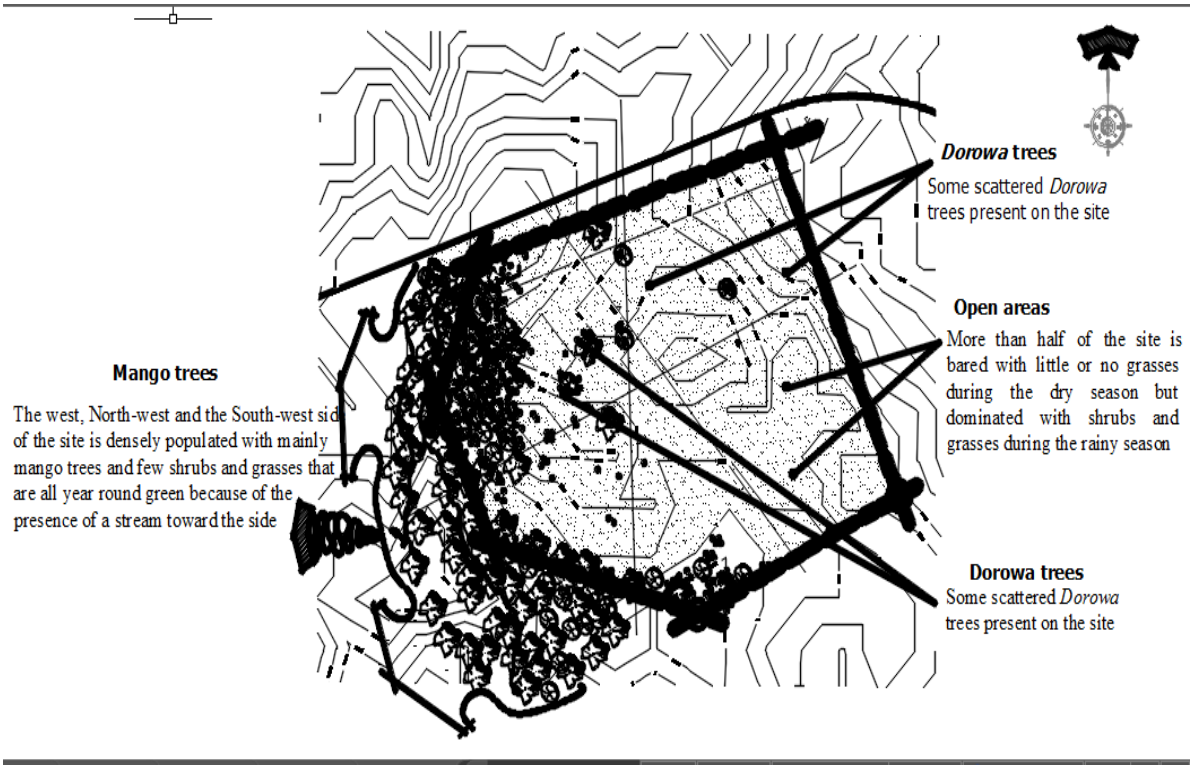


Figure 6.7: Analysis of the site vegetation
Source: Fieldwork, 2014

6.6.1.3 Micro-climatic data analysis of the site

Since the site is in Dandume, the climate of the site is same as that of the Dandume town characterised by two distinct climates that is, rainy season and dry season. Rainfall starts from the month of April and ends in October. During this time temperature range between 35°c – 40°c in the afternoon and comes down to20°c – 25°c in the night. The dry season begins in the month of November and the temperature falls to about 18°c during the day and could be down to 14°c – 15°c at night. The humidity is low during the dry season and high during the rainy season. Hence openings should be provided to ventilate the building especially during the day and proper building orientation should be considered.

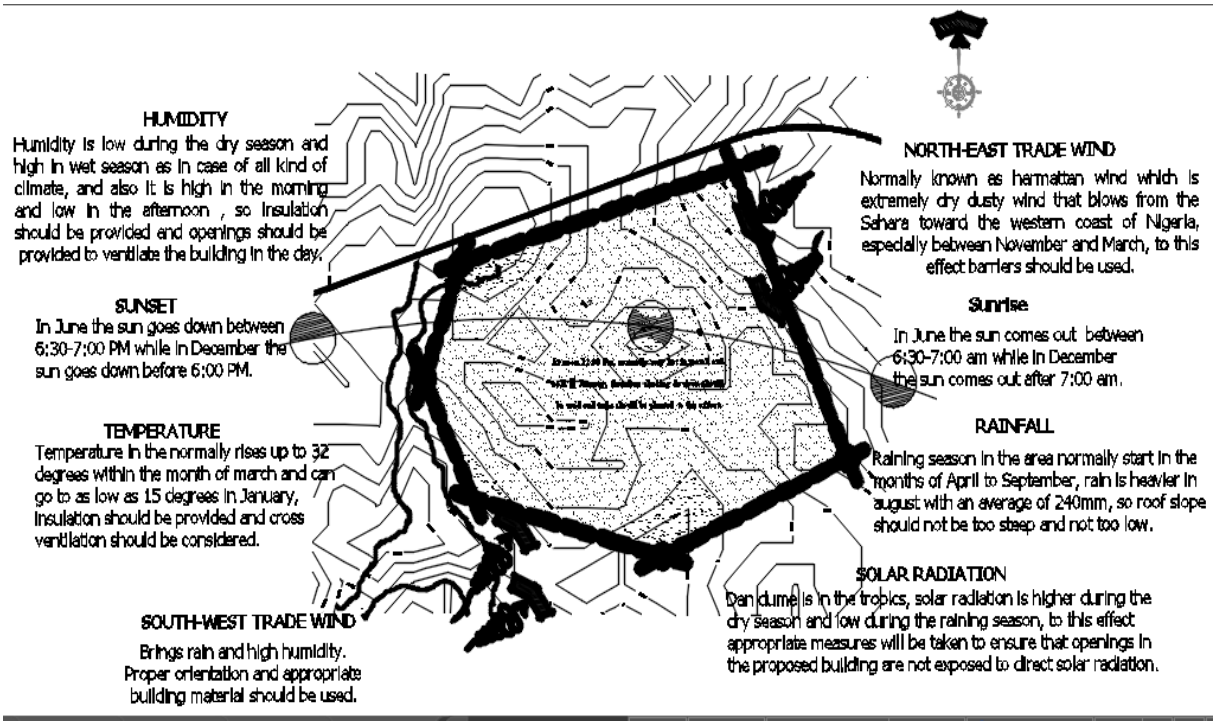


Figure 6.8: Micro climatic data analysis of the site
Source: Author's work, 2014

6.6.1.4 Site drainage

In spite of the fact that the site is relatively flat, yet the topographical analysis of the site revealed that the extreme western, north-western, south-western parts of the site are

at lower elevations. Also the centre of the site is at lower level. So, the site drains its water toward those directions. This result in accumulation of water around the centre of the site during rainy season there by creating a small pond on the site.

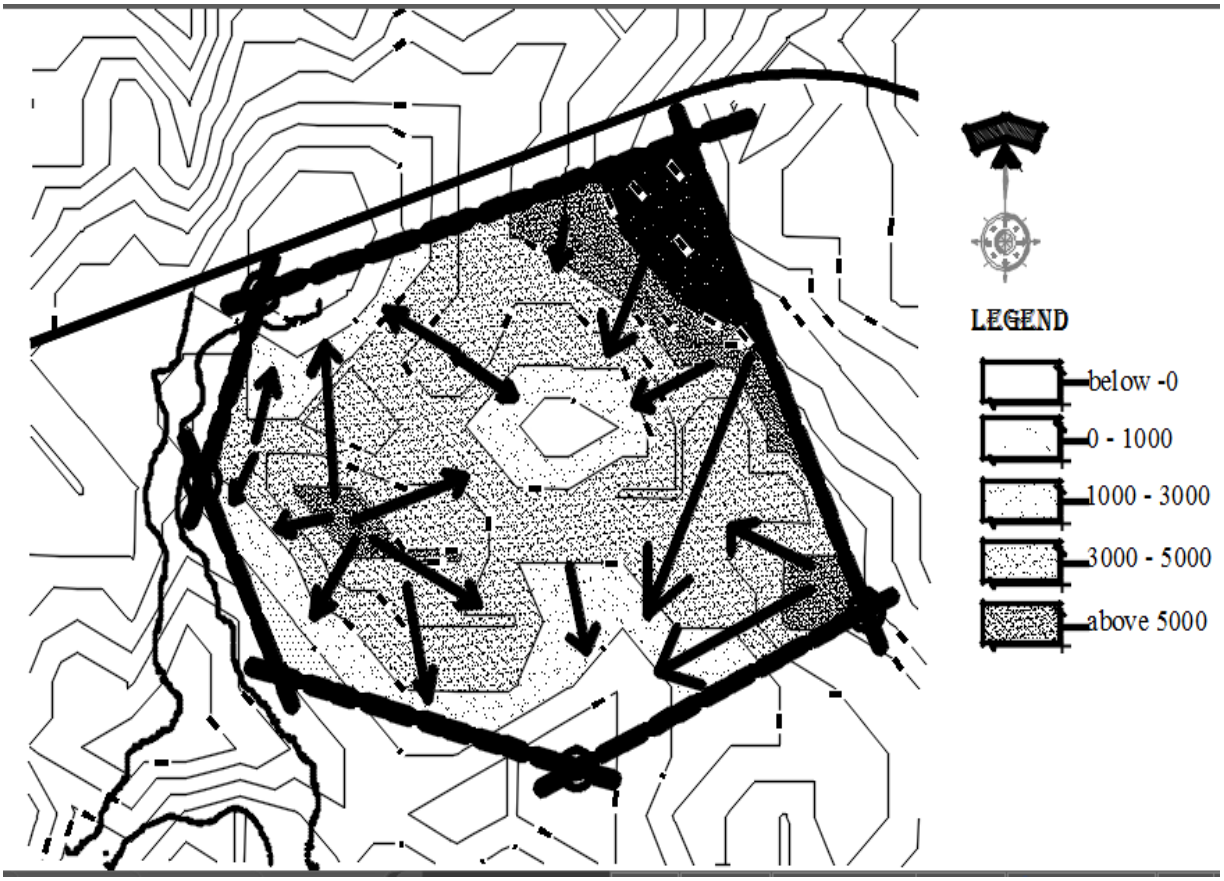


Figure 6.9: Drainage analysis
Source: Author's work, 2014

6.6.1.5 Accessibility, views and services

The site is readily accessible from the Funtua-Birningwari road. Another access would be provided from the eastern side of the site, but for services, the only services on the site are electrical and G.S.M service.

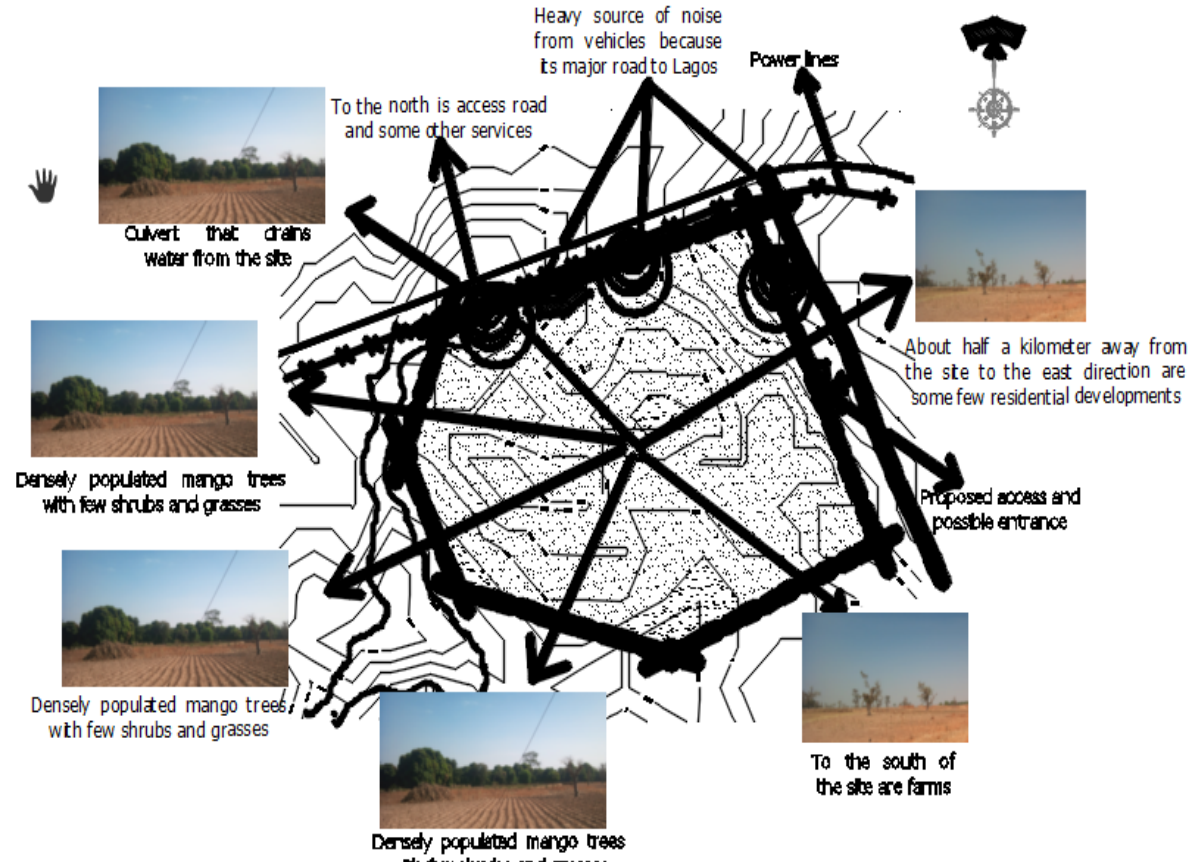


Figure 6.10: Analysis of services and Views
Source: Author's work, 2014

6.6.1.6 Visual quality

The western and south-western parts of the site have excellent visual quality because of the presence of mango trees, plants, and shrubswhich serve to give cooling effects. The effect of these trees and the microclimate provide a conducive and optimal working condition for employees and staff and very important in aiding patients' recovery. The trees also provide noise and soundbarrier and acts as absorbent to direct solar radiation.

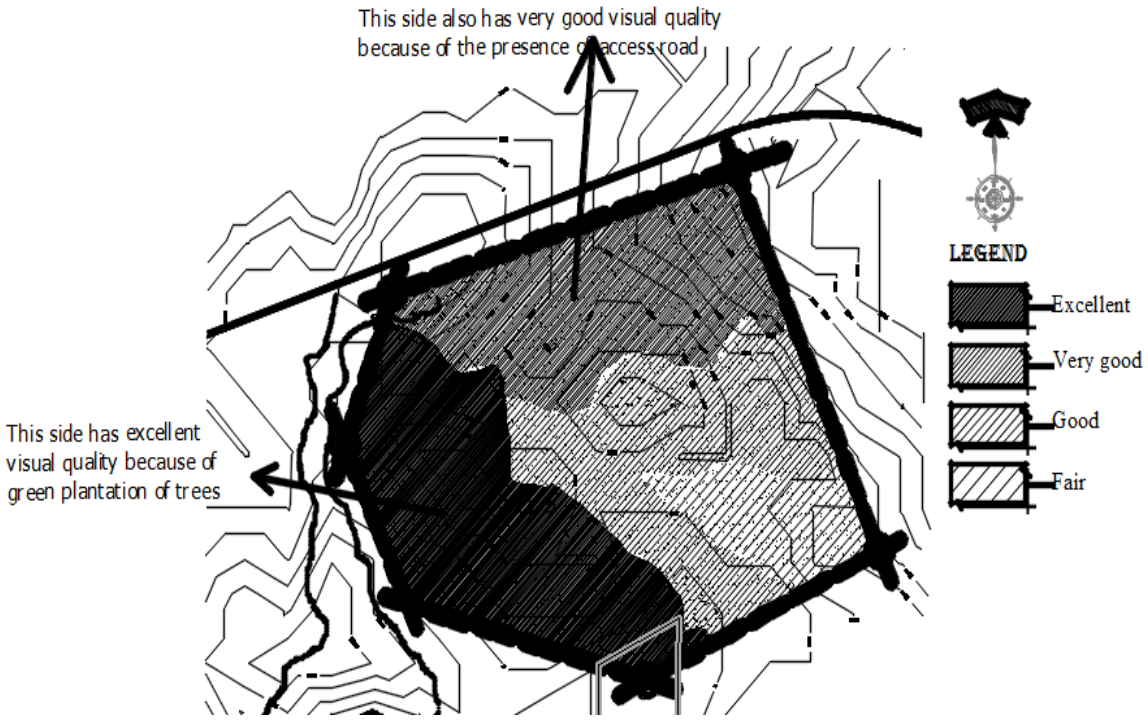


Figure 6.11: Visual quality of the site
Source: Author's work, 2014

6.6.1.7 Potential development

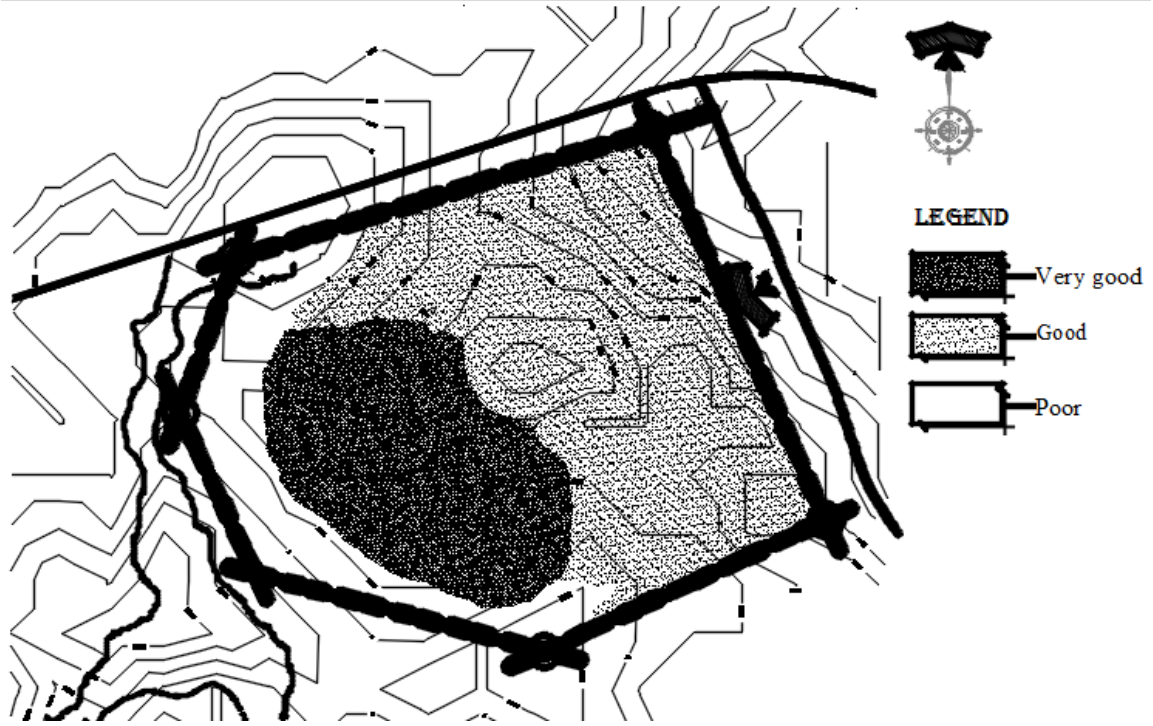


Figure 6.12: Analysis of potential development of the site
Source: Author's work, 2014

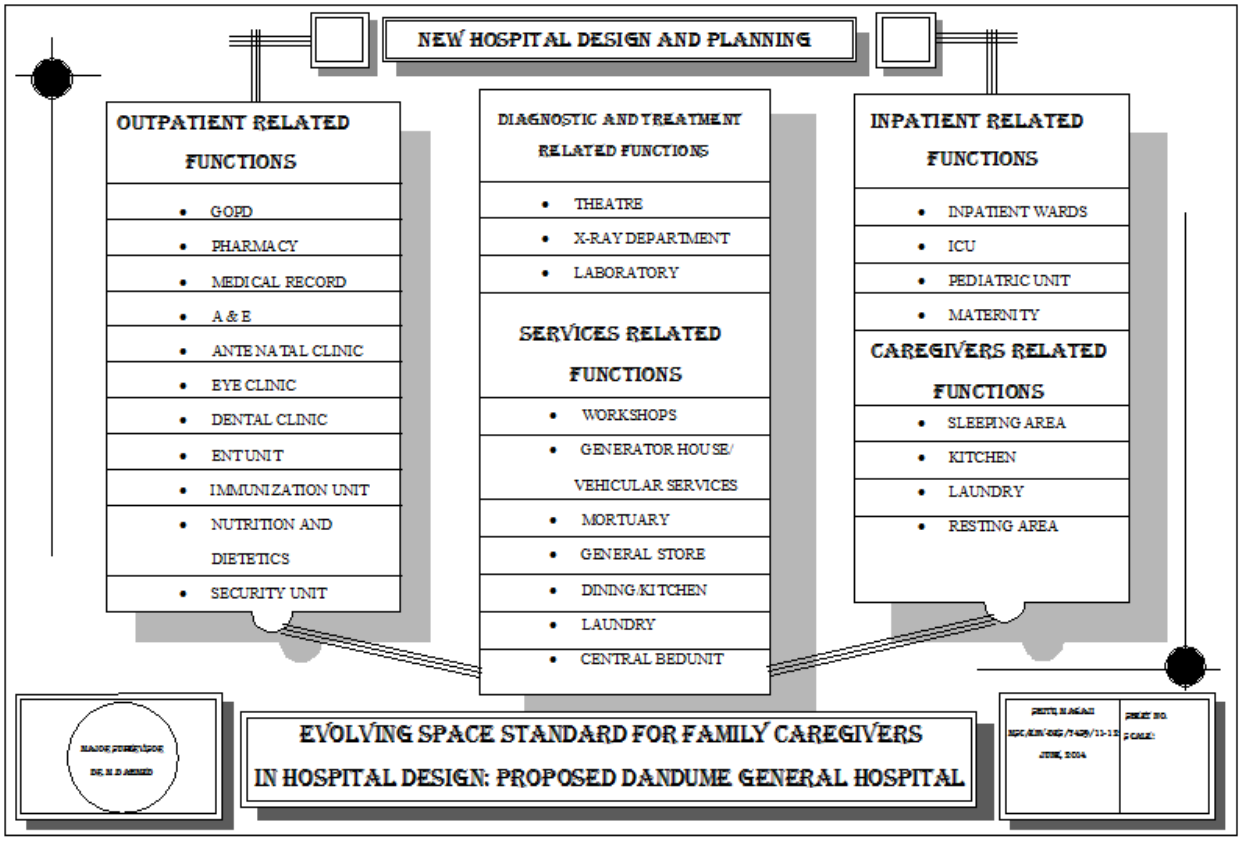
From the analysis of potential development of the site, the area within the darker space has better potential for development, this is because of the area has good terrain and better views opportunity due to its closeness to the green area, on the other hand, the area left white will not be good for development because it is dominated by thick plantation of trees which will not be good to cut them down just to develop a structure in place.

6.7 Brief Development

After series of case studies and consultation of related books, articles and medical practitioners; the client's brief was studied and developed thereby forming bulk schedule of requirement and schedule of accommodation.

6.7.1 Bulk schedule of requirement

Table 6.2: Bulk schedule of requirement



Source: Author's work, 2014

6.7.2 Schedule of accommodation

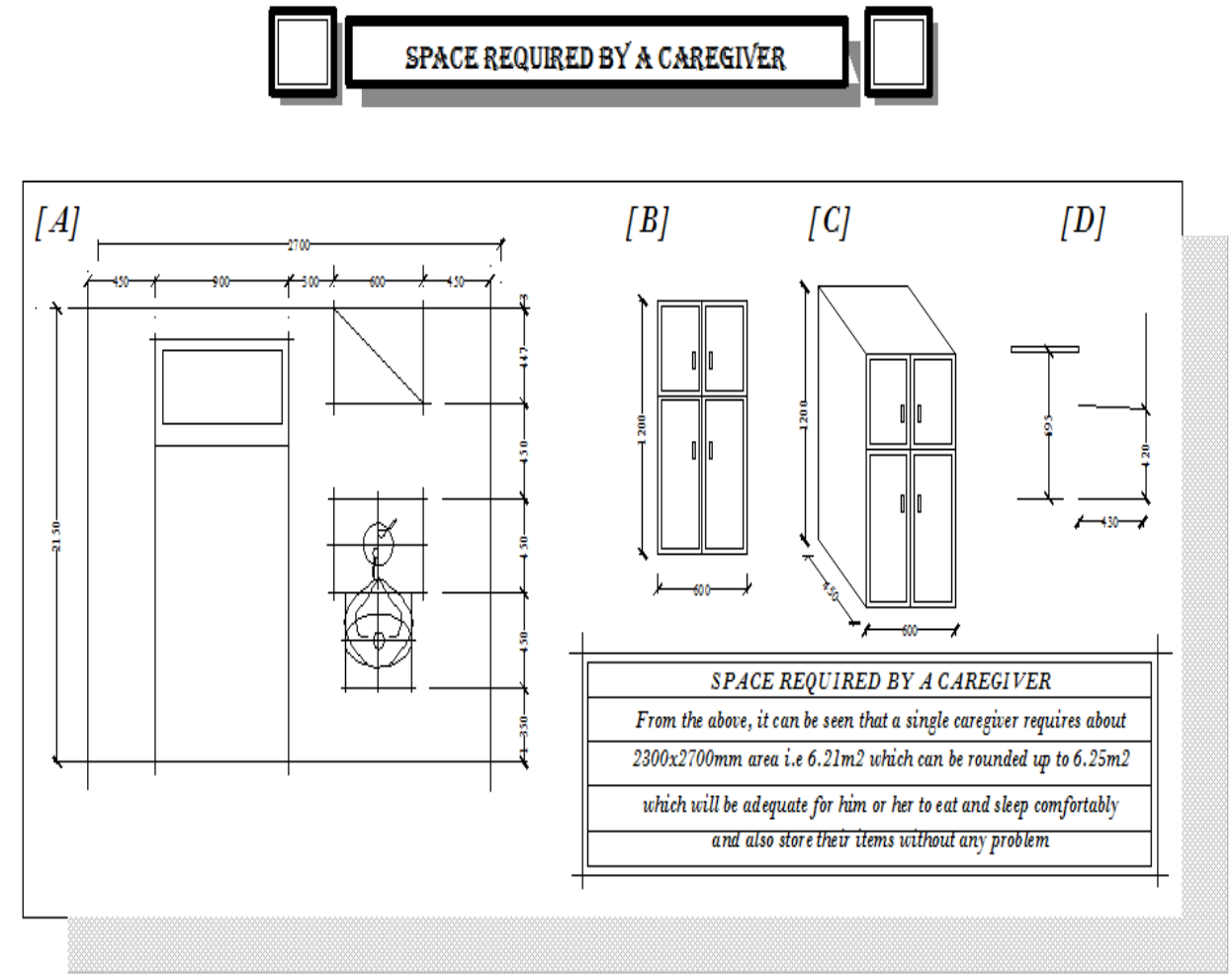


Figure 6.13: Analysis of space required by caregiver
Source: Author's work, 2014

Table 6.3: Space required by patients/caregivers in different units of the hospital

SPACE REQUIREMENT

Department	Type of ward	Area (m2) /patient	Area (m2) /caregiver	No. of beds	Unit	Net area (m2)
Inpatients	Medical ward	7.5	6.25	16	4	880
	Surgical	7.5	6.25	20	2	550
	A&E ward	7.5	6.25	20	2	550
	Isolation	7.5	-	10	2	150
ICU	Male medical	7.5	6.25	8	1	110
	Male surgical	7.5	6.25	8	1	110
	Female medical	7.5	6.25	8	1	110
	Female surgical	7.5	6.25	8	1	110
Maternity	Ante natal	7.5	6.25	20	1	225
	Post natal	7.5	6.25	20	1	225
Paediatric	PEM	10	6.25	1	5	81.25
	Isolation	10	-	1	5	50
	Special care	10	6.25	1	5	81.25
	Bay	7.5	6.25	10	4	550
A&E	Isolation	10	-	1	3	30

WAITING AREAS

Department/unit	Area/person (m2)	Expected number of people	Net area (m2)
GOPD	0.8	300	240
Eye unit	0.8	40	32
Dental unit	0.8	30	24
ENT	0.8	30	24
A&E	0.8	30	24
Maternity	0.8	40	32
Ante natal	0.8	250	200
Laboratory	0.8	40	32
Theatre	0.8	20	16
Radiology	0.8	40	32
Paediatric	0.8	60	48
ICU	0.8	20	16
Immunization	0.8	30	24
Pharmacy	0.8	30	24
Nutrition and dietatics	0.8	30	24

Source: Author's work, 2014

Table 6.4: Schedule of accommodation (Outpatients related functions)

OUTPATIENT RELATED FUNCTION

GOPD

Space	Area (m2)	Unit	Net area (m2)
Gurney stand/wheelchair bay	48	1	48
Registration/card room	20	2	40
Cash point	36	1	36
Waiting area	75	4	300
Consultation	30	6	180
Store	36	1	36
Injection room	20	1	20
H.O.D'S Office	20	1	20
Reception	20	1	20
Admission and discharge	25	1	25
Nurses' station	48	1	48
Conveniences	2.25	15	33.75
Security	10	1	10
PHARMACY			
Reception/waiting	36	1	36
Pharmacist office	20	1	20
Assistant pharmacist office	20	1	20
Cold and dry store	10	2	20
Materials store	20	1	20
General drug store (active and dormant)	48	1	48
Drug dispensary	48	1	48
Resting room	30	1	30
Toilets	2.25	4	9

EYE CLINIC

Space	Area (m2)	Unit	
Reception/waiting	48	1	48
Opthalmologist's office	20	1	20
Opthalmetric's office	20	1	20
Examination room	9	2	18
Treatment room	25	1	25
Optical workshop	25	1	25
Optical store	9	1	9
General store	20	1	20
Resting room	24	1	24
Theatre	16	1	16
Toilets	2.25	4	9
DENTAL CLINIC			
Reception/waiting	48	1	48
OPC 1	20	1	20
OPC 2	20	1	20
Therapy room	20	1	20
X-ray/ processing room	36	1	36
Dental surgery	10	2	20
Dental workshop	36	1	36
Common room	36	1	36
General store	16	1	16
Surgeon office	20	1	20
Toilets	2.25	3	6.75

Source: Author's work, 2014

Table 6.5: Schedule of accommodation (Outpatient related functions)

OUTPATIENT RELATED FUNCTION

ENT UNIT

Space	Area (m2)	Unit	Net area (m2)
Reception/waiting	42	1	42
Consultation office	20	1	20
Treatment room	30	1	30
Examination room	9	1	9
Store	9	1	9
Toilets	2.25	2	4.5
MEDICAL RECORD			
Office of the incharge	20	1	20
Record library	48	1	48
Reception	20	1	20
Toilets	2.25	1	2.25
ANTE NATAL CLINIC (ANC)			
Reception/waiting	240	1	240
Matron's office	25	1	25
Record office	20	1	20
HIV test office	25	1	25
Staff office	30	1	30
Store	12	1	12
Toilets	2.25	4	9
NUTRITION AND DIETETICS			
Space	**Area (m2)**	**Unit**	**Net area (m2)**
Reception/waiting/heath talk	42	1	42
Nurse station	12	1	12
Store	12	1	12
Toilets	2.25	2	4.5

ACCIDENT AND EMERGENCY

Space	Area (m2)	Unit	
Reception/waiting	36	1	36
Ambulance bay	36	1	36
Casualty theatre	36	1	36
Recovery room	16	1	16
Equipment store	9	1	9
Autoclave room	9	1	9
Unit head's office	20	1	20
General store	20	1	20
Treatment room	24	1	24
Small isolation ward	30	1	30
Toilets	2.25	4	9
Consultation room	24	1	24
Examination	12	1	12
Wheelchair/stretcher stand	20	1	20
Scrubbing	4	1	4
Anaesthesia office	9	1	9
First aid	30	1	30
IMMUNIZATION UNIT			
Reception/waiting	36	1	36
Immunization office	30	1	30
Toilets	2.25	2	4.5
Medicine store	9	1	9
SECURITY UNIT			
Chief security officer	20	1	20
Staff room	36	1	36
Toilets	2.25	2	4.5

Source: Author's work, 2014

Table 6.6: Schedule of accommodation (Diagnostic and treatment functions)

DIAGNOSTIC & TREATMENT FUNCTIONS

RADIOLOGY DEPARTMENT

Space	Area (m2)	Unit	Net area (m2)
Reception/waiting	30	4	120
X-ray room (conventional)	36	2	72
Dark room or processing room	30	1	30
Services room	20	1	20
Ultrasound room (conventional)	12	2	24
Magnetic resonance imaging room (MRI)	40	1	40
Control room	12	1	12
Toilet/changing in x-ray room	6	2	12
Unit head office	20	1	20
Registration	30	1	30
Examination room	20	1	20
Senior radiographer	20	1	20
Senior X-ray technician	25	1	25
X-ray technicians	36	1	36
Accountant office	20	1	20
Changing room	12	1	12
Toilets	2.25	6	13.5

LABORATORY

Space	Area (m2)	Unit	Net area (m2)
Reception/waiting	40	1	40
Registration	8	1	8
Sample collection	3	4	12
Result collection	12	1	12
Media preparation/culture room	9	1	9
Haematology	30	1	30
Bacteriology	30	1	30
Parasitology	30	1	30
Chemical pathology	30	1	30
Serology	30	1	30
Histology	30	1	30
STD	30	1	30
H.O.D'S office	36	1	36
Unit heads' office	42	1	42
Conference room	36	1	36
Quality control officer	12	1	12
Wash-up room	30	1	30
Changing room	25	1	25
Resting room	36	1	36
Store	15	1	15
Toilets	2.25	5	11.5

Source: Author's work, 2014

Table 6.7: Schedule of accommodation (Diagnostic and treatment functions)

DIAGNOSTIC & TREATMENT FUNCTIONS

MAIN THEATRE

Space	Area (m2)	Unit	Net area (m2)
Reception/waiting	48	1	48
Unit head office	12	1	12
Common room	36	1	36
General store	36	1	36
Anaesthesia office	20	1	20
Patients' changing room	12	1	12
Doctors' common room	25	1	25
Equipment store	8	3	24
Suite 1	48	1	48
Suite 2	48	1	48
Suite 3	36	1	36
Recovery room	48	1	48
Sluice room	6	3	18
Sub-sterilization area	30	1	30
Scrubbing area	6	3	18
Staff changing	20	1	20
Toilets	2.25	4	9

INPATIENT RELATED FUCTIONS

INTENSIVE CARE UNIT (ICU)

Space	Area (m2)	Unit	
Reception/waiting	30	1	30
Surgical wards	105	2	210
Medical wards	105	2	210
Treatment room	12	2	24
Nurse workstation	16	2	32
Changing room	12	2	24
Resting room	12	2	24
Equipment store	6	2	12
Toilets	2.25	12	27
INPATIENTS WARDS (ICU)			
Wards	210	4	840
Surgical/A&E ward	260	4	1040
Isolation ward	130	2	260
Nurse workstation	25	6	150
Treatment room	12	6	72
Resting room	15	6	90
Dirty utility store	12	6	72
Clean utility store	12	6	72
Changing room	30	2	30
Wheelchair/stretcher stand	10	6	60
Offices (station doctor and head nurse)	25	2	50
Patients' launge	48	2	96
Toilets	2.25	30	67.5

Source: Author's work, 2014

Table 6.8: Schedule of accommodation (Inpatients related functions)

INPATIENT RELATED FUCTIONS

PEDIATRIC UNIT

Space	Area (m2)	Unit	Net area (m2)
Reception/waiting	48	1	48
Paediatric energy malnutrition (PEM)	10	5	50
Paediatric emergency unit (PEU)	42	1	40
Bay	130	4	520
Isolation ward	10	6	60
Record office	12	1	12
Matron office	20	1	20
Injection room	8	1	8
Collection of drugs	9	1	9
HIV counseling and testing	30	1	30
Pharmacy	20	1	20
Special care baby unit	13	5	65
Dietary room	20	1	20
Therapy room	48	1	48
Toilets	2.25	1	20

MATERNITY

Space	Area (m2)	Unit	
Gynae ward			
Post natal ward			
Labor room	24	3	72
Recovery room	24	1	24
Operating suite	36	1	36
Sterilization area	10	1	10
Treatment room	12	2	24
Clean room	12	2	24
Non clean room	12	2	24
Staff resting room	36	1	36
Staff changing	20	1	20
Reception/waiting	48	1	48
Patients lounge	48	1	48
Nurse workstation	25	2	50
Equipment store	12	1	12
Wheelchair/stretcher stand	20	1	20
Consultation room	30	1	30
Examination room	12	1	12
Midwives workstation	20	1	20
Scrub-up	6	4	64
Sleeping area for doctors/nurses on call	12	1	12
Ambulance bay	36	1	36
Toilets	2.25	10	22.5

Source: Author's work, 2014

Table 6.9: Schedule of accommodation (Services related functions)

SERVICES RELATED FUCTIONS

MORTUARY

Space	Area (m2)	Unit	Net area (m2)
Waiting/arrival	48	1	48
Office	16	1	16
Departure	20	1	20
Embalmment	30	1	30
Storage room	150	1	150
Store	20	1	20
Changing room	4	2	8
Preparation	16	1	16
Record room	12	1	12
Toilets	2.25	2	4.5
GENERATOR HOUSE AND VEHICULAR SERVICES			
Generator house	200	1	240
Store	12	1	12
Control room	20	1	20
Lube bay	36	1	36
Mechanical office	12	1	12
Spare part store	12	1	12
Changing room	9	1	9
Toilets	2.25	1	2.25

CENTRAL BED UNIT

Space	Area (m2)	Unit	Net area (m2)
Clean side	40	1	40
Non-clean side	40	1	40
Bed cleaning room	25	1	25
Mattress disinfecting room	20	1	20
Staff changing	12	1	12
Toilets	2.25	2	4.5
LAUNDRY			
Sorting and weighing area	15	1	15
Laundry collection room	9	1	9
Wet working area	50	1	50
Dry working area	60	1	60
Detergent store	10	1	10
Sewing room	12	1	12
Laundry store	15	1	15
Staff launge	20	1	20
Toilets	2.25	2	4.5
WORKSHOPS			
Electrical section	40	1	40
Mechanical section	50	1	50
Carpentary section	50	1	50
Store	12	3	36
Staff room	36	1	36
Toilets	2.25	1	4.5

Source: Author's work, 2014

Table 6.10: Schedule of accommodation (Services related functions)

SERVICES RELATED FUCTIONS

KITCHEN/DINING

Space	Area (m2)	Unit	Net area (m2)
Dining area	75	1	75
Kitchen	36	1	36
Wet store	9.6	1	9.6
Dry store	8	1	8
Toilets	2.25	4	9
General store	10	1	10
Changing room	9	2	18
Preparation	9.6	1	9.6
Servery	6	1	6
Office	10	1	10
GENERAL STORE			
Store room	120	1	120
Parking	24	2	48
CENTRAL STERILIZATION UNIT			
Sterilization laboratory	60	1	60
Clean equipment store	36	1	36
Dirty equipment store	36	1	36
Steaming section	36	1	36
Refrigerating section	16	1	16
Staff room	30	1	30
Changing room	9	1	9
Store	12	1	12
Toilets	2.25	4	5

CAREGIVER RELATED FUNCTIONS

KITCHEN/DINING

Space	Area (m2)	Unit	Net area (m2)
Dining area	36	2	72
Kitchen	42	2	84
Wet store	9	2	18
Dry store	8	2	16
Toilets	2.25	4	9
General store	10	2	20
Changing room	9	2	18
Preparation	9	2	18
Office	10	2	20
LAUNDRY			
Wet working area	50	1	50
Dry working area	60	2	120
Detergent store	10	2	20
Laundry store	15	2	30
Toilets	2.25	2	4.5

Source: Author's work, 2014

Table 6.11: Schedule of accommodation (Administrative functions)

ADMINISTRATIVE FUNCTIONS

ADMIN BLOCK

Space	Area (m2)	Unit	Net area (m2)
Reception/waiting	36	1	36
Medical director's office	42	1	42
Secretary to MD	20	1	20
Hospital secretary's office	25	1	25
Chief matron	36	1	36
Hospital accountant	25	1	25
Conference room	48	1	48
Auditor	25	1	25
Toilets	2.25	4	9

Source: Author's work, 2014

6.8 Architectural design of the proposed General Hospital

6.8.1 Site development concept

After the studies and analysis, a site development concept was developed taking all necessary precautions into consideration. The concept was developed using the new model of caregiver oriented design and planning of hospitals. Figure 6.32 below shows the detailed illustration of the concept.

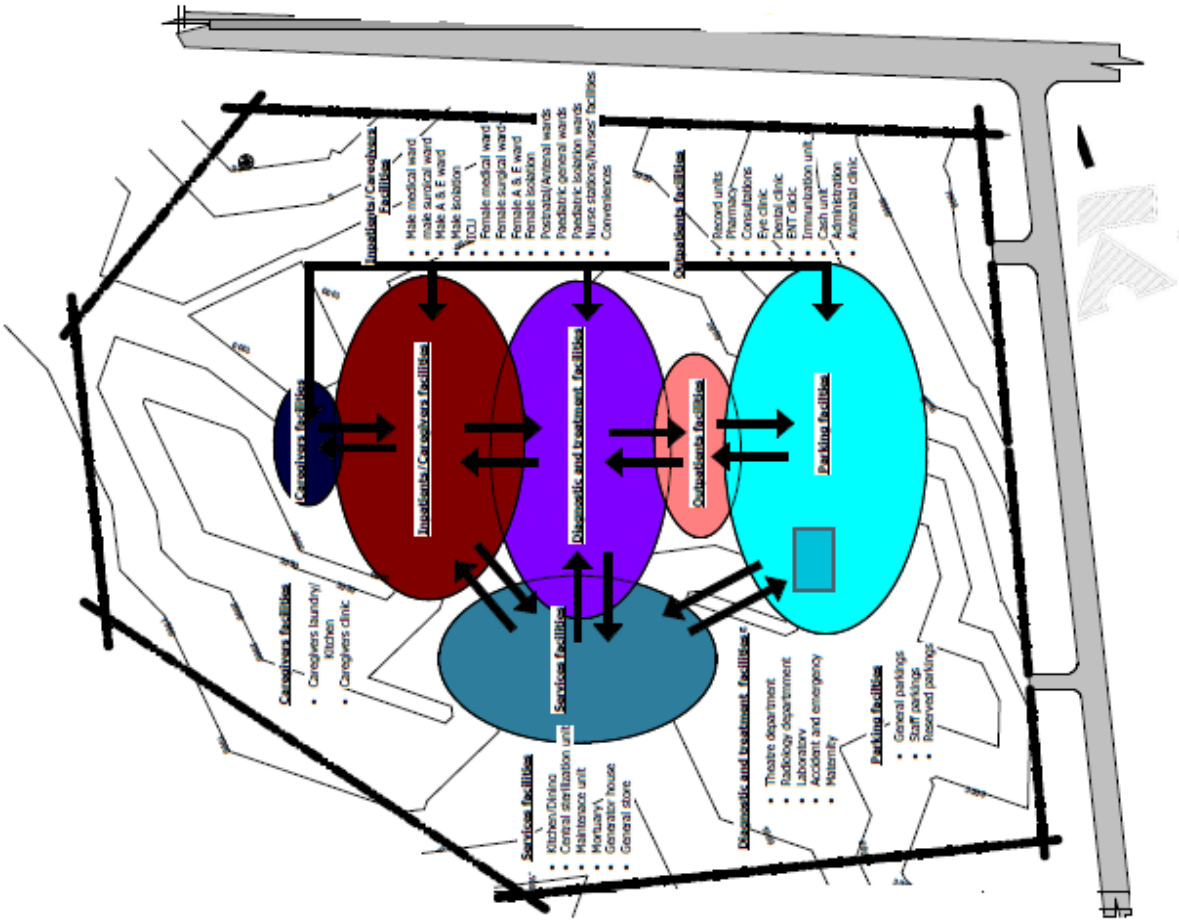


Figure 6.14: Site development concept
Source: Author's work, 2014

6.8.2 Site plan

After careful analysis of the site and the surrounding landscape. The facilities were systematically arranged on the site in accordance with the caregiver oriented design and planning of hospitals. The General Outpatient Department (GOPD) was placed in way that it is clearly visible to patients and visitors. At the same time the internal flow of the hospital planning was maintained. The diagnostic and treatment facilities were placed next to the GOPD. Finally the inpatients and caregivers facilities were placed towards the western end of the site; which is the quieter zone. By situating the inpatient wards towards the western end, full advantage of the beautiful view of the surrounding greenery was taken. The services facilities were zoned by the side so that their activities

will not interfere with those of the main hospital. Two vehicular entrances were provided; one for services and the other for patients, visitors and the staff. Separate pedestrian entrance was also provided as it can be seen in the figure below

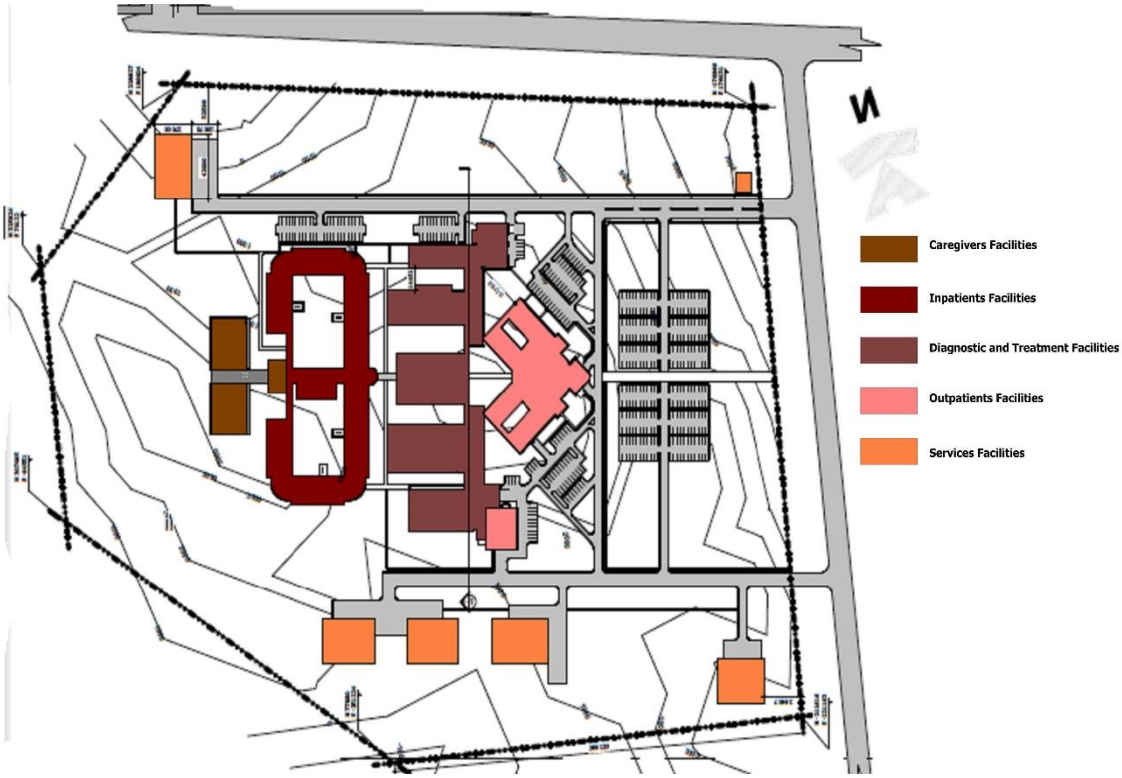


Figure 6.15: Organisation and zoning of facilities on site
Source: Author's work, 2014

6.8.3 General out-patient department (GOPD)

This is where home based patients are treated and if necessary admitted into the hospital as in patients. It provides consultations/examinations and treatments for patients that require little or no recovery services. GOPD is the first point of contact as one enters into hospital, therefore it is best positioned at a place that can be accessed directly from the main hospital entrance.

In this proposal, the GOPD was designed and located in such a way that it can be identified by visitors and patients, be it first time or referred patients. The building has reception and enquiry, card rooms, cash point, six consultation/examination rooms,

injection room, admission and discharge office, pharmacy, record department, immunization unit, and waiting areas. The GOPD was also designed with enough circulation spaces and with a high headroom and large window openings for proper circulation of air because of the volume of people that attend it almost every hour of the day. The GOPD is shown in the figure below.

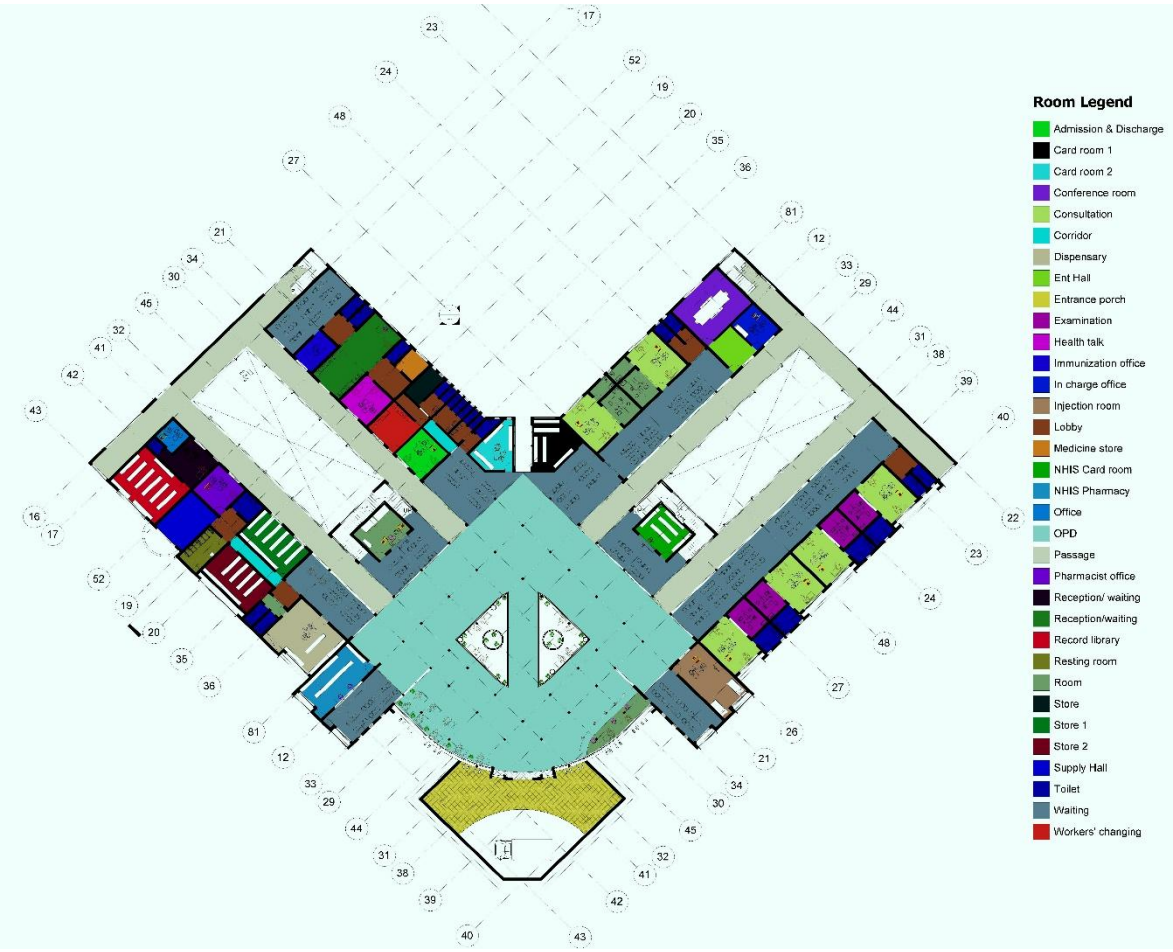


Figure 6.16: Floor plan of the GOPD
Source: Author's work, 2014

6.8.4 Clinics

Clinics are provided for patients with special, those patients need not to go the main OPD, rather can pass directly to the clinics for diagnosis and treatment. The clinics provided are eye clinic, dental clinic and ENT clinic and they are attached to the GOPD building because of the fact that the services they render are mostly outpatient in nature

only that they are placed at the first floor. The clinics were designed with their own card rooms, consultations/examinations, pharmacy, waiting areas and small theatre for eye and dental operations. The clinics are shown in the figure below.

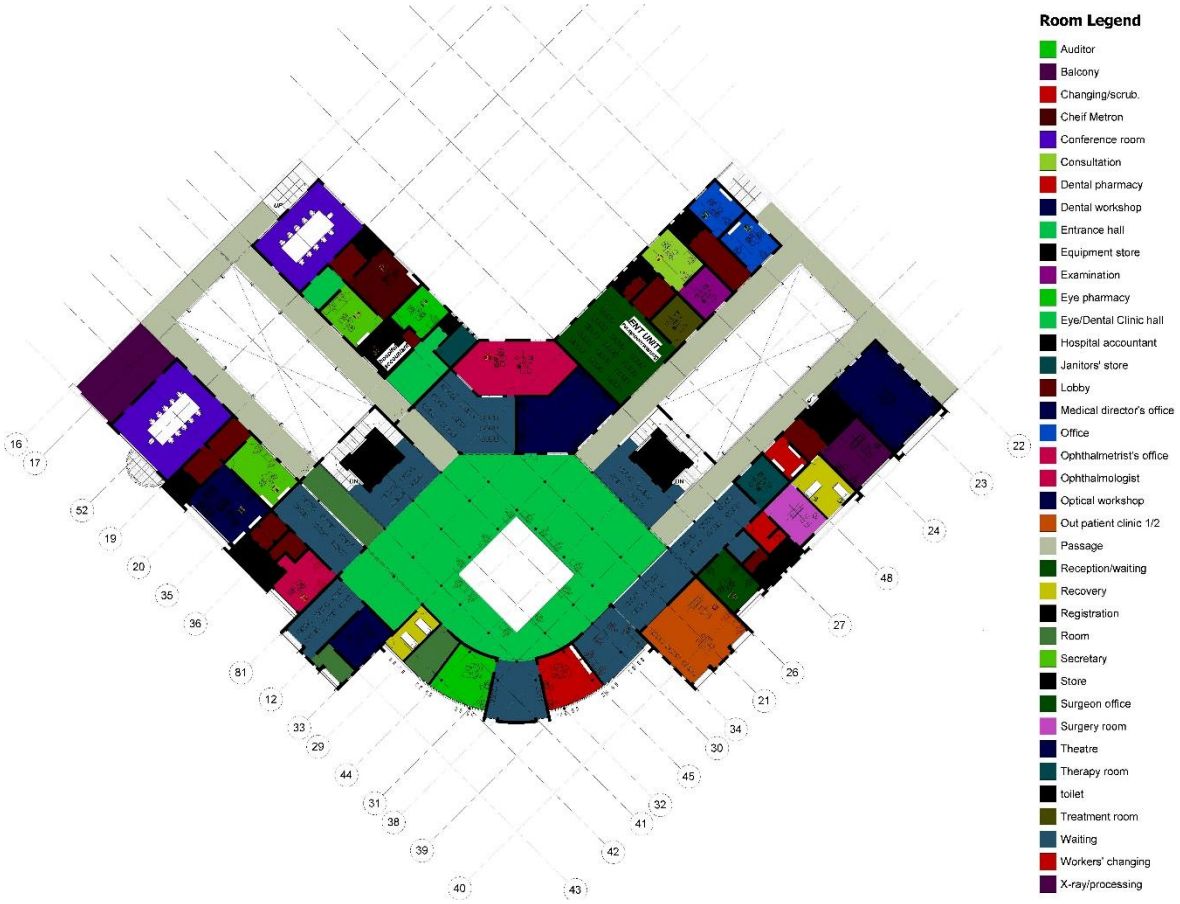


Figure 6.17: Floor plan of the clinics
Source: Author's work, 2014

6.8.5 ANC/Maternity

Maternity department provides continual physical, medical, psychological and social care for mothers and babies before and after delivery. After uncomplicated births, the care of mothers is considered part of normal care, but if the delivery happened to be with complications, or with highly infectious diseases like TB, the mothers are taken to the intensive care unit (ICU) or isolation ward respectively.

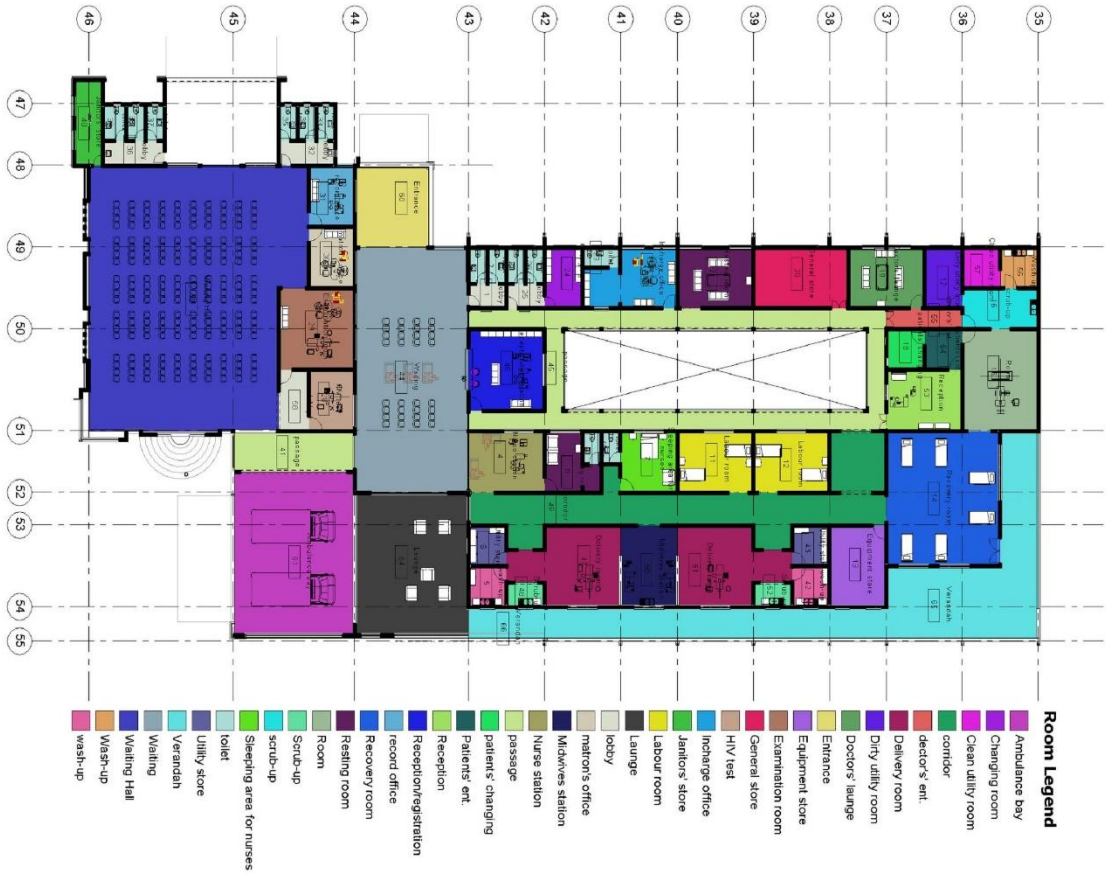


Figure 6.18: Floor plan of the Maternity/ANC unit
Source: Author's work, 2014

The design provided two labour rooms and two delivery rooms, one midwives station between the delivery rooms in a way that the delivery rooms can be supervised from the midwives station. Maternity theatre has also been incorporated in the department for mothers that go through surgical operations before giving birth. One recovery room was provided and conveniently located in a way that it can be easily accessed both from the theatreand the recovery rooms. Other supporting facilities were also incorporated as shown in the figure above.

Antenatal clinic was also attached to the maternity department and it was designed with large waiting area with a high headroom because of the large number of women that attend the ANC every day.

The department was also located in a place close and easily accessible to the maternity ward so that patient can be easily transported from recovery room to post-natal ward and from antenatal ward to the labour room or ANC.

6.8.6 Laboratory

Laboratory department is concerned mostly with the preparation and processing of blood, urine and faecal samples.

In this design, the laboratory was designed and located within the diagnostic and treatment facilities which is between the general outpatient department and the inpatient wards so that patients from the GOPD can easily access it and ambulant patients and caregivers from the wards can also easily come for test and examinations. Patients from maternity and A&E can also access it easily. The laboratory has waiting area, an office for collection of result at the reception hall and easily accessible from the laboratory rooms. It also has sample collection room for both male and female patients. The laboratory room was compartmentalised into units depending on the type of test to be carried out, such units are; haematology, chemical pathology, parasitology, bacteriology, histology, serology and SDT. A blood bank was also attached close to haematology unit. Other important spaces in the laboratory were also incorporated in the design as shown in the figure below.



Figure 6.19: Floor of the laboratory department
Source: Author's work, 2014

6.8.7 Theatre

Theatre is a department where surgical operations take place. Theatre department is a requirement for general hospitals and it comprises of operating suites, scrub-up areas, clean and dirty utility rooms, recovery rooms, anaesthesia office, doctors' and patients' changing, stores, waiting area and some few offices.

In this design, three operating suites were provided, one of which is for minor cases, but the two are for general surgical cases. The department is located close to the surgical wards so that patients need not to be transported a long distance to their

allocated wards. All other important spaces were incorporated in the design. The theatre department design is shown in the figure below.



Figure 6.20: Floor plan the theatre department
Source: Author's work, 2014

6.8.8 Radiology department

This department includes the specialist areas which use ionising radiation for diagnostic and therapeutic purposes.The department handles diagnostic radiology that provides internal images of patients eitheron film or on cathode ray tube. Facilities provided for diagnostic radiology were: computed tomography (CT) scanning, magnetic resonance imaging (MRI), conventional X-ray, fluoroscopy and positron electron tomography (PET) scanning. The department is best planned on ground or basement floor. The plan is shown in the figure below.



Figure 6.21: Radiology department
Source: Author's work, 2014

6.8.9 Accident and emergency

The accident and emergency department is for ambulant and bedridden patients and is accessed via an emergency entrance. The department consist of emergency treatment room, plaster room, recovery room and other supporting facilities. The department should have proximity to the surgical department.

In the design, the department was provided with ambulance bay, first aid treatment room, consultation/examination room, casualty theatre, recovery room and important spaces as it can be seen in the figure below. The department was located close to

radiology department and laboratory. The department was also provided with emergency entrance.

6.8.10 Inpatient wards

Wards are where inpatients are housed or accommodated, the design provided different requirements for inpatients depending on the nature of the patients' ailment. The wards were categorised gender wise with paediatric wards located very close to female wards. The wards provided are: male medical ward, male surgical, male isolation, male accident and emergency, male ICU, male isolation, female medical, female surgical, female accident and emergency, female isolation female ICU, maternity wards, paediatric general ward, and paediatric isolation.

The maternity wards are on a two storey building with the post natal ward at the ground level and the antenatal ward at the upper floor. However, the remaining female wards are on a three storey building; having female surgical and ICU at the ground floor while half of female medical ward, accident and emergency ward, on the first floor, lastly female other half of medical wardand isolation wards are located on the second floor. The male wards are on a three separate blocks one of which is one storey hosting only the male isolation ward, while the remaining two blocks are two storeys; one is hosting the surgical and ICU wards on the ground floor withaccident and emergency wards at the upper floor and the other block is hosting the medical wards.

In summary male and female surgical, male and female ICU, male isolation, male medical, postnatal, and paediatric general wards are located on the ground floor; The first floor has, male and female A&E wards, male and female medical wars, antenatal ward, and paediatric general ward also; lastly, female isolation ward, paediatric

isolation, and female medical also are located on the second floor as shown in figure 6.22, 6.23, .6.24 respectively.

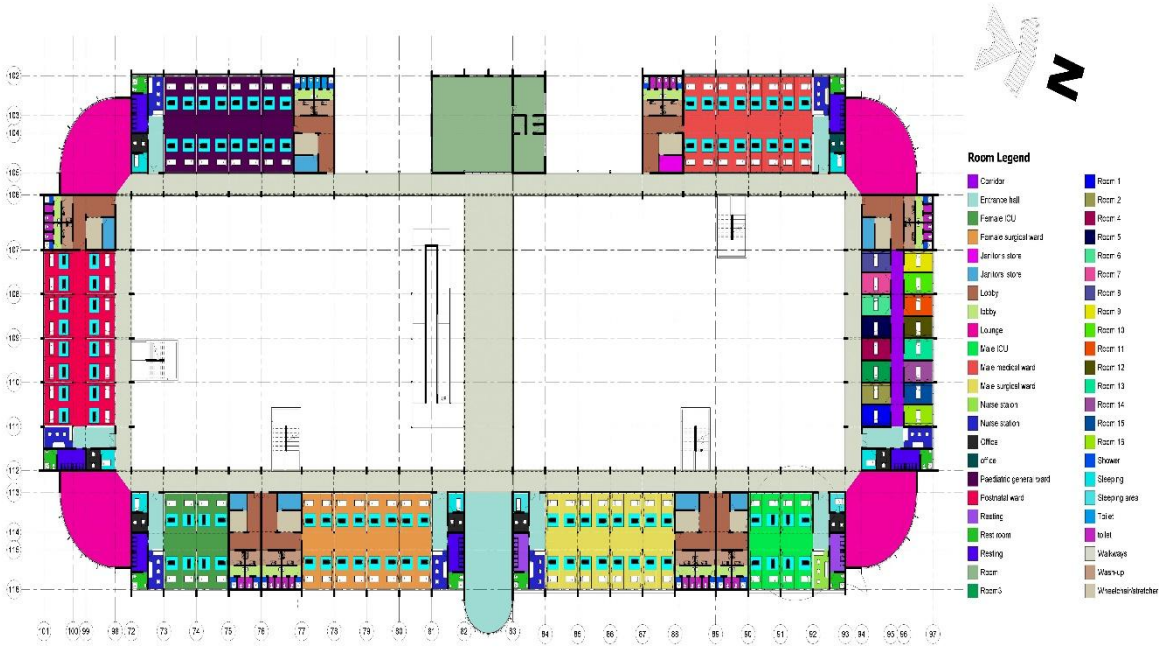


Figure 6.22: Ground floor plan of the inpatients wards
Source: Authors' work, 2014

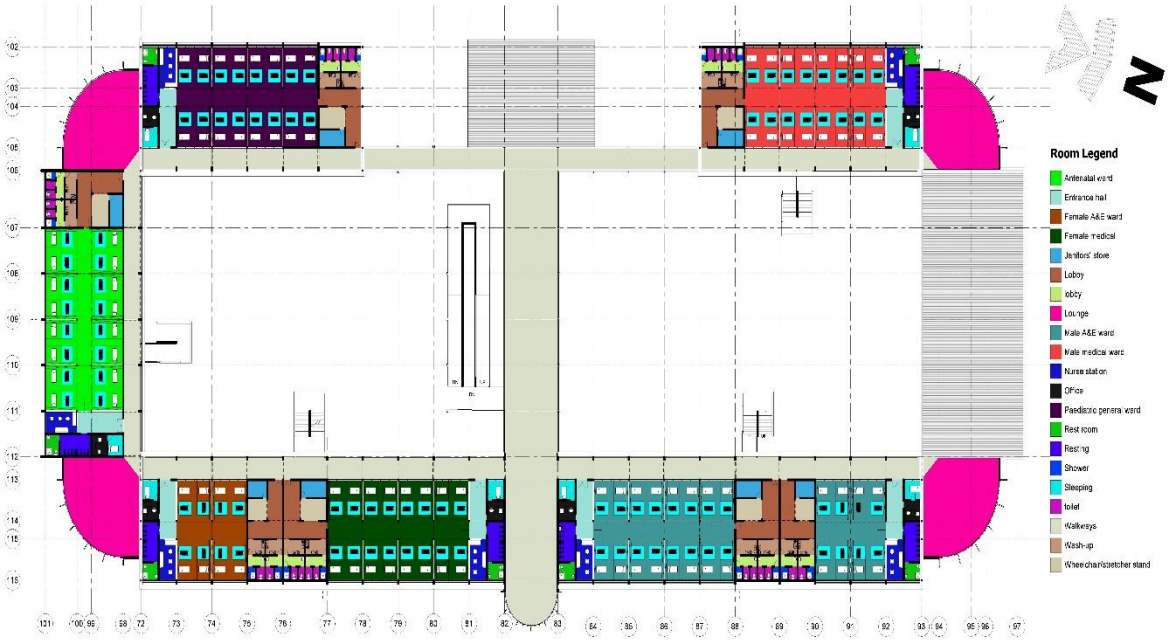


Figure 6.23: First floor plan of the inpatients wards



Figure 6.24: Second Floor plan of the Inpatient wards
Source: Authors' work, 2014



Figure 6.25: Furniture arrangement in a typical ward

The design of the wards was generally different from the conventional ward design, because it incorporated family caregivers; thus, spaces for sleeping, eating and storage were provided for them. Toilets were also provided for the family caregivers but the toilets were separated from those of the patients to avoid hospital acquired infections.

Lounges were also provided for patients and their relatives so that ambulant patients, caregivers and visitors can go and relax. Other supporting facilities like clean and dirty utility rooms, nurse station, and relaxation area for the staff were all provided as it can be seen in the figure below.

6.8.11 Caregivers clinic

This a clinic designed for family caregivers, here family caregivers will be going for medical check-up from time to time to make sure that they are medically fit for the task; this will help in improving the lives of the patients, the caregivers themselves and health workers and will as well reduce disease transmission in within the ward in particular and the hospital at large. The clinic has only waiting area and some offices for examination; it was located around the ward area.

As suggested by some scholars that,any caregiver that stays in hospital for more than a week should go for medical check-up, based on that duration of stay of the caregivers in hospital was captured and it was found that 35% of the caregivers stayed for more than a week, out of which 17.5% were male and 17.5% were female. Thus, for a design of whatever number of beds capacity hospital, a waiting area of at least 20% of the family caregivers should be provided in the caregiver clinic. The clinic is shown in the figure below.

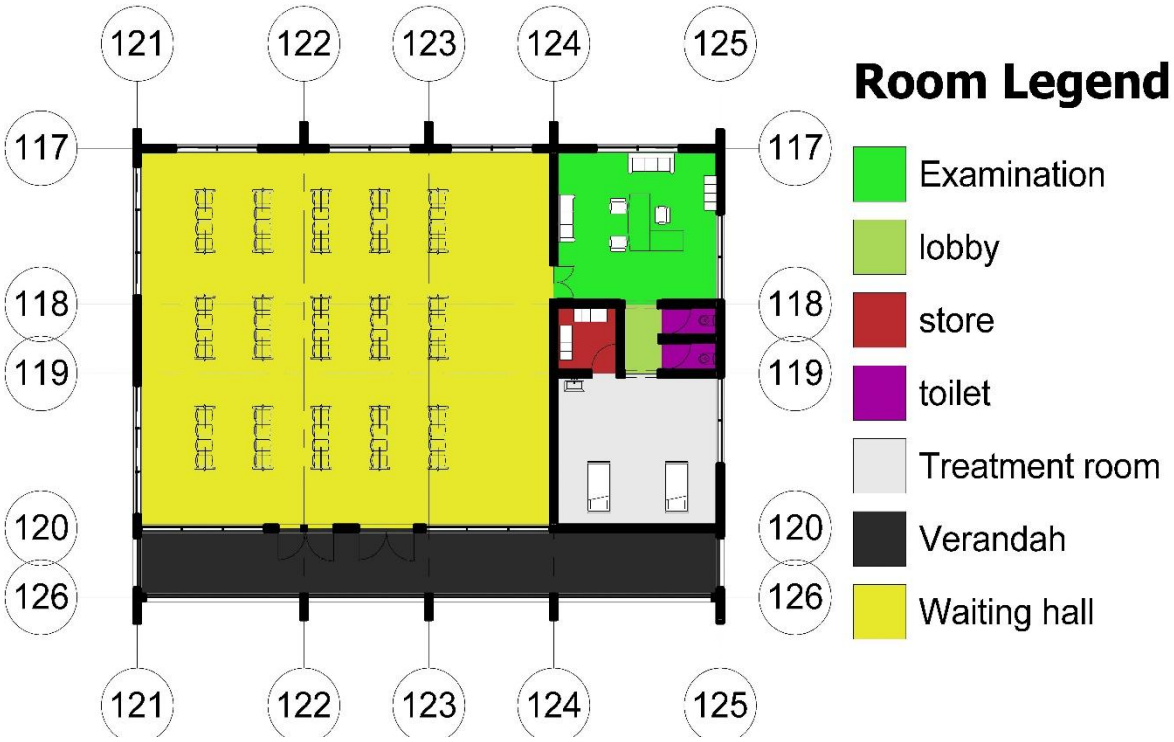


Figure 6.26: Caregivers' clinic
Source: Authors' work, 2014

6.8.12 Caregivers laundry/kitchen

The laundry provided for the caregivers is where the will be washing their clothes and that of the patients. However, due the nature of the caregivers, the laundry designed was not a modern library, rather a somehow local laundry whereby a caregiver is provided with a place for keeping soiled or dirty clothes, a place for keeping washed clothes, a place for sitting and a place for washing. An open courtyard was also provided for spreading their clothes to dry under the sun. Some sitting arrangements were provided for those that might sit and watch over their clothes to dry after that a space was designed for ironing.

From the research, it was found that 82.5% of the caregivers wash their clothes and those of the patients, out of which 47.5% were female and 35% were male. However, it was considered that not all of them wash at the time, hence an assumption was made

that one quarter of them (1/4) would wash at the same time, which is equivalent to 9.4% female and 8.75% male. Hence, the space provided was for the 9.4% female, 8.75% male.

The kitchen provided was very small because very small percentage of the caregivers cook. The design is shown in the figure below.

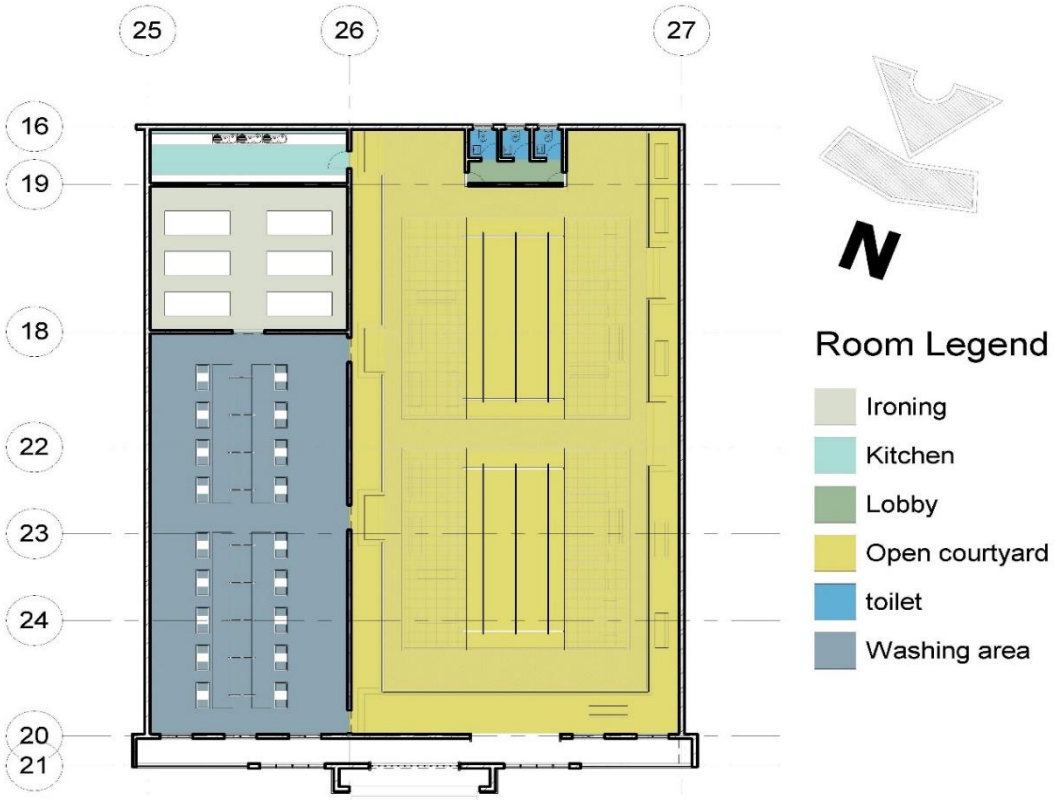


Figure 6.27: Caregivers laundry/kitchen
Source: Authors' work, 2014

7.0 CONCLUSION AND RECOMMENDATIONS

7.1 Conclusion

The aim of undertaking this research was to devise or create an approach to future changes in the health care industry in order to bring about shift from the current state of health care facilities to functional hospitals with cultural context.

In chapter one, the statement of the problem was introduced, a review of literatures, including various reports and studies concerning family caregivers permitted the research gap to be established. Based on careful analysis of the problem; the best methods and instrument to be used in carrying out the study were established.

The result obtained showed that some facilities ought to be incorporated in hospital design. Therefore, the research proposed a new model for hospital design and planning which if applied could provide a hospital with cultural context of family caregivers.

7.2 Contribution to Knowledge

The study " Evolving Space Standard for Family Caregivers in Hospital Design" being the first of its kind set a new dimension or line of architectural study that the researcher called "*Architecture of family caregivers*"upon which other researches can build up.

The study also established new bases or facts about family caregivers' life in hospital that were not established before by other researches, some of which are number of family caregivers that stay with the patient during the patient's stay in hospital, where the caregivers eat, where the caregivers sleep, their space requirements among others.

The study also developed a new model or a new design framework and named it "*Caregiver Oriented Design and Planning of Hospitals*" for the design of hospital that will suite our own culture contrary to what we were used to before.

The study also demonstrated the final outcome of the research in the design of a general hospital.

7.3 Recommendations

As family caregivers spaces have been successfully evolved in hospital design providing a somewhat conducive atmosphere for both the patients and family caregivers, it is highly recommended here that government and other relevant stake holders should take into consideration the provision of additional facilities and make it become part of the rules and regulations governing hospitals design so that it can be put into practice.

It is also recommended that, our architects and other relevant professionals should make use of the product of this research for it will guide and help them in coming up with a better and functional hospital design that will to a large extent satisfy the need of patients in this part of the globe.

Finally, it is recommended that, health workers and allied professionals should recognize the significant roles the family caregivers play in the patient management processes from admission to ultimate discharge and should therefore not to see any family caregiver as a nuisance.

7.4 Areas for Further Research

With respect to the architecture of hospitals, there are areas that need to be exploited for further in depth research, due to the fact that all designs are unique, such areas would have to first of all, be identified, analysed and reviewed in an attempt at improving the suitability and compatibility or otherwise of intended concept anddesign with our cultures and traditions

Therefore, hospital as an institutional edifice meant to provide healthcare services to ailing individuals/patients; one single template of hospital design cannot be employed and may not be suitable in all parts of the globe.

Hence, further research into allocating appropriate number of beds to different hospital ward types would go a long way in minimizing, at least, or eliminating, at best the problem of ward overcrowding resulting from patients overloads.

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APPENDICES

Appendix A: Adapted Questionnaire

*An **informal caregiver** provides needed care on a long term basis to a **care recipient**, who is most often a relative, friend, or neighbor. This does not include caregivers who provide care on a voluntary basis through an organization (such as a church group), or those who provide care as a career. Long-term care often involves assisting the care receiver with personal hygiene, getting dressed, using the bathroom, or household tasks such as preparing meals. It does not include recovery from an injury after which the recipient no longer needs care. Currently we are interested only in those recipients of care who are at least 60 years of age.*

Q1. What is your caregiver status? (Check all that apply)
__I provide care to my spouse
__I provide care to my mother/mother-in-law
__I provide care to my father/father-in-law
__I provide care to a friend
__I provide care to a relative
__I provide care to a sibling/sibling-in-law
__I provide care to my adult child (60 years of age or older)
__I currently do not provide care, but have done so within the last year
__Other (specify)_____

Q2. Why does the care receiver need services? (Check all that apply)
__Aging process
__Cognitive impairment (e.g., Alzheimer's/dementia)
__Developmental disabilities/Mental retardation
__Mental illness (depression, panic/anxiety disorder, schizophrenia)
__Physical disabilities (arthritis, stroke, etc.)
__Head injury
__Substance abuse issues
__End of life issues (e.g., Hospice)
__Other (specify)_____

Q3. Do you receive monetary compensation for any of the caregiving services you provide (such as Qualified Service Providers or Guardian Services, where you are compensated because it would cost the state more for formal care)?
__Yes
__No

Q4. Where is the caregiving done? (Check all that apply)
__In my home - the care recipient lives with me
__Care recipient's home/apartment **(skip to Q5)**
__Assisted living facility **(skip to Q5)**
__Independent living facility **(skip to Q5)**
__Other

Q4a. If the care recipient lives with you, how much care is required?
__Around the clock/care recipient cannot be left alone **(skip to Q6)**
__Around the clock/care recipient can be left alone for a few hours **(skip to Q6)**
__Around the clock/care recipient can be left alone for most of the day **(skip to Q6)**

Q5. If the care recipient is not living with you...

5a. How far away do you live from him/her?

__Less than 20 minutes away
__Between 20 and 59 minutes away
__Between one and two hours away
__More than two hours away

5b. How many hours per week, on average, are you caregiving?

__0-5 hours/week
__6-10 hours/week
__11-15 hours/week
__16-20 hours/week
__More than 20 hours/week

Q6. How long have you been providing caregiving services to your care recipient?
_____ (please indicate months or years)

Q7. Here is a list of caregiving difficulties you may have experienced when providing care. Please tell us the difficulties you have experienced by circling the letters of your choices. Then, on a one to five scale, with one being "Not at all serious" and five being "Very serious", please indicate how serious the difficulty was.

What are the difficulties you experience when providing care to your loved one?		Please rate the seriousness of the difficulties you have experienced
	Caregiving difficulties	Rating of seriousness
a.	Less time for myself (shopping, hobbies, etc.)	Not at all-1 2 3 4 5-Very serious
b.	Less time for my family (shorter vacations, missed events, etc.)	Not at all-1 2 3 4 5-Very serious
c.	No consistent help from other family members	Not at all-1 2 3 4 5-Very serious
d.	Affects my family relationships	Not at all-1 2 3 4 5-Very serious
e.	Conflicts with my social life (eating out, movies, visiting friends, etc.)	Not at all-1 2 3 4 5-Very serious
f.	Emotional aspects (frustration, sadness, anxiety, etc.)	Not at all-1 2 3 4 5-Very serious
g.	Less privacy	Not at all-1 2 3 4 5-Very serious
h.	Interferes with my job	Not at all-1 2 3 4 5-Very serious
i.	Financial obligations	Not at all-1 2 3 4 5-Very serious
j.	Lifestyle change	Not at all-1 2 3 4 5-Very serious
k.	Having the responsibility for making major life decisions for loved ones	Not at all-1 2 3 4 5-Very serious
l.	My physical health is deteriorating due to caregiving	Not at all-1 2 3 4 5-Very serious
m.	I am unable to get the sleep I need due to caregiving	Not at all-1 2 3 4 5-Very serious

Q7a. Are there other caregiving difficulties you may have experienced when providing care that haven't already been mentioned?
__No
__Yes (please specify)_____

_____

Q8.
Here is a list of concerns that may have applied to you at some time during your caregiving. Please indicate how much you agree or disagree with each statement.

Concerns	Please rate how much you agree or disagree with the concern
a. It is difficult for me to accept support or assistance when caregiving because it is my duty to provide care	Strongly disagree-1 2 3 4 5- Strongly agree
b. It is difficult for me to find support or assistance when caregiving (I feel like I don't have help)	Strongly disagree-1 2 3 4 5- Strongly agree
c. It is difficult for me to accept financial support or assistance when caregiving because it sometimes carries a negative stigma	Strongly disagree-1 2 3 4 5- Strongly agree
d. It is difficult for me to accept help from others when caregiving because I'm being paid (e.g. Qualified Service Provider)	Strongly disagree-1 2 3 4 5- Strongly agree
e. I'm providing caregiving services because people in my community will think ill of me if I don't	Strongly disagree-1 2 3 4 5- Strongly agree
f. Since I have started caregiving services I've experienced a sense of isolation from others in my community	Strongly disagree-1 2 3 4 5- Strongly agree
g. Since I have started caregiving services I've experienced a lack of understanding from others in my community	Strongly disagree-1 2 3 4 5- Strongly agree

Q8a. Are there other concerns for you as a caregiver that haven't already been mentioned?
__No
__Yes (please specify)_____

_____

Q9. Are there other informal caregivers who are providing care to the care recipient?
__Yes——>Who is providing care?_____
__No

Q10. If there are other people who are not providing care, why not? (Check all that apply)
__There are no other immediate family members
__Others are also in need of care
__Others are embarrassed/uncomfortable fulfilling intimate needs (bathing, toileting, etc.)
__Others are too inexperienced
__Others live farther away
__Others have full-time jobs
__Others have less flexible daily schedules
__Others have young dependents living with them
__Others do not get along with care recipient
__Others are unaware of needed care (have not been informed - have not been asked to help)
__Others are unwilling or "just can't"
__Recipient doesn't want care from others
__Other reasons_____

The next series of questions addresses services that may or may not be available for your care recipient.

Q11. Are **dietician services** available to your care recipient?
__Yes (**Skip to Q11b**)
__No
__Do not know

Q11a. If you answered "No" or "Do not know", would you like **dietician services** to be available to your care recipient?
__Yes (**skip to Q12**)
__No (**skip to Q12**)

Q11b. If **dietician services** are available to your care recipient, are you using it?
__Yes (**Skip to Q11d**)
__No

Q11c. If you're not using **dietician services**, why not? (**After answering, skip to Q12**)
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q11d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **dietician services**. Not good at all - 1 2 3 4 5 - Very good

Q11e. If you rated **dietician services** 1 or 2, please tell us why the service was not good.
_____
_____

Q12. Are **home delivered meals** (**through Meals on Wheels, community volunteering, church, etc.**) available to your care recipient?
__Yes (**Skip to Q12b**)
__No
__Do not know

Q12a. If you answered "No" or "Do not know", would you like **home delivered meals** to be available to your care recipient?
__Yes (**skip to Q13**)
__No (**skip to Q13**)

Q12b. If **home delivered meals** are available to your care recipient, are you using it?
__Yes (**Skip to Q12d**)
__No

Q12c. If you're not using **home delivered meals**, why not? (**After answering, skip to Q13**)
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q12d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **home delivered meals**. Not good at all - 1 2 3 4 5 - Very good

Q12e. If you rated **home delivered meals** 1 or 2, please tell us why the service was not good.
_____
_____

Q13. Are **congregate meal settings** (**at Senior centers, restaurants, etc.**) available to your care recipient?
__Yes (**Skip to Q13b**)
__No
__Do not know

Q13a. If you answered "No" or "Do not know", would you like **congregate meal settings** to be available to your care recipient?
__Yes (**skip to Q14**)
__No (**skip to Q14**)

Q13b. If **congregate meal settings** are available to your care recipient, are you using it?
__Yes **(Skip to Q13d)**
__No

Q13c. If you're not using **congregate meal settings**, why not? **(After answering, skip to Q14)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q13d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **congregate meal settings**.
Not good at all - 1 2 3 4 5 - Very good

Q13e. If you rated **congregate meal settings** 1 or 2, please tell us why the service was not good.
_____
_____

Q14. Are **adult day centers** available to your care recipient?
__Yes **(Skip to Q14b)**
__No
__Do not know

Q14a. If you answered "No" or "Do not know", would you like **adult day centers** to be available to your care recipient?
__Yes **(skip to Q15)**
__No **(skip to Q15)**

Q14b. If **adult day centers** are available to your care recipient, are you using it?
__Yes **(Skip to Q14d)**
__No

Q14c. If you're not using **adult day centers**, why not? **(After answering, skip to Q15)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q14d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **adult day centers**. Not good at all - 1 2 3 4 5 - Very good

Q14e. If you rated **adult day centers** 1 or 2, please tell us why the service was not good.
_____
_____

Q15. Are **outreach programs (i.e. senior companions)** available to your care recipient?
__Yes **(Skip to Q15b)**
__No
__Do not know

Q15a. If you answered "No" or "Do not know", would you like **outreach programs** to be available to your care recipient?
__Yes **(skip to Q16)**
__No **(skip to Q16)**

Q15b. If **outreach programs** are available to your care recipient, are you using it?
__Yes **(Skip to Q15d)**
__No

Q15c. If you're not using **outreach programs**, why not? **(After answering, skip to Q16)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q15d. On a one to five scale, with one being "Not good at all" and five being "Very Good", please rate **outreach programs**. Not good at all - 1 2 3 4 5 - Very good

Q15e. If you rated **outreach programs** 1 or 2, please tell us why the service was not good.
_____
_____

Q16. Are **visiting nurse** available to your care recipient?
__Yes (**Skip to Q16b**)
__No
__Do not know

Q16a. If you answered "No" or "Do not know", would you like **visiting nurse** to be available to your care recipient?
__Yes (**skip to Q17**)
__No (**skip to Q17**)

Q16b. If **visiting nurse** are available to your care recipient, are you using it?
__Yes (**Skip to Q16d**)
__No

Q16c. If you're not using **visiting nurse**, why not? (**After answering, skip to Q17**)
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q16d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **visiting nurse**. Not good at all - 1 2 3 4 5 - Very good

Q16e. If you rated **visiting nurse** 1 or 2, please tell us why the service was not good.
_____
_____

Q17. Are **parish nurses** available to your care recipient?
__Yes (**Skip to Q17b**)
__No
__Do not know

Q17a. If you answered "No" or "Do not know", would you like **parish nurses** to be available to your care recipient?
__Yes (**skip to Q18**)
__No (**skip to Q18**)

Q17b. If **parish nurses** are available to your care recipient, are you using it?
__Yes (**Skip to Q17d**)
__No

Q17c. If you're not using **parish nurses**, why not? (**After answering, skip to Q18**)
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q17d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **parish nurses**. Not good at all - 1 2 3 4 5 - Very good

Q17e. If you rated **parish nurses** 1 or 2, please tell us why the service was not good.
_____
_____

Q18. Are **homemaker services/home health aides** available to your care recipient?
__Yes (**Skip to Q18b**)
__No
__Do not know

Q18a. If you answered "No" or "Do not know", would you like **homemaker services/home health aides** to be available to your care recipient?
__Yes (**skip to Q19**)
__No (**skip to Q19**)

Q18b. If **homemaker services/home health aides** are available to your care recipient, are you using it?
__Yes (**Skip to Q18d**)
__No

Q18c. If you're not using **homemaker services/home health aides**, why not? **(After answering, skip to Q19)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q18d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **homemaker services/home health aides**.
Not good at all - 1 2 3 4 5 - Very good

Q18e. If you rated **homemaker services/home health aides** 1 or 2, please tell us why the service was not good_____

_____

Q19. Are **escort/transportation services** available to your care recipient?
__Yes **(Skip to Q19b)**
__No
__Do not know

Q19a. If you answered "No" or "Do not know", would you like **escort/transportation services** to be available to your care recipient?
__Yes **(skip to Q20)**
__No **(skip to Q20)**

Q19b. If **escort/transportation services** are available to your care recipient, are you using it?
__Yes **(Skip to Q19d)**
__No

Q19c. If you're not using **escort/transportation services**, why not? **(After answering, skip to Q20)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q19d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **escort/transportation services**. Not good at all - 1 2 3 4 5 - Very good

Q19e. If you rated **escort/transportation services** 1 or 2, please tell us why the service was not good_____

_____

Q20. Are **shopping assistance** available to your care recipient?
__Yes **(Skip to Q20b)**
__No
__Do not know

Q20a. If you answered "No" or "Do not know", would you like **shopping assistance** to be available to your care recipient?
__Yes **(skip to Q21)**
__No **(skip to Q21)**

Q20b. If **shopping assistance** are available to your care recipient, are you using it?
__Yes **(Skip to Q20d)**
__No

Q20c. If you're not using **shopping assistance**, why not? **(After answering, skip to Q21)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q20d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **shopping assistance**. Not good at all - 1 2 3 4 5 - Very good

Q20e. If you rated **shopping assistance** 1 or 2, please tell us why the service was not good.
_____

_____

Q21. Are **pet services (grooming, vet needs, etc.)** available to your care recipient?
__Yes **(Skip to Q21b)**
__No
__Do not know

Q21a. If you answered "No" or "Do not know", would you like **pet services** to be available to your care recipient?
__Yes **(skip to Q22)**
__No **(skip to Q22)**

Q21b. If **pet services** are available to your care recipient, are you using it?
__Yes **(Skip to Q21d)**
__No

Q21c. If you're not using **pet services**, why not? **(After answering, skip to Q22)**
__Do not need it
__Care recipient won't use it
__Other reason (please specify)_____

Q21d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **pet services**. Not good at all - 1 2 3 4 5 - Very good

Q21e. If you rated **pet services** 1 or 2, please tell us why the service was not good
_____
_____

Q22. Are there other services that haven't already been mentioned that you would like to have available to your care recipient?
__No
__Yes (please specify_____
_____

The next series of questions addresses services that may be available to you as a caregiver.

Q23. Is **information about available services** available to you?
__Yes **(Skip to Q23b)**
__No
__Do not know

Q23a. If you answered "No" or "Do not know", would you like **information about available services** to be available to you?
__Yes **(skip to Q24)**
__No **(skip to Q24)**

Q23b. If **information about available services** is available to you, are you using it?
__Yes **(Skip to Q23d)**
__No

Q23c. If you're not using **information about available services**, why not? **(After answering, skip to Q24)**
__Do not need it
__Other reason (please specify)_____

Q23d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **information about available services**.
Not good at all - 1 2 3 4 5 - Very good

Q23e. If you rated **information about available services** 1 or 2, please tell us why the service was not good_____
_____

Q24. Is **assistance with accessing available services** available to you?
__Yes (**Skip to Q24b**)
__No
__Do not know

Q24a. If you answered "No" or "Do not know", would you like **assistance with accessing available services** to be available to you?
__Yes (**skip to Q25**)
__No (**skip to Q25**)

Q24b. If **assistance with accessing available services** is available to you, are you using it?
__Yes (**Skip to Q24d**)
__No

Q24c. If you're not using **assistance with accessing available services**, why not? (**After answering, skip to Q25**)
__Do not need it
__Other reason (please specify)_____

Q24d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **assistance with accessing available services**.
Not good at all - 1 2 3 4 5 - Very good

Q24e. If you rated **assistance with accessing available services** 1 or 2, please tell us why the service was not good_____

_____

Q25. Is **individual caregiver counseling** available to you?
__Yes (**Skip to Q25b**)
__No
__Do not know

Q25a. If you answered "No" or "Do not know", would you like **individual caregiver counseling** to be available to you?
__Yes (**skip to Q26**)
__No (**skip to Q26**)

Q25b. If **individual caregiver counseling** is available to you, are you using it?
__Yes (**Skip to Q25d**)
__No

Q25c. If you're not using **individual caregiver counseling**, why not? (**After answering, skip to Q26**)
__Do not need it
__Other reason (please specify)_____

Q25d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **individual caregiver counseling**.
Not good at all - 1 2 3 4 5 - Very good

Q25e. If you rated **individual caregiver counseling** 1 or 2, please tell us why the service was not very good_____

_____

Q26. Is **caregiver training or education** available to you?
__Yes (**Skip to Q26b**)
__No
__Do not know

Q26a. If you answered "No" or "Do not know", would you like **caregiver training or education** to be available to you?
__Yes (**skip to Q27**)
__No (**skip to Q27**)

Q26b. If **caregiver training or education** is available to you, are you using it?
__Yes (**Skip to Q26d**)
__No

Q26c. If you're not using **caregiver training or education**, why not? (**After answering, skip to Q27**)
__Do not need it
__Other reason (please specify)_____

Q26d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **caregiver training or education**.
Not good at all - 1 2 3 4 5 - Very good

Q26e. If you rated **caregiver training or education** 1 or 2, please tell us why the service was not good_____

_____

Q27. Is **respite care (someone else provides short-term relief for you)** available to you?
__Yes (**Skip to Q27b**)
__No
__Do not know

Q27a. If you answered "No" or "Do not know", would you like **respite care** to be available to you?
__Yes (**skip to Q28**)
__No (**skip to Q28**)

Q27b. If **respite care** is available to you, are you using it?
__Yes (**Skip to Q27d**)
__No

Q27c. If you're not using **respite care**, why not? (**After answering, skip to Q28**)
__Do not need it
__Other reason (please specify)_____

Q27d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **respite care**.
Not good at all - 1 2 3 4 5 - Very good

Q27e. If you rated **respite care** 1 or 2, please tell us why the service was not very good_____

_____

Q28. Are **caregiver support groups** available to you?
__Yes (**Skip to Q28b**)
__No
__Do not know

Q28a. If you answered "No" or "Do not know", would you like **caregiver support groups** to be available to you?
__Yes (**skip to Q29**)
__No (**skip to Q29**)

Q28b. If **caregiver support groups** are available to you, are you using it?
__Yes (**Skip to Q28d**)
__No

Q28c. If you're not using **caregiver support groups**, why not? (**After answering, skip to Q29**)
__Do not need it
__Other reason (please specify)_____

Q28d. On a one to five scale, with one being "Not good at all" and five being "Very good", please rate **caregiver support groups**.
Not good at all - 1 2 3 4 5 - Very good

Q28e. If you rated **caregiver support groups** 1 or 2, please tell us why the service was not good.
_____

_____

Q29. Are there other services I haven't already been mentioned that you would like to have available to you as a caregiver ?

__No
__Yes (please specify_____

_____

Q30. Think about the services that you have provided or are now providing to your care recipient. Please tell us which of the following services you've provided, how often you've provided the service, and if you would have liked help providing the service. For example, if you have phone contact on a weekly basis check the "weekly" box.

Type of Service	How often have you provided this service? (Please fill in the most appropriate box)					Would you have liked help providing this service?	
	Daily	Weekly	Monthly	On Occasion	Never	Yes	No
Manage finances							
Contribute financially							
Administer personal care (bathing, bandaging, nail care, etc.)							
Assist with household tasks (including pet care)							
Assist with maintenance/repair (indoor/outdoor)							
Assist with meals/nutritional needs							
Assist with errands/shopping							
Provide companionship							
Provide phone contact							
Help with worries, anxiety, and emotional needs (i.e., loss of independence, leaving home behind, fear of death, crying, anger, etc.)							
Listen to them - someone for them to talk to							
Provide transportation, getting places							
Assist with medicines (administering, side effects, etc.)							
Communicate with medical providers							
Get other family members involved in caregiving							
Help with legal assistance							

Q31. Are there other services that I haven't already been mentioned that you would like to have available to you as a caregiver ?
__No
__Yes (please specify)_____

Q32. What kinds of information/services would be valuable to you as a caregiver, now or in the future?
__Information about the care recipient's condition or disability (what to expect as they age, etc.)
__Information on end of life issues
__Information about developments or changes in laws which might affect your situation
__Info-line (central place to call to find out what kind of help is available or where to get it)
__Someone to help you arrange for services, assess your situation
__Someone to talk to/counselling services/support group
__Respite care or adult day care
__Aftercare/grief counselling
__Hotline (for dealing with immediate emotional needs while preserving dignity of care recipient)
__Help in understanding how to select a nursing home/other care facility
__Help in assessing the timing of placement in formal caregiving institutions
__Help in understanding how to pay for nursing homes, adult day care, etc.
__Help in dealing with agencies (bureaucracies) to get services
__Financial support
__Tax break, stipend, government subsidy
__Other (specify)_____
__None of the above

Q33. Because of caregiving have you... (check all that apply)
__Changed locations to accomodate care recipient's needs (e.g. handicap accessibility)
__Sold a home to move in with care recipient
__Stopped working
__Retired early
__Taken a less demanding job
__Changed from full-time to part-time work
__Reduced your official working hours
__Lost some of your employment fringe benefits
__Had time conflicts between working and caregiving
__Used your vacation time to provide care
__Taken a leave of absence to provide care
__Lost a promotion
__Taken off work early or arrived to work late because you provided care
__Other (specify)_____
__None of the above

Q34. Within the past year, on average, how much money have you spent caring for your care recipient?
__0 to $1,000
__$1,001 to $2,000
__$2,001 to $3,000
__$3,001 to $4,000
__$4,001 to $5,000
__More than $5,000
__The care recipient lives with me - it's difficult to separate expenses.
__I do not know

Q35. What is your age?
__Younger than 35 years of age
__35 to 44 years old
__45 to 54 years old
__55 to 64 years old
__65 to 74 years old
__75 to 84 years old
__85 or older

Q36. What is your marital status?
__Married or living with partner
__Single, never married
__Divorced or separated
__Widowed

Q37. If there are children who reside in you household, what are their ages? (Please indicate the number of children in each age category.)
__0 to 4 years old
__5 to 9 years old
__10 to14 years old
__15 to 18 years old
__18 or older

Q38. What is your gender?
__Male
__Female

Q39. What is the highest level of education you have completed?
__Less than High school
__Some high school
__Graduated high school/GED
__Some technical college
__Technical degree
__Some college
__Graduated college
__Post graduate of professional degree

Q40. What is your employment status?
__Full-time employment (35 hours/week or more)
__Part-time
__Multiple jobs (including full-time)
__Retired
__Not working

Q41. What was your annual household income in 2001 before taxes (including money from jobs, social security, retirement income, public assistance, etc.)?
__Less than $10,000
__$10,000-$20,000
__$20,001-$35,000
__$35,001-$50,000
__$50,001-$65,000
__$65,001-$80,000
__$80,001-$100,000
__More than $100,000

Q42. What is your race/ethnic background?
__White (Non-Hispanic)
__White (Hispanic)
__Black or African American
__Asian American
__American Indian or Alaska Native
__Native Hawaiian or other Pacific Islander
__Other race/ethnicity_____

Q43. What is your principle language?
__English
__Spanish
__Other_____

Q44. What is your zip code?_____

The North Dakota Department of Human Services Aging Services Division is interested in establishing a registry of caregivers in North Dakota. Information gathered from the survey will assist policymakers in developing programs and educational materials to help meet the needs of caregivers such as yourself. If you are willing, please give us your name, address, and phone number so we may add you to the registry.

45. Name: _____
Address: _____
Phone: _____

Thank you for taking time to help us with this important study!

Appendix B: Sample of the Questionnaire

DEPARTMENT OF ARCHITECTURE, FACULTY OF ENVIRONMENTAL DESIGN, AHMADU BELLO UNIVERSITY, ZARIA

This questionnaire is designed to get relevant information that will aid in *Evolving Space Standard for Family Caregiversin Hospital Design*

All information provided will be treated with confidentiality and will be used for academic purpose only.

Thank you

Shitu, Magaji

EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS

IN HOSPITAL DESIGN

SECTION A: CAREGIVER BIODATA

1. Please tick where appropriate

a) Sex: Male [ ] Female [ ]

b) Age bracket (in years) : 10-19 [ ] 20-29 [ ] 30-39 [ ] 40-49 [ ] 50-59 [ ] 60 above [ ]

c) Marital status: Married [ ] single [ ] divorced [ ] widow [ ]

2. Ethnicity: Hausa [ ] Yoruba [ ] Igbo [ ] Fulani [ ] Other [ ]

3. Relationship with the patient (please state)…….

SECTION: PATIENT'S BIODATA

4. Please tick where appropriate

a) Sex: Male [ ] Female [ ]

b). Age bracket (in years)

0-9 [ ] 10-19 [ ] 20-29 [ ] 30-39 [ ] 40-49 [ ] 50 and above [ ]

c). Marital status: Married [ ] single [ ] divorced [ ] widowed [ ]

5. Ethnicity: Hausa [ ] Yoruba [ ] Igbo [ ] Fulani [ ] Other [ ]

6. Relationship with caregiver please

state……..

7. If married, and if allowed, would you like your wife to be your caregiver?

Yes [ ] No []

8. If yes, and she is not the one taking care of you now, then why? Please tick

Lack of privacy [ ] Women cannot give care to men [ ] others, specify

……

9. Type of patient's ailment (please

state)……

SECTION C: PATIENT'S CONDITION

10. Please fill the table below

Can the patient do the following him/herself?	**Toileting**	**Washing**	**Eating**	**Bathing**	**Moving**	**Taking medication**	**brushing**
Yes							
No							

SECTION D: CAREGIVING DETAILS

11. Please fill the following table by indicating the person that helps the caregiver carry out the following activities if the patient cannot do them.

Activities	**The Care provider**		
	Caregiver	**Health workers**	**Others specify**
Toileting			
Washing			
Eating			
Bathing			
Moving			
Taking medication			
Brushing			

12. If you are the one that wash the patient's clothes, where do you do it?

In the laundry [ ] in an open space outside [ ]others, specify……

13. If you are the one helping the patient while eating, how do you do it?

Giving him/her: while lying on the bed [ ] while sitting on the bed himself [ ] while sitting on bed with your support [ ] while sitting on a chair beside the bed [ ] while sitting on a chair with your support [ ] others, specify…….....**.....**

14. At a time, how many of the family members stay with the patient? One [ ] two [ ] three [ ]

15. How long have you been staying in the hospital? 0-6 days [ ] 7-30 days [ ] 30 days and above [ ]

16. Where do you normally sleep? Please tick

In a separate place within the ward but not with the patient [ ] within the ward with the patient [ ] Outside the ward but within the hospital premises [ ] outside the hospital premises [ ] other, specify……...

17. How often do you sleep? …….

18. How do you get food? Buying [ ] Cooking [ ] from home [ ] other, specify ……

19. If cooking, where do you cook it? Within the ward [ ] Outside the ward [ ] other,

specify…….

20. If buying, where do you buy it? Within the ward [ ] Outside the ward but within the hospital premises [ ] Outside the hospital [ ] others, specify……

21. Where do you eat your own food?

In a separate place within the ward but not with the patient [ ] within the ward with the patient [ ] Outside the ward but within the hospital premises [ ] outside the hospital premises [ ] others, specify……...

22. Where do you keep containers after eating? In a locker [ ] under the bed [ ] others…….

23. How many times do doctors come and attend to the patients in a day?

One [ ] Two [ ] Three [ ]

24. When they come, are you allowed to remain with the patient? Yes [ ] No [ ]

25. If no, where do you stay? Anywhere outside the ward [ ] in a particular space outside the ward [ ] within the ward [ ] others, specify ……..

26. When it is time for cleaning the ward, where do you stay? Anywhere outside the ward [ ]

In a particular space outside the ward [ ] within the ward [ ] others, specify……

27. As a person giving care to your relative, have you had any formal knowledge, skill or training on how to carry out caregiving activities? Yes [ ] No [ ]

28. If yes, how long? 0-6 months [ ] 7-12 months [ ] 2 years [ ] 3 years [ ]

SECTION E: SPACE NEEDS

29. Please fill the table below as regards to the equipment you use and the available space you have for storage

List the equipment you use	**Are you satisfied with the available space you have for storage?**	**Is your need for using certain equipment being constraint by space availability?**	**Please list those equipment**

30. Are you satisfied with the space you have for sleeping?

Yes [ ] No [ ]

Thanks for your participation.

Appendix C: Introduction Letters

C1:Introduction Letter to Sheikh Muhammad Jiddah General Hospital

DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

30th September 2013

The Medical Director,
Sheikh Muhammed Jiddah General Hospital,
Kano,

Sir,

Letter of Introduction: SHITU, Magaji

I write to introduce to you the above named Post graduate student of this department. He is undertaking a research work leading to a Master of Science degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital with the North West zone of Nigeria.
Your Hospital has been selected as one of those to be surveyed during his field work. Kindly render him assistance in the course of his Data Collection.

Thank You

With Kind regards

Dr. M.D Ahmed
(Head of Department)

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C2: Introduction Letter to Wudil General Hospital

DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

30th September 2013

The Medical Director,
Wudil General Hospital,
Wudil,

Sir,

Letter of Introduction: SHITU, Magaji

I write to introduce to you the above named Post graduate student of this department. He is undertaking a research work leading to a Master of Science degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital Design with the North West zone of Nigeria.
Your Hospital has been selected as one of those to be surveyed during his field work. Kindly render him assistance in the course of his Data Collection.

Thank You

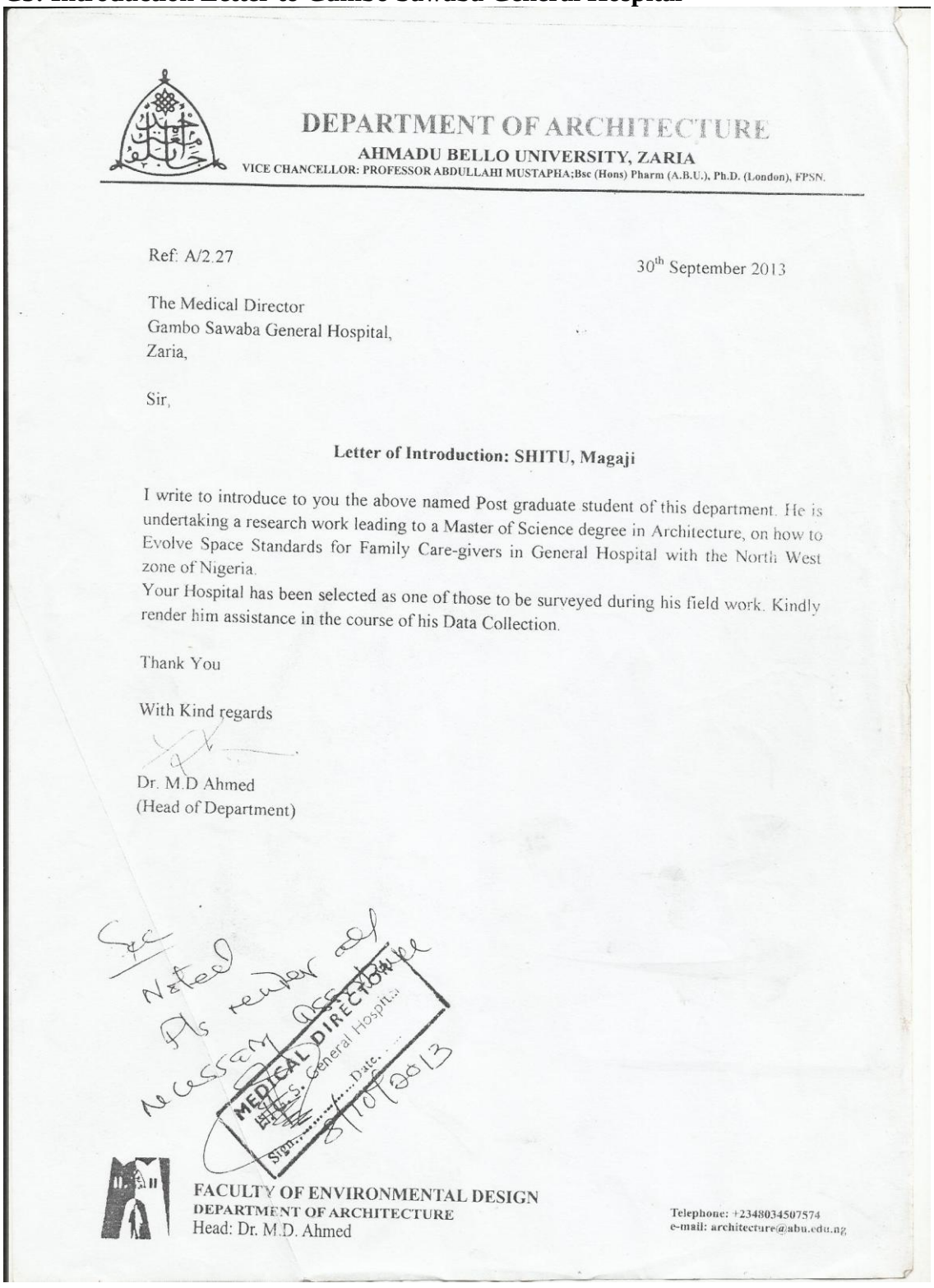
With Kind regards

Dr. M.D Ahmed
(Head of Department)

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C3: Introduction Letter to Gambo Sawaba General Hospital



DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

30th September 2013

The Medical Director
Gambo Sawaba General Hospital,
Zaria,

Sir,

Letter of Introduction: SHITU, Magaji

I write to introduce to you the above named Post graduate student of this department. He is undertaking a research work leading to a Master of Science degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital with the North West zone of Nigeria.
Your Hospital has been selected as one of those to be surveyed during his field work. Kindly render him assistance in the course of his Data Collection.

Thank You

With Kind regards

Dr. M.D Ahmed
(Head of Department)

See
Noted
Pls render all
necessary assistance

MEDICAL DIRECTOR
G.S. General Hospital
Sign.....Date.....
31/09/2013

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C4: Introduction Letter to Funtua General Hospital

DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

30th September 2013

The Medical Director,
Funtua General Hospital,
Funtua,

Sir,

Letter of Introduction: SHITU, Magaji

I write to introduce to you the above named Post graduate student of this department. He is undertaking a research work leading to a Master of Science degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital with the North West zone of Nigeria.
Your Hospital has been selected as one of those to be surveyed during his field work. Kindly render him assistance in the course of his Data Collection.

Thank You

With Kind regards

Dr. M.D Ahmed
(Head of Department)

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C5: Introduction Letter to Katsina General Hospital

DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

30th September 2013

The Medical Director,
Katsina General Hospital,
Katsina,

Sir,

Letter of Introduction: SHITU, Magaji

I write to introduce to you the above named Post graduate student of this department. He is undertaking a research work leading to a Master of Science degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital with the North West zone of Nigeria.
Your Hospital has been selected as one of those to be surveyed during his field work. Kindly render him assistance in the course of his Data Collection.

Thank You

With Kind regards

Dr. M.D Ahmed
(Head of Department)

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C6: Introduction Letter to Kaduna State Ministry of Health

DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

16th September, 2013

The Honorable Commissioner of Health,
Kaduna State Ministry of Health,
Kaduna.

Sir,

LETTER OF INTRODUCTION: SHITU, MAGAJI

I write to introduce to you the above named Postgraduate student of this Department. He is undertaking a Research work leading to a Master of Science Degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital Design within the North West zone of Nigeria.

As part of his field work, he is to collect information on existing General Hospitals in your State.

Kindly grant him permission to carry out his field work and assist him in the course of his Data Collection.

Thank you

With kind regards,

Dr. M.D. Ahmed
Head of Department

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C7: Introduction Letter to Kano State Ministry of Health

DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

16th September 2013

The Honorable Commissioner of Health,
Kano State Ministry of Health,
Kano.

Sir,

LETTER OF INTRODUCTION: SHITU, MAGAJI

I write to introduce to you the above named Postgraduate student of this Department. He is undertaking a Research work leading to a Master of Science Degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital Design within the North West zone of Nigeria..

As part of his field work, he is to collect information on existing General Hospitals in your State.

Kindly grant him permission to carry out his field work and assist him in the course of his Data Collection.

Thank you

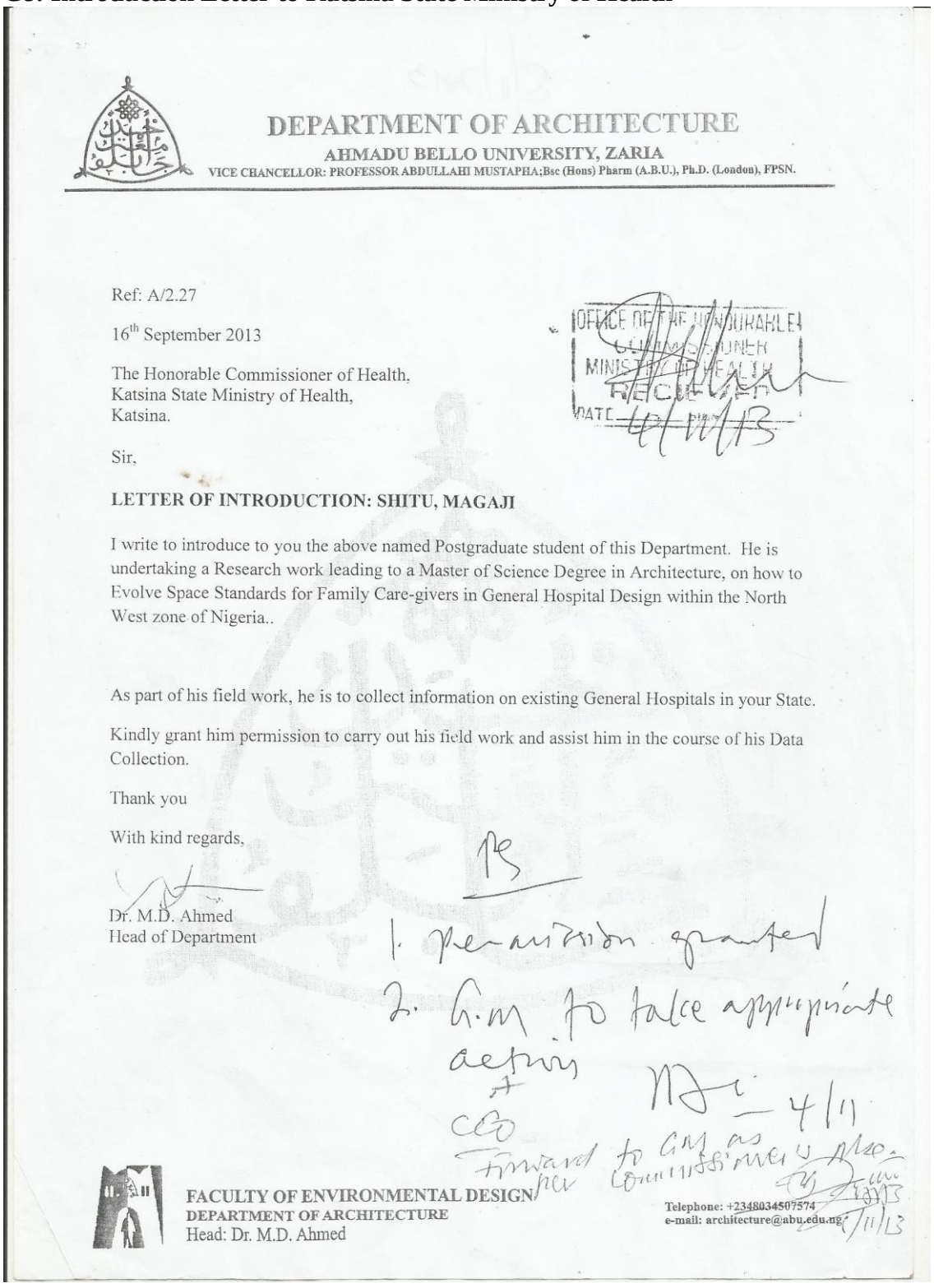
With kind regards,

Dr. M.D. Ahmed
Head of Department

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

C8: Introduction Letter to Katsina State Ministry of Health



DEPARTMENT OF ARCHITECTURE
AHMADU BELLO UNIVERSITY, ZARIA
VICE CHANCELLOR: PROFESSOR ABDULLAHI MUSTAPHA;Bsc (Hons) Pharm (A.B.U.), Ph.D. (London), FPSN.

Ref: A/2.27

16th September 2013

The Honorable Commissioner of Health,
Katsina State Ministry of Health,
Katsina.

OFFICE OF THE HONOURABLE
COMMISSIONER
MINISTRY OF HEALTH
RECEIVED
DATE 4/11/13

Sir,

LETTER OF INTRODUCTION: SHITU, MAGAJI

I write to introduce to you the above named Postgraduate student of this Department. He is undertaking a Research work leading to a Master of Science Degree in Architecture, on how to Evolve Space Standards for Family Care-givers in General Hospital Design within the North West zone of Nigeria..

As part of his field work, he is to collect information on existing General Hospitals in your State.

Kindly grant him permission to carry out his field work and assist him in the course of his Data Collection.

Thank you

With kind regards,

Dr. M.D. Ahmed
Head of Department

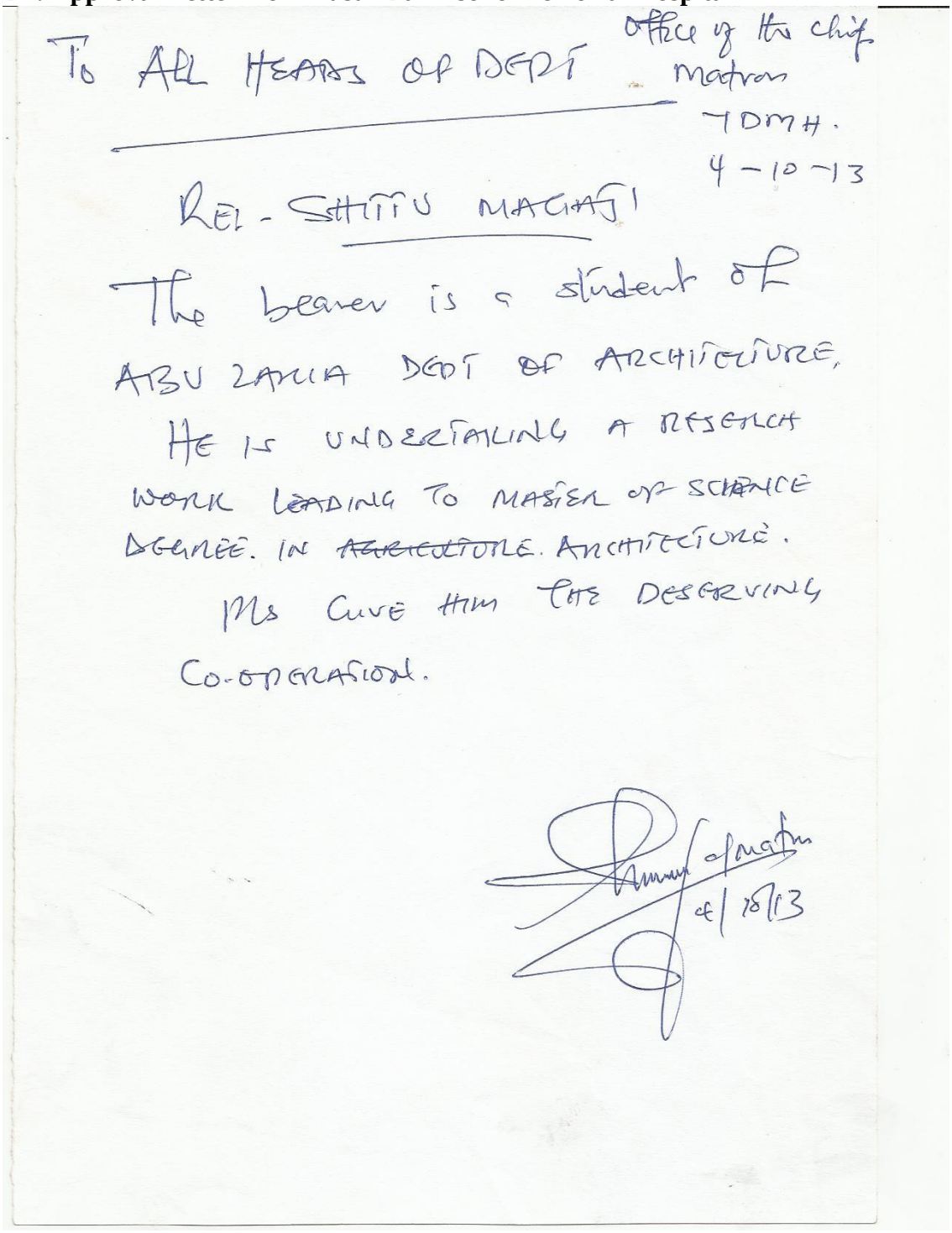
1. Permission granted
2. G.M to take appropriate action
CEO
Forward to GM as Commissioner also.
4/11
7/11/13

FACULTY OF ENVIRONMENTAL DESIGN
DEPARTMENT OF ARCHITECTURE
Head: Dr. M.D. Ahmed

Telephone: +2348034507574
e-mail: architecture@abu.edu.ng

Appendix D: Approval Letters

D1: Approval Letter from Yusuf Dan Tsoho Memorial Hospital



To ALL HEADS OF DEPT

Office of the chief Matron
YDMH.
4-10-13

REL-SUITU MACHAJI

The bearer is a student of ABU ZARIA DEPT OF ARCHITECTURE.

HE IS UNDERTAKING A RESEARCH WORK LEADING TO MASTER OF SCIENCE DEGREE. IN ~~AGRICULTURE~~ ARCHITECTURE.

PLS GIVE HIM THE DESERVING CO-OPERATION.

4/10/13

D2: Approval Letter from Kano State Hospital Management Board

KANO STATE

HOSPITALS MANAGEMENT BOARD

BOARD HEADQUARTER

P.M.B 3540, POST OFFICE ROAD, KANO

HMB/GEN/488/VOL.I

21Thul- Hajj, 1434: 25th = October, 2013

Shitu Magaji
Department Arch.
Ahmadu Bello University,
Zaria.

PROVISIONAL ETHICAL CLEARANCE

Sequel to conduct a research title **"EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS IN HOSPITAL DESIGN at SMJGH, Gaya and Wudil General Hospital"**. In the light of the above, I am mandated to convey provisional clearance to proceed on your study based on the following conditions.

i. That the consent of all participants must be obtained by filling in consent form.
ii. That you should liase with the Management of the facility for appropriate guidance.
iii. That any publication related to the study should be brought to the knowledge of the Ethical Committee for approval.
iv. That a copy of your finding should be submitted for documentation, record and final approval, please.

Best regards.

ZAHRA SULEIMAN
Asst. Sec. I (Estb)
FOR: EXECUTIVE SECRETARY

D3: Approval Letter from Funtua General Hospital

GENERAL HOSPITAL FUNTUA
H.S.M.B
P.M.B. 6027, Funtua, Katsina State.
☎ :0697702

Our ref: *Date:* 10/10/2013

TO ALL H.O.D'S AND WARD INCHARGES

RE- SHITU MAGAJI

The above named student is from A.B.U . zaria, He is undertaking a research work leading to a master of science degree in Architecture on how to evolve space standard for family care givers in his hospital .

You are requested to give him all necessary assistance please.

Kabir .S.Kunduru
KSK.
Hospital Secretary
For: Medical Director

D4: Approval Letter from Katsina State Ministry of Health

MOH/ADM/SUB/15/T 05/11/2013

The General Manager,
Health Services Management Board,
Katsina.

RE: LETTER OF INTRODUCTION: SHITU MAGAJI

I am directed to refer to the above subject matter, and introduce the above named who is a postgraduate student with the Department of ARCHITECTURE, AHMADU BELLO UNIVERSITY, ZARIA. Who is undertaking a research work leading to a master of science Degree in Architecture on how to Evolve space standards for family care givers in General Hospital Design within the North west zone of Nigeria.

As part of his field work, he is to collect information on Existing General Hospital in the state.

In view of the foregoing, I am further directed to inform you that the Honourable Commissioner has approved his request and request you to take the appropriate action.

4. Thank you for the usual cooperation, please.

S. M. Mai'aya
For:- Hon. Commissioner

AppendixE: Spread sheet
D1: Caregivers' Bio data

Caregivers' Bio data						
S/N	**Mark**	**Sex**	**Age bracket (In years)**	**Marital status**	**Ethnicity**	**Relationship with the patient**
Sheikh Muhammad Jiddah General Hospital (SMJGH)						
1	GH01	Female	20-29	Married	Hausa	Son
2	GH02	Female	20-29	Married	Hausa	Son
3	GH03	Female	20-29	Married	Hausa	Mother
4	GH04	Male	10-.19	Single	Hausa	Father
5	GH05	Female	20-29	Married	Hausa	Sister
6	GH06	Female	20-29	Married	Hausa	Daughter
7	GH07	Male	30-39	Married	Hausa	Brother
8	GH08	Male	20-29	Single	Hausa	Brother
9	GH09	Female	40-49	Widow	Hausa	Daughter
10	GH10	Male	20-29	Married	Hausa	Brother
Wudil General Hospital (WGH)						
1	GH11	Female	20-29	Married	Hausa	Sister
2	GH12	Female	10-.19	Married	Hausa	Mother
3	GH13	Female	30-39	Married	Hausa	Son
4	GH14	Female	30-39	Married	Hausa	Daughter
5	GH15	Male	20-29	Married	Fulani	Father
6	GH16	Male	10-.19	Single	Hausa	Brother
7	GH17	Female	50-59	Widow	Hausa	Daughter
8	GH18	Female	20-29	Married	Hausa	Sister
9	GH19	Male	10-.19	Single	Hausa	Brother
10	GH20	Female	10-.19	Single	Hausa	Mother
11	GH21	Female	20-29	Married	Hausa	Sister
12	GH22	Male	20-29	Single	Hausa	Father
Gambo Sawaba General Hospital (GSGH)						
1	GH23	Female	20-29	Married	Hausa	Sister
2	GH24	Female	50-59	Married	Hausa	Daughter
3	GH25	Female	30-39	Married	Hausa	Son
4	GH26	Female	20-29	Married	Hausa	Sister
5	GH27	Male	20-29	Single	Yoruba	Brother
6	GH28	Female	30-39	Divorced	Hausa	Daughter
7	GH29	Female	> 60	Married	Hausa	Daughter
8	GH30	Female	50-59	Widow	Hausa	Daughter
9	GH31	Male	30-39	Married	Hausa	Brother
10	GH32	Female	20-29	Married	Fulani	Sister
11	GH33	Male	20-29	Single	Hausa/Fulani	Brother
12	GH34	Male	20-29	Single	Hausa	Brother

13	GH35	Male	20-29	Single	Hausa	Father	
14	GH36	Male	20-29	Single	Fulani	Father	
15	GH37	Male	10-.19	Single	Hausa	Brother	
Yusuf Dantsoho Memorial Hospital (YDMH)							
1	GH38	Female	30-39	Married	Hausa/Fulani	Son	
2	GH39	Male	20-29	Single	Atyap	Brother	
3	GH40	Male	20-29	Single	Yoruba	Brother	
4	GH41	Male	20-29	Single	Hausa	Brother	
5	GH42	Male	20-29	Single	Bajju	Brother	
6	GH43	Male	30-39	Married	Hausa	Father	
7	GH44	Female	20-29	Married	Hausa	Sister	
8	GH45	Male	20-29	Single	Hausa	Brother	
9	GH46	Female	30-39	Married	Atyap	Sister	
10	GH47	Male	30-39	Married	Fulani	Father	
11	GH48	Male	20-29	Single	Bajju	Brother	
12	GH49	Female	30-39	Married	Hausa	Daughter	
13	GH50	Female	30-39	Married	Hausa	Daughter	
Funtua General Hospital (FGH)							
1	GH51	Female	20-29	Married	Hausa	Sister	
2	GH52	Female	30-39	Divorced	Hausa	Son	
3	GH53	Female	20-29	Married	Hausa	Mother	
4	GH54	Male	30-39	Married	Hausa	Father	
5	GH55	Female	30-39	Married	Hausa	Son	
6	GH56	Female	30-39	Married	Hausa	Daughter	
7	GH57	Male	20-29	Married	Hausa/Fulani	Brother	
8	GH58	Male	20-29	Married	Fulani	Father	
9	GH59	Male	10-.19	Single	Hausa	Brother	
10	GH60	Female	20-29	Married	Hausa	Sister	
11	GH61	Female	30-39	Married	Fulani	Sister	
12	GH62	Male	20-29	Single	Hausa	Brother	
13	GH63	Female	50-59	Married	Hausa	Daughter	
14	GH64	Female	30-39	Married	Hausa	Sister	
Katsina General Hospital (KGH)							
1	GH65	Female	20-29	Married	Hausa	Mother	
2	GH66	Male	20-29	Single	Hausa	Father	
3	GH67	Female	40-49	Widow	Hausa	Daughter	
4	GH68	Female	30-39	Married	Hausa	Sister	
5	GH69	Male	20-29	Married	Fulani	Brother	
6	GH70	Female	30-39	Married	Hausa	Sister	
7	GH71	Female	20-29	Married	Hausa	Mother	
8	GH72	Female	20-29	Married	Hausa	Sister	
9	GH73	Male	20-29	Single	Hausa	Father	

10	GH74	Female	30-39	Married	Fulani	Sister	
11	GH75	Female	30-39	Married	Hausa	Daughter	
12	GH76	Male	20-29	Single	Hausa	Brother	
13	GH77	Male	20-29	Single	Hausa	Brother	
14	GH78	Female	30-39	Married	Hausa/Fulani	Son	
15	GH79	Male	20-29	Married	Fulani	Brother	
16	GH80	Female	20-29	Married	Hausa	Son	

E2: Patients' bio data

PATIENTS' BIO DATA					
S/N	**Sex**	**Age bracket (In years)**	**Marital status**	**Ethnicity**	**Relationship with the caregiver**
	Sheikh Muhammad Jiddah General Hospital (SMJGH)				
1	Male	0-9	Single	Hausa	Mother
2	Female	0-9	Single	Hausa	Mother
3	Female	>50	Widow	Hausa	Daughter
4	Male	40-49	Married	Hausa	Son
5	Female	30-39	Married	Hausa	Sister
6	Female	10-.19	Single	Hausa	Mother
7	Male	20-29	Single	Hausa	Brother
8	Male	20-29	Single	Hausa	Brother
9	Female	20-29	Married	Hausa	Mother
10	Male	>50	Married	Hausa	Son
Wudil General Hospital (WGH)					
1	Female	30-39	Married	Hausa	Sister
2	Female	>50	Widow	Hausa	Daughter
3	Male	0-9	Single	Hausa	Mother
4	Female	0-9	Single	Hausa	Mother
5	Male	40-49	Married	Fulani	Son
6	Male	20-29	Single	Hausa	Brother
7	Female	30-39	Divorced	Hausa	Mother
8	Female	20-29	Married	Hausa	Sister
9	Male	10-.19	Single	Hausa	Brother
10	Female	40-49	Married	Hausa	Daughter
11	Female	20-29	Married	Hausa	Sister
12	Male	>50	Married	Hausa	Son
Gambo Sawaba General Hospital (GSGH)					
1	Female	20-29	Married	Hausa	Sister
2	Female	0-9	Single	Hausa	Mother
3	Male	0-9	Single	Hausa	Mother
4	Female	20-29	Married	Hausa	Sister
5	Male	20-29	Single	Yoruba	Brother

6	Female	20-29	Married	Hausa	Mother
7	Female	20-29	Married	Hausa	Mother
8	Female	20-29	Married	Hausa	Mother
9	Male	30-39	Married	Hausa	Brother
10	Female	20-29	Married	Fulani	Sister
11	Male	10-.19	Single	hausa/fulani	Brother
12	Male	10-.19	Single	Hausa	Brother
13	Male	>50	Married	Hausa	Son
14	Male	>50	Married	Fulani	Son
15	Male	10-.19	Single	Hausa	Brother
Yusuf Dantsoho Memorial Hospital (YDMH)					
1	Male	0-9	Single	hausa/fulani	Mother
2	Male	20-29	Single	Atyap	Brother
3	Male	20-29	Single	Yoruba	Brother
4	Male	30-39	Married	Hausa	Brother
5	Male	20-29	Single	Bajju	Brother
6	Male	>50	Married	Hausa	Son
7	Female	30-39	Divorced	Hausa	Sister
8	Male	20-29	Single	Hausa	Brother
9	Female	30-39	Married	Atyap	Sister
10	Male	>50	Married	Fulani	Son
11	Male	20-29	Single	Bajju	Brother
12	Female	10-.19	Married	Hausa	Mother
13	Female	0-9	Single	Hausa	Mother
Funtua General Hospital (FGH)					
1	Female	40-49	Married	Hausa	Sister
2	Male	0-9	Single	Hausa	Mother
3	Female	>50	Divorced	Hausa	Daughter
4	Male	>50	Married	Hausa	Son
5	Male	0-9	Single	Hausa	Mother
6	Female	10-.19	Single	Hausa	Mother
7	Male	20-29	Married	hausa/fulani	Brother
8	Male	>50	Married	Fulani	Son
9	Male	20-29	Single	Hausa	Brother
10	Female	30-39	Married	Hausa	Sister
11	Female	20-29	Married	Fulani	Sister
12	Male	10-.19	Single	Hausa	Brother
13	Female	30-39	Married	Hausa	Mother
14	Female	20-29	Married	Hausa	Sister
Katsina General Hospital (KGH)					
1	Female	40-49	Married	Hausa	Daughter
2	Male	>50	Married	Hausa	Son

3	Female	10-.19	Single	Hausa	Mother
4	Female	20-29	Married	Hausa	Sister
5	Male	30-39	Married	Fulani	Brother
6	Female	10-.19	Single	Hausa	Sister
7	Female	30-39	Married	Hausa	Daughter
8	Female	20-29	Married	Hausa	Sister
9	Male	>50	Married	Hausa	Son
10	Female	20-29	Married	Fulani	Sister
11	Female	0-9	Single	Hausa	Mother
12	Male	10-.19	Single	Hausa	Brother
13	Male	20-29	Single	Hausa	Brother
14	Male	0-9	Single	hausa/fulani	Mother
15	Male	20-29	Single	Fulani	Brother
16	Male	0-9	Single	Hausa	Mother

E3: Activities that the patients can or cannot do their selves

PATIENTS' CONTION (ACTIVITIES THAT THE PATIENT CAN OR CAN'T DO)							
S/N	**Toileting**	**Washing**	**Eating**	**Bathing**	**Moving**	**Taking medication**	**Brushing**
Sheikh Muhammad Jiddah General Hospital (SMJGH)							
1	No	No	No	No	No	No	No
2						No	
3	No	No	No		No	No	
4			Yes		Yes	Yes	
5	Yes	No	Yes		Yes	Yes	Yes
6	Yes	No	Yes	Yes	Yes	Yes	Yes
7	Yes		Yes	Yes	Yes	Yes	Yes
8	No	No	Yes		Yes	Yes	Yes
9	No	No	No		No	No	
10	Yes	No	Yes	Yes	Yes	Yes	Yes
Wudil General Hospital (WGH)							
1	Yes		Yes	Yes	Yes	Yes	Yes
2	No	No	Yes		No	Yes	
3	No	No	No	No	No	No	No
4	No	No	No	No	No	No	No
5		No				No	
6	No	No	Yes		No	Yes	
7	No	No	No	No	No	No	
8		No	No		No	No	
9	Yes	No	Yes		Yes	Yes	Yes
10		No	Yes		Yes	Yes	

11			Yes		Yes	Yes	
12	No	No	No	No	No	No	
Gambo Sawaba General Hospital (GSGH)							
1			No			No	
2	No	No	No	No	No	No	No
3	No	No	No	No	No	No	
4		No	No			No	
5	Yes	No	Yes		No	Yes	Yes
6	No	No	No			No	
7	Yes	No	Yes	Yes	Yes	Yes	Yes
8	Yes	No	Yes	Yes	Yes	Yes	Yes
9	No	No	Yes		No	Yes	
10	No	No	No	No	No	No	No
11	Yes	No	Yes		Yes	Yes	Yes
12	No	No	Yes		No	Yes	
13	No	No	No	No	No	No	
14	No	No	No	No	No	No	
15	No	No	No	No	No	No	
Yusuf Dantsoho Memorial Hospital (YDMH)							
1	No	No	No	No	No	No	No
2			No			No	
3	No	No	Yes	No	No	Yes	Yes
4	No	No	No	No	No	No	No
5	No	No	Yes	No	Yes	Yes	
6	No	No	Yes	No	No	Yes	
7	No	No	Yes	No	No	No	No
8	No	No	No	No	No	No	No
9	No	No	No	No	No	No	No
10	No	No	No	No	No	No	No
11			No			No	
12	Yes	No	Yes	Yes	Yes	Yes	Yes
13	Yes	No	Yes	Yes	Yes	Yes	Yes
Funtua General Hospital (FGH)							
1	No	No	No	No	No	No	No
2	No	No	No	No	No	No	No
3	Yes	No	Yes	Yes	Yes	Yes	Yes
4	No	No	Yes		No	Yes	Yes
5	No	No	No	No	No	No	No
6			Yes		Yes	Yes	
7	No	No	No		No	No	
8	No	No	No	No	No	No	
9	No	No	Yes		No	Yes	Yes

10	Yes	No	Yes		Yes	Yes	Yes
11	No	No	No		No	No	
12			No		No	No	
13			Yes			Yes	
14	Yes	No	Yes	Yes	Yes	Yes	Yes
Katsina General Hospital (KGH)							
1	Yes	No	Yes	Yes	Yes	Yes	Yes
2	No	No	Yes		No	Yes	Yes
3			Yes		Yes	Yes	Yes
4		No	No		No	No	
5	No	No	No		No	No	
6			Yes		Yes	Yes	Yes
7	No	No	Yes		No	Yes	Yes
8		No	No		No	No	
9	No	No	No			No	
10		No	Yes		No	Yes	Yes
11	No	No	No	No	No	No	No
12	No	No	No	No		No	
13	No	No	Yes		No	Yes	
14	No	No	No	No	No	No	No
15	No	No	Yes		No	Yes	Yes
16	No	No	No	No	No	No	No

E4: Caregiving activities

CAREGIVING ACTIVITIES (THOSE THAT HELP THE PATIENTS CARRYOUT ACTIVITIES THEY CAN NOT DO THEIR SELVES)							
S/N	**Toileting**	**Washing**	**Eating**	**Bathing**	**Moving**	**Taking medication**	**Brushing**
Sheikh Muhammad Jiddah General Hospital (SMJGH)							
1	CG	CG	CG	CG	CG	HW	CG
2						CG	
3	CG	CG	CG		CG	CG	
4							
5		CG					
6		CG					
7							
8	CG	CG					
9	CG	CG	CG		CG	HW	
10		CG					
Wudil General Hospital (WGH)							
1	CG	CG			CG		
2	CG	CG	CG	CG	CG	CG	CG

3	CG	CG	CG	CG	CG	CG	CG
4		CG				CG	
5	CG	CG			CG		
6	CG	CG	CG	CG	CG	CG	
7		CG	CG		CG	CG	
8		CG					
10		CG					
11							
12	HW/CG	CG	HW/CG	CG	HW/CG	HW/CG	
Gambo Sawaba General Hospital (GSGH)							
1			CG			CG	
2	CG	CG	CG	CG	CG	CG	CG
3	CG	CG	CG	CG	CG	CG	
4		CG	CG			CG	
5		CG			CG		
6	CG	CG	CG			CG	
7		CG					
8		CG					
9	CG	CG			CG		
10	CG	CG	CG	CG	CG	CG	CG
11		CG					
12	CG	CG			CG		
13	CG	CG	CG	CG	HW/CG	HW/CG	
14	CG	CG	CG	CG	CG	CG	
15	CG	CG	CG	CG	CG	HW/CG	
Yusuf Dantsoho Memorial Hospital (YDMH)							
1	CG	CG	CG	CG	CG	CG	CG
2			CG			CG	
3	CG	CG			HW/CG	HW/CG	
4	CG	CG	CG	CG	CG	CG	CG
5	CG	CG		CG			
6	CG	CG		CG	CG		
7	CG	CG		CG	HW/CG	CG	CG
8	CG	CG	CG	CG	CG	HW/CG	CG
9	CG	CG	CG	CG	CG	CG	CG
10	CG	CG	CG	CG	CG	CG	CG
11			CG			CG	
12		CG					
13							
Funtua General Hospital (FGH)							
1	CG	CG	CG	CG	HW/CG	HW/CG	CG
2	CG	CG	CG	CG	CG	CG	CG

3	CG	CG					
4	CG	CG			CG		
5	CG	CG	CG	CG	CG	CG	CG
6							
7	CG	CG	CG		CG	CG	
8	CG	CG	CG	CG	HW/CG	HW/CG	
9	CG	CG			CG		
10		CG					
11	CG	CG	CG		CG	CG	
12			CG		CG	CG	
13							
14		CG					
Katsina General Hospital (KGH)							
1		CG					
2	CG	CG			HW/CG		
3							
4		CG	CG		CG	CG	
5	CG	CG	CG		CG	CG	
6							
7	CG	CG			CG		
8		CG	CG		CG	HW/CG	
9	CG	CG	CG			CG	
10		CG			CG		
11	CG	CG	CG	CG	CG	CG	CG
12	CG	CG	CG	CG		CG	
13	CG	CG			HW/CG		
14	CG	CG	CG	CG	CG	CG	CG
15	CG	CG			CG		
16	CG	CG	CG	CG	CG	CG	CG

S/N	Where the caregivers wash	How the caregiver helps the patient while eating	Number of FCG at a time	Duration of the patient in the hospital
Sheikh Muhammad Jiddah General Hospital (SMJGH)				
1	In an open space	While sitting with caregiver's support	One	0-6 days
2			One	0-6 days
3	In an open space	While sitting him/herself	One	7-30 days
4			One	0-6 days
5	In an open space		One	0-6 days
6	In an open space		One	0-6 days
7			One	0-6 days
8	In an open space		One	7-30 days

9	In an open space	While sitting him/herself	One	0-6 days
10	In an open space		One	0-6 days
Wudil General Hospital (WGH)				
1			One	0-6 days
2	In an open space	While sitting him/herself	One	7-30 days
3	In an open space	While sitting with caregiver's support	One	0-6 days
4	In an open space	While sitting with caregiver's support	One	0-6 days
5	In an open space		One	0-6 days
6	In an open space	While sitting him/herself	One	0-6 days
7	In an open space	While sitting him/herself	One	0-6 days
8	In an open space	While sitting him/herself	One	0-6 days
9	In an open space		One	0-6 days
10	In an open space		One	0-6 days
11			One	0-6 days
12	In an open space		One	Above 30 days
Gambo Sawaba General Hospital (GSGH)				
1		While sitting with caregiver's support	One	0-6 days
2	In an open space	While sitting with caregiver's support	One	0-6 days
3	In an open space	While sitting with caregiver's support	One	0-6 days
4	In an open space	While sitting with caregiver's support	One	0-6 days
5	In an open space		One	7-30 days
6	In an open space	While sitting with caregiver's support	One	0-6 days
7	In an open space		One	Above 30 days
8	In an open space		One	Above 30 days
9	In an open space		One	0-6 days
10	In an open space	While sitting him/herself	One	0-6 days
11	In an open space		One	0-6 days
12	In an open space		One	7-30 days
13	In an open space	While sitting with caregiver's support	Two	7-30 days
14	In an open space	While sitting with caregiver's support	Two	7-30 days
15	In an open space	While sitting him/herself	Two	7-30 days
Yusuf Dantsoho Memorial Hospital (YDMH)				
1	In an open space	While sitting with caregiver's support	One	7-30 days
2		While sitting with caregiver's support	Two	0-6 days
3	In an open space		One	7-30 days
4	In an open space	While sitting him/herself	Two	7-30 days
5	In an open space	While sitting him/herself	Two	0-6 days
6	In an open space	While sitting with caregiver's support	One	0-6 days
7	In an open space	While sitting with caregiver's support	One	Above 30 days
8	In an open space	While sitting with caregiver's support	One	0-6 days
9	In an open space	While sitting with caregiver's support	Two	0-6 days
10	In an open space	While sitting with caregiver's support	One	0-6 days

11		While lying on bed	Two	0-6 days
12	In an open space		One	0-6 days
13	In an open space	While sitting with caregiver's support	One	7-30 days
Funtua General Hospital (FGH)				
1	In an open space	While sitting him/herself	One	7-30 days
2	In an open space	While sitting with caregiver's support	One	7-30 days
3	In an open space		One	7-30 days
4	In an open space		One	0-6 days
5	In an open space	While sitting with caregiver's support	One	0-6 days
6			One	0-6 days
7	In an open space	While sitting him/herself	One	7-30 days
8	In an open space	While sitting with caregiver's support	Two	7-30 days
9	In an open space		One	7-30 days
10	In an open space		One	0-6 days
11	In an open space	While sitting him/herself	One	0-6 days
12			One	0-6 days
13			One	0-6 days
14	In an open space		One	7-30 days
Katsina General Hospital (KGH)				
1	In an open space		One	0-6 days
2	In an open space		One	7-30 days
3			One	0-6 days
4	In an open space	While sitting him/herself	One	0-6 days
5	In an open space	While sitting with caregiver's support	Two	0-6 days
6			One	0-6 days
7	In an open space		One	0-6 days
8	In an open space	While sitting him/herself	One	0-6 days
9	In an open space	While sitting him/herself	One	0-6 days
10	In an open space		One	7-30 days
11	In an open space	While sitting with caregiver's support	One	7-30 days
12	In an open space	While sitting with caregiver's support	One	0-6 days
13	In an open space		One	7-30 days
14	In an open space	While sitting with caregiver's support	One	7-30 days
15	In an open space		One	0-6 days
16	In an open space	While sitting with caregiver's support	One	0-6 days

S/N	Where the caregivers sleep	How often they sleep	How the caregivers get food	Where they cook, if cooking	Where they buy, if buying
Sheikh Muhammad Jiddah General Hospital (SMJGH)					
1	With the patient	2-3 hour	From home		

2			From home		
3	With the patient	3-4 hour	Buying		Outside the hospital
4			From home		
5	With the patient	4-5 hour	Buying		Outside the hospital
6	With the patient	4-5 hour	From home		
7	With the patient	4-5 hour	From home		
8	With the patient	3-4 hour	Buying		Within the hospital
9	With the patient	3-4 hour	Buying		Outside the hospital
10	With the patient	4-5 hour	Buying		Outside the hospital
Wudil General Hospital (WGH)					
1	With the patient	3-4 hour	Buying		Outside the hospital
2	With the patient	3-4 hour	Buying		Outside the hospital
3	With the patient	2-3 hour	Buying		Outside the hospital
4	With the patient	3-4 hour	From home		
5	With the patient	3-4 hour	From home		
6	With the patient	4-5 hour	Buying		Outside the hospital
7	With the patient	4-5 hour	Buying		Outside the hospital
8	With the patient	3-4 hour	Buying		Outside the hospital
9	With the patient	4-5 hour	Buying		Within the hospital
10	With the patient	4-5 hour	Buying		Outside the hospital
11	With the patient	5-6 hour	From home		
12	With the patient	3-4 hour	Buying		Within the hospital
Gambo Sawaba General Hospital (GSGH)					
1	With the patient	2-3 hour	Buying		Outside the hospital
2	With the patient	2-3 hour	Buying		Outside the hospital
3	With the patient	1-2 hour	Buying		Outside the hospital
4	With the patient	3-4 hour	From home		
5	With the patient	3-4 hour	From home		
6	With the patient	3-4 hour	Buying		Outside the hospital
7	With the patient	6-7 hour	cooking	Outside the ward	
8	With the patient	5-6 hour	cooking	Outside the ward	
9	With the patient	2-3 hour	Buying		Outside the hospital
10	With the patient	4-5 hour	Buying		Outside the hospital
11	With the patient	3-4 hour	From home		
12	With the patient	3-4 hour	From home		
13	With the patient	3-4 hour	Buying		Outside the hospital
14	With the patient	2-3 hour	Buying		Outside the hospital
15	With the patient	2-3 hour	Buying		Outside the hospital
Yusuf Dantsoho Memorial Hospital (YDMH)					
1	With the patient	1-2 hour	From home		
2	With the patient	1-2 hour	Buying		Outside the hospital

3	With the patient	3-4 hour	From home		
4	With the patient	2-3 hour	Buying		Outside the hospital
5	With the patient	2-3 hour	From home		
6	With the patient	3-4 hour	Buying		Outside the hospital
7	With the patient	2-3 hour	Buying		Outside the hospital
8	With the patient	2-3 hour	Buying		Outside the hospital
9	With the patient	2-3 hour	From home		
10	With the patient	1-2 hour	Buying		Outside the hospital
11	With the patient	2-3 hour	Buying		Outside the hospital
12	With the patient	3-4 hour	Buying		Within the hospital
13	With the patient	1-2 hour	From home		
Funtua General Hospital (FGH)					
1	With the patient	2-3 hour	Buying		Outside the hospital
2	With the patient	2-3 hour	Buying		Outside the hospital
3	With the patient	5-6 hour	Buying		Outside the hospital
4	With the patient	4-5 hour	From home		
5	With the patient	2-5 h	From home		
6	With the patient	5-6 hour	From home		
7	With the patient	3-4 hour	Buying		Outside the hospital
8	With the patient	3-4 hour	Buying		Outside the hospital
9	With the patient	3-4 hour	Buying		Outside the hospital
10	With the patient	4-5 hour	From home		
11	With the patient	4-5 hour	Buying		Outside the hospital
12	With the patient	3-4 hour	From home		
13	With the patient	4-5 hour	Buying		Outside the hospital
14	With the patient	5-6 hour	Buying		Outside the hospital
Katsina General Hospital (KGH)					
1	With the patient	3-4 hour	Buying		Outside the hospital
2	With the patient	2-3 hour	Buying		Outside the hospital
3	With the patient	4-5 hour	From home		
4	With the patient	3-4 hour	Buying		Outside the hospital
5	With the patient	1-2 hour	Buying		Outside the hospital
6	With the patient	4-5 hour	From home		
7	With the patient	4-5 hour	Buying		Outside the hospital
8	With the patient	3-4 hour	From home		
9	With the patient	3-4 hour	Buying		Outside the hospital
10	With the patient	3-4 hour	Buying		Outside the hospital
11	With the patient	2-3 hour	Buying		Outside the hospital
12	With the patient	3-4 hour	From home		
13	With the patient	4-5 hour	Buying		Outside the hospital
14	With the patient	2-3 hour	Buying		Outside the hospital
15	With the patient	3-4 hour	From home		

16	With the patient	2-3 hour	Buying		Outside the hospital

S/N	Where the caregivers eat	Where they keep containers	number of times doctors attend to patient in a day	If they are allowed to remain with patient	If no, where do they stay
Sheikh Muhammad Jiddah General Hospital (SMJGH)					
1	With the patient	under the bed	One	Yes	
2	With the patient	under the bed			
3	With the patient	under the bed	One	Yes	
4	With the patient	under the bed			
5	With the patient	under the bed	One	Yes	
6	With the patient	under the bed	One	Yes	
7	With the patient	under the bed	One	Yes	
8	With the patient	under the bed	One	Yes	
9	With the patient	under the bed	One	Yes	
10	With the patient	under the bed	One	Yes	
Wudil General Hospital (WGH)					
1	With the patient	under the bed	One	Yes	
2	With the patient	under the bed	One	Yes	
3	With the patient	under the bed	One	Yes	
4	With the patient	under the bed	One	Yes	
5	With the patient	under the bed	One	Yes	
6	With the patient	under the bed	One	Yes	
7	With the patient	under the bed	One	Yes	
8	With the patient	under the bed	Two	Yes	
9	With the patient	under the bed	One	Yes	
10	With the patient	under the bed	One	Yes	
11	With the patient	under the bed	One	Yes	
12	With the patient	under the bed	One	Yes	
Gambo Sawaba General Hospital (GSGH)					
1	With the patient	under the bed	Two	Yes	
2	With the patient	under the bed	Two	Yes	
3	With the patient	under the bed	Two	Yes	

4	With the patient	under the bed	One	Yes	
5	With the patient	under the bed	Two	Yes	
6	With the patient	under the bed	Two	Yes	
7	Outside the ward	under the bed			
8	With the patient	under the bed			
9	With the patient	under the bed	Two	Yes	
10	With the patient	under the bed	Two	Yes	
11	With the patient	under the bed	One	Yes	
12	With the patient	under the bed	Two	Yes	
13	With the patient	under the bed	Two	Yes	
14	With the patient	under the bed	Two	Yes	
15	With the patient	under the bed	Two	Yes	
Yusuf Dantsoho Memorial Hospital (YDMH)					
1	With the patient	under the bed	Two	Yes	
2	With the patient	under the bed	Two	Yes	
3	With the patient	under the bed	Two	Yes	
4	With the patient	under the bed	One	Yes	
5	With the patient	under the bed	Two	Yes	
6	With the patient	under the bed	Two	Yes	
7	With the patient	under the bed	Two	Yes	
8	With the patient	under the bed	Two	Yes	
9	With the patient	under the bed	Two	Yes	
10	With the patient	under the bed	Two	Yes	
11	With the patient	under the bed	One	Yes	
12	With the patient	under the bed	Two	Yes	
13	With the patient	under the bed	Two	Yes	
Funtua General Hospital (FGH)					
1	With the patient	under the bed	One	Yes	
2	With the patient	under the bed	One	Yes	
3	With the patient	under the bed	Two	Yes	
4	With the patient	under the bed	One	Yes	
5	With the patient	under the bed	Two	Yes	
6	With the patient	under the bed	Two	Yes	

7	With the patient	under the bed	One	Yes	
8	With the patient	under the bed	Two	Yes	
9	With the patient	under the bed	One	Yes	
10	With the patient	under the bed	Two	Yes	
11	With the patient	under the bed	Two	Yes	
12	With the patient	under the bed	Two	Yes	
13	With the patient	under the bed	Two	Yes	
14	With the patient	under the bed	Two	Yes	
Katsina General Hospital (KGH)					
1	With the patient	under the bed	One	Yes	
2	With the patient	under the bed	Two	Yes	
3	With the patient	under the bed	One	Yes	
4	With the patient	under the bed	One	Yes	
5	With the patient	under the bed	One	Yes	
6	With the patient	under the bed	One	Yes	
7	With the patient	under the bed	Two	Yes	
8	With the patient	under the bed	One	Yes	
9	With the patient	under the bed	One	Yes	
10	With the patient	under the bed	One	Yes	
11	With the patient	under the bed	One	Yes	
12	With the patient	under the bed	One	Yes	
13	With the patient	under the bed	One	Yes	
14	With the patient	under the bed	One	Yes	
15	With the patient	under the bed	One	Yes	
16	With the patient	under the bed	Two	Yes	

S/N	**Where the caregivers stay when the ward is being washed**	**If the caregivers had any formal knowledge or training of caregiving**	**If yes, for how long**
Sheikh Muhammad Jiddah General Hospital (SMJGH)			
1	Anywhere outside the ward	No	
2		No	
3	Anywhere outside the ward	No	
4		No	
5	Anywhere outside the ward	No	
6	Anywhere outside the ward	No	

7	Anywhere outside the ward	No	
8	Anywhere outside the ward	No	
9	Anywhere outside the ward	No	
10	Anywhere outside the ward	No	
Wudil General Hospital (WGH)			
1	Anywhere outside the ward	No	
2	Anywhere outside the ward	No	
3	Anywhere outside the ward	No	
4	Anywhere outside the ward	No	
5	Anywhere outside the ward	No	
6	Anywhere outside the ward	No	
7	Anywhere outside the ward	No	
8	Anywhere outside the ward	No	
9	Anywhere outside the ward	No	
10	Anywhere outside the ward	No	
11	Anywhere outside the ward	No	
12	Anywhere outside the ward	No	
Gambo Sawaba General Hospital (GSGH)			
1	Anywhere outside the ward	No	
2	Anywhere outside the ward	No	
3	Anywhere outside the ward	No	
4	Anywhere outside the ward	No	
5	Anywhere outside the ward	No	
6	Anywhere outside the ward	No	
7	Anywhere outside the ward	No	
8	Anywhere outside the ward	No	
9	Anywhere outside the ward	No	
10	Anywhere outside the ward	No	
11	Anywhere outside the ward	No	
12	Anywhere outside the ward	No	
13	Anywhere outside the ward	No	
14	Anywhere outside the ward	No	
15	Anywhere outside the ward	No	
Yusuf Dantsoho Memorial Hospital (YDMH)			
1	Anywhere outside the ward	No	
2	Anywhere outside the ward	No	
3	Anywhere outside the ward	No	
4	Anywhere outside the ward	No	
5	Anywhere outside the ward	No	
6	Anywhere outside the ward	No	
7	Anywhere outside the ward	No	
8	Anywhere outside the ward	No	

9	Anywhere outside the ward	No	
10	Anywhere outside the ward	No	
11	Anywhere outside the ward	No	
12	Anywhere outside the ward	No	
13	Anywhere outside the ward	No	
Funtua General Hospital (FGH)			
1	Anywhere outside the ward	No	
2	Anywhere outside the ward	No	
3	Anywhere outside the ward	No	
4	Anywhere outside the ward	No	
5	Anywhere outside the ward	No	
6	Anywhere outside the ward	No	
7	Anywhere outside the ward	No	
8	Anywhere outside the ward	No	
9	Anywhere outside the ward	No	
10	Anywhere outside the ward	No	
11	Anywhere outside the ward	No	
12	Anywhere outside the ward	No	
13	Anywhere outside the ward	No	
14	Anywhere outside the ward	No	
Katsina General Hospital (KGH)			
1	Anywhere outside the ward	No	
2	Anywhere outside the ward	No	
3	Anywhere outside the ward	No	
4	Anywhere outside the ward	No	
5	Anywhere outside the ward	No	
6	Anywhere outside the ward	No	
7	Anywhere outside the ward	No	
8	Anywhere outside the ward	No	
9	Anywhere outside the ward	No	
10	Anywhere outside the ward	No	
11	Anywhere outside the ward	No	
12	Anywhere outside the ward	No	
13	Anywhere outside the ward	No	
14	Anywhere outside the ward	No	
15	Anywhere outside the ward	No	
16	Anywhere outside the ward	No	

E5: Caregivers' spatial needs

S/N	If they are satisfied with the space they have for storage	If their need for using some equip. is being constraint by space availability	List of those equipment (if yes)	If they are satisfied with the space they have for sleeping

Sheikh Muhammad Jiddah General Hospital (SMJGH)				
1	Yes	No		Yes
2	Yes	No		
3	No	No		No
4	Yes	No		
5	No	No		No
6	Yes	No		Yes
7	Yes	No		No
8	No	Yes	bucket, bathing bowl	No
9	No	No		No
10	No	No		No
Wudil General Hospital (WGH)				
1	No	No		No
2	No	No		No
3	No	No		No
4	No	No		No
5	No	No		No
6	Yes	No		No
7	No	No		No
8	No	No		No
9	No	No		No
10	No	No		No
11	Yes	No		Yes
12	No	No		No
Gambo Sawaba General Hospital (GSGH)				
1	Yes	No		No
2	Yes	No		Yes
3	No	No		No
4	No	No		No
5	No	Yes	bucket	No
6	No	No		No
7	Yes	No		Yes
8	Yes	No		No
9	No	Yes	bathing bowl	No
10	No	No		No
11	No	No		No
12	No	Yes	bathing bowl	Yes
13	No	No		No
14	Yes	No		No
15	No	No		No
Yusuf Dantsoho Memorial Hospital (YDMH)				
1	No	Yes	bucket/bathing	Yes

			bowl	
2	No	No		No
3	No	Yes	bucket/bathing bowl	No
4	No	Yes	bucket/bathing bowl	No
5	Yes	No		No
6	Yes	No		No
7	No	Yes	bucket/bathing bowl	No
8	Yes	No		No
9	Yes	No		No
10	No	Yes	bucket/bathing bowl	Yes
11	No	Yes	bucket/bathing bowl	No
12	No	Yes	bucket/bathing bowl	No
13	Yes	No		No
Funtua General Hospital (FGH)				
1	Yes	No		Yes
2	Yes	No		No
3	Yes	No		No
4	No	No		No
5	No	No		No
6	Yes	No		Yes
7	No	No		No
8	No	No		No
9	No	No		No
10	Yes	No		No
11	Yes	No		No
12	Yes	No		Yes
13	Yes	No		No
14	Yes	No		Yes
Katsina General Hospital (KGH)				
1	No	No		No
2	No	No		No
3	Yes	No		Yes
4	No	Yes	bucket/bathing bowl	No
5	No	No		No
6	Yes	No		No
7	No	No		No
8	No	No		No

9	No	Yes	bucket/bathing bowl	No
10	No	No		No
11	Yes	No		No
12	Yes	No		Yes
13	No	No		No
14	Yes	No		Yes
15	Yes	No		No
16	Yes	No		No

Appendix F: Analysis tables

F1: Sex of caregivers

Hospitals	Number of respondents	Frequency (sex)		% frequency	
		Female	male	Female	male
SMJGH	10	6	4	60	40
WGH	12	8	4	66.7	33.3
GSGH	15	8	7	53.3	46.7
YDMH	13	5	8	38.5	61.5
FGH	14	9	5	64.3	35.7
KGH	16	10	6	62.5	37.5
Total	80(100%)	46	34	57.5	42.5

Source: Fieldwork, 2014

F2: Age bracket of caregivers

Hospitals	Number of respondents	Frequency (age bracket)						% frequency					
		10-19	20-29	30-39	40-49	50-59	>60	10-19	20-29	30-39	40-49	50-59	>60
SMJGH	10	1	7	I	1	-	-	10	70	10	10	0	0
WGH	12	4	5	2	-	1	-	33.3	41.7	16.7	0	8.3	0
GSGH	15	1	8	3	1	1	1	6.7	53.3	20	6.7	6.7	6.7
YDMH	13	-	7	6	-	-	-	0	53.8	46.2	0	0	0
FGH	14	1	6	6	-	1	-	7.1	42.9	42.9	0	7.1	0
KGH	16	-	10	5	1	-	-	0	62.5	31.3	6.3	0	0
Total	80(100%)	7	43	23	3	3	1	8.8	53.8	28.8	3.8	3.8	1.3

Source: Fieldwork, 2014

F3: Marital status of caregivers

Hospitals	Number of respondents	Frequency				% frequency			
		married	single	divorced	widow	married	single	divorced	widow
SMJGH	10	7	2	-	1	70	20	0	10

WGH	12	7	4	-	1	58.3	33.3	0	8.3
GSGH	15	7	6	1	1	46.7	40	6.7	6.7
YDMH	13	7	6	-	-	53.8	46.2	0	0
FGH	14	11	2	1	-	78.6	14.3	7.1	0
KGH	16	11	4	-	1	68.8	25	0	6.3
Total	80(100%)	50	24	2	4	62.5	30	2.5	5

Source: Fieldwork, 2014

F4: Ethnic identity of caregivers

Hospitals	Number of respondents	Frequency					% frequency				
		Hausa	Yoruba	Igbo	Fulani	Other	Hausa	Yoruba	Igbo	Fulani	Other
SMJGH	10	10	-	-	-	-	100	0	0	0	0
WGH	12	11	-	-	1	-	91.7	0	0	8.3	0
GSGH	15	11	1	-	2	1	73.3	6.7	0	13.3	6.7
YDMH	13	6	1	-	1	5	46.2	7.7	0	7.7	38.5
FGH	14	11	-	-	2	1	78.6	0	0	14.3	7.1
KGH	16	12	-	-	3	1	75	0	0	18.8	6.3
Total	80(100%)	61	2	0	9	8	76.3	2.5	0	11.3	10

Source: Fieldwork, 2014

F5: Sex of the patients

Hospitals	Number of respondents	Frequency (sex)		% frequency	
		Female	male	Female	male
SMJGH	10	5	5	50	50
WGH	12	7	5	58.3	41.7
GSGH	15	7	8	46.7	53.3
YDMH	13	4	9	30.8	69.2
FGH	14	7	7	50	50
KGH	16	8	8	50	50
Total	80(100%)	38	42	47.5	52.5

Source: Fieldwork, 2014

F6: Age bracket of the patients

Hospitals	Number of respondents	Frequency (age bracket)						% frequency					
		0-9	10-19	20-29	30-39	40-49	>50	0-9	10-19	20-29	30-39	40-49	>50
SMJGH	10	2	1	3	1	1	2	20	10	30	10	10	20
WGH	12	2	1	3	2	2	2	16.7	8.3	25	16.7	16.7	16.7

GSGH	15	2	3	7	1	-	2	13.3	20	46.7	6.7	0	13.3
YDMH	13	2	1	5	3	-	2	15.4	7.7	38.5	23.1	0	15.4
FGH	14	2	2	4	2	1	3	14.3	14.3	28.6	14.3	7.1	21.4
KGH	16	3	3	5	2	1	2	18.8	18.8	31.3	12.5	6.3	12.5
Total	80(100%)	13	11	27	11	5	13	16.3	13.8	33.8	13.8	6.3	16.3

Source: Fieldwork, 2014

F7: Marital status of the patients

Hospitals	Number of respondents	Frequency				% frequency			
		married	single	divorced	widow	married	single	divorced	widow
SMJGH	10	4	5	-	1	40	50	0	10
WGH	12	6	4	1	1	50	33.3	8.3	8.3
GSGH	15	9	6	-	-	60	40	0	0
YDMH	13	5	7	1	-	38.5	53.8	7.7	0
FGH	14	8	5	-	1	57.1	35.7	0	7.1
K GH	16	8	8	-	-	50	50	0	0
Total	80(100%)	40	35	2	3	50	43.8	2.5	3.8

Source: Fieldwork, 2014

F8: Ethnic Identity of the patients

Hospitals	Number of Resp.	Frequency					% frequency				
		Hausa	Yoruba	Igbo	Fulani	Other	Hausa	Yoruba	Igbo	Fulani	Other
SMJGH	10	10	-	-	-	-	100	0	0	0	0
WGH	12	11	-	-	1	-	91.7	0	0	8.3	0
GSGH	15	11	1	-	2	1	73.3	6.7	0	13.3	6.7
YDMH	13	6	1	-	1	5	46.2	7.7	0	7.7	38.5
FGH	14	11	-	-	2	1	78.6	0	0	14.3	7.1
KGH	16	12	-	-	3	1	75	0	0	18.8	6.3
Total	80(100%)	61	2	0	9	8	76.3	2.5	0	11.3	10

Source: Fieldwork, 2014

F9: Activities the patients can or cannot do (Toileting &Washing)

Hospitals	No. of Resp.	Toileting			% frequency			Washing			% frequency		
		Yes	No	Silent	Yes	No	Silent	Yes	No	Silent	Yes	No	Silent
SMJGH	10	4	4	2	40	40	20	0	7	3	0	70	30
WGH	12	2	6	4	16.7	50	33.3	0	10	2	0	83.3	16.7

GSGH	15	4	9	2	26.7	60	13.3	0	14	1	0	93.3	6.7
YDMH	13	2	9	2	15.4	69.2	15.4	0	11	2	0	84.6	15.4
FGH	14	3	8	3	21.4	57.1	21.4	0	11	3	0	78.6	21.4
KGH	16	1	10	5	6.3	62.5	31.3	0	14	2	0	87.5	12.5
Total	80(100%)	16	46	18	20	57.5	22.5	0	67	13	0	83.8	16.3

Source: Fieldwork, 2014

F10: Activities the patients can or cannot do (Eating & Bathing)

Hospitals	No. of Resp.	Eating			% frequency			Bathing			% frequency		
		Yes	No	Silent	Yes	No	Silent	Yes	No	Silent	Yes	No	Silent
SMJGH	10	6	3	1	60	30	10	3	1	6	30	10	60
WGH	12	6	5	1	50	41.7	8.3	1	4	7	8.3	33.3	58.3
GSGH	15	6	9	0	40	60	0	2	6	7	13.3	40	46.7
YDMH	13	6	7	0	46.2	53.8	0	2	9	2	15.4	69.2	15.4
FGH	14	7	7	0	50	50	0	2	4	8	14.3	28.6	57.1
KGH	16	8	8	0	50	50	0	1	4	11	6.3	25	68.8
Total	80(100%)	39	39	2	48.8	48.8	2.5	11	28	41	13.8	35	51.3

Source: Fieldwork, 2014

F11: Activities the patients can or cannot do (Moving & Taking medication)

Hospitals	No. of Respondents	Moving			% frequency			Taking medication			% frequency		
		Yes	No	Silent	Yes	No	Silent	Yes	No	Silent	Yes	No	Silent
SMJGH	10	6	3	1	60	30	10	6	4	0	60	40	0
WGH	12	4	7	1	33.3	58.3	8.3	6	6	0	50	50	0
GSGH	15	3	9	3	20	60	20	6	9	0	40	60	0
YDMH	13	3	8	2	23.1	61.5	15.4	5	8	0	38.5	61.5	0
FGH	14	4	9	1	28.6	64.3	7.1	7	7	0	50	50	0
KGH	16	3	11	2	18.8	68.8	12.5	8	8	0	50	50	0
Total	80(100%)	23	47	10	28.8	58.8	2.5	38	42	0	47.5	52.5	0

Source: Fieldwork, 2014

F12: Activities the patients can or cannot do (Brushing)

Hospitals		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		10	12	15	13	14	16	80(100%)
Brushing	Yes	5	2	4	3	5	7	26
	No	1	2	2	6	3	3	17
	Silent	4	8	9	4	6	6	37
% frequency	Yes	50	16.7	26.7	23.1	35.7	43.8	32.5
	No	10	16.7	13.3	46.2	21.4	18.8	21.3
	Silent	40	66.7	60	30.8	42.9	37.5	46.3

Source: Fieldwork, 2014

F13: Those that help patients with activities they cannot do (Toileting & Washing)

Hospital	No. of Resp.	Toileting			% frequency			No. of Resp.	Washing			% frequency		
		CG	HW	Other	CG	HW	CG/HW		CG	HW	Other	CG	WH	CG/HW
SMJGH	4	4	0	0	100	0	0	7	7	0	0	100	0	0
WGH	6	5	0	1	83.3	0	16.7	10	10	0	0	100	0	0
GSGH	9	9	0	0	100	0	0	14	14	0	0	100	0	0
YDMH	9	9	0	0	100	0	0	11	11	0	0	100	0	0
FGH	8	8	0	0	100	0	0	11	11	0	0	100	0	0
KGH	10	10	0	0	100	0	0	14	14	0	0	100	0	0
Total	46 (100%)	45	0	1	97.8	0	2.2	67 (100%)	67	0	0	100	0	0

F14: Those that help patients with activities they cannot do (Eating & Bathing)

Hospitals	No. of Resp.	Eating			% frequency			No. of Resp.	Bathing			% frequency		
		CG	HW	Other	CG	HW	CG/HW		CG	HW	Other	CG	WH	CG/HW
SMJGH	3	3	0	0	100	0	0	1	1	0	0	100	0	0
WGH	5	4	0	1	80	0	20	4	4	0	0	100	0	0
GSGH	9	9	0	0	100	0	0	6	6	0	0	100	0	0
YDMH	7	7	0	0	100	0	0	9	9	0	0	100	0	0
FGH	7	7	0	0	100	0	0	4	4	0	0	100	0	0
KGH	8	8	0	0	100	0	0	4	4	0	0	100	0	0
Total	39 (100%)	38	0	1	97.4	0	2.6	28 (100%)	28	0	0	100	0	0

Source: Fieldwork, 2014

F15: Those that help patients with activities they cannot do (Moving & Taking medication)

Hospitals	No. of Resp.	Moving			% frequency			No. of Resp.	Taking medication			% frequency		
		CG	HW	Other	CG	HW	CG/HW		CG	HW	Other	CG	WH	CG/HW
SMJGH	3	3	0	0	100	0	0	4	2	2	0	50	50	0
WGH	7	6	0	1	85.7	0	14.3	6	5	0	1	83.3	0	16.7
GSGH	9	8	0	1	88.9	0	11.1	9	7	0	2	77.8	0	22.2
YDMH	8	6	0	2	75	0	25	8	7	0	1	87.5	0	12.5
FGH	9	7	0	2	77.8	0	22.2	7	5	0	2	71.4	0	28.6

KGH	11	9	0	2	81.8	0	18.2	8	7	1	0	87.5	12.5	0
Total	47 (100%)	39	0	8	93	0	17	42 (100%)	33	3	6	78.6	7.1	14.3

Source: Fieldwork, 2014

F16: Those that help patients with activities they cannot do (Brushing)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		1	2	2	6	3	3	17(100%)
Brushing	CG	1	2	2	6	3	3	17
	HW	0	0	0	0	0	0	0
	CG/HW	0	0	0	0	0	0	0
% frequency	CG	100	100	100	100	100	100	100
	HW	0	0	0	0	0	0	0
	CG/HW	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F17: Caregiving activities (Where the caregivers wash)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		7	10	14	11	11	14	67(100%)
Where the caregivers wash	In the laundry	0	0	0	0	0	0	0
	In an open space	7	10	14	11	11	14	67
	Others	0	0	0	0	0	0	0
% frequency	In the laundry	0	0	0	0	0	0	0
	In an open space	100	100	100	100	100	100	100
	Others	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F18: Caregiving activities (Number of caregivers at a time)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		10	12	15	13	14	16	80(100%)
No. of caregivers at a time	One	10	12	12	8	13	15	70
	Two	0	0	3	5	1	1	10
	Three	0	0	0	0	0	0	0
% frequency	One	100	100	80	61.5	92.9	93.7	87.5
	Two	0	0	20	38.5	7.1	6.3	12.5

	Three	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F19: Caregiving activities (Where the caregivers sleep)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		8	12	15	13	14	16	78(100%)
Where the caregivers sleep	Within the ward but not with the patient	0	0	0	0	0	0	0
	Within the ward with the patient	8	12	15	13	14	16	78
	Outside the ward	0	0	0	0	0	0	0
	Outside the hospital	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0
% frequency	Within the ward but not with the patient	0	0	0	0	0	0	0
	Within the ward with the patient	100	100	100	100	100	100	100
	Outside the ward	0	0	0	0	0	0	0
	Outside the hospital	0	0	0	0	0	0	0
	Others	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F20: Caregiving activities (How the caregivers get food)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		10	12	15	13	14	16	80(100%)
How the caregivers get food	Buying	5	9	9	8	9	11	51
	Cooking	0	0	2	0	0	0	2
	From home	5	3	4	5	5	5	27
% frequency	Buying	50	75	60	61.5	64.3	68.8	63.8
	Cooking	0	0	13.3	0	0	0	2.5
	From home	50	25	26.7	38.5	35.7	31.2	33.8

Source: Fieldwork, 2014

F21: Caregiving activities (Where the caregivers cook)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		0	0	2	0	0	0	2(100%)
Where the caregivers cook, for those that cook	Within the ward	0	0	0	0	0	0	0
	Outside the ward	0	0	2	0	0	0	2
	Others	0	0	0	0	0	0	0
% frequency	Within the ward	0	0	0	0	0	0	0

	Outside the ward	0	0	100	0	0	0	100
	Others	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F22: Caregiving activities (Where the caregivers get food)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		5	9	9	8	9	11	51(100%)
Where the caregivers buy food, for those that buy.	Within the ward	0	0	0	0	0	0	0
	Outside the ward, but within the hospital	1	2	0	1	0	0	4
	Outside the hospital	4	7	9	7	9	11	47
	Others	0	0	0	0	0	0	0
% frequency	Within the ward	0	0	0	0	0	0	0
	Outside the ward, but within the hospital	20	22.2	0	12.5	0	0	7.8
	Outside the hospital	80	77.8	100	87.5	100	100	92.2
	Others	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F23: Caregiving activities (Where the caregivers eat)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		10	12	15	13	14	16	80(100%)
Where the caregivers eat	Within the ward, but not with the patient	0	0	0	0	0	0	0
	Within the ward, with the patient	8	10	14	12	12	15	71
	Outside the ward	0	1	1	1	1	1	5
	Outside the hospital	2	1	0	0	1	0	4
	Others	0	0	0	0	0	0	0
% frequency	Within the ward, but not with the patient	0	0	0	0	0	0	0
	Within the ward, with the patient	80	83.3	93.3	92.3	85.7	93.8	88.8
	Outside the ward	0	8.3	6.7	7.7	7.1	6.3	6.3
	Outside the hospital	20	8.3	0	0	7.1	0	5
	Others	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F24: Caregiving activities (Where the caregivers keep containers after eating)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		10	12	15	13	14	16	80(100%)
Where the caregivers keep containers after eating	In a locker	1	0	3	0	2	4	10
	Under the bed	9	12	12	13	12	12	70
	Others	0	0	0	0	0	0	0
% frequency	In a locker	10	0	20	0	14.3	25	12.5
	Under the bed	90	100	80	100	85.7	75	87.5
	Others	0	0	0	0	0	0	0

Source: Fieldwork, 2014

F25: Caregivers' spatial needs (If the caregivers are satisfied with space for storage)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		10	12	15	13	14	16	80(100%)
If the caregivers are satisfied with the space for storage	Yes	5	2	5	5	9	7	33
	No	5	10	10	8	5	9	47
% frequency	Yes	50	16.7	33.3	38.5	64.3	43.8	41.3
	No	50	83.3	66.7	61.5	35.7	56.3	58.8

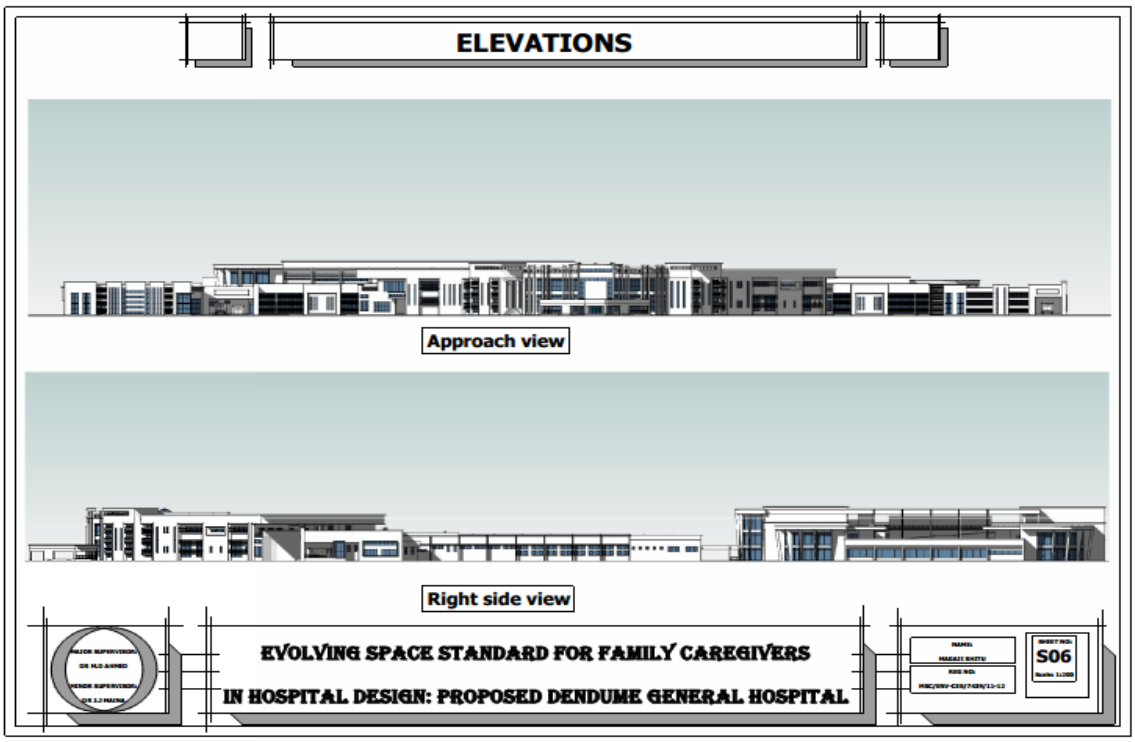
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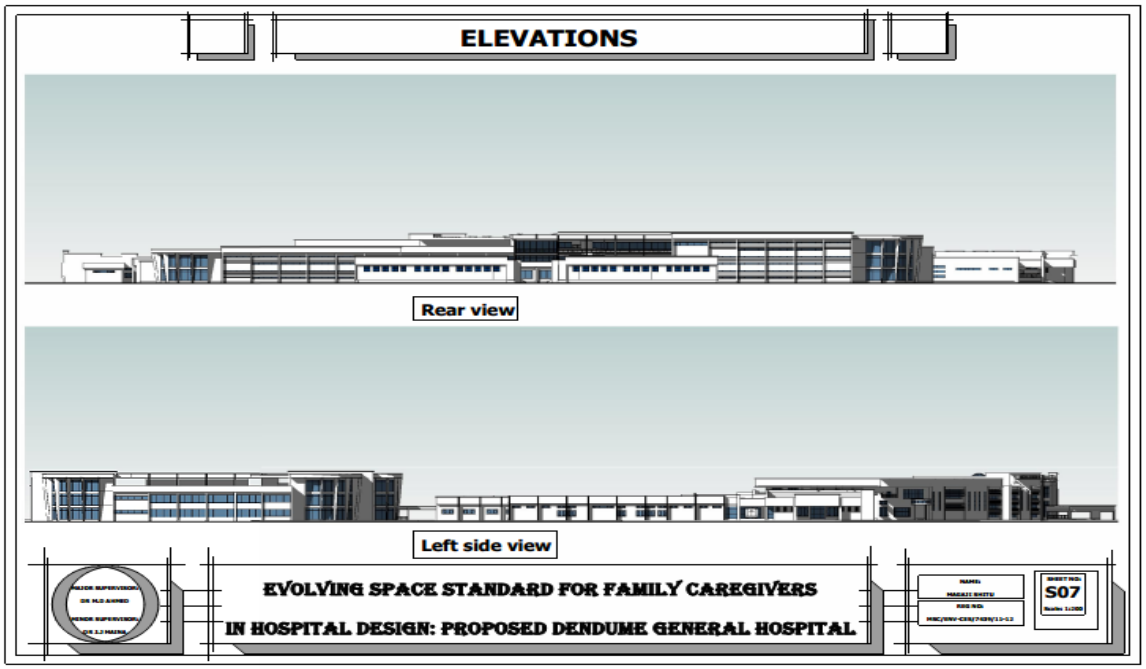
F26: Caregivers' spatial needs (If the caregivers are satisfied with space for sleeping)

Hospital		SMJGH	WGH	GSGH	YDMH	FGH	KGH	Total
No. of respondents		8	12	15	13	14	16	78(100%)
If the caregivers are satisfied with the space for sleeping	Yes	2	1	3	2	4	3	15
	No	6	11	12	11	10	13	63
% frequency	Yes	25	8.3	20	15.4	28.6	18.8	19.2
	No	75	91.7	80	84.6	71.4	81.3	80.8

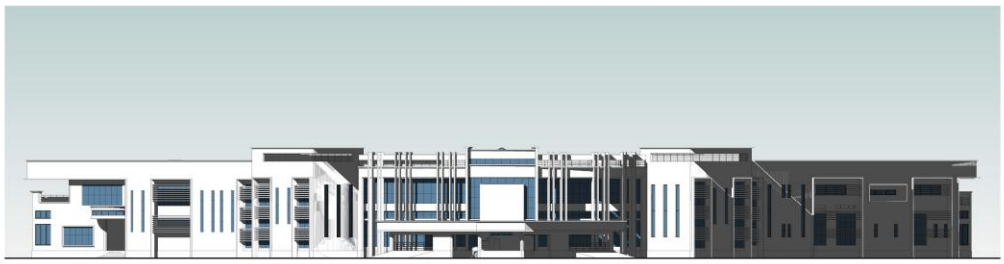
Source: Fieldwork, 2014

Appendix G: Elevations





ELEVATIONS



Approach elevetion



Right side elevation

MAJOR SUPERVISOR:
DR M.D AHMED
MINOR SUPERVISOR:
DR J.J MAINA

EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS
IN HOSPITAL DESIGN: PROPOSED DENDUME GENERAL HOSPITAL

NAME:
MAGAJI SHITU
REG NO:
MSC/ENV-CES/7439/11-12

SHEET NO:
G09
Scale: 1:100

ELEVATIONS



Rear elevation



Left side elevation

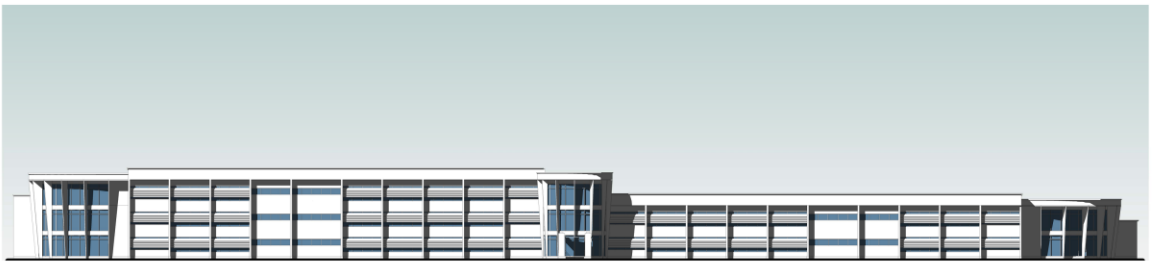
MAJOR SUPERVISOR:
DR M.D AHMED
MINOR SUPERVISOR:
DR J.J MAINA

EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS
IN HOSPITAL DESIGN: PROPOSED DENDUME GENERAL HOSPITAL

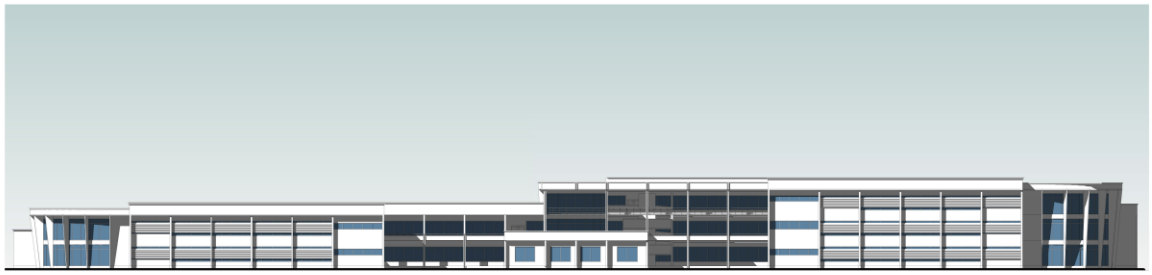
NAME:
MAGAJI SHITU
REG NO:
MSC/ENV-CES/7439/11-12

SHEET NO:
G10
Scale: 1:100

ELEVATIONS



Approach elevation



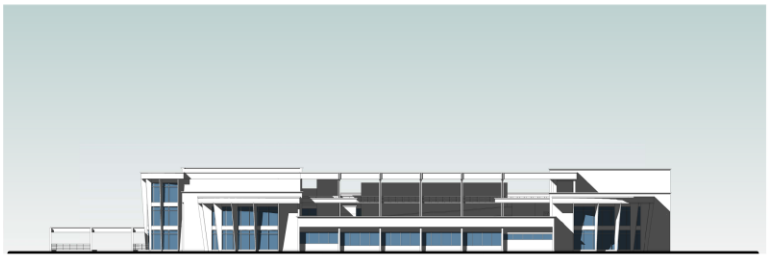
Rear elevation

MAJOR SUPERVISOR: DR M.D AHMED
MINOR SUPERVISOR: DR J.J MAINA

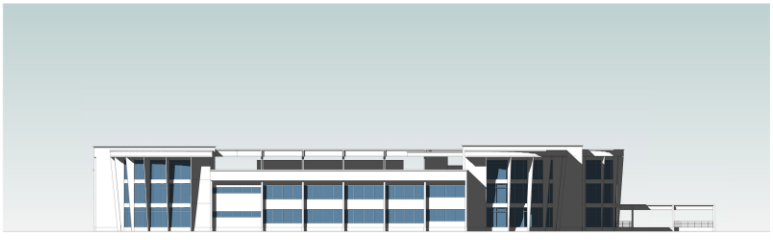
EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS IN HOSPITAL DESIGN: PROPOSED DENDUME GENERAL HOSPITAL

NAME: MAGAJI SHITU
REG NO: MSC/ENV-CES/7439/11-12
SHEET NO: W12
Scale: 1:150

ELEVATIONS



Right side elevation



Left side elevation

MAJOR SUPERVISOR: DR M.D AHMED
MINOR SUPERVISOR: DR J.J MAINA

EVOLVING SPACE STANDARD FOR FAMILY CAREGIVERS IN HOSPITAL DESIGN: PROPOSED DENDUME GENERAL HOSPITAL

NAME: MAGAJI SHITU
REG NO: MSC/ENV-CES/7439/11-12
SHEET NO: W13
Scale: 1:150

Appendix H: Sections

