A POST OCCUPANCY EVALUATION OFPATIENTS′ SATISFACTION WITH NIGER STATE GOVERNMENT HOSPITAL BUILDINGS

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DECLARATION

I declare that dissertation entitled **"A POST OCCUPANCY EVALUATION OF PATIENTS′ SATISFACTION WITH NIGER STATE GOVERNMENT HOSPITAL BUILDINGS"** has been carried out by me in the Department of Building. The information derived from the literature has been duly acknowledged in the text and a list of referenc provided. No part of this thesis was presently presented for another degree or diploma at this or any other institution.

LYNDA NWOKOBIA _____ _____

Signature Date

CERTIFICATION

This thesis entitled **A POST OCCUPANCY EVALUATION OF PATIENTS' SATISFACTION WITH NIGER STATE GOVERNMENT HOSPITAL BUILDINGS** by **LYNDA NWOKOBIA,** meets the regulations governing the award of the degree of Master in Construction management of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This dissertation is dedicated to God Almighty to whom I give all praise and adoration, to my lovely husband, ESV. J. E. Odine and my lovely angels, Juanita and Sophia Odine, I am highly favoured.

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ABSTRACT

Patients in healthcare facilities are often fearful and uncertain about their health, safety and isolation from normal social relationships. This is due to the large, complex environment of a typical hospital which further contributes to the stressful situation. This research evaluated patients′ satisfaction of the Niger State Government hospital buildings using the Post Occupancy Evaluation approach as a prominent tool with a view to improving the building performance of the hospitals in Niger State. The objectives of this research are, to identify the relevance of the predominant services offered by the general hospitals to use of buildings, to assess the satisfaction of the patients with the general setting of the hospital buildings based on the sections and departments and to determine the factors influencing patients' satisfaction in public hospital buildings. The research work focused on patients in three general hospitals in Niger State- Minna, Bida and Kontagora. A well-structured questionnaire was used to collect primary data from 150 respondents. Findings from the research showed that Clinical service is the predominant services offered by the general hospitals and efficiency is the major factor influencing patients' satisfaction of General Hospital buildings. It was also found that patients are satisfied with the illumination provided in all the departments in the hospital buildings. From the general Post Occupancy Evaluation undertaken, the study therefore concluded that patients of the Niger State General hospitals are fairly satisfied with the characteristics of the facilities of all the Departments in the hospital buildings studied. Major recommendation from the study was that further studies should be undertaken to consider better means of improving cleanliness, aesthetics and comfortability of patients in the General Hospitals Buildings.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Buildings can add substantial value to their clients, their occupiers, the economy and the environment. In spite of this, opportunities are regularly missed and value needlessly subtracted because people do not learn enough from the buildings they construct (Olagunju*et al*., 2013). When undertaking a new project, to make the most of the potentialand to avoid common pitfalls, construction team need to obtain feedback from the previous projects and their performance in use and feed forward into the building project and into the procurement process (Bordass, Leaman and Eley, 2006).Feedback should also be obtained from the project itself, during the construction process and after it has been constructed. The feedback obtained is termed "post occupancy evaluation" (Khalil and Husin, 2009).

Buildings are required to provide a conducive and safe environment for various human activities. The ability of a hospital building to facilitate healing process is termed 'therapeutic', which can be described as the overall environment both physical and non-physical created to aid the recovery process (Abbas and Ghazali, 2010; Dandajeh, 2011).Hospitals today have evolved as advanced centre for healthcare - diagnostics and research, recovery and preventive health facilities. Hospitals have a large ecological footprint. The wards buildings in hospitals form the largest component of any hospital setup. There are a number of factors such as privacy, comfortability, accessibility, design of the building, beyond good medical practices and safe environment that contribute to patient healing (Pritam and Mukta, 2012). The goal of every health institution is to provide patient care, produce medical and health manpower. In furtherance of this goal, staff and expertise based on the highest skill

are motivated in an environment that is clean, conducive and patient friendly (Zubairu and Ayuba, 2012).

Patients in a healthcare facility are often fearful and uncertain about their health, their safety and their isolation from normal social relationships. The large, complex environment of a typical hospital further contributes to the stressful situation. While it is true that good patient care comes from dedicated individuals, it is equally true that the physical structures and hospital environment must be such that the safety and well-being of patients is protected (Shohet, 2003).

Patient's perceptions are gaining popularity to evaluate the quality of healthcare facilities delivered (Pritam and Mukta, 2012). The most known evaluation method for buildings is Post Occupancy Evaluation (Preiser, 2001). Post Occupancy Evaluation (POE) consists of a set of methods and techniques applied in thebuilt environment. It is the evaluation of the performance of buildings after occupancy. Its purpose is to evaluate performance from the perspective of specialists and from that of the environment's users, and then draw up a systematic diagnosis of the positive and negative functional aspects, as well as of the construction system, environmental comfort, cost/benefit relationships related to maintenance, and relationships between the built environment and human behaviour (Preiser, 2001). This diagnosis will serve as feedback for managing the quality of the construction process, as well as the use, management and maintenance of built environments. Importance of POEs has greatly increased in recent years, although it is a more typical activity in the USA and some European countries than it is in most developing countries (Adewunmi*e. al.,* 2009). Post-occupancy evaluation (POE) is a platform for the systematic study of buildings once occupied, so as to identify building performance issues that will improve their current conditions and guide the design of future buildings. Various aspects of the

occupied buildings' functioning and performance can be assessed in a POE and that is why Post Occupancy Evaluation is important in order to avoid repeated mistakes in building designs.

1.2 Statement of the Research Problem

POE thoroughly appraises a particular environment to have a better understanding of the impact of a constructed or renovated facility on its occupants and environment, thus it analyses how it facilitates or inhibits health or daily activities of the occupants (Khalil &Husin, 2009). Therefore, the continuous and rekindled interest in natural condition within the hospital environment has increased the research efforts in documenting the advantages of nature for lessening stress, improving occupants' mood, and increasing healthcare satisfaction (Sherman, Varni, Ulrich &Malcarne, 2005). Sherman *et al*. (2005) argued that these efforts become necessary as a result of paradigmatic change in the subjective sphere of health outcome such as healthcare satisfaction and well-being, which are becoming gradually significant in health and hospital culture. This according to Sullivan (2003) has resulted in hospitals striving not only to cure physical conditions, but also to improve quality of life of healthcare seekers and hospital goers.

However, most of the studies on POE of hospital buildings have mostly been conducted in developed countries such as in USA and other European countries with little or no research in the developing world context such as Nigeria. A few number of studies on POE in Nigeria centred on public and residential buildings (Zubairu and Ayuba, 2012; Olagunju*et al.*, 2013). Meanwhile, previous studies have established that hospital environment replete with stressors and poor quality air can increase the rates of Sick Building Syndrome of occupants as well as high state of mental fatigue (Kaplan & Kaplan, 1983; Rdesinski, 2009). Working and living in buildings can have

unanticipated adverse health effects. Based on this assertion, early researchers (such as Kaplan & Kaplan, 1983; Sherman *et al*., 2005) have concluded that exposure to a curative natural environment would be relaxing, less stressful, and therefore, increase patient's satisfaction and psychological well-being. In spite of this huge benefits, it remains unknown the impact of hospital buildings in improving or increasing users' satisfaction as well as their well-being especially in the Northern part of Nigeria.

In the sphere of buildings however, construction professionals such as architects and engineers rarely carry out evaluation of completed buildings or even receive useful feedback about the performance of completed building projects (Olagunju*et al.*, 2013). Generally, the Maintenance departments actually have no framework in place for evaluating the performance of the building and the satisfaction of the users, thus creating a huge backlog of maintenance issues overtime (Olagunju*et al.*, 2013).The large, complex environment of a typical hospital further contributes to the stressful situation.As a result of this, patients in a healthcare facility are often fearful and uncertain about their health, safety and isolation from normal social relationships. This leads to the fact that presently in Nigeria, in order to address this problem, this research undertooka post occupancy evaluation of patient's satisfaction with selected Government Hospital buildings in Niger State.

1.3 Justification for the Study

Previous studies have established that hospital environment replete with stressors, poor quality air; can increase the rates of Sick Building Syndrome of occupants as well as high state of mental fatigue (Kaplan & Kaplan, 1983; Rdesinski, 2009). British Council of Offices (2007) opined that with the evaluation of new and existing buildings, certain discoveries would come up; such as whether the building is satisfying the users and also problems associated with the buildings would surface.

However, large gaps still exist in knowledge in post occupancy evaluation of hospital building performance in providing safety, security, conduciveness, health recovery and prevention, especially in the Northern part of Nigeria. This necessitated this research to carry out a post occupancy evaluation of patient's satisfaction with Government Hospital buildings in Niger State. The outcome of this study will help future projects in meeting the need and aspiration of the patient. The outcome of the study will be a lesson learned for future projects to help in designing that meets the satisfaction of patients and construction methodology.

1.4 Research Questions

To investigate this, the research asks the following questions:

i. What are thepredominant types of services provided in general hospitals?
ii. What arethe factors influencing patients′ satisfaction with hospital buildings?
iii. What is the level of satisfaction of patients′ with the hospital buildings?

1.5 Aim and Objectives

1.5.1 Aim

The aim of this research is to carry out a Post Occupancy Evaluation of patients' satisfaction of the Niger State Government hospital buildings with view to ascertaining areas requiring improvements in design and contribution of future hospital developments..

1.5.2 Objectives

To achieve this aim, the following specific objectives were considered:

i. To identify the predominant types of services provided by the general hospital buildings.
ii. To determinethe factors influencing patients′ satisfaction with hospital buildings based on sections and departments.

iii. To assessthe level of satisfaction of patients′ with the hospital buildings.

1.6 Scope of the Study

This research coveredthe General Hospital buildings in three major towns in Niger State (Minna, Bida and Kontagora). Hence, the questionnaires distributed were within the aforesaid jurisdiction.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Hospital Buildings and POE

Hospital is a blend of science and a coordination of human skills in the performance of healing processes (Gupta, and Kant, 2004). Therefore, hospital development must be in response to the healthcare demands of the users that are targeted as well as the social, environmental and demographic distribution of its host community(s). Hence, the efficiency of hospital is to a large extent dependent on the visual composition of the building and its occupants and users. Hence a well-planned hospital with a well-articulated landscape will really help the complete recovery of patients. Nous Hospital Consultants (2002) regarded hospitals as not just a mere building, but a complex social institution, composed of many groups representing a wide variety of interests and diverse needs that utilize the services of various medical, paramedical and support personnel to render all needed healthcare to the patients in its custody. There are various tools and methods for evaluating facilities. The focus is usually on the technical building performance, function/usability or form/beauty. Examples are: Post-Occupancy Evaluation (POE) and Usability Appraisal. Buildings are required to provide a conducive and safe environment for various human activities. The extent to which buildings provide the required environment for the required activity is a measure of the functionality of the building (Oladapo, 2005). Hospitals are the most complex of building types (Kliment, 2000). Each hospital is comprised of a wide range of services and functional units or departments, such as Laboratory unit (diagnostic and treatment functions, Obstetrics and Gynaecology unit, pharmacy, hospitality functions, etc and the fundamental inpatient care or bed- related functions.

In the study of (Rdesinski, 2009) Oregun health and science University Center for health and healing, it focuses on the measures of energy and occupant productivity results of this state-of-the-art high performance building. This spans through:

(a) Occupant survey

(b) Occupant absenteeism

(c) Energy analysis

(d) As-built characterization

(e) Recommendations.

Their report highlighted building performance analysis, findings and discusses some of the specific challenges the ownership, management and design team have faced.

A further study is that of (Ashish*et al.* 2008) who investigated patient's perception of hospital care in the United States through the hospital consumer assessment of healthcare providers and system (HCAHPS) database. It was concluded that moderately high levels of satisfaction with care of hospital's patients said that they would definitely recommend the hospital. Hospitals with a high level of patient satisfaction provided clinical care that was somewhat higher in quality for all conditions examined.

Pritam and Mukta (2012) also carried out a study on visual comfort condition of hospital wards using a POE and questionnaire method. It was revealed that there is preference for natural day lighting as against artificial lighting in the patient's ward. This suggests economical recommendations to modify architectural design and maximize use of natural lights in wards.

It has long been identified that light reaching brain cells affects the body's circadian cycles which are biological events that repeat themselves at regular intervals (Golombek and Rosenstein 2010). Pritam and Mukta (2012) studied the post-occupancy evaluation of patient's perception of visual comfort in hospital wards; their study revealed that there is a positive preference to certain light quality and illumination levels in patients for visual comfort. It is also important for patients to experience the changing character of daylight.

According to the World Health Organization (2004), the quality of a house plays a vital role in the health status of residents. The indoor air quality, humidity, low temperature and overcrowding in a house usually poses threats to the health of the residents (WHO 2004).

Todd et al. (2002) carried out an investigation of assessment of attitudes to and perceptions of the built environments of NHS trust hospitals. They found that patient's perceptions of a hospital environment were also influenced by ability to control factors such as lighting and heating in the environment.

Sarhan et al. (2014) reported the impact of daylight on patients' outcomes. It revealed that higher level of light exposures compared to lower levels is effective in reducing depression in patients and that the morning light is twice effective than the afternoon light in improving patients' conditions.

Choi, Beltran and Kim (2012) investigated the impact of indoor daylight environment on patient's average length of stay (ALOS). This study showed that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation. And that excessive daylight and glare has caused visual discomforts to patients. The benefit of daylight was that when patients are provided

with options to control daylight in rooms, it was found to improve their physiological and psychological conditions.

Findings by Anjali (2006) showed that daylight impacts outcomes in healthcare settings by reducing depression among patients, decreasing length of stay in hospitals, improving sleep and circadian rhythm, lessening agitation among dementia patients, easing pain, and improving adjustment to night-shift work among staff. The presence of windows in the Workplace and access to daylight have been linked with increased satisfaction with the work environment; and exposure to light is critical for vitamin D metabolism in the human body.

Colours according to Salonen, Marjaana, Lappalainen, Nevala, Knibbs, Morawska, and Reijula, (2012) affect blood pressure, heart rhythm, the psyche, and the electrical activity of the brain. Good interior colour design therefore can reduce feelings of alienation and thus promote wellbeing and recovery. The summary of these findings are that there is a significant relationship between indoor daylight environment as created by designers and patients' length of stay in hospitals. It behoves therefore that design consideration should be given to windows and other lighting facilities in healthcare buildings.

On the element of space for privacy, Alalouch (2009) investigated the implications for space and privacy in hospital ward design revealed that patients in single-bed space experience quick recovery than those in multi-bed space. This has re-emphasized the concept of patients' privacy and its importance for patients' well-being. These findings put pressure on hospital designers to offer a better level of privacy for individuals especially in multi-bed wards where there is more potential for a breach of privacy. In excess or lack thereof, light may cause physical damage which is not restricted to the eyes (e.g. the development of skin problems). On the other hand, if

provided appropriately, light is considered to have a curative stimulating property that affects our metabolism and our mind. Also, ventilation can be promoted by both natural and artificial routes and its impact on health outcomes are mainly associated with the dissemination of infectious disease (Farhad, 2011).

POEs are useful to test how well new buildings met their program specifications and can help fine-tune the building (make recommendations for incremental improvements). For the public sector, where public agencies often own large building inventories and carry "cradle-to-grave" responsibility for their buildings, POEs are useful to generate knowledge to continuously improve building designs over time and benchmark individual buildings against pools of similar buildings to make informed, evidence-based decisions (Steinke et al., 2010).

2.2 Historical Development of Hospitals

The strain between patients and hospital personnel such as doctors, nurses, technicians, therapists, aides etc. dates back to the history of hospitals. Hospitals in Early America served different purposes than what they do today; they were shelter homes for adults, the dying, orphans and vagrants and also to protect the community from the contagiously sick and dangerously insane. Whatever passed for Medical care in those days was provided in the home.

On this backdrop, healthcare delivery has been primarily carried out within the confines of a building such as hospitals, dispensaries, ambulatory centres amongst others. The configuration and composition of these facilities are influenced by their use, socio-cultural responsibilities, visual expectations, ecological indices, and availability of finance. Alongside the clinical procedures involved in curing diseases, studies have shown that the physical surrounding plays a great role in the healing and

recuperation process as well as the safety of patients, their accompanying relations, and care givers (Van Den Berg, 2005).

Beyond functionality, the hospital building should exude visual qualities that have the finesse of humanity. Aesthetics should be balanced with function, safety, pleasant landscape views, and regulatory requirements in order to achieve a holistic healing environment. Scientific evidences show that there is a strong synergy between patients healing and recovery with the environment where treatment is undergone. This is made manifest in environmental design strategies such as bringing natural lighting into patients' room, and taking advantage of natural landscape views which reinvigorate the patient's body (Ulrich, 1984: Ulrich, Linden, and Etinge, 1993).

Though, the primary function of the hospital is to manage the physical and mental well-being of individuals, with healthcare being made more accessible to the populace, and the scientific and technological awareness today, hospitals are considered the last option (Francis, 2007) as homes and other sources offering alternative therapies that can accentuate the closeness of the human mind and body with nature are made more available.

2.3 Modern Hospitals

Modern hospitals gradually developed from the medieval hospitals, becoming very visible in the 18th century. It was shaped by developments in hospital sanitation, science and technological developments, and the increasing need for social welfare for the growing active workforce. It's planning and design has been inspired by several factors such as hygiene which is synonymous with the industrial age, and recently the need for a more user centered facility.

The modern hospital is now mostly modelled to take a homelier ambience with a more utilitarian disposition. This has been motivated by the shorter stays of patients, and the more specialized healthcare services on offer. Therefore, hospital building is taking a more human identity which involves the relation of the building more to its users and the environment (Pellitteri, 2012).

2.4 Classification of Hospital

Hospitals are classified based on function, size and the range of specialized service on offer. Thus, the following types are generally recognized:

1. General Hospital

This class of hospital is concerned with a wide range of disease and injuries. It is established to take care of several health challenges, and usually have an Accident and Emergency unit (A&E) as well as facilities for surgical procedures. General hospitals are designed with in-patient facilities to allow for the admittance of patients who require staying overnight, or for a short period as well as a relatively longer period depending on the degree of their health challenge. General hospitals can also serve as tertiary referral outfits for the management of more severe cases. It is usually located in urban areas, as well as in sub-urban areas as cottage hospitals.

2. District Hospital

A district hospital shares many similarities with a general hospital. It is usually the most prominent healthcare outfit in a region with the capacity to admit a large number of in-patients for a long period as well as having a large intensive care facility. This type of hospital is usually located in urban areas.

3. Teaching Hospital

This class of hospitals is usually affiliated to medical colleges of universities. There are referral tertiary hospitals which are adept and equipped with innovative healthcare technologies for the extensive diagnosis and treatment of diseases. There are designed to facilitate the training of medical doctors and nurses as well as other medical careers. The teaching hospital usually requires a careful conception and design of spaces in order to enhance learning. In-patient facilities are usually designed to allow observing students and practicing medical personnel.

4. Specialist Hospital

This class of hospital has increased over the years due to the demand for more focused singular treatments. The specialist hospital is usually concerned with a particular arm of healthcare service, age group, gender, or a limited and closely related number of medical specialties or sub-specialties. This includes; children's hospital (paediatric), Orthopaedic, gynaecology amongst others.

2.5 Functions and Social Responsibilities of Public Hospitals

As the core of public health and medical institutions, public hospitals save lives, prevent and cure diseases, and are key to attaining government objectives for health and social stability. Their essential functions and responsibilities include:

1. To provide regular medical services.

2. Providing preventive health care, health education and rehabilitation.

3. Responding to public health accidents.

4. To support other government missions.

5. Conducting medical education and research for the people.

2.5.1 Regular Medical Services

Public hospitals provide two types of medical services. First, they provide low-cost medical services to ensure basic health services for everyone. Second, they provide diagnosis and treatment services for intractable diseases, treatment services for critical illnesses, emergency services, healthcare services for civil servants, and foreign patients. Public hospitals provide treatment services for acute, severe, and critical outpatients and inpatients, fixing the Public Hospital System and they fulfil education, research, prevention, and rehabilitation objectives by providing special medical services. With their service orientation, quality, price, and standards, public hospitals influence private health service providers, and guide the development of medical services markets. The number of inpatients is more than 10,000 a year, and some could reach 20,000 to 30,000 in large-scale comprehensive public hospitals.

2.5.2 Preventive Health Care, Health Education and Rehabilitation

Preventive health care, rehabilitation, and health education are all important hospital functions. With the SARS outbreak in 2003 and other public health accidents, prevention has taken on increasing significance. All public hospitals now have preventive health care branches, which are responsible for reporting infectious diseases, health checks, health counselling, community prevention services, health education, disease screening, family planning and birthing guidance, and care of staff. With social and economic development, rising living standards, an aging population, and an increase in non-communicable diseases, society's demand for rehabilitation

medicine increases year by year, and rehabilitation services should be available in second-tier general hospitals.

2.5.3 Public Health Accidents

Public hospitals play a significant role in responding to major natural disasters and other calamities. Public hospitals safeguard lives and social stability, and are a national and social stabilizer.

2.5.4 Other Government Missions

All public hospitals provide medical services for vulnerable groups, such as fixed price inpatient services, free registration, free infusion, free dressing, and free injection. They waive fees for surgery, laboratory, physiotherapy, medicine and other items; and they provide beds for low-income and poor people for basic medical services. Public hospitals support teaching practical-level health organizations as an important social function, and they support international, rural, and peer-to-peer aid programs. Public hospitals cultivate medical talent not only for their own units, but for teaching hospitals and community hospitals. Many public hospitals offer medical education. Public hospitals also serve as training grounds for medical technology professionals.

Most public hospitals also conduct scientific research. Clinical research addresses needs related to disease treatment and patient nursing, and has direct and indirect economic and social benefits through the application of scientific research.

2.6 Hospital Design Coordination and Complexities

Although, hospitals are repellent to both physical and socio-cultural change (McKee & Healy, 2002b: McKee & Healy 2002b), the modern hospital building usually reverberates the cultural and health demands of the time its design and development was conceived, and population. In her accounts, Florence Nightingale one of the proponents of safe healthcare, records that the middle and later parts of the 19th century saw European hospitals recording very high death rate (Joint Commission, 2008: Komesaroff, 1999). Therefore, the hospital was largely regarded as a place of no return (McKee, & Healy, 2002a). This is not the case today as great innovations in healthcare research and technology have been effectively achieved.

The modern hospital evolved from the industrial age hospital design which was more focused on hygiene (Rechel, Wright, Edwards, Dowdes, & McKee, 2009; Black, &Gruen, 2005; Komesaroff, 1999). Due to the level of scientific and technological advancement in the field of healthcare at the time, hospitals were more of facilities where the sick and the injured could go for recuperation. However, with rapidly changing cultures and technological advancement, hospitals are now faced with many complexities in its design as less people fall sick or are admitted, and because of the upward trajectory of ambulatory healthcare services (Rechel et al, 2009) which offers a return of patients to more comforting environments.

Hospitals are distinguished with respect to the increasing specialization as well as size of facility, and the range of services offered. Early examples of hospital buildings were strictly planned for medical practices but there has been a break away from its institutional precept in the direction of a more humanist identity. Contemporary hospital designs adopt a more homely ambience which relates it more to its hospitality roots, and drawing inspiration from nature to provide an optimal healing environment.

Hospitals are now modeled after hotels with a relatively lower emphasis on sanitary inspired designs of its precursors. Patients spend lesser durations, the equipments are getting smaller in scale, and distances between personnel, equipments, and patients are getting shorter while spaces are generally taking a more utilitarian outlook. Amongst other organisations and regulatory agencies, the World Health Organisation (WHO) have being in the frontline of advocating a more patient centered hospital with provision for patient's family and care givers as this will enhance patient recovery as well as support their mental balance (You *et al*, 2010: Pelikan, Krajic, &Dietsdier, 2001). In response to the aforementioned advocacy, newer hospital designs have place significance on early patient involvement in all clinical processes (Joint Commission, 2008) which has greatly influence the structural and aesthetic configuration of the hospital building.

2.6.1 Hospital Building Form and Adaptations

The hospital building form is the interpretation of the visual arrangement of a hospital. The functional aspect of a hospital building often dominates other parameters that characterize its architecture. This is as a result of the contradictions inherent in the definition of its architectural quality which is synonymous with hygiene and safety efficiency. This character portrays the hospital as an institutional building system dedicated to organised health care. As such, the hospital design has to consider indices such as future expansion, and the physical and psychological needs of the patients as being paramount.

Contemporary architecture has pushed the boundaries of building composition from linear configurations to embrace more sophisticated nature inspired forms. Thus building forms reflect the civilization and environmental awareness of the time

(Bates- Brlkjac, 2010). This portrays the technological breakthroughs achieved, and the artistic standards and sensibilities attained. The building form should therefore appeal to the visual needs of the anticipated users as well as satisfy the functional requirements of the anticipated use.

On this backdrop, Hospital buildings are usually coordinated in linear replicable modules in order to allow for easy expansion. There are usually constructed in stages depending on standardized growth indices. Though, there are built to allow for flexibility in expansion and the building form is to a large extent detected by the access and circulation options available.

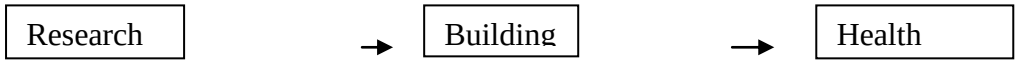
2.6.2 History of Building Evaluation

Historically, major building failures have prompted careful building evaluations. The results of building evaluation and feedback have been used for centuries, particularly after there has been a major building failure. These evaluations have resulted in drafting regulations that historically been the only systematic and research based source of information on building design.

These regulations evolved into building codes, which began to control critical aspects of buildings, such as:

1. The health
2. The safety.

2.6 The general welfare of building occupants.



2.7 Concept of Post Occupancy Evaluation

Post occupancy evaluation evolved from the architectural programming techniques of the late 1950s and early 1960s. Early significant evaluative efforts were in response to severe problems faced in institutions such as mental hospitals and prisons, some of which were attributable to the built environment (Ilesanmi, 2010). The 1960s saw the growth of research that focused on the relationship between human behavior and building design, leading to the creation of the new field of environmental design research and the formation of interdisciplinary professional associations. Preiser and Vischer (2004), however, consider POE to be the most commonly used term for the activity of evaluating buildings in use. Post-Occupancy Evaluation consists of a set of methods and techniques applied during use of built environments. Its purpose is to evaluate their performance from the perspective of specialists and from that of the users in the environment, and then draw up a systematic diagnosis of the positive and negative functional aspects, as well as of the construction system, environmental comfort, cost/benefit relationships related to maintenance, and relationships between the built environment and human behaviour. This diagnosis will serve as feedback for managing the quality of the construction process, as well as the use, management and maintenance of built environments, especially regarding initial planning, programming, and design, and in the maintenance programs of the environments when in use (Orstein, 2005).

Watson (2003) defined POE as a systematic evaluation of opinions about buildings in use, from the perspective of users. POE serves as a multifaceted tool to account for building quality through the identification of successful design features, redundant or unnecessary building features, problems to mitigate, and defects to rectify (Watson, 2003). It thereby helps to empower users to negotiate building issues and reduce

maintenance works and cost (Bordas and Leaman, 2001; Vischer, 2002; Hewitt *et al,* 2005). According to preiser (2002), the concept of post occupancy evaluation is a systematic manner of evaluating buildings after they have been built and occupied for duration of time (Preiser, 1995, 2002). It is the gap between the actual performance of buildings and explicitly stated performance criteria constitute the evaluation (Preiser*et al,* 1988). One of the applications of POE is the comparison between the use that the designer intended for an environment and that to which its users put it. It is essential to elicit the perceptions of the residents and correlate these with the performance level of housing as determined by POE. From history, building performance was evaluated in an informal manner, and the lessons learned were applied in subsequent building cycles of similar building types (Preiser, 2002). Although informal, subjective evaluations of the built environment have been conducted throughout history, systematic evaluations, employing explicitly stated performance criteria with which performance measures of buildings are compared, is of more recent origin. Vischer (2002) suggests that POE is used in determining building defects, formulating design and construction criteria, supporting performance measures for asset and facility management, lowering facility life cycle costs by identifying design errors that could lead to increased maintenance and operating costs, and clarifying design objectives. POE provides a mechanism for understanding the mutual interaction between buildings and users' aspirations and for proposing ways of improving the environment necessary to accommodate these aspirations (Preiser and Vischer, 2004 cited in Ilesanmi, 2010).

2.7.1 Aim and Targets of POE

The nature and goals of POE depend on who is asked, as the prospects and hazards of this tool and approach are seen differently from the standpoint of each stakeholder.

The entrepreneur should have a vested interest in POE as a way to assess the design quality and potential gains – value for money invested – enabled by a better end product, i.e. the building. Against such potential gains, however, entrepreneurs do not always want too probing a light to be thrown on the performance of their buildings and, in extreme cases, they will be wary of their legal liability for malfunctioning or hazardous buildings.

The building manager should be interested in lowering energy consumption and maintenance costs, and an understanding of the actual operation of the building by the users is an essential step towards this. It has been demonstrated that often there is an acute discrepancy between objective comfort (such as thermal comfort defined by ASHRAE (1992)) and subjective comfort (such as defined by the adaptive thermal model (Nicol and Humphreys, 2002)). Studies have demonstrated energy waste alongside thermally uncomfortable interiors (overheated or overcooled), as well as increased energy consumption in buildings in which there is no control over one's personal space (air temperature, light intensity, and so forth).

Here we can distinguish between the emphasis on well-being and health (in the case of the building's occupants, workers, tenants, students, and so forth) and an emphasis on productivity (in the case of the company owner/manager of the building or the institutional entity responsible for it (the education system, etc.). These two emphases are clearly intertwined, although in reality clashes of interest exist (Davara*et al.*, 2006).

The architect and consultants should be aiming at producing the best possible building within the existing economic, statutory, technical and other constraints. The responsibility of design professionals for the well-being of the people that occupy

their buildings is an obvious but sometimes overlooked basic principle, sometimes inscribed in professional ethics codes and legislation. As an example, the second paragraph of the Israeli Bylaws of Engineers and Architects states that the first and foremost task of the architect and the engineer is to ensure public health and safety (IAUA, 1994), issues definitely associated with IAQ and IEQ. This often causes raised eyebrows among architecture students, as these mundane duties do not square with their initial glamorous image of the design professions, i.e. the various governmental bodies concerned, on the national and political levels should be interested in the promotion of better design and building practices, such as would be enabled by a continuous process of assessment and upgrade that can be facilitated by POE. In severe cases, faulty buildings characterized by sick building syndrome (SBS) cause absenteeism, hospitalization and may create demands for potential compensation for long-term health and other damages. Institutional stakeholders will also be motivated to achieve the added longevity of better buildings and systems, minimizing the need for changes, refurbishment or demolition and reconstruction. While each of these stakeholders' approaches POE from differing and at times conflicting viewpoints, it is clear that all have much to gain from a thorough institutionalization of POE practices and from the extensive use of these methods for understanding flaws in current practices and producing solutions for the correction of these. (Meir, Garb, Jiao and Cicelsky, 2009).

2.7.2 Post Occupancy Evaluation Models

There are three levels of efforts process models at which POE may be conducted, and each is composed of three major phases – Planning, Conducting and Applying the POE. Before a POE is undertaken, its purpose must be clearly stated and justified. This will determine the depth and cost of the exploration, which in turn determines

the type of POE. The three types of models as indicated by Preiser and Vischer (2004) are;

i. Indicative (wide ranging application)
ii. Investigative (more detailed approach)
iii. Diagnostic (extremely detailed and focused study)

1. **The *Indicative*** form of POE attempts to identify the major functional failures and successes of the building in a general manner. That is, the physical qualities of the setting which foster or impede desired or necessary behaviours in occupants are noted; appropriate and unwanted behaviours on the part of residents are recognized. An Indicative POE is conducted in a short period of time (2-16 hours), usually by one person, and its effectiveness is primarily dependent on the experience and insight of the individual who carries out the assessment. The following format is observed:

i. a review of archival material related to the history, utilization and performance of the building is conducted prior to collecting data;
ii. data are gathered on performance issues primarily through the use of standard questionnaires;
iii. a walk-through of the building is done; photographs, measurements etc. may be taken;
iv. interviews are held with a few key people;
v. A brief written report and recommendations are submitted.

By means of this basic cross-sectional evaluation, the presence, frequency and location of factors that support or impede activities are identified and compared to the expert's knowledge. Simple solutions or the need for further investigation are then suggested.

2. ***Investigative*** **POEs** follow the same basic procedure as the Indicative POEs but undertake each step more extensively. They require an estimated 160-240 staff hours and the assistance of support staff service to conduct. Unbiased criteria for building performance are developed by means of a literature review and comparisons with similar facilities. This evaluation covers more topics in greater detail and with greater reliability and additionally, allows performance to be monitored over time.

3. **The** ***Diagnostic POE*** is the most sophisticated form of POE and may take from several months to a year to conduct, and employs a team of researchers and support staff. Again, the basic structure is similar to the less detailed POEs, but these evaluation studies differ in three important ways:

i. They employ triangulation or multileveled strategies for gathering data on numerous variables

ii. They use basic scientific research designs

iii. They employ representative samples which allow the results to be generalized to similar buildings and situations. On completion of the Diagnostic POE, a formal report which interprets the data and suggests strategies for change is issued, and briefing sessions are held to discuss the implementation of these strategies. The aim is to improve not only the particular facility, but to advance the state of the art for all buildings of that type, and to provide information that can be applied in similar buildings. Diagnostic POEs are costly ventures and are only warranted under circumstances when the anticipated long-term gains seem to outweigh the expense.

2.7.3 The Post Occupancy Evaluation Phases and Steps

POEs are carried out by completing three phases, each involving a number of steps:

Phase 1 - Planning the POE: The planning phase provides guidance for initiating and organizing the POE.

Phase 2 – Conducting the POE: The main tasks in conducting the POE are the collection and analysis of data.

Phase 3 – Applying the POE: In the applying phase, findings, conclusions, and recommendations are formulated together with a method to review the results of actions taken.

Phase 1: Planning the POE

There are several preliminaries to observe in initiating and organizing a POE project prior to the on-site data collection.

i. The client must be briefed on the nature of POEs, the type of activities involved and the resources needed.
ii. Agreement is reached on which type of POE to conduct.
iii. Historical and other background information that may assist in planning the evaluation is identified and obtained.
iv. Coordination with user groups within the building begins and potential benefits for participants are outlined.

There are three steps included in this phase:

i. Reconnaissance and feasibility.
ii. Resource planning.
iii. Research planning.

For every step, the evaluator should set out and/or state:

i. The purpose of the step.
ii. Justification for this step.
iii. Activities involved in conducting this step.
iv. Resources necessary to conduct this step.
v. The expected results of this step.

Phase 2: Conducting the POE – Steps

There are three steps included in this phase:

i. Initiating the on-site data-collection process.
ii. Monitoring and managing data-collection procedures.
iii. Analysing data.

Phase 3: Applying the POE

In this phase of the POE, findings are reported, conclusions drawn, recommendation made, and eventually the resulting actions reviewed. The steps involved in the applying phase of POE are:

i. Reporting findings.
ii. Recommending actions.
iii. Reviewing outcomes.

Taking into consideration the various methods of conducting POE, Preiser (1995) developed a process model as shown below in figure 2.3. The model represents the three phases and nine steps of his POE process.

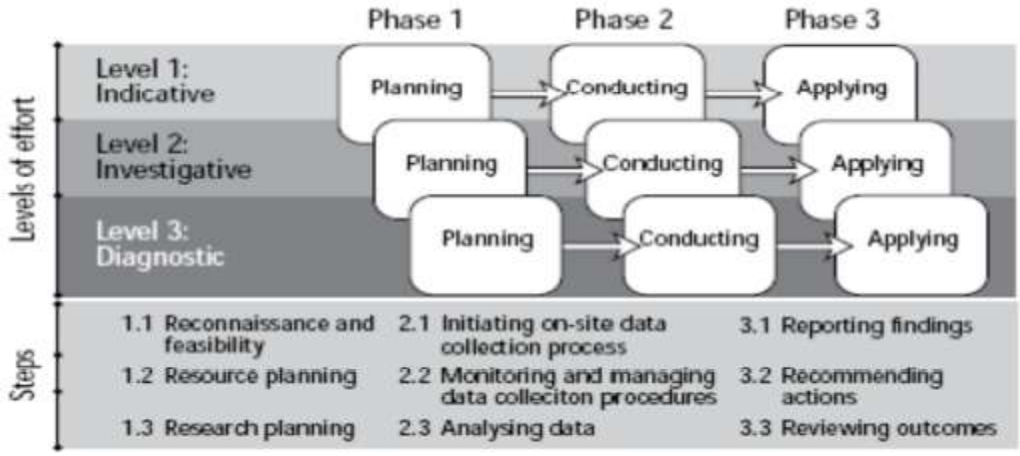


Figure 2.1: Post-occupancy Evaluation Process Model(Preiser, 1995)

2.7.4 Benefits and barriers to POE

Benefits of POEs are at different stages of occupancy, from initial occupation, to an annual review, or prior to a move; for all four stakeholder groups: clients, end-users, facilities managers and project team (Jaunzens*et al.* 2003). The benefits of a POE are directly comparative to the extent of the investigation performed. Preiser*et al.* (1988) indicated that POEs in general have a number of benefits and include:

i. Immediate identification of problems in buildings and solutions to them.

ii. Improved space utilisation and feedback on building performance

iii. Improved attitude of building occupants through active involvement in the evaluation process

iv. Informed decision-making and better understanding of the consequences of design

v. Significant cost savings in the building process and throughout the building's lifecycle;

vi. Accountability for building performance by design professionals and owners (Horgen and Sheridan 1996; Fisk 2001).

vii. Improvements in the building performance

viii. Improvement of design databases, standards, criteria and guidance literature.

Barriers to POEs are posed by ownership of cost as to who to shoulder the responsibility of paying for it, misinterpretations of purpose as well as timing of surveys because it can show deficiencies within buildings and working environments. (Turpin-Brooks &Viccars 2006).

2.7.5 Post Occupancy Evaluation Tools

Since buildings are very complex systems, and their interaction with occupants further compounds the complexity of possible interrelations and potential malfunctions, it is imperative that the study of building post occupancy be based on a multi-level, multifaceted system of checks and tests. These should involve thermal comfort alongside heating, ventilation and air conditioning; illumination and visual comfort; occupants' satisfaction and behaviour; and, not least, physiological and psychological comfort, since all of these issues together will affect energy consumption and human well-being. The tools employed for POEs are both quantitative and qualitative, aimed at testing user satisfaction in order to diagnose and present more suitable recommendations.

1. **Observation and mapping of activities and behaviours**– requires regular application, visualization, description and, if possible, quantification of activities at pre-determined intervals and with specific age brackets. It also requires graphic representation and photographic or videotaped records. This latter technique is quite useful for understanding the flows and dynamics of the activities involved.
2. **Interviews** – open, free or semi-structured (based on a few specific questions). Well-trained interviewers usually interact with the respondents but avoid inducing them in certain directions. Whenever possible the interview is

recorded for later transcription. Many interviews are applied to key people, such as school principals, guidance personnel and staff responsible for maintenance. With adapted formats, they can also be applied to children, adolescents or adults.

3. **Questionnaires** – multiple-choice questions with scales of values can be used to measure satisfaction, combining open and closed questions. Questionnaires are quantifiable, and depend on validation and definition of the sample. Questionnaires can be applied face-to-face with pre-teens, adolescents or adults. The results are easy to tabulate and summarize with the use of specific software. However, the results must usually be confronted with those obtained through other tools, in order to make them clearer. When applied to children or teenagers, questionnaires should not take more than 20 minutes to fill out.
4. **Focus groups** – this qualitative technique consists of group meetings, with limited numbers of participants (usually a maximum of eight and belonging to the same age bracket and profile) and the moderator. Several questions are prepared beforehand to stimulate discussion and debate. Focus groups can be held with any age bracket, but should not last longer than one hour. Whenever possible, they should be recorded for later transcription. Focus groups can be very useful when deadlines for applying POEs are short. For example, they can be held with groups of teachers, administrative staff or students in the same class. If carefully planned, they can also be combined with scheduled walkthrough visits in groups. In this case the moderator and participants in the group, walk around the school together and carry on discussions based on checklists. Conditions of construction, functional aspects, environmental

comfort and behavior, and activities in the environment are usually among the topics discussed.

5. **Visual selection and perception** – These tools are often used with children and pre-adolescents, who often participate in a much more dynamic and interested way when questionnaires are associated with images to which they can attribute scales of values. Sometimes the moderator asks participants to choose images shown on cards, as in a game, based on given topics. Children between the ages of four and seven can be asked to present drawings. Based on a question, they are asked to draw their impressions, feelings and concepts on paper. Especially with this type of exercise, the results should be analyzed with the help of an educator or psychologist, in order to guarantee the most reliable results possible.

2.7.6 POE as a Facility Management Tool

Facility managers may become the keepers of expertise and databases/information systems on facility performance of common facility types, as opposed to architects, or independent clearing-houses. Being on-site and familiar with everyday problems and issues of building performance, facility managers may also be aided by so-called building user manuals which should be developed for facilities independently of who happens to operate them at a given point in time*"* (Preiser, 1995*)*

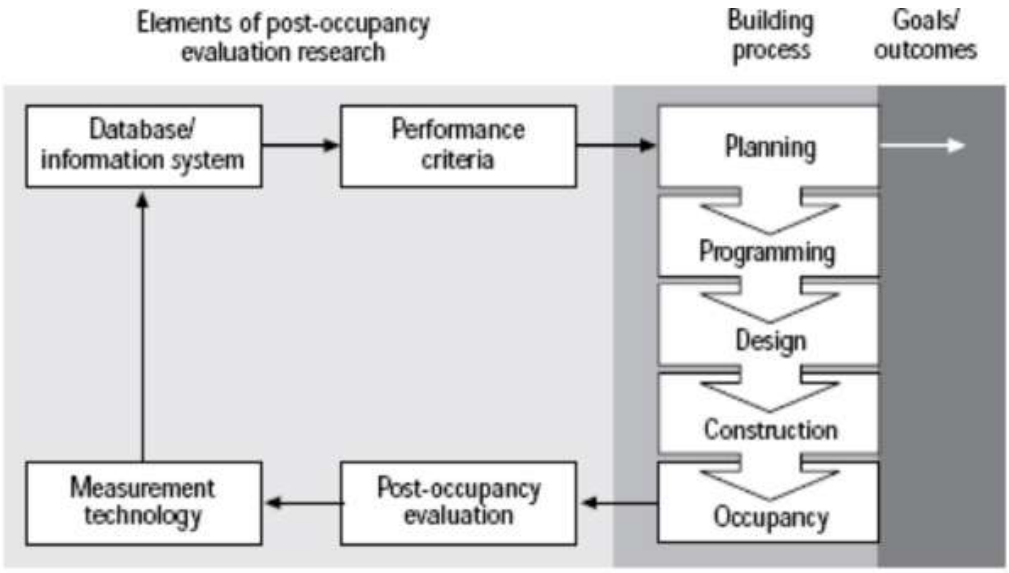


Figure 2.4: POE as a Facility Management Tool(Preiser, 1995)

2.7.7 POE in the Balance of Creativity and Utility in Building Design

POE can inform the debate regarding the trade-offs of creativity and utility in buildings. In the modern age, the former has found more widespread expression as monumental buildings are designed not only to house religious or public institutions: spectacular museums, libraries and universities are joined today by apartment blocks and offices as landmarks. Everyman and company can commission a building that says 'art', not just architecture. Today's new tools allow architectural forms to be constructed within a spectacularly wide design scale. Buildings with non-repeating unique structural components are now commonly engineered and constructed. How do these capabilities interact with the familiar constraints of cost, and the forward-looking constraints of energy efficiency? The contention is that the market is full of spectacular and unique buildings that may be jewels to view but are unethical in the use of energy, land and budget. Even those that gesture to sustainability may fall short: their rugs may meet the highest standards of recycled content, the high-performance windows the most insulated available; at the same time, however, they

may have unwarranted use of some of these components in the building, in particular if the building has a curious shape. In other words, even though the building may use more efficient materials, it may use more of them, or, more of another kind of less efficient material. For example, in the case of wrap-around glazing, true energy savings could be attained with fewer windows altogether. POE can play a role in attempts to determine an acceptable balance between creativity and utility. It does this by bringing in the element of user satisfaction as well as the actual functioning of the building, which together constitute its utility, and can help assess if and how the more imaginative or artistic elements interact with these. Currently, POE of 'green' buildings assumes that they are utilitarian in design and, therefore, measuring satisfaction of the air quality, lighting, thermal conditions, energy use and perhaps workspace comfort is sufficient. Roaf (2004) is critical of the current definitions of 'green' and 'sustainable' for all projects (that is, the idea that all projects today need to be sustainable) and in particular when confronted with 'signature buildings' that may be green in material selection and thermal standards of each element, but lack sense when it comes to total material use, use (read 'waste') of space in work areas and in public access zones of these buildings (Wilson and Austin, 2004). Roaf (2004) contends that POE needs to be expanded to contend with design and layout parameters in addition to the ones covered in research and surveys to date.

2.7.8 Performance Criteria

There is a difference between the quantitative and qualitative aspects of building performance. Many aspects of building performance are quantifiable, such as lighting, acoustics, temperature, humidity, and durability of materials. The qualitative aspects of buildings, such as aesthetics or visual compatibility with a building's surroundings are more difficult to evaluate. In the case of qualitative evaluation, the evaluator will

exercise judgment. In addition to the quantitative and qualitative differentiation, performance criteria need to be distinguished and understood in several other ways. In applying criteria, one needs to determine the criteria for both the current use of a building and its originally intended use. One needs to examine criteria selected by evaluators as experts. One needs to examine facility management criteria versus occupant-needed criteria.

2.8 Patients' Satisfaction

Whenever either the patient is pleased with services, then it is considered as satisfaction. Satisfaction may be a person's feelings of happiness or disappointment in result for comparing a product/service perceived performance or outcome with its expectation (Kotler& Keller, 2009, p. 789). Satisfaction can be derived as happiness achieved from the consumption of goods or services offered by a person or group of people. Sometimes it becomes very difficult to satisfy everyone or determine satisfaction among group of individuals because mostly people have different expectations and perceptions. Satisfaction is similar to the other psychological words that are easy to understand but difficult to explain. Satisfaction is not the phenomenon waiting to be measured by people but is a judgment of people from over a period of time as they reflect from their experience (Irish Society for Quality and Safety in Health Care, (ISQSHC) 2003, pp. 10).

A simple and practical definition of satisfaction would be the degree to which desired goals have been achieved. (Irish Society for Quality and Safety in Health Care, (ISQSHC) 2003, pp. 10).

Patient satisfaction has been defined as the patients' subjective evaluation of the cognitive-emotional reaction that results from the interaction of their expectations of ideal nursing care and their perception of actual nursing care (Risser, 1975; Eriksen, 1995; Johansson et al., 2002). Laschinger et al. (2011) argue that few studies have demonstrated empirical support for the concept of patient satisfaction. In fact, researchers have commented that patient satisfaction, being multi-dimensional in nature, has been measured in many different ways because there is no consensus on the domains to be included (Hall & Dorman, 1990; Chang, 1997; Sitzia& Wood, 1997; Merkouris et al., 1999). Patient satisfaction is nonetheless important to hospital administrators since it is the arbitrator between patient's perception of quality of care and his/her future intentions to reuse the service or recommend the service to others (Laschinger et al., 2011). Furthermore, perception of quality can be defined as a long-term attitude developed over time, whereas patient satisfaction can be defined as a short-term response to a specific experience. So unlike healthcare marketers, who are interested in a patient's future desire to recommend the healthcare provider to others (or to return themselves), Therefore, patient satisfaction can be treated as both an outcome measure (satisfaction with health status following treatment) and a process measure (satisfaction with the way in which care was delivered) (Coulter et al., 2009). As from the literature, we found that there is no exact definition of patientsatisfaction because it depends on several factors. The main problem is that some patients are satisfied with one factor while the others are not. However Linder-Pelz (1982, 580) suggest the definition of patient satisfaction through content analysis of the satisfaction studies in which five psychological variables were proposed to be probable determinant of satisfaction in health care services.

i. Occurrence: The outcomes of a result take place and importance of the individual perceiving what has been occurred.

ii. Value: Judgment of the quality perceived as good or bad or features of health care encounter is consider by the customer as “value”.

iii. Expectation: Patients belief that certain attributes might be attached to an object and judging importance of those attributes are the building blocks of satisfaction.

iv. Interpersonal comparisons: Evaluating of the individual experience of current health care encounter with what he/she has experienced previously.

v. Entitlement: The individual thinking that he has a solid and sound basis for claiming of particular result.

2.8.1 Factors Affecting Patient’s Satisfaction

1. Gender

Some researchers have found that men are more satisfied with their care than women (Lövgren et al., 1998; Johansson et al., 2002; Alhusban&Abualrub, 2009; Arnetz&Arnetz, 1996.), while others reported women to be more satisfied (Lövgren et al., 1998; O'Connell et al., 1999; Ahmad &Alasad, 2004; Chan &Chau, 2005; Alhusban&Abualrub, 2009). Still some studies reported that gender was not associated with satisfaction at all (Barbara et al., 1999); (Wallin et al., 2000; Liu & Wang, 2007). There is a lack of consensus on the association of patient satisfaction and gender.

2. Age

The age range of the patients attending hospitals can be wide (Sandovski et al., 2001). Although the literature revealed that the associations between patient satisfaction,

their education level, and length of stay were consistent, there are inconsistent results in regard to the association between patient satisfaction and age or gender. Age has been found to be significantly related to patient satisfaction (Johansson et al., 2002; Chan &Chau, 2005; Liu & Wang, 2007). Older patients were found more satisfied than younger patients (Mahon, 1996; O'Connell et al., 1999; Liu & Wang, 2007; Alhusban&Abualrub, 2009), while younger patients were found to have significantly lower satisfaction with hospital care (Hansagi et al., 1992; Sun et al., 2000; Sandovski et al., 2001). Other studies, however, reported that age was not associated with satisfaction (Barbara et al., 1999; Wallin et al., 2000; Ahmad &Alasad, 2004; Alhusban&Abualrub, 2009).

3. Waiting Time

People generally do not like to wait to see a clinician, and it is worse when they are anxious and uncomfortable (McMillan et al., 1986). The time spent by a patient waiting for health services can be psychologically painful because the patient has to give up more productive and rewarding activities. Some researchers have reported that customer satisfaction is inversely proportional to waiting time (Davis &Vollmann, 1990). They conducted a study in restaurants where they observed that waiting time was correlated to self-report of satisfaction. The researchers found that the longer a customer waited, the less satisfied he or she became with the service. Furthermore, the researchers also noted that other variables may moderate the relationship, such as the customer's prior experience, their expected waiting time, the situational context, the time of day, the day of the week, and the importance of time to the customer.

Some researchers argue that the perceptions regarding waiting times predict patient satisfaction but that actual waiting time does not (Thompson et al., 1996). Interestingly, patients in the emergency department who actually waited longer than expected were found to have significantly lower satisfaction scores than patients whose actual waiting times were the same or less than expected (Mowen et al., 1993). In other studies, long waiting times were not a significant predictor of patient satisfaction (Kurata et al., 1992; Monzon et al., 2005). Dansky and Miles (1997) examined the waiting times while in the waiting room in an emergency department, the waiting time in the treatment room, the waiting time to see the clinician, and the total time in an emergency department. Only the total time waiting to see the clinician was significant in the model of overall satisfaction with the urgent care department. This finding is similar to the finding of Sandovski et al. (2001) who reported a significant negative correlation between patient satisfaction and waiting time to examination by the emergency department physician. Dansky and Miles (1997) concluded that waiting time to see the clinician significantly predicted satisfaction with clinicians and therefore overall satisfaction in the urgent care department, but it did not predict satisfaction with staff. Emergency patients with trauma or life-threatening injuries are more satisfied than urgent and non-urgent patients. Since it is more likely that non-urgent patients will not be treated more quickly than trauma patients, hospitals have improved the waiting experience by ensuring the waiting area is close to refreshments, providing magazines and privacy, and advising them of the estimated waiting times (McMillan *et al.*, 1986).

2.8.2 Patients Satisfaction with Hospitals

Patients' satisfaction was defined as the result of matching one's expectation of healthcare services with actual experiences whether it is pleasant or disappointed. The

level of satisfaction will be low if the services do not meet what the patients have wished. However, the patients will show a high level of satisfaction if their expectations are met. In addition, patients will feel highly satisfied and delightful if services are even better than what they have expected (Swartz TA, Bowen DE, Brown SN, and Stephen; 1993). Many articles about patients' satisfaction suggested the following significant relationship:

1. Satisfaction is the result of perceiving service implementation against expectation.
2. Willingness to buy or come back to receive the same services is the effect of satisfaction.
3. Expecting and willingness to have services create alternatives for patients.

The more the patients are pleased, the greater the level of satisfaction will be (Swan, et al.; 1985). Government-operated public hospitals are to provide accessible,cost effective specialist services that are safe and respond to individual needs, with efficient health-care delivery regardless of geographic location. Public hospitals are usually large buildings that have significant impact on the environment and the economy of the surrounding community. The physical surroundings in hospitals constitute health problems in public health delivery (Dilani, 1999). Patients in a healthcare facility are often fearful and uncertain about their health, their safety, and their isolation from normal social relationships. The large and complex environment of a typical hospital further contributes to the stressful situation. While it is true that good patient care comes from dedicated individuals, it is equally true that the physical structures and hospital environment must be such that the safety and well-being of patients are protected. The performance of hospital buildings and their components depends to a large extent on continuousand planned periodical maintenance (Shohet, 2003). Maintenance is the art of controlling the rate at which structures deteriorate towards a state of unserviceability and collapse (Smith, 2003). Government-owned

hospitals are confronted with unique challenges that threaten their existence. Through an examination of the history, characteristics, and structure of public hospitals, it is found that such institutions by their nature lack the capacity to compete in a market-driven economy (Stolzenberg, 2002). This deficiency is further found to originate from the institution's inherent government structure, which promotes inefficiencies and inflexibility through the imposition of bureaucratic impediments to operational effectiveness. In Nigeria, according to Onifade (2003), installed health facilities are as old as the hospitals themselves. Some of the medical equipment are unserviceable and need outright replacement. The colonial architecture in some of the older hospitals, which were hitherto famous for their sturdiness and functionality, has now become less attractive because of the general neglect of building maintenance. Overcrowding has also led to deterioration of these facilities. Patients in a healthcare facility are often fearful, uncertain about their health and safety.

Smith (2003), stated that regardless of the location, size or budget, all hospital buildings should have certain common attributes: efficiency and cost-effectiveness, flexibility and expandability, therapeutic environment, cleanliness and sanitations, accessibility, controlled circulation, aesthetics, security, safety and sustainability. A functional design can promote skill, economy conveniences and comforts; a non-functional design can impede activities of all types, detract from quality of care, and raise costs to intolerable levels (Hardy and Lamner, 1996).

2.8.3 POE and Patient Satisfaction with Buildings

According to Baird (2001), Post-occupancy evaluation (POE) is defined as a generic term for a variety of general programs and procedures as well as specific techniques for the evaluation of existing buildings and facilities. It involves systematic evaluation of opinions about buildings in use, from the perspective of the people who use them.

It assesses how well buildings match users' needs, and identifies ways to improve building design, performance and fitness for purpose (Watson, 2003). POEs are intended to compare systematically and rigorously the actual performance of buildings with explicitly stated performance criteria. The difference between the two constitutes the evaluation. When used appropriately, it communicates the effectiveness of building systems between the facility's users and the facility's management.

Residential satisfaction is reflection of the degree to which the inhabitants feel about their housing to help them achieve their goals. It refers to individuals' evaluation of the conditions of their current residential environment, subject to their needs, expectations and achievements (Hui and Yu, 2009). According to Salleh (2008), theories on residential satisfaction are based on the notion that residential satisfaction is a measure of the difference between occupants' actual and desired housing and neighbourhood situations whose judgments are based on their needs and aspirations. Satisfaction with their residential conditions indicates the absence of complaints as their needs meet their aspirations. Contrariwise, they are likely to feel dissatisfied if their housing and neighbourhoods do not meet their residential needs and aspirations. In the expectancy-value model of attitude proposed by Rosenberg (cited in Francescato*et al*., 1989), evaluations were seen as strongly dependent upon people's expectations or beliefs that the evaluated object furthered or hindered the attainment of their goals. To be more specific, Morris and Winter (cited in Salleh, 2008) introduced the notion of ''housing deficit'' to conceptualize residential satisfaction. Their housing adjustment theory contends that if a house- hold's current housing meets the norms, the household is likely to express a high level of satisfaction with the housing and the neighbourhood. An incongruity between the actual housing

situation and housing norms results in a housing deficit which gives rise to residential dissatisfaction. Once their dissatisfaction with the current residence surpasses a certain level (the threshold level) they are likely to consider some form of housing adjustment (Salleh, 2008; Hui and Yu, 2009). The adjustment may be in the form of intention to relocate except for some socio-economic reasons.

Satisfaction as a process of evaluation between what was received and what was expected is the most widely adopted description of customer satisfaction in the current literature (Parker and Mathews, 2001). This strand of theory appears to have origins in the discrepancy theory (Porter cited in Parker and Mathews, 2001). Over the years, a number of authors have used some form of comparison to model satisfaction and early contributions include the contrast theory, which states that consumers would exaggerate any contrast between expectation and product evaluation (Parker and Mathews, 2001). The most well-known descendant of the discrepancy theory is the expectancy disconfirmation paradigm (Oliver, 1981), which states that, if performance exceeds expectations, customers will be positively disconfirmed (satisfied). On the other hand, if performance fails to meet expectations, customers will be negatively disconfirmed (dissatisfied). Customer expectations are formed on the basis of buyers' past buying experience, statements made by friends and associates as well as marketer and competitor information and promises (Kotler et al., 1996).

2.8.4 POE and Building Performance

Many organisations around the world are now adopting the POE as a tool for evaluating their building's performance. Implementing the use of POE in an organization will help to identify a measurable link between the quality of the building and the performance outcomes of the occupants. It is crucial to conduct a

POE because it indicates how well the building is performing in order to satisfy the occupants' needs and achieve organizational goals (Chandrasekar, 2011).

POE was initiated because of the challenges and changes in the building environment due to the fact that even continual improvement was not sufficient to solve the problems that occupants face every day. POE will then assess the responses of the occupants with regard to the residential environment where they live every day. The relationship between the building and its occupants must be understood by designers prior to designing the building in order to understand the impact that the building will have on the occupants with regard to workplace set-up, health and safety, etc. If the environment is not conducive to human health, it is going to have an effect on the efficiency of the building's performance and the occupants' satisfaction (Kamaruzzaman*et al.* 2010). It is important to conduct a POE in the residential building or any other building so that the results can be used to gauge the level of satisfaction of designers, occupants and owners of the building, and to determine whether the occupants are happy or not. As the purpose of the building is to serve the needs of the owners and it is critical that the building should be evaluated from time to time to ensure that it is serving its intended purposes. The building is an immovable asset, and it is affected by external factors such as exposure to the climate, which leads to the necessity for maintenance (Konara and Sandanayake, 2010).

2.9 Predominant Services Offered by General Hospitals

Services offered by the hospitals are majorly classified into two categories: the core and the support services. The core services are the dominant services offered by the

hospitals, they usually define the purpose of the hospital building. On the other hand, the support services aid the day to day running of the hospital or the core services. They include the following;

i. **Core services:** Polyclinic Services, Emergency Health Services, Biochemistry Laboratory Services, Microbiology Laboratory Services, Pathology Laboratory Services, Imaging Services, Endoscopy Services, Clinics, Operating Room Services, Intensive Care Services, New-born Intensive Care Services, Pharmacy Services, Sterilization Services, Transfusion Medicine Services, Oral and Dental Health Services, Physiotherapy Services, Dialysis Services, Childbirth Services, Psychiatry Services and Nuclear Medicine Services.

ii. **Support Services:** Patient File and Archive Services, Kitchen Services, Laundry Services and Morgue Services.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

According to Saunders *et al*. (2003), the choice of research method influences the way in which the researcher collects data. Given the scale and complexity of the study, a number of methods are considered in order to capture the diversity of information and data across a number of sources (Saunders *et al.*, 2003).

The indicative type of post occupancy evaluation was used to assess data, analyse and make recommendations; this gives a quick snapshot of the project. The aim was to highlight major strengths and weaknesses. The value of this is to provide useful information quickly but also to form the basis of a more in-depth study. Primary and secondary data were collected for the study through a structured questionnaire. The purpose of employing this method was to describe the nature of a situation as it exists at the time of the study and to explore the causes of a particular phenomena and relevant literature were reviewed.

3.2 Population of the Study

Morenikeji (2006) defined population as “the total of the members constituting the target group defined by the objective of the study”. For the purpose of this study, the population comprised the three General Hospitals in the study area (Minna, Bida and Kontagora) in Niger State.

Table 3.1 shows the research population. It is difficult to ascertain the actual population for this study due to the unpredictable movement of patients in and out of hospitals. As such, fifty (50) questionnaires were distributed to each of the selected general hospitals in Niger state totalling one hundred and fifty (150) questionnairesfor the three selected general hospitals. From the fifty (50) questionnaires allocated to each hospital, twenty-five (50) were distributed to patients covering five departments (excluding administrative department).Based on the aforesaid, the population for this research was one hundred and fifty(150).

Table 3.1: Research Population

Departments	**Bida**	**Kontagora**	**Minna**	**Total**
Obsterics and Gynaecology	13	13	13	39
Emergency Outpatient	12	12	12	36
Special	13	13	13	39
Laboratory	5	5	5	15
Pharmacy	7	7	7	21
Total	**50**	**50**	**50**	**150**

Source: Field Survey 2017

3.3 Sampling Technique

Sampling technique is the approach used in selecting respondents that will participate in this research, in the case of this study, simple random sampling was used all through. Subset of individuals chosen from the population is referred to as simple random sample. Each individual is chosen randomly and entirely by chance, such that each individual has the same probability of being chosen.

In the collection of data for patients, simple random sampling technique was used to randomly select patients from each department excluding administrative department

to participate in the survey. To be eligible for the survey, patients were able to comprehend or understand English. They also had to be fever-free and have not taken thermoregulatory drugs in the last 4 hours. Further, patients had to be dressed in standard patient gown provided by the hospital without any other outer clothing or blankets covering the body. The patient gowns were of light material and assumed to be similar across the selected hospitals. Surveys were distributed by a research assistant during a daytime shift, and collected at the end of the survey. The same basic procedure for selecting patients was used in each of the three selected hospitals.

3.4 Sample Size

A sample size is a small proportion of a population selected for observation and analysis. 2 staged sampling was used to obtain the data for this study. In the first stage, Bida, Kontagora and Minna general hospitals were purposively selected from each of the senatorial district of Niger State because the 3 hospitals have the same source of funding. In the second stage 50 patients were randomly selected from each of the hospitals making a total of 150 patients. However, only 143 patients returned the questionnaires making a return rate of 95.3%.

3.5 Questionnaire Design and Response

A well-structured questionnaire was distributed in order to achieve the objectives of this study. The questionnaire was used to elicit information on patients' socio-demographic characteristics, relevant services offered by the general hospitals and level of satisfaction of patients in the hospital buildings.

3.6 Data Analysis Techniques

The data obtained were processed using the following statistical tools;

i. **Descriptive Statistics:** descriptive statistics such as mean, frequency count, percentages were used to describe the patients' socio-demographic factors,

relevant services offered by the general hospitals and the level of satisfaction of patients with services rendered.

ii. **Likert Scale:** A 5- point likertscale of 5 = strongly satisfied, 4= satisfied 3= neutral, 2= dissatisfied and 1 = strongly dissatisfied was used to determine the level of satisfaction of patients in hospital buildings. The mean score was obtained.

Decision rule:

≤ 2.9 = dissatisfied

3 = indifferent

≥3.1= satisfied

iii. **Tobit Regression Analysis:** The Tobit regression was used to determine the factors that influenced patients satisfaction with hospital buildings and the model is specified as;

$$y_i = \beta_{0+}\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + e_i$$

where;

y_i = satisfaction score

$X_1 = \text{sex}$

$X_2 = \text{age}$

$X_3 = \text{years of education}$ $X_4 = \text{duration of stay in the hospital (number of days)}$

$X_5 = \text{patients in general ward}$

$X_6 = \text{patients in private ward}$

$X_7 = \text{patients in Bida}$

$X_8 = \text{patients in Kontagora}$

3.7 Relative Importance Index (RII)

Relative importance index was used in the study to rank the factors that affect partnership.

Relative Importance Index (RII) $= \frac{\sum fx}{\sum f} \times \frac{1}{k}$

Where,

$\sum fx$ = is the total weight given to each attributes by the respondents.

$\sum f$ = is the total number or respondents in the sample.

K = is the highest weight on the likert scale.

Ranking of the items under consideration was based on their RII values. The item with the highest RII value is ranked first (1) the next (2) and so on.The rating of all the factors for degree of significance was based on the value of their respective relative importance index (RII).

3.8Study Area

The study area covers Niger State, (from which three general hospitals were chosen for the study), general hospital, Minna, general hospital, Bida and general hospital, Kontagora. These towns are from different senatorial districts but they have similar backgrounds. The general hospitals have six departments and twenty-six units and they include;

1. **Administrative department**

   i. Hospital record unit.

   ii. Account unit.

   iii. Social welfare unit.

   iv. Maintenance unit.

2. **Obstetrics and Gynaecology department**

   i. Antenatal unit.

   ii. Postnatal unit.

   iii. Gynaecology unit

   iv. Labour unit.

3. **Emergency Outpatient Department**

i. Paediatric outpatient department

ii. General outpatient department

iii. Medical outpatient department

iv. Surgical outpatient department

v. National health insurance scheme

4. Special Department

i. Dental unit

ii. Eye unit.

iii. Ear, nose and throat

iv. physiotherapy

v. Scanning and x-ray.

vi. Theatre.

5. Laboratory Department

i. Haematology unit.

ii. Chemical pathology unit.

6. Pharmacy department

i. Pharmacy unit

CHAPTER FOUR

4.0 DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 Data Presentation and Analysis

This part of the study deals with the presentation and interpretation of data obtained from the field survey, analysis of the data and discussion of findings as they relate to the objectives of the study.

4.2 Questionnaire Design and Response

A well-structured questionnaire was distributed in order to achieve the objectives of this study. The questionnaires were one-hundred and fifty (150) and were administered to the respondents However, not all the questionnaires administered were returned as shown in the table.

Table 4.1: Breakdown of Administered Questionnaires

	Minna	Bida	Kontagora	Total
No. Distributed	50	50	50	150
No. properly filled and returned	50	45	48	143
Percentage response	100	90	96	95.3

4.3 Social Demographic Characteristics of Patients

The results of Section A of the questionnaire on respondent's demographic information which included gender, age, occupation, admission status, and educational qualification of respondents, are presented in the Figures.

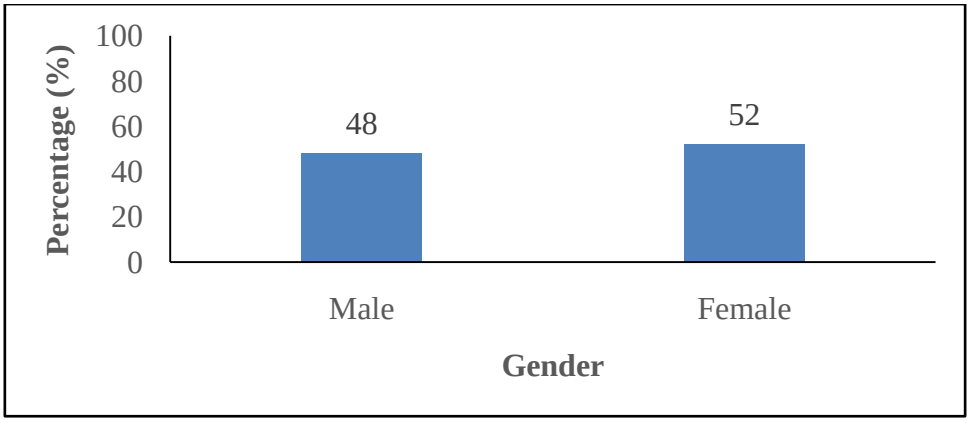


Figure 4.1: Gender of Respondents
Source: Field Survey (2017)

Figure 4.1 shows the gender of respondent's distribution. 48% were females while 52% were male patients. Majority were female which is significantly different from male respondent. This implied that female access healthcare more, either for medical advice or treatment of children illnesses.

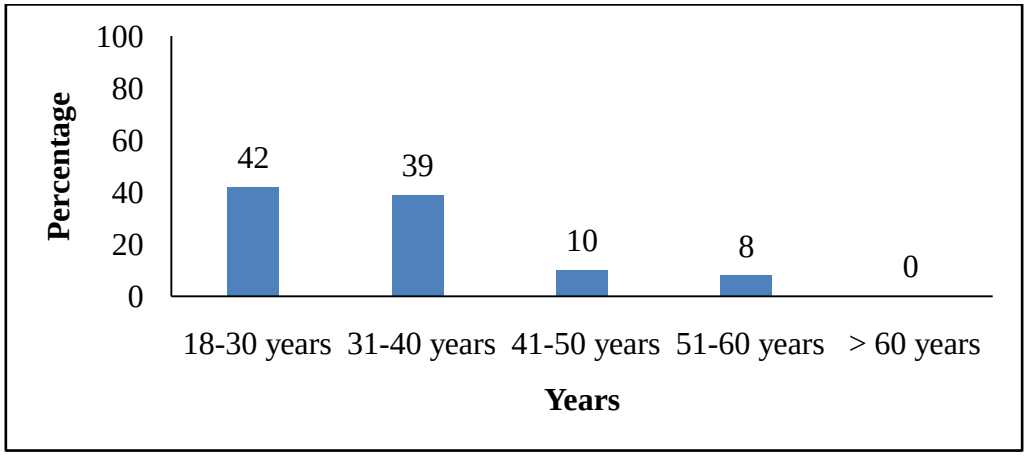


Figure 4.2: Age of Respondents
Source: Field Survey (2017)

Figure 4.2 shows the distribution of age of respondents. 42% of the respondents were within the ages of 18 – 30 years. 39% of the respondents were from the ages of 31 – 40 years, followed by 41 – 50 years. Only 8% of the respondents were within the ages of 51 – 60 years, while 0% of the respondents were above 60 years old. This indicates that every age group were represented with the most functional age (18-30 years) dominating the respondents.

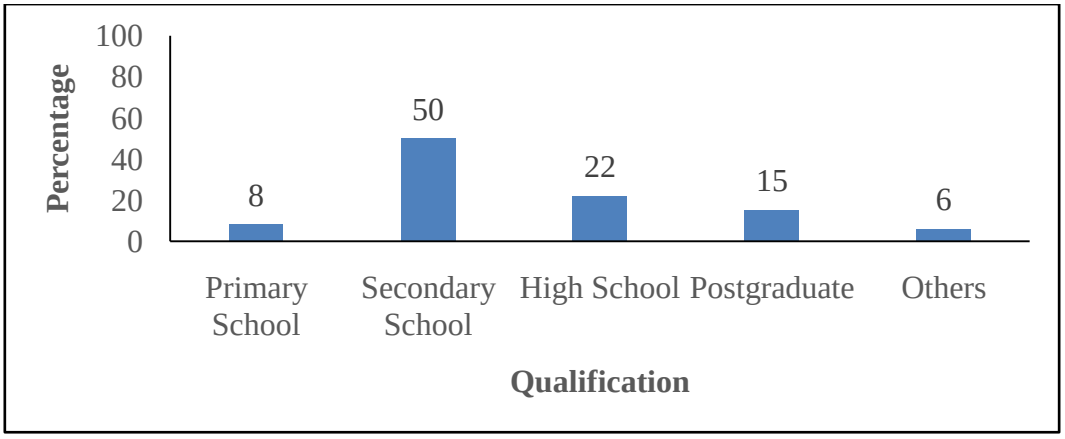


Figure 4.3: Educational Qualification of Respondents
Source: Field Survey (2017)

Figure 4.3 revealed that majority of the respondents were secondary school leavers with a percentage of of 50.0%, followed by high school leavers with 22.0%, 15% were post graduate holders and 8% were primary school certificate holders. Only 6% of the respondents had other educational qualification. This inferred that the respondents were knowledgeable enough to give reliable response.

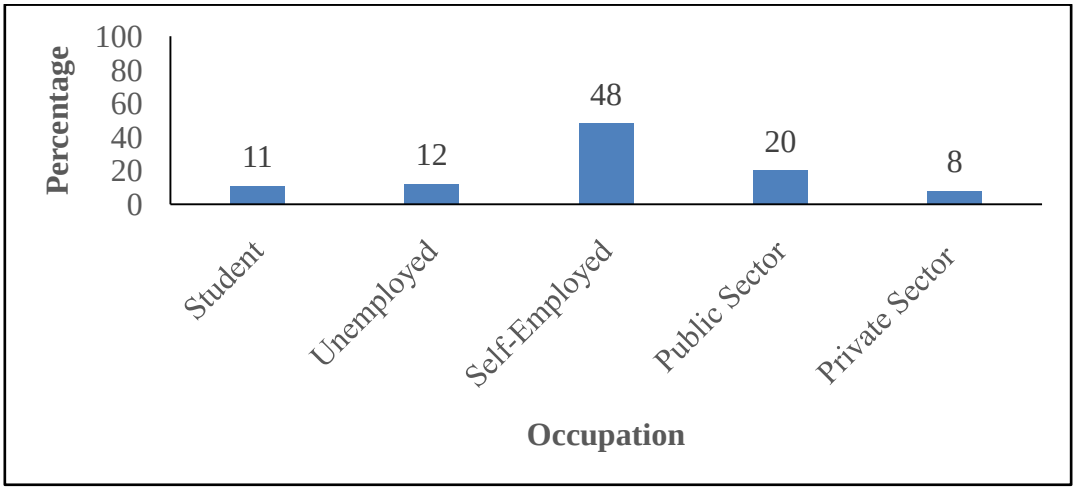


Figure 4.4: Occupation of Respondents
Source: Field Survey (2017)

Figure 4.4revealed that majority of the respondents were self – employed with a percentage of 48.0. Next in line were public sector, unemployed, student and private sector with percentage of 20.0, 12.0, 11.0 and 8.0 respectively. This result inferred that most of the patients that use General Hospitals in Niger State are self – employed.

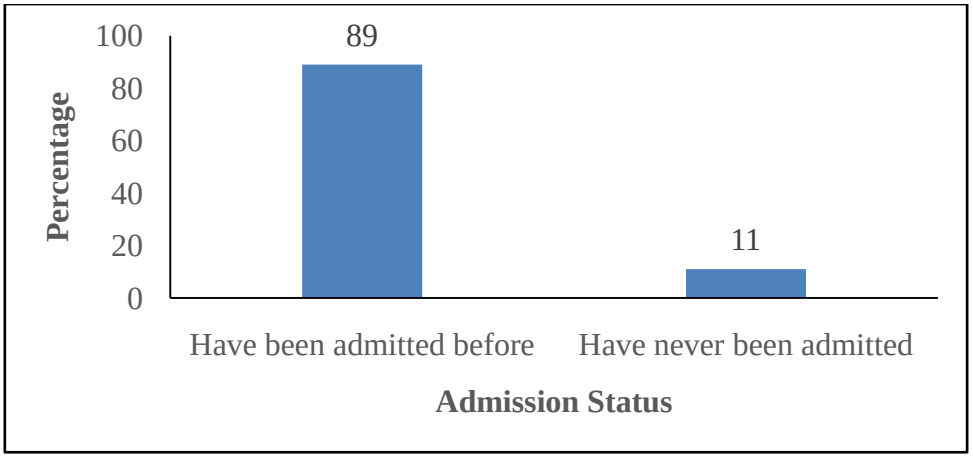


Figure 4.5: Admission Status of Respondents
Source: Field Survey (2017)

Figure 4.5 shows the admission status of the respondents; majority of the respondents have been admitted before into the General Hospital in Niger State with a percentage of 89.0 while 11% have never been admitted to the General Hospital in Niger State. This result inferred that reliable information can be obtained from the respondents.

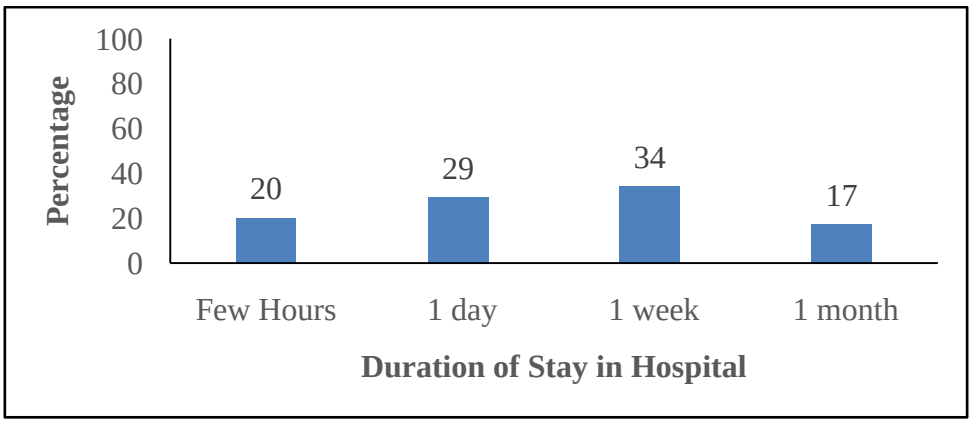


Figure 4.6: Duration of Stay in Hospital
Source: Field Survey (2017)

Figure 4.6 revealed that majority of the respondents have spent 1 week in the hospital with a percentage of 34.0. Next in line were respondent who have spent1 day, few hours and 1 month with percentage of 29.0, 20.0 and 17.0 respectively. This result inferred that most of the patients that use General Hospitals in Niger State have spent 1 week.

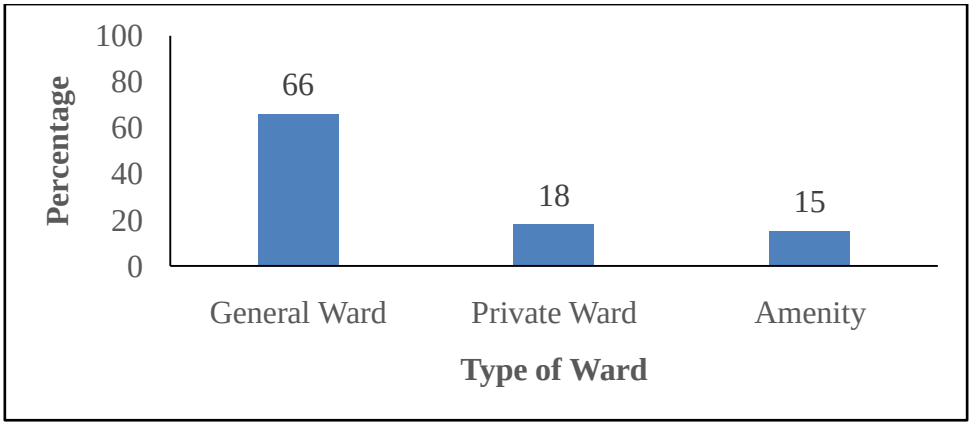


Figure 4.7: Type of Ward
Source: Field Survey (2017)

Figure 4.7 shows the type of ward the respondents were admitted to, many of the respondents have been admitted to the General ward with a percentage of 66.0. Next in line were respondent who have been admitted into the Private ward and Amenity with 18% and 15% respectively.

4.4 Type of Predominant Services Offered by the General Hospitals

Table 4.2 shows the type of predominant services offered by the hospitals the study identified two major categories of services: the core and the support services. The core services were the dominant services offered by the hospitals. They usually define the purpose of the hospital building. On the other hand, the support services aid the day to day running of the hospital or the core services.

Table 4.2: Type of Predominant Services Offered by The General Hospital That Depends On Buildings

Services	Bida		Kontagora		Minna		Pooled	
	Yes	No	Yes	No	Yes	No	Yes	No
Polyclinic Services	36(80.0%)	9(20.0%)	35(72.9%)	13(27.1%)	34(68.0%)	16(32.0%)	105(73.4%)	38(26.6%)
Emergency Health Services	37(82.2%)	8(17.8%)	40(83.3%)	8(16.7%)	39(78.0%)	11(22%)	116(81.1%)	27(18.9%)
Biochemistry Laboratory Services	39(86.7%)	6(13.3%)	40(83.3%)	8(16.7%)	41(82.0%)	18(9.0%)	120(83.9%)	23(16.1%)
Microbiology Laboratory Services	42(93.3%)	3(6.7%)	41(85.4%)	7(14.6%)	41(82.0%)	9(18.0%)	124(86.7%)	19(13.3%)
Pathology Laboratory Services	39(86.7%)	6(13.3%)	38(79.2%)	10(20.8%)	38(76.0%)	12(24.0%)	115(80.4%)	28(19.6%)
Imaging Services	36(80.0%)	9(20.0%)	39(81.3%)	9(18.8%)	42(84.0%)	8(16.0%)	117(81.8%)	26(18.2%)
Endoscopy Services	37(82.2%)	8(17.8%)	40(83.3%)	8(16.7%)	40(80.0%)	10(20.0%)	117(81.8%)	26(18.2%)
Clinics	38(84.4%)	7(15.6%)	36(75.0%)	12(25.0%)	41(82.0%)	9(18.0%)	115(80.4%)	28(19.6%)
Operating Room Services	38(84.4%)	7(15.6%)	39(81.3%)	9(18.8%)	42(84.0%)	8(16.0%)	119(83.2%)	24(16.8%)
Intensive Care Services	38(84.4%)	7(15.6%)	39(81.3%)	9(18.8%)	41(82.0%)	9(18.0%)	118(82.5%)	25(17.5%)
New-born Intensive Care Services	35(77.8%)	10(22.2%)	42(87.5%)	6(12.5%)	40(80.0%)	10(20.0%)	117(81.8%)	26(18.2%)
Pharmacy Services	40(88.9%)	5(11.1%)	41(85.4%)	7(14.6%)	41(82.0%)	9(18.0%)	122(85.3%)	21(14.7%)
Transfusion Medicine Services	41(91.1%)	4(8.9%)	39(81.3%)	9(18.8%)	38(76.0%)	12(24.0%)	118(82.5%)	25(17.5%)
Oral and Dental Health Services	41(91.1%)	4(8.9%)	39(81.3%)	9(18.8%)	42(84.0%)	8(16.0%)	122(85.3%)	21(14.7%)
Physiotherapy Services	37(82.2%)	8(17.8%)	36(75.0%)	12(25.0%)	37(74.0%)	13(26.0%)	110(76.9%)	33(23.1%)
Dialysis Services	39(86.7%)	6(13.3%)	36(75.0%)	12(25.0%0	39(78.0%)	11(22.0%)	114(79.7%)	29(20.3%)
Childbirth Services	40(88.9%)	5(11.1%)	40(83.3%)	8(16.7%)	43(86.0%)	7(14.0%)	123(86.0%)	20(14.0%)
Psychiatry Services	40(88.9%)	5(11.1%)	39(81.3%)	9(18.8%)	40(80.0%)	10(20.0%)	119(83.2%)	24(16.8%)
Nuclear Medicine Services	38(34.4%)	7(15.6%)	35(72.9%)	13(27.1%)	36(72.0%)	14(28.0%)	109(76.2%)	34(23.8%)
Patient File and Archive Services	39(86.7%)	6(13.3%)	35(72.9%)	13(27.1%)	33(66.0%)	17(34.0%)	107(74.8%)	36(25.2%)
Kitchen Services	39(86.7%)	6(13.3%)	30(62.5%)	18(37.5%)	31(62.0%)	19(38.0%)	100(69.9%)	43(30.1%)
Laundry Services	33(73.3%)	12(26.7%)	29(60.4%)	19(39.6%)	30(60.0%)	20(40.0%)	92(64.3%)	51(35.7%)
Morgue Services	39(86.0%)	6(13.3%)	38(79.2%)	10(20.8%)	38(76.0%)	12(24.0%)	115(80.4%)	28(19.6%)

Source: Field Survey 2017

The results on table 4.2 showed that microbiology services were the most (86.7%) relevant services offered in the study area. As reported by 93.3%, 85.4% and 82.0% of patients in Bida, Kontagora and Minna general hospital respectively. This could be because most patients in the hospital must undergo test before diagnosis and drug prescriptions. Also, Pharmacy services appeared to be one of the relevant services identified as indicated by 88.9%, 85.4% and 82.0% of Bida, Kontagora and Minna patients respectively. The reason is not far-fetched because most times, patients prefer to purchase their drugs in the hospital pharmacy because it is cheaper and the genuityof the drugs is assured.

Another relevant service was the Childbirth services, 86.0% of the patients identified it as a relevant service. In this era of high mother and infant mortality rate, most women prefer to utilize general hospital facilities compared to other private facilities. The laundry service was the activity with the lowest relevance. This could be because, most patients do not use the laundry service directly except for some patients who are on admission and the service is mostly used by new caregivers.These results are in line with the findings of Pritam and Mukta, (2012) who concluded that hospitals today have evolved as advanced centre for delivering healthcare services- diagnostics and research, recovery and preventive health facilities. The results also support the findings of Gupta and Kant (2004) who stated that hospital setting is a blend of science and a coordination of human skills in the performance of healing processes. Therefore, hospital development must be in response to the healthcare demands of the users. These include microbiology lab services, childbirth services, pharmacy services and so forth. Moreover, the study also corroborates the findings of Hospital Consultants (2002) who regarded hospitals as a complex social institution, composed of many groups representing a wide variety of interests and diverse needs that utilize

the services of various medical, paramedical and support personnel to render all needed healthcare to the patients in its custody.

Table 4.3: Satisfaction of the Patients with the General Setting of Administrative Department Building in Minna General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII
		1	2	3	4	5				
1	Circulation space	0	0	9	1	0	10	3.1	0.32	0.62
2	Furniture arrangement	0	0	9	1	0	10	3.1	0.32	0.62
3	Conversation privacy	0	1	9	0	0	10	2.9	0.32	0.58
4	Cooling system(AC)	0	2	8	0	0	10	2.8	0.42	0.56
5	Cleanliness of external environment	0	2	8	0	0	10	2.8	0.42	0.56
6	Artificial lighting	0	1	8	1	0	10	3	0.47	0.6
7	Quality of bed/lining	0	1	8	1	0	10	3	0.47	0.6
8	Acoustic privacy	0	1	8	1	0	10	3	0.47	0.6
9	No. of patients per room	0	1	8	1	0	10	3	0.47	0.6
10	No. Of patients	0	0	7	3	0	10	3.3	0.48	0.66
11	Thermal comfort	0	3	7	0	0	10	2.7	0.48	0.54
12	Circulation space	0	3	7	0	0	10	2.7	0.48	0.54
13	Visual privacy	0	3	7	0	0	10	2.7	0.48	0.54
14	Archiving and storage	0	3	7	0	0	10	2.7	0.48	0.52
15	Spatial comfort	0	1	7	2	0	10	3.1	0.57	0.62
16	Location of room	0	1	7	2	0	10	3.1	0.57	0.62
17	Service quality	0	2	7	1	0	10	2.9	0.57	0.58
18	Level of waste disposal	0	2	7	1	0	10	2.9	0.57	0.58
19	Traffic within ward	0	1	6	3	0	10	3.2	0.63	0.64
20	Natural lighting	0	3	6	1	0	10	2.8	0.63	0.56
21	External lighting	0	3	6	1	0	10	2.8	0.63	0.56
22	Cleanliness of bathroom	0	3	6	1	0	10	2.8	0.63	0.56
23	Pedestrian walkway traffic control	0	2	6	2	0	10	3	0.67	0.6
24	Ease of direction	1	2	7	0	0	10	2.6	0.7	0.52
25	Amount of space available for fixtures	0	1	8	0	1	10	3.1	0.74	0.6
26	Appearance of the building	1	0	8	1	0	10	2.9	0.74	0.56
27	Ward fixtures and fittings	0	1	6	2	1	10	3.3	0.82	0.66

28	Car parking lot	0	3	4	3	0	10	3	0.82	0.6
29	Design of building	0	3	4	3	0	10	3	0.82	0.58
30	Colours / painting on walls	0	3	4	3	0	10	3	0.82	0.58
31	Signs of direction	0	5	3	2	0	10	2.7	0.82	0.54
32	Type of materials used in construction	1	3	3	3	0	10	2.8	1.03	0.54
33	Cleanliness of area provided to eat	1	1	6	1	1	10	3	1.05	0.6

Source: Field Survey 2017

Table 4.3shows 33factors which was ranked by respondents to assess the satisfaction of patients using the administrative department building in general hospital Minna. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.60 and 0.52. These important factors ranged from Number of patientswhich is the highest ranked (0.60) to Ease of direction which is the least ranked (0.52).

These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and car parking lots as the factors constituting end-users' satisfaction in buildings. The finding also supports Pritam and Mukta (2012) who believe that visual comfort in hospital wards has a positive preference to certain light quality and illumination levels in patients for visual comfort. Moreover, Aigbavboa and Thwala (2013) identified design of buildings and colours as one of the physical and social factors which influenced the occupants' satisfaction in buildings. The result also corroboratesAnjali (2006) andChoi, Beltran and Kim (2012) who concludes that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation.

Table 4.4: Satisfaction of the Patients with The General Setting of Obstetrics Department Building in Minna General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII
		1	2	3	4	5				
1	Colours/painting on walls	0	1	8	1	0	10	3.00	0.47	0.60
2	Appearance of the building	0	2	7	1	0	10	2.90	0.57	0.58
3	Service quality	1	2	5	2	0	10	2.80	0.92	0.56
4	Traffic within ward	1	4	1	4	0	10	2.80	1.14	0.56
5	Artificial lighting	1	3	4	1	1	10	2.80	1.14	0.56
6	Design of building	0	3	6	1	0	10	2.80	0.63	0.56
7	Ward fixtures and fittings	0	3	6	1	0	10	2.80	0.63	0.56
8	Furniture arrangement	0	3	6	1	0	10	2.80	0.63	0.56
9	Cleanliness of external environment	0	4	5	1	0	10	2.70	0.67	0.54
10	No. of patients per room	1	2	6	1	0	10	2.70	0.82	0.54
11	Ease of direction	1	3	4	2	0	10	2.70	0.95	0.54
12	Circulation space	1	3	4	2	0	10	2.70	0.95	0.54
13	Cooling system(AC)	0	6	2	2	0	10	2.60	0.84	0.52
14	Natural lighting	1	3	5	1	0	10	2.60	0.84	0.52
15	Cleanliness of area provided to eat	1	3	5	1	0	10	2.60	0.84	0.52
16	Circulation space	2	3	3	2	0	10	2.50	1.08	0.50
17	Car parking lot	3	1	5	0	1	10	2.50	1.27	0.50
18	Quality of bed/lining	0	6	3	1	0	10	2.50	0.71	0.50
19	Level of waste disposal	1	5	3	0	1	10	2.50	1.08	0.50
20	Location of room	1	4	4	1	0	10	2.50	0.85	0.50
21	Conversation privacy	1	4	4	1	0	10	2.50	0.85	0.50
22	Type of materials used in construction	1	4	4	1	0	10	2.50	0.85	0.50
23	Thermal comfort	3	1	5	1	0	10	2.40	1.07	0.48
24	No. Of patients	1	4	5	0	0	10	2.40	0.70	0.48
25	Acoustic privacy	1	5	3	1	0	10	2.40	0.84	0.48
26	Amount of space available for fixtures	0	7	2	1	0	10	2.40	0.70	0.48
27	Cleanliness of bathroom	1	5	4	0	0	10	2.30	0.67	0.46
28	Archiving and storage	0	7	3	0	0	10	2.30	0.48	0.46
29	Pedestrian walkway traffic control	2	4	4	0	0	10	2.20	0.79	0.44
30	External lighting	1	6	3	0	0	10	2.20	0.63	0.44
31	Spatial comfort	3	3	4	0	0	10	2.10	0.88	0.42
32	Visual privacy	2	5	3	0	0	10	2.10	0.74	0.42
33	Signs of direction	2	5	3	0	0	10	2.10	0.74	0.42

Source: Field Survey 2017

Table 4.4shows 33factors which were ranked by respondents to assess the satisfaction of patients using the obstetrics department building in Minna general hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.60 and 0.42. These important factors ranged from Colours/painting on walls which is the highest ranked (0.60) to Spatial comfort, Visual privacy and Signs of direction which are the least ranked (0.42).

The result ‘colours/painting on walls’ was visible from the visit made to the obstetrics department building of Minna general hospital that the patients are satisfied with the general painting and its colours of the building. These results corroborateAigbavboa and Thwala (2013) who identified design of buildings and colours as one of the physical and social factors which influenced the occupants’ satisfaction in buildings. These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and car parking lots as the factors constituting end-users’ satisfaction in buildings. The result is also in line with the findings of Dahlan et al. (2009) who identified thermal comfort in Malaysian on-campus housing rooms as one of keys of satisfaction in buildings. Also, theWorld Health Organization (2004) identified the indoor air quality as an issue that poses threats to the health of the residents (WHO 2004).

Table 4.5: Satisfaction of The Patients with The General Setting of Emergency Department Building in Minna General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Natural lighting	0	1	2	6	0	9	3.56	0.73	0.71	1
2	Cleanliness of bathroom	0	0	5	4	0	9	3.44	0.53	0.69	2
3	No. Of patients	1	1	4	4	0	9	3.33	0.71	0.69	2
4	Service quality	1	0	8	0	1	9	3.22	0.67	0.67	3
5	Circulation space	1	1	6	1	1	9	3.22	0.83	0.67	3
6	Design of building	2	2	5	1	1	9	3.11	0.93	0.67	3
7	Cooling system(AC)	1	0	8	1	0	9	3.11	0.33	0.64	4
8	External lighting	0	1	5	3	0	9	3.22	0.67	0.64	4
9	Quality of bed/lining	0	1	5	3	0	9	3.22	0.67	0.64	4
10	Level of waste disposal	1	1	6	2	0	9	3.11	0.60	0.64	4
11	Spatial comfort	0	0	8	1	0	9	3.11	0.33	0.62	5
12	Cleanliness of external environment	1	1	7	1	0	9	3.11	0.50	0.62	5
13	Location of room	0	0	8	1	0	9	3.11	0.33	0.62	5
14	Ease of direction	0	4	1	3	1	9	3.11	1.17	0.62	5
15	Type of materials used in construction	0	2	5	1	1	9	3.11	0.93	0.62	5
16	Traffic within ward	0	0	9	0	0	9	3.00	0.00	0.60	6
17	Signs of direction	0	4	2	2	1	9	3.00	1.12	0.60	6
18	Appearance of the building	1	3	4	2	0	9	2.89	0.78	0.60	6
19	Car parking lot	0	4	2	3	0	9	2.89	0.93	0.58	7
20	Artificial lighting	0	3	4	2	0	9	2.89	0.78	0.58	7
21	Cleanliness of area provided to eat	1	2	7	0	0	9	2.78	0.44	0.58	7
22	Colours/painting on walls	1	2	7	0	0	9	2.78	0.44	0.58	7
23	Ward fixtures and fittings	0	2	6	1	0	9	2.89	0.60	0.58	7
24	Furniture arrangement	0	2	6	1	0	9	2.89	0.60	0.58	7
25	Amount of space available for fixtures	0	2	6	1	0	9	2.89	0.60	0.58	7
26	Thermal comfort	0	2	7	0	0	9	2.78	0.44	0.56	8
27	No. of patients per room	1	5	2	2	0	9	2.67	0.87	0.56	8
28	Circulation space	0	3	5	1	0	9	2.78	0.67	0.56	8
29	Archiving and storage	0	5	1	3	0	9	2.78	0.97	0.56	8
30	Acoustic privacy	0	4	4	1	0	9	2.67	0.71	0.53	9
31	Conversation privacy	0	5	3	0	1	9	2.67	1.00	0.53	9
32	Visual privacy	0	5	2	2	0	9	2.67	0.87	0.53	9
33	Pedestrian walkway traffic control	0	8	1	0	0	9	2.11	0.33	0.42	10

Source: Field Survey 2017

Table 4.5 shows 33factors which was ranked by respondents to assess the satisfaction of patients using the emergency department building in Minna general hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.71 and 0.42. These important factors ranged from Natural lightingwhich is the highest ranked (0.71) to Pedestrian walkway traffic control which is the least ranked (0.42). It can be inferred that patients are fairly satisfied with the emergency department building of Minna general hospital. The result of this study is in line with the findings of Olumide and Ayobami (2006) that sufficient air circulation and lighting within the hospital environment contributes to reduction in the rate of infectious disease. Also, the result corroborates the findings ofSarhan et al. (2014) who reported the impact of daylight on patients' outcome that higher level of light exposures compared to lower levels is effective in reducing depression in patients.

Table 4.6: Satisfaction of the Patients with the General Setting of Laboratory Department Building in Minna General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Car parking lot	0	0	3	4	1	8	3.75	0.71	0.75	1
2	Artificial lighting	0	1	1	5	1	8	3.75	0.89	0.75	1
3	Pedestrian walkway traffic control	0	0	5	1	2	8	3.63	0.92	0.73	2
4	External lighting	0	1	2	4	1	8	3.63	0.92	0.73	2
5	Quality of bed/lining	0	0	4	3	1	8	3.63	0.74	0.73	2
6	Amount of space available for fixtures	0	0	3	5	0	8	3.63	0.52	0.73	2
7	Traffic within ward	0	0	4	4	0	8	3.50	0.53	0.70	3
8	Location of room	0	0	5	2	1	8	3.50	0.76	0.70	3
9	Circulation space	0	0	4	4	0	8	3.50	0.53	0.70	3
10	Furniture arrangement	0	1	2	5	0	8	3.50	0.76	0.70	3
11	Natural lighting	0	0	6	1	1	8	3.38	0.74	0.68	4
12	Cleanliness of bathroom	0	2	2	3	1	8	3.38	1.06	0.68	4
13	Ward fixtures and fittings	0	1	3	4	0	8	3.38	0.74	0.68	4
14	Cooling system(AC)	1	0	4	2	1	8	3.25	1.16	0.65	5
15	Spatial comfort	0	1	4	3	0	8	3.25	0.71	0.65	5
16	Acoustic privacy	0	0	6	2	0	8	3.25	0.46	0.65	5
17	Visual privacy	0	2	3	2	1	8	3.25	1.04	0.65	5
18	Ease of direction	0	0	7	0	1	8	3.25	0.71	0.65	5
19	Colours/painting on walls	1	0	4	2	1	8	3.25	1.16	0.65	5
20	Service quality	1	1	3	2	1	8	3.13	1.25	0.63	6
21	Thermal comfort	0	1	5	2	0	8	3.13	0.64	0.63	6
22	Circulation space	1	0	5	1	1	8	3.13	1.13	0.63	6
23	Cleanliness of area provided to eat	1	0	4	3	0	8	3.13	0.99	0.63	6
24	Signs of direction	0	1	6	0	1	8	3.13	0.83	0.63	6
25	Type of materials used in construction	0	2	3	3	0	8	3.13	0.83	0.63	6
26	Appearance of the building	1	1	2	4	0	8	3.13	1.13	0.63	6
27	Archiving and storage	0	2	3	3	0	8	3.13	0.83	0.63	6
28	No. Of patients	1	1	3	3	0	8	3.00	1.07	0.60	7
29	Conversation privacy	0	1	6	1	0	8	3.00	0.53	0.60	7
30	Cleanliness of external environment	2	0	3	3	0	8	2.88	1.25	0.58	8
31	Level of waste disposal	1	1	5	0	1	8	2.88	1.13	0.58	8
32	No. of patients per room	1	1	5	0	1	8	2.88	1.13	0.58	8
33	Design of building	2	0	3	3	0	8	2.88	1.25	0.58	8

Source: Field Survey 2017

Table 4.6shows 33factors which was ranked by respondents to assess the satisfaction of patients using the laboratory department building in Minna general hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.75 and 0.58. These important factors ranged from Car parking lot and Artificial lighting which are the highest ranked (0.75) toCleanliness of external environment, Level of waste disposal, No. of patients per room and Design of buildingwhich were the least ranked (0.58). This result shows that patients are fairly satisfied with the laboratory department building of Minna general hospital. These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of car parking lots as afactor constituting end-users' satisfaction in buildings. Also, the World Health Organization (2004) identified the indoor air quality as an issue that poses threats to the health of the residents (WHO, 2004).

Table 4.7: Satisfaction of The Patients with The General Setting of Special Department Building in Minna General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Pedestrian walkway traffic control	0	0	1	5	0	6	3.83	0.41	0.77	1
2	Artificial lighting	0	0	1	5	0	6	3.83	0.41	0.77	1
3	Natural lighting	0	0	1	5	0	6	3.83	0.41	0.77	1
4	External lighting	0	0	1	5	0	6	3.83	0.41	0.77	1
5	Appearance of the building	0	0	1	5	0	6	3.83	0.41	0.77	1
6	Spatial comfort	0	0	2	4	0	6	3.67	0.52	0.73	2
7	Service quality	0	0	2	4	0	6	3.67	0.52	0.73	2
8	Circulation space	0	0	2	4	0	6	3.67	0.52	0.73	2
9	Traffic within ward	0	0	2	4	0	6	3.67	0.52	0.73	2
10	Car parking lot	0	0	2	4	0	6	3.67	0.52	0.73	2
11	Type of materials used in construction	0	0	2	4	0	6	3.67	0.52	0.73	2
12	Design of building	0	0	2	4	0	6	3.67	0.52	0.73	2
13	Amount of space available for fixtures	0	0	2	4	0	6	3.67	0.52	0.73	2
14	Archiving and storage	0	0	2	4	0	6	3.67	0.52	0.73	2
15	Thermal comfort	0	0	3	3	0	6	3.50	0.55	0.70	3
16	Ward fixtures and fittings	0	0	3	3	0	6	3.50	0.55	0.70	3
17	Furniture arrangement	0	0	3	3	0	6	3.50	0.55	0.70	3
18	Circulation space	0	1	1	4	0	6	3.50	0.84	0.70	3
19	Cooling system(AC)	0	1	2	3	0	6	3.33	0.82	0.67	4
20	No. Of patients	0	1	2	3	0	6	3.33	0.82	0.67	4
21	Signs of direction	0	1	2	3	0	6	3.33	0.82	0.67	4
22	Ease of direction	0	1	2	3	0	6	3.33	0.82	0.67	4
23	Colours/painting on walls	0	1	2	3	0	6	3.33	0.82	0.67	4
24	Level of waste disposal	0	1	3	2	0	6	3.17	0.75	0.63	5
25	Location of room	0	1	3	2	0	6	3.17	0.75	0.63	5
26	Acoustic privacy	0	1	3	2	0	6	3.17	0.75	0.63	5
27	No. of patients per room	0	1	3	2	0	6	3.17	0.75	0.63	5
28	Conversation privacy	0	1	3	2	0	6	3.17	0.75	0.63	5
29	Visual privacy	0	1	3	2	0	6	3.17	0.75	0.63	5
30	Quality of bed/lining	0	1	4	1	0	6	3.00	0.63	0.60	6
31	Cleanliness of bathroom	0	1	4	1	0	6	3.00	0.63	0.60	6
32	Cleanliness of external environment	0	1	4	1	0	6	3.00	0.63	0.60	6
33	Cleanliness of area provided to eat	0	1	4	1	0	6	3.00	0.63	0.60	6

Source: Field Survey 2017

Table 4.7shows 33factors which were ranked by respondents to assess the satisfaction of patients using the special department building in Minna general hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.77 and 0.60. These important factors range from Pedestrian walkway traffic control, Artificial lighting, Natural lighting and External lighting which were the highest ranked (0.77) to Quality of bed/lining, Cleanliness of bathroom, Cleanliness of external environment and Cleanliness of area providedto eatwhichwere the least ranked (0.60).

It can be deduced that patients are very satisfied with the special department building of Minna General Hospital. The result above agrees with the assertions of Ibem, Opoko, Adeboye and Amole (2013) who observed that lighting, privacy, illumination, external environment and thermal comfort, appearance are the most important factors that determine satisfaction with residential buildings in public housing estates in Nigeria. They also purported that these aforementioned factors are critical aspects of buildings that have significant influence on the well-being, health and productivity of occupants/ users. Therefore, in order to achieve optimal user satisfaction and performance of hospital buildings in meeting patients' needs and expectations, architects and other professionals involved in the building industry should give adequate attention to these dimensions of building in the design, planning and construction of housing projects in Nigeria.

Table 4.8: Satisfaction of the Patients with the General Setting of Pharmacy Department Building in Minna General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	No. of patients per room	0	0	3	3	1	7	3.71	0.76	0.74	1
2	Conversation privacy	0	0	4	2	1	7	3.57	0.79	0.71	2
3	Visual privacy	0	0	4	2	1	7	3.57	0.79	0.71	2
4	Traffic within ward	0	1	3	3	0	7	3.29	0.76	0.66	3
5	Natural lighting	0	0	5	2	0	7	3.29	0.49	0.66	3
6	Quality of bed/lining	0	0	5	2	0	7	3.29	0.49	0.66	3
7	Cleanliness of area provided to eat	2	0	2	0	3	7	3.29	1.80	0.66	3
8	No. Of patients	0	2	3	0	2	7	3.29	1.25	0.66	3
9	Furniture arrangement	0	3	1	1	2	7	3.29	1.38	0.66	3
10	Cooling system(AC)	0	0	6	1	0	7	3.14	0.38	0.63	4
11	Circulation space	1	1	3	0	2	7	3.14	1.46	0.63	4
12	Appearance of the building	0	2	2	3	0	7	3.14	0.90	0.63	4
13	Car parking lot	0	3	1	3	0	7	3.00	1.00	0.60	5
14	Cleanliness of external environment	2	0	2	2	1	7	3.00	1.53	0.60	5
15	Acoustic privacy	0	1	5	1	0	7	3.00	0.58	0.60	5
16	Signs of direction	0	1	5	1	0	7	3.00	0.58	0.60	5
17	Circulation space	0	0	7	0	0	7	3.00	0.00	0.60	5
18	Thermal comfort	0	1	6	0	0	7	2.86	0.38	0.57	6
19	Artificial lighting	0	3	2	2	0	7	2.86	0.90	0.57	6
20	External lighting	0	3	2	2	0	7	2.86	0.90	0.57	6
21	Cleanliness of bathroom	0	3	2	2	0	7	2.86	0.90	0.57	6
22	Location of room	0	2	4	1	0	7	2.86	0.69	0.57	6
23	Type of materials used in construction	0	2	4	1	0	7	2.86	0.69	0.57	6
24	Design of building	0	3	2	2	0	7	2.86	0.90	0.57	6
25	Colours/painting on walls	1	1	3	2	0	7	2.86	1.07	0.57	6
26	Amount of space available for fixtures	1	1	3	2	0	7	2.86	1.07	0.57	6
27	Pedestrian walkway traffic control	0	3	3	1	0	7	2.71	0.76	0.54	7
28	Ease of direction	0	2	5	0	0	7	2.71	0.49	0.54	7
29	Level of waste disposal	1	2	3	1	0	7	2.57	0.98	0.51	8
30	Ward fixtures and fittings	1	2	3	1	0	7	2.57	0.98	0.51	8
31	Spatial comfort	0	4	3	0	0	7	2.43	0.53	0.49	9
32	Service quality	0	4	3	0	0	7	2.43	0.53	0.49	9
33	Archiving and storage	1	3	2	1	0	7	2.43	0.98	0.49	9

Source: Field Survey 2017

Table 4.8shows 33factors which were ranked by respondents to assess the satisfaction of patients using the pharmacy department building in Minna general hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.74 and 0.49.These important factors range from No. of patients per roomwhich is the highest ranked (0.74) to Spatial comfort, Service quality and Archiving and storage which were the least ranked (0.49).

It can be deduced that patients are fairly satisfied with the pharmacy department building of Minna general hospital. These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and car parking lots as the factors constituting end-users' satisfaction in buildings. The result also corroboratesAnjali (2006) andChoi, Beltran and Kim (2012) who concludes that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation.

Table 4.9: Satisfaction of the Patients with the General Setting of Administrative Department Building in Bida General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Furniture arrangement	0	0	1	7	2	10	4.10	0.57	0.82	1
2	Cleanliness of area provided to eat	0	0	2	6	2	10	4.00	0.67	0.80	2
3	Circulation space	0	0	4	3	3	10	3.90	0.88	0.78	3
4	Artificial lighting	0	0	2	7	1	10	3.90	0.57	0.78	3
5	No. Of patients	0	0	3	5	2	10	3.90	0.74	0.78	3
6	Ward fixtures and fittings	0	0	2	7	1	10	3.90	0.57	0.78	3
7	Service quality	0	0	3	6	1	10	3.80	0.63	0.76	4
8	Cleanliness of external environment	0	0	3	6	1	10	3.80	0.63	0.76	4
9	No. of patients per room	0	1	0	9	0	10	3.80	0.63	0.76	4
10	Type of materials used in construction	0	0	3	6	1	10	3.80	0.63	0.76	4
11	Appearance of the building	0	0	4	4	2	10	3.80	0.79	0.76	4
12	Amount of space available for fixtures	0	0	4	4	2	10	3.80	0.79	0.76	4
13	Archiving and storage	0	1	1	7	1	10	3.80	0.79	0.76	4
14	Thermal comfort	0	1	3	4	2	10	3.70	0.95	0.74	5
15	Car parking lot	0	1	2	6	1	10	3.70	0.82	0.74	5
16	Natural lighting	0	0	4	5	1	10	3.70	0.67	0.74	5
17	Level of waste disposal	0	1	1	8	0	10	3.70	0.67	0.74	5
18	Location of room	0	1	2	6	1	10	3.70	0.82	0.74	5
19	Acoustic privacy	0	1	3	4	2	10	3.70	0.95	0.74	5
20	Conversation privacy	0	1	2	6	1	10	3.70	0.82	0.74	5
21	Quality of bed/lining	0	0	5	4	1	10	3.60	0.70	0.72	6
22	Design of building	0	0	5	4	1	10	3.60	0.70	0.72	6
23	Colours/painting on walls	0	0	5	4	1	10	3.60	0.70	0.72	6
24	Spatial comfort	0	1	4	4	1	10	3.50	0.85	0.70	7
25	Cleanliness of bathroom	0	1	4	4	1	10	3.50	0.85	0.70	7
26	Visual privacy	1	0	2	7	0	10	3.50	0.97	0.70	7
27	Ease of direction	0	1	4	4	1	10	3.50	0.85	0.70	7
28	Circulation space	0	1	4	4	1	10	3.50	0.85	0.70	7
29	Pedestrian walkway traffic control	2	0	3	2	3	10	3.40	1.51	0.68	8
30	External lighting	1	0	3	6	0	10	3.40	0.97	0.68	8
31	Cooling system(AC)	1	1	4	2	2	10	3.30	1.25	0.66	9
32	Traffic within ward	1	1	4	2	2	10	3.30	1.25	0.66	9
33	Signs of direction	0	1	7	1	1	10	3.20	0.79	0.64	10

Source: Field Survey 2017

Table 4.9shows 33factors which were ranked by respondents to assess the satisfaction of patients using the administrative department building in Bida General HospitalThirty–three (33) important factors were identified here with relative importance index ranging between 0.82 and 0.64.These important factors range from Furniture arrangementwhich is the highest ranked (0.82) to Signs of direction which wasthe least ranked (0.64).

It was observed that patients are very satisfied with the administrative department building of Bida general hospital. Hence, Aigbavboa and Thwala (2013) emphasised that one of the physical and social factors which influenced the occupants' satisfaction in housingisthe locations of furniture arrangements.

Table 4.10: Satisfaction of the Patients with the General Setting of Obstetrics Department Building in Bida General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Amount of space available for fixtures	0	0	2	3	3	8	4.13	0.83	0.83	1
2	Design of building	0	0	2	4	2	8	4.00	0.76	0.80	2
3	Circulation space	0	0	2	5	1	8	3.88	0.64	0.78	3
4	Car parking lot	0	1	1	5	1	8	3.75	0.89	0.75	4
5	Colours/painting on walls	0	0	3	4	1	8	3.75	0.71	0.75	4
6	Ward fixtures and fittings	0	0	3	4	1	8	3.75	0.71	0.75	4
7	Archiving and storage	0	0	4	2	2	8	3.75	0.89	0.75	4
8	Spatial comfort	1	0	1	5	1	8	3.63	1.19	0.73	5
9	Traffic within ward	1	0	1	5	1	8	3.63	1.19	0.73	5
10	Pedestrian walkway traffic control	1	0	2	3	2	8	3.63	1.30	0.73	5
11	Service quality	1	0	3	2	2	8	3.50	1.31	0.70	6
12	External lighting	0	2	0	6	0	8	3.50	0.93	0.70	6
13	Ease of direction	0	1	3	3	1	8	3.50	0.93	0.70	6
14	Type of materials used in construction	0	0	4	4	0	8	3.50	0.53	0.70	6
15	Appearance of the building	0	0	4	4	0	8	3.50	0.53	0.70	6
16	Furniture arrangement	0	0	5	2	1	8	3.50	0.76	0.70	6
17	Thermal comfort	1	0	3	3	1	8	3.38	1.19	0.68	7
18	Circulation space	1	1	2	2	2	8	3.38	1.41	0.68	7
19	Cleanliness of external environment	1	1	2	2	2	8	3.38	1.41	0.68	7
20	Quality of bed/lining	1	1	1	4	1	8	3.38	1.30	0.68	7
21	No. Of patients	1	1	1	4	1	8	3.38	1.30	0.68	7
22	Acoustic privacy	1	0	2	5	0	8	3.38	1.06	0.68	7
23	Signs of direction	0	2	2	3	1	8	3.38	1.06	0.68	7
24	Conversation privacy	1	0	3	3	1	8	3.38	1.19	0.68	7
25	Artificial lighting	0	2	3	2	1	8	3.25	1.04	0.65	8
26	Natural lighting	0	2	2	4	0	8	3.25	0.89	0.65	8
27	No. of patients per room	1	0	3	4	0	8	3.25	1.04	0.65	8
28	Location of room	1	1	2	4	0	8	3.13	1.13	0.63	9
29	Visual privacy	1	2	1	3	1	8	3.13	1.36	0.63	9
30	Cleanliness of area provided to eat	1	1	4	2	0	8	2.88	0.99	0.58	10
31	Level of waste disposal	1	2	2	3	0	8	2.88	1.13	0.58	10
32	Cleanliness of bathroom	1	3	2	1	1	8	2.75	1.28	0.55	11
33	Cooling system(AC)	0	3	5	0	0	8	2.63	0.52	0.53	12

Source: Field Survey 2017

Table 4.10shows 33factors which was ranked by respondents to assess the satisfaction of patients using the obstetrics department building in Bida General Hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.83 and 0.53.These important factors range from Amount of space available for fixtures which is the highest ranked (0.83) to Cooling system(AC)which was the least ranked (0.53).

This was evidenced from the visit made to the obstetrics department building of Bida General Hospital that the patients are satisfied with the general setting of the building.This result is line with findings of Salonen et al. (2012) who concluded that workplace and access to daylight as a result of adequacy of openings have been linked with increased satisfaction with the work environment; and exposure to light is critical for vitamin D metabolism in the human body.

Table 4.11: Satisfaction of Patients with the General Setting of Emergency Department Building in Bida General Hospital

S/N	Factors	Frequency of Response					∑f	mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Cleanliness of area provided to eat	0	0	1	3	2	6	4.17	0.75	0.83	1
2	Visual privacy	0	0	1	3	2	6	4.17	0.75	0.83	1
3	Thermal comfort	0	0	2	2	2	6	4.00	0.89	0.80	2
4	Artificial lighting	0	0	1	4	1	6	4.00	0.63	0.80	2
5	Type of materials used in construction	0	0	2	2	2	6	4.00	0.89	0.80	2
6	Appearance of the building	0	0	1	4	1	6	4.00	0.63	0.80	2
7	Furniture arrangement	0	0	1	4	1	6	4.00	0.63	0.80	2
8	Service quality	0	0	1	5	0	6	3.83	0.41	0.77	3
9	Traffic within ward	0	0	1	5	0	6	3.83	0.41	0.77	3
10	External lighting	0	0	3	1	2	6	3.83	0.98	0.77	3
11	No. of patients per room	0	1	0	4	1	6	3.83	0.98	0.77	3
12	Design of building	0	0	3	1	2	6	3.83	0.98	0.77	3
13	Amount of space available for fixtures	0	1	0	4	1	6	3.83	0.98	0.77	3
14	Location of room	0	0	2	3	1	6	3.83	0.75	0.77	3
15	Colours/painting on walls	0	0	1	5	0	6	3.83	0.41	0.77	3
16	Cooling system(AC)	0	1	0	5	0	6	3.67	0.82	0.73	4
17	Circulation space	0	0	3	2	1	6	3.67	0.82	0.73	4
18	Pedestrian walkway traffic control	0	0	2	4	0	6	3.67	0.52	0.73	4
19	Natural lighting	0	0	2	4	0	6	3.67	0.52	0.73	4
20	Quality of bed/lining	0	1	1	3	1	6	3.67	1.03	0.73	4
21	Cleanliness of external environment	0	0	2	4	0	6	3.67	0.52	0.73	4
22	No. Of patients	0	1	1	3	1	6	3.67	1.03	0.73	4
23	Ward fixtures and fittings	0	0	3	2	1	6	3.67	0.82	0.73	4
24	Archiving and storage	0	0	2	4	0	6	3.67	0.52	0.73	4
25	Car parking lot	0	0	3	3	0	6	3.50	0.55	0.70	5
26	Acoustic privacy	0	0	3	3	0	6	3.50	0.55	0.70	5
27	Circulation space	0	1	1	4	0	6	3.50	0.84	0.70	5
28	Cleanliness of bathroom	0	1	2	3	0	6	3.33	0.82	0.67	6
29	Ease of direction	0	1	2	3	0	6	3.33	0.82	0.67	6
30	Conversation privacy	0	0	4	2	0	6	3.33	0.52	0.67	6
31	Level of waste disposal	0	1	3	2	0	6	3.17	0.75	0.63	7
32	Signs of direction	0	0	5	1	0	6	3.17	0.41	0.63	7
33	Spatial comfort	0	0	6	0	0	6	3.00	0.00	0.60	8

Source: Field Survey 2017

Table 4.11shows 33factors which was ranked by respondents to assess the satisfaction of patients using the emergency department building in Bida General Hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.83 and 0.60.These important factors range from Cleanliness of area provided to eat and Visual privacywhich were the highest ranked (0.83) to Spatial comfort which was the least ranked (0.60).

This result corroborates the findings of WHO (2004) humidity and moisture in a building usually poses threats to the health of the residents. Patients in the emergency unit seem very satisfied with the settings in terms of moisture control.

Table 4.12: Satisfaction of the Patients with the General Setting of Laboratory Department Building in Bida General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Quality of bed/lining	0	0	0	5	2	7	4.29	0.49	0.86	1
2	Natural lighting	0	0	0	7	0	7	4.00	0.00	0.80	2
3	External lighting	0	0	1	5	1	7	4.00	0.58	0.80	2
4	Cleanliness of bathroom	0	0	1	5	1	7	4.00	0.58	0.80	2
5	Colours/painting on walls	0	1	0	4	2	7	4.00	1.00	0.80	2
6	Archiving and storage	0	0	1	5	1	7	4.00	0.58	0.80	2
7	Circulation space	0	0	2	4	1	7	3.86	0.69	0.77	3
8	Level of waste disposal	0	0	1	6	0	7	3.86	0.38	0.77	3
9	No. Of patients	0	0	2	4	1	7	3.86	0.69	0.77	3
10	Acoustic privacy	0	0	2	4	1	7	3.86	0.69	0.77	3
11	Visual privacy	0	0	1	6	0	7	3.86	0.38	0.77	3
12	Signs of direction	0	0	2	4	1	7	3.86	0.69	0.77	3
13	Type of materials used in construction	0	0	2	4	1	7	3.86	0.69	0.77	3
14	Design of building	0	0	3	2	2	7	3.86	0.90	0.77	3
15	Car parking lot	0	1	0	6	0	7	3.71	0.76	0.74	4
16	Ease of direction	0	0	3	3	1	7	3.71	0.76	0.74	4
17	Appearance of the building	0	0	3	3	1	7	3.71	0.76	0.74	4
18	Cooling system(AC)	0	1	1	5	0	7	3.57	0.79	0.71	5
19	Spatial comfort	0	1	1	5	0	7	3.57	0.79	0.71	5
20	Thermal comfort	0	0	3	4	0	7	3.57	0.53	0.71	5
21	No. of patients per room	0	0	3	4	0	7	3.57	0.53	0.71	5
22	Ward fixtures and fittings	0	0	4	2	1	7	3.57	0.79	0.71	5
23	Amount of space available for fixtures	0	0	4	2	1	7	3.57	0.79	0.71	5
24	Service quality	0	1	2	4	0	7	3.43	0.79	0.69	6
25	Traffic within ward	0	1	2	4	0	7	3.43	0.79	0.69	6
26	Location of room	0	1	2	4	0	7	3.43	0.79	0.69	6
27	Conversation privacy	0	0	4	3	0	7	3.43	0.53	0.69	6
28	Circulation space	0	0	4	3	0	7	3.43	0.53	0.69	6
29	Furniture arrangement	0	1	3	2	1	7	3.43	0.98	0.69	6
30	Pedestrian walkway traffic control	1	1	0	5	0	7	3.29	1.25	0.66	7
31	Artificial lighting	1	1	1	3	1	7	3.29	1.38	0.66	7
32	Cleanliness of external environment	1	0	3	2	1	7	3.29	1.25	0.66	7
33	Cleanliness of area provided to eat	1	0	2	4	0	7	3.29	1.11	0.66	7

Source: Field Survey 2017

Table 4.12shows 33factors which was ranked by respondents to assess the satisfaction of patients using the laboratory department building in Bida General Hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.86 and 0.66.These important factors range from Quality of bed/lining whichwere the highest ranked (0.86) to Cleanliness of area provided to eat which was the least ranked (0.66).

It can be inferred that patients are very satisfied with the laboratory department building. These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and acoustic control in buildingasfactors constituting end-users' satisfaction in buildings. This result also corroborates the findings of Ibem*et al.* (2013) who identified protection against noise in a building as one of the key factors of satisfaction in building.

Table 4.13: Satisfaction of Patients with the General Setting of Special Department Building in Bida General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Cooling system(AC)	0	0	1	4	0	5	3.80	0.45	0.76	1
2	Pedestrian walkway traffic control	0	1	0	3	1	5	3.80	1.10	0.76	1
3	Circulation space	0	0	2	3	0	5	3.60	0.55	0.72	2
4	Appearance of the building	0	0	2	3	0	5	3.60	0.55	0.72	2
5	Design of building	0	0	2	3	0	5	3.60	0.55	0.72	2
6	Circulation space	0	1	1	3	0	5	3.40	0.89	0.68	3
7	Artificial lighting	0	0	3	2	0	5	3.40	0.55	0.68	3
8	No. of patients per room	0	0	3	2	0	5	3.40	0.55	0.68	3
9	Ward fixtures and fittings	0	0	4	0	1	5	3.40	0.89	0.68	3
10	Signs of direction	0	1	2	2	0	5	3.20	0.84	0.64	4
11	Ease of direction	0	0	4	1	0	5	3.20	0.45	0.64	4
12	Colours/painting on walls	0	1	3	0	1	5	3.20	1.10	0.64	4
13	Furniture arrangement	0	1	3	0	1	5	3.20	1.10	0.64	4
14	Archiving and storage	0	0	4	1	0	5	3.20	0.45	0.64	4
15	Service quality	0	1	3	1	0	5	3.00	0.71	0.60	5
16	Car parking lot	1	0	2	2	0	5	3.00	1.22	0.60	5
17	Natural lighting	0	1	3	1	0	5	3.00	0.71	0.60	5
18	External lighting	0	1	3	1	0	5	3.00	0.71	0.60	5
19	Conversation privacy	0	0	5	0	0	5	3.00	0.00	0.60	5
20	Type of materials used in construction	0	2	1	2	0	5	3.00	1.00	0.60	5
21	Amount of space available for fixtures	0	1	3	1	0	5	3.00	0.71	0.60	5
22	Spatial comfort	0	2	2	1	0	5	2.80	0.84	0.56	6
23	Traffic within ward	1	0	3	1	0	5	2.80	1.10	0.56	6
24	Quality of bed/lining	0	1	4	0	0	5	2.80	0.45	0.56	6
25	Cleanliness of bathroom	0	1	4	0	0	5	2.80	0.45	0.56	6
26	Cleanliness of external environment	0	1	4	0	0	5	2.80	0.45	0.56	6
27	Level of waste disposal	0	2	2	1	0	5	2.80	0.84	0.56	6
28	No. Of patients	0	1	4	0	0	5	2.80	0.45	0.56	6
29	Location of room	0	1	4	0	0	5	2.80	0.45	0.56	6
30	Acoustic privacy	0	1	4	0	0	5	2.80	0.45	0.56	6
31	Visual privacy	0	2	2	1	0	5	2.80	0.84	0.56	6
32	Thermal comfort	1	1	2	1	0	5	2.60	1.14	0.52	6
33	Cleanliness of area provided to eat	1	2	2	0	0	5	2.20	0.84	0.44	7

Source: Field Survey 2017

Table 4.13shows 33factors which were ranked by respondentsto assess the satisfaction of patients using the special department building in Bida General Hospital. Thirty–three (33) important factors were identified here with relative

importance index ranging between 0.76 and 0.44.These important factors range from Cooling system(AC)which were the highest ranked (0.76) to Cleanliness of area provided to eat which was the least ranked (0.44).

It can be inferred that patients are fairly satisfied with the special department building.These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and car parking lots as the factors constituting end-users' satisfaction in buildings. The finding also supports Pritam and Mukta (2012) who believe that visual comfort in hospital wards has a positive preference to certain light quality and illumination levels in patients for visual comfort. Moreover, the results also validate the findings of Ibem*et al.* (2013) who identified protection against dampness, protection against noise, and external lighting as the key factors of satisfaction in buildings. The result also corroboratesAnjali (2006) andChoi, Beltran and Kim (2012) who concludes that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation.

Table 4.14: Satisfaction of Patients with the General Setting of Pharmacy Department Building in Bida General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Ward fixtures and fittings	0	0	3	4	2	9	3.89	0.78	0.78	1
2	Design of building	0	0	5	2	2	9	3.67	0.87	0.73	2
3	Colours/painting on walls	0	1	4	1	3	9	3.67	1.12	0.73	2
4	Spatial comfort	0	1	5	1	2	9	3.44	1.01	0.69	3
5	Circulation space	0	1	4	3	1	9	3.44	0.88	0.69	3
6	Natural lighting	0	1	4	3	1	9	3.44	0.88	0.69	3
7	Quality of bed/lining	0	1	5	2	1	9	3.33	0.87	0.67	4
8	No. Of patients	0	1	6	0	2	9	3.33	1.00	0.67	4
9	Ease of direction	0	2	3	3	1	9	3.33	1.00	0.67	4
10	Amount of space available for fixtures	0	1	4	4	0	9	3.33	0.71	0.67	4
11	Service quality	0	1	6	1	1	9	3.22	0.83	0.64	5
12	Thermal comfort	0	2	4	2	1	9	3.22	0.97	0.64	5
13	External lighting	0	2	4	2	1	9	3.22	0.97	0.64	5
14	Cleanliness of area provided to eat	1	2	2	2	2	9	3.22	1.39	0.64	5
15	Furniture arrangement	0	2	4	2	1	9	3.22	0.97	0.64	5
16	Car parking lot	1	1	4	2	1	9	3.11	1.17	0.62	6
17	Acoustic privacy	0	2	5	1	1	9	3.11	0.93	0.62	6
18	Pedestrian walkway traffic control	1	2	3	2	1	9	3.00	1.22	0.60	7
19	Cleanliness of external environment	0	2	5	2	0	9	3.00	0.71	0.60	7
20	Location of room	0	3	3	3	0	9	3.00	0.87	0.60	7
21	Signs of direction	0	3	3	3	0	9	3.00	0.87	0.60	7
22	Circulation space	0	1	7	1	0	9	3.00	0.50	0.60	7
23	Type of materials used in construction	0	1	7	1	0	9	3.00	0.50	0.60	7
24	Traffic within ward	1	2	4	1	1	9	2.89	1.17	0.58	8
25	Appearance of the building	0	2	6	1	0	9	2.89	0.60	0.58	8
26	Archiving and storage	0	3	5	0	1	9	2.89	0.93	0.58	8
27	Cooling system(AC)	0	3	5	1	0	9	2.78	0.67	0.56	9
28	Artificial lighting	1	2	4	2	0	9	2.78	0.97	0.56	9
29	Cleanliness of bathroom	0	3	5	1	0	9	2.78	0.67	0.56	9
30	Level of waste disposal	1	3	3	1	1	9	2.78	1.20	0.56	9
31	Conversation privacy	0	4	3	2	0	9	2.78	0.83	0.56	9
32	No. of patients per room	1	1	7	0	0	9	2.67	0.71	0.53	10
33	Visual privacy	2	3	3	1	0	9	2.33	1.00	0.47	11

Source: Field Survey 2017

Table 4.14shows 33factors which were ranked by respondentsto assess the satisfaction of patients using the pharmacy department building in Bida General Hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.78 and 0.47.These important factors range from Ward fixtures and fittings which were the highest ranked (0.78) to Visual privacy which was the least ranked (0.47).

It can be inferred that patients are fairly satisfied with the pharmacy department building.These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers as afactor constituting end-users' satisfaction in buildings. Moreover, the results also validate the findings of Ibem*et al.* (2013) who identified protection against noiseas a key factor of satisfaction in buildings.

Table 4.15: Satisfaction of Patients with the General Setting of Administrative Department Building in Kontagora General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Ward fixtures and fittings	0	0	6	3	0	9	3.33	0.50	0.67	1
2	Artificial lighting	0	1	6	1	1	9	3.22	0.83	0.64	2
3	Quality of bed/lining	0	1	5	3	0	9	3.22	0.67	0.64	2
4	Spatial comfort	0	1	6	2	0	9	3.11	0.60	0.62	3
5	Service quality	0	2	5	2	0	9	3.00	0.71	0.60	4
6	Pedestrian walkway traffic control	1	2	3	2	1	9	3.00	1.22	0.60	4
7	External lighting	0	2	5	2	0	9	3.00	0.71	0.60	4
8	Cleanliness of area provided to eat	0	2	5	2	0	9	3.00	0.71	0.60	4
9	Level of waste disposal	0	0	9	0	0	9	3.00	0.00	0.60	4
10	No. Of patients	0	3	3	3	0	9	3.00	0.87	0.60	4
11	Colours/painting on walls	0	2	5	2	0	9	3.00	0.71	0.60	4
12	Natural lighting	0	3	4	2	0	9	2.89	0.78	0.58	5
13	Furniture arrangement	0	2	6	1	0	9	2.89	0.60	0.58	5
14	Circulation space	1	1	6	1	0	9	2.78	0.83	0.56	6
15	Car parking lot	0	4	3	2	0	9	2.78	0.83	0.56	6
16	Cleanliness of external environment	1	1	6	1	0	9	2.78	0.83	0.56	6
17	Acoustic privacy	0	3	5	1	0	9	2.78	0.67	0.56	6
18	No. of patients per room	1	2	4	2	0	9	2.78	0.97	0.56	6
19	Ease of direction	0	2	7	0	0	9	2.78	0.44	0.56	6
20	Type of materials used in construction	1	2	4	2	0	9	2.78	0.97	0.56	6
21	Appearance of the building	0	3	5	1	0	9	2.78	0.67	0.56	6
22	Amount of space available for fixtures	0	3	5	1	0	9	2.78	0.67	0.56	6
23	Archiving and storage	0	3	5	1	0	9	2.78	0.67	0.56	6
24	Thermal comfort	0	4	4	1	0	9	2.67	0.71	0.53	7
25	Location of room	1	2	5	1	0	9	2.67	0.87	0.53	7
26	Conversation privacy	0	4	4	1	0	9	2.67	0.71	0.53	7
27	Circulation space	1	2	5	1	0	9	2.67	0.87	0.53	7
28	Design of building	2	2	2	3	0	9	2.67	1.22	0.53	7
29	Traffic within ward	2	1	5	1	0	9	2.56	1.01	0.51	8
30	Cleanliness of bathroom	2	1	5	1	0	9	2.56	1.01	0.51	8
31	Signs of direction	0	5	3	1	0	9	2.56	0.73	0.51	8
32	Cooling system(AC)	1	4	3	1	0	9	2.44	0.88	0.49	9
33	Visual privacy	1	4	4	0	0	9	2.33	0.71	0.47	10

Source: Field Survey 2017

Table 4.15shows 33factors which was ranked by respondents to assess the satisfaction of patients using the administrative department building in Kontagora General Hospital. Thirty–three (33) important factors were identified here with relative

importance index ranging between 0.67 and 0.47.These important factors range from Ward fixtures and fittings which were the highest ranked (0.67) to Visual privacy which was the least ranked (0.47).

It can be inferred that patients are not satisfied with the administrative department building.These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffer as the factor constituting end-users' satisfaction in buildings. Moreover, Aigbavboa and Thwala (2013) identified design of buildings and colours as one of the physical and social factors which influenced the occupants' satisfaction in buildings. The result also corroboratesAnjali (2006) andChoi, Beltran and Kim (2012) who concludes that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation. Some of the results validate the findings of Ibem*et al.* (2013) who identified protection against noise, aesthetic appearance which deals with colours/painting on wall,and external lighting as key factors of satisfaction in buildings.

Table 4.16: Satisfaction of Patients with the General Setting of Obstetrics Department Building in Kontagora General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Traffic within ward	1	2	3	4	0	10	3.00	1.05	0.60	1
2	Level of waste disposal	0	3	5	1	1	10	3.00	0.94	0.60	1
3	Location of room	0	3	4	3	0	10	3.00	0.82	0.60	1
4	Circulation space	0	1	8	1	0	10	3.00	0.47	0.60	1
5	Ward fixtures and fittings	0	3	5	1	1	10	3.00	0.94	0.60	1
6	Cleanliness of area provided to eat	1	2	5	1	1	10	2.90	1.10	0.58	2
7	Acoustic privacy	0	3	5	2	0	10	2.90	0.74	0.58	2
8	No. of patients per room	0	1	9	0	0	10	2.90	0.32	0.58	2
9	Conversation privacy	0	1	9	0	0	10	2.90	0.32	0.58	2
10	Amount of space available for fixtures	0	3	6	0	1	10	2.90	0.88	0.58	2
11	No. Of patients	0	2	8	0	0	10	2.80	0.42	0.56	3
12	Design of building	0	3	6	1	0	10	2.80	0.63	0.56	3
13	Furniture arrangement	0	2	8	0	0	10	2.80	0.42	0.56	3
14	Cooling system(AC)	0	4	5	1	0	10	2.70	0.67	0.54	4
15	Artificial lighting	1	2	6	1	0	10	2.70	0.82	0.54	4
16	Quality of bed/lining	0	3	7	0	0	10	2.70	0.48	0.54	4
17	Cleanliness of external environment	0	3	7	0	0	10	2.70	0.48	0.54	4
18	Appearance of the building	1	1	8	0	0	10	2.70	0.67	0.54	4
19	Colours/painting on walls	0	4	5	1	0	10	2.70	0.67	0.54	4
20	Service quality	0	4	6	0	0	10	2.60	0.52	0.52	5
21	Car parking lot	2	3	3	1	1	10	2.60	1.26	0.52	5
22	Natural lighting	0	4	6	0	0	10	2.60	0.52	0.52	5
23	External lighting	0	5	4	1	0	10	2.60	0.70	0.52	5
24	Ease of direction	1	3	5	1	0	10	2.60	0.84	0.52	5
25	Circulation space	1	4	4	1	0	10	2.50	0.85	0.50	6
26	Pedestrian walkway traffic control	0	5	5	0	0	10	2.50	0.53	0.50	6
27	Visual privacy	0	5	5	0	0	10	2.50	0.53	0.50	6
28	Archiving and storage	0	5	5	0	0	10	2.50	0.53	0.50	6
29	Spatial comfort	2	2	6	0	0	10	2.40	0.84	0.48	7
30	Thermal comfort	2	2	6	0	0	10	2.40	0.84	0.48	7
31	Cleanliness of bathroom	1	4	5	0	0	10	2.40	0.70	0.48	7
32	Signs of direction	1	5	3	1	0	10	2.40	0.84	0.48	7
33	Type of materials used in construction	1	5	3	1	0	10	2.40	0.84	0.48	7

Source: Field Survey 2017

Table 4.16shows 33factors which was ranked by respondents in order to assess the satisfaction of patients using the obstetrics department building in Kontagora general hospital. Thirty–three (33) important factors were identified here with relative

importance index ranging between 0.60 and 0.48.These important factors range from Traffic within ward, Level of waste disposal, Location of room, Circulation space, and Ward fixtures and fittingswhich were the highest ranked (0.60) to Spatial comfort, Thermal comfort, Cleanliness of bathroom, Signs of direction, and Type of materials used in constructionwhich were the least ranked (0.48).

It was evidenced from the visit made to the obstetrics department building that patients are not satisfied with the general setting of the building.These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffer as the factor constituting end-users' satisfaction in buildings. The result also corroboratesAnjali (2006) andChoi, Beltran and Kim (2012) who concludes that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation. Some of the results validate the findings of Ibem*et al.* (2013) who identified protection against noise, privacy in buildings, locations of building use to other buildings, and external lighting as key factors of satisfaction in buildings.

Table 4.17: Satisfaction of Patients with the General Setting of Emergency Department Building in Kontagora General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Artificial lighting	0	2	4	2	1	9	3.22	0.97	0.64	1
2	Colours/painting on walls	0	0	8	1	0	9	3.11	0.33	0.62	2
3	Service quality	1	0	6	2	0	9	3.00	0.87	0.60	3
4	Natural lighting	1	2	2	4	0	9	3.00	1.12	0.60	3
5	Design of building	0	2	5	2	0	9	3.00	0.71	0.60	3
6	Ward fixtures and fittings	0	1	7	1	0	9	3.00	0.50	0.60	3
7	Furniture arrangement	0	1	7	1	0	9	3.00	0.50	0.60	3
8	Traffic within ward	0	3	4	2	0	9	2.89	0.78	0.58	4
9	Cleanliness of external environment	0	3	4	2	0	9	2.89	0.78	0.58	4
10	Appearance of the building	0	2	6	1	0	9	2.89	0.60	0.58	4
11	Cooling system(AC)	0	3	5	1	0	9	2.78	0.67	0.56	5
12	Quality of bed/lining	0	4	3	2	0	9	2.78	0.83	0.56	5
13	Circulation space	1	2	5	1	0	9	2.67	0.87	0.53	6
14	Cleanliness of bathroom	0	4	4	1	0	9	2.67	0.71	0.53	6
15	No. Of patients	1	2	5	1	0	9	2.67	0.87	0.53	6
16	Ease of direction	1	3	3	2	0	9	2.67	1.00	0.53	6
17	Spatial comfort	1	2	6	0	0	9	2.56	0.73	0.51	7
18	Thermal comfort	1	3	4	1	0	9	2.56	0.88	0.51	7
19	Car parking lot	1	3	4	1	0	9	2.56	0.88	0.51	7
20	Location of room	1	2	6	0	0	9	2.56	0.73	0.51	7
21	Type of materials used in construction	1	3	4	1	0	9	2.56	0.88	0.51	7
22	Amount of space available for fixtures	0	5	3	1	0	9	2.56	0.73	0.51	7
23	External lighting	1	4	3	1	0	9	2.44	0.88	0.49	8
24	Cleanliness of area provided to eat	1	3	5	0	0	9	2.44	0.73	0.49	8
25	Circulation space	1	4	3	1	0	9	2.44	0.88	0.49	8
26	Archiving and storage	0	6	2	1	0	9	2.44	0.73	0.49	8
27	Level of waste disposal	1	4	4	0	0	9	2.33	0.71	0.47	9
28	No. of patients per room	1	5	2	1	0	9	2.33	0.87	0.47	9
29	Conversation privacy	1	6	1	1	0	9	2.22	0.83	0.44	10
30	Signs of direction	1	5	3	0	0	9	2.22	0.67	0.44	10
31	Pedestrian walkway traffic control	2	4	3	0	0	9	2.11	0.78	0.42	11
32	Acoustic privacy	1	6	2	0	0	9	2.11	0.60	0.42	11
33	Visual privacy	2	5	2	0	0	9	2.00	0.71	0.40	12

Source: Field Survey 2017

Table 4.17shows 33factors which were ranked by respondentsto assess the satisfaction of patients using the emergency department building in Kontagora General Hospital. Thirty–three (33) important factors were identified here with relative importance index ranging between 0.64 and 0.40.These important factors

range from Artificial lightingwhich was the highest ranked (0.64) to Visual privacy which was the least ranked (0.40).

It was evidenced from the visit made to the building that patients are not satisfied with the general setting of the building.These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and acoustic control in building as factors constituting end-users' satisfaction in buildings. This result also corroborates the findings of Ibem*et al.* (2013) who identified protection against noise and design of a building as the key factors of satisfaction in building. Also, Hassanain (2008) found that the degree of satisfaction in a building is related to the functional performance (i.e., room layout and furniture quality) of the building.

Table 4.18: Satisfaction of Patients with the General Setting of Laboratory Department Building in Kontagora General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Cleanliness of bathroom	0	0	3	3	0	6	3.5	0.55	0.70	1
2	Service quality	0	0	5	0	1	6	3.33	0.82	0.67	2
3	Circulation space	0	1	3	1	1	6	3.33	1.03	0.67	2
4	Natural lighting	0	1	2	3	0	6	3.33	0.82	0.67	2
5	No. Of patients	0	1	2	3	0	6	3.33	0.82	0.67	2
6	Signs of direction	0	2	1	2	1	6	3.33	1.21	0.67	2
7	Type of materials used in construction	0	1	3	1	1	6	3.33	1.03	0.67	2
8	Cooling system(AC)	0	0	5	1	0	6	3.17	0.41	0.63	3
9	Spatial comfort	0	0	5	1	0	6	3.17	0.41	0.63	3
10	External lighting	0	1	3	2	0	6	3.17	0.75	0.63	3
11	Quality of bed/lining	0	1	3	2	0	6	3.17	0.75	0.63	3
12	Level of waste disposal	0	1	3	2	0	6	3.17	0.75	0.63	3
13	Location of room	0	0	5	1	0	6	3.17	0.41	0.63	3
14	Ease of direction	0	3	0	2	1	6	3.17	1.33	0.63	3
15	Thermal comfort	0	0	6	0	0	6	3.00	0.00	0.60	4
16	Traffic within ward	0	0	6	0	0	6	3.00	0.00	0.60	4
17	Car parking lot	0	2	2	2	0	6	3.00	0.89	0.60	4
18	Acoustic privacy	0	1	4	1	0	6	3.00	0.63	0.60	4
19	No. of patients per room	0	2	2	2	0	6	3.00	0.89	0.60	4
20	Conversation privacy	0	2	3	0	1	6	3.00	1.10	0.60	4
21	Visual privacy	0	2	2	2	0	6	3.00	0.89	0.60	4
22	Circulation space	0	1	4	1	0	6	3.00	0.63	0.60	4
23	Appearance of the building	0	2	2	2	0	6	3.00	0.89	0.60	4
24	Design of building	0	2	3	0	1	6	3.00	1.10	0.60	4
25	Amount of space available for fixtures	0	1	4	1	0	6	3.00	0.63	0.60	4
26	Cleanliness of external environment	0	1	5	0	0	6	2.83	0.41	0.57	5
27	Cleanliness of area provided to eat	0	1	5	0	0	6	2.83	0.41	0.57	5
28	Ward fixtures and fittings	0	2	3	1	0	6	2.83	0.75	0.57	5
29	Furniture arrangement	0	2	3	1	0	6	2.83	0.75	0.57	5
30	Archiving and storage	0	3	1	2	0	6	2.83	0.98	0.57	5
31	Colours/painting on walls	0	2	4	0	0	6	2.67	0.52	0.53	6
32	Artificial lighting	0	3	3	0	0	6	2.50	0.55	0.50	7
33	Pedestrian walkway traffic control	0	5	1	0	0	6	2.17	0.41	0.43	7

Source: Field Survey 2017

Table 4.18shows 33factors which was ranked by respondents to assess the satisfaction of patients using the laboratory department building in Kontagora General Hospital. Thirty – three (33) important factors were identified here with relative importance index ranging between 0.70 and 0.43. These important factors range from Cleanliness

of bathroomwhich was the highest ranked (0.70) to Artificial lighting and Pedestrian walkway traffic control (0.43). It can be inferred that the patients are satisfied with the general setting of the building.

These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers, acoustic control, and car parking lots in building as factors constituting end-users' satisfaction in buildings. This result also corroborates the findings of Ibem*et al.* (2013) who identified protection against noise, design of buildings, as the key factors of satisfaction in building. Also, Hassanain (2008) found that the degree of satisfaction in a building is related to the functional performance (i.e., room layout and furniture quality) of the building.

Table 4.19: Satisfaction of Patients with the General Setting of Special Department Building in Kontagora General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Car parking lot	0	0	3	3	1	7	3.71	0.76	0.74	1
2	Pedestrian walkway traffic control	0	0	4	1	2	7	3.71	0.95	0.74	1
3	Artificial lighting	0	1	1	4	1	7	3.71	0.95	0.74	1
4	Traffic within ward	0	0	3	4	0	7	3.57	0.53	0.71	2
5	External lighting	0	1	2	3	1	7	3.57	0.98	0.71	2
6	Quality of bed/lining	0	0	4	2	1	7	3.57	0.79	0.71	2
7	Cleanliness of bathroom	0	1	2	3	1	7	3.57	0.98	0.71	2
8	Location of room	0	0	4	2	1	7	3.57	0.79	0.71	2
9	Circulation space	0	0	3	4	0	7	3.57	0.53	0.71	2
10	Amount of space available for fixtures	0	0	3	4	0	7	3.57	0.53	0.71	2
11	Natural lighting	0	0	5	1	1	7	3.43	0.79	0.69	3
12	Visual privacy	0	1	3	2	1	7	3.43	0.98	0.69	3
13	Furniture arrangement	0	1	2	4	0	7	3.43	0.79	0.69	3
14	Cooling system(AC)	1	0	3	2	1	7	3.29	1.25	0.66	4
15	Acoustic privacy	0	0	5	2	0	7	3.29	0.49	0.66	4
16	Ease of direction	0	0	6	0	1	7	3.29	0.76	0.66	4
17	Type of materials used in construction	0	1	3	3	0	7	3.29	0.76	0.66	5
18	Appearance of the building	1	0	2	4	0	7	3.29	1.11	0.66	5
19	Colours/painting on walls	1	0	3	2	1	7	3.29	1.25	0.66	5
20	Ward fixtures and fittings	0	1	3	3	0	7	3.29	0.76	0.66	5
21	Spatial comfort	0	1	4	2	0	7	3.14	0.69	0.63	6
22	Thermal comfort	0	1	4	2	0	7	3.14	0.69	0.63	6
23	Circulation space	1	0	4	1	1	7	3.14	1.21	0.63	6
24	Cleanliness of external environment	1	0	3	3	0	7	3.14	1.07	0.63	6
25	Cleanliness of area provided to eat	1	0	3	3	0	7	3.14	1.07	0.63	6
26	Conversation privacy	0	0	6	1	0	7	3.14	0.38	0.63	6
27	Signs of direction	0	1	5	0	1	7	3.14	0.9	0.63	6
28	Archiving and storage	0	2	2	3	0	7	3.14	0.9	0.63	6
29	Service quality	1	1	3	1	1	7	3	1.29	0.6	7
30	Level of waste disposal	1	1	4	0	1	7	2.86	1.21	0.57	8
31	No. Of patients	1	1	3	2	0	7	2.86	1.07	0.57	8
32	No. of patients per room	1	1	4	0	1	7	2.86	1.21	0.57	8
33	Design of building	2	0	2	3	0	7	2.86	1.35	0.57	8

Source: Field Survey 2017

Table 4.19shows 33factors which was ranked by respondents to assess the satisfaction of patients using the special department building in Kontagora general hospital. Thirty – three (33) important factors were identified here with relative importance index ranging between 0.74 and 0.57. These important factors range from Car parking lot

and Pedestrian walkway traffic controlwhich were the highest ranked (0.74) to Level of waste disposal, No. Of patients, No. of patients per room, and Design of building (0.57).

It can be inferred that the patients are satisfied with the general setting of the building.According to the World Health Organization (2004), the quality of a house plays a vital rolein the health status of residents. The indoor air quality, humidity, low temperature and overcrowding in a house usually poses threats to the health of the residents (WHO 2004). These results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers and car parking lots as the factors constituting end-users' satisfaction in buildings. The result also corroboratesAnjali (2006) andChoi, Beltran and Kim (2012) who concludes that patients in rooms with brighter orientations have shorter length of stay in the hospital than those in darker orientation

Table 4.20: Satisfaction of Patients with the General Setting of Pharmacy Department Building in Kontagora General Hospital

S/N	Factors	Frequency of Response					∑f	Mean	StDev	RII	Ranking
		1	2	3	4	5					
1	Circulation space	0	0	2	3	2	7	4.00	0.82	0.80	1
2	Circulation space	0	0	2	4	1	7	3.86	0.69	0.77	2
3	Traffic within ward	0	0	2	4	1	7	3.86	0.69	0.77	2
4	Artificial lighting	0	0	1	6	0	7	3.86	0.38	0.77	2
5	External lighting	0	0	1	6	0	7	3.86	0.38	0.77	2
6	Amount of space available for fixtures	0	0	1	6	0	7	3.86	0.38	0.77	2
7	Thermal comfort	0	0	3	3	1	7	3.71	0.76	0.74	3
8	Car parking lot	0	0	2	5	0	7	3.71	0.49	0.74	3
9	Pedestrian walkway traffic control	0	0	2	5	0	7	3.71	0.49	0.74	3
10	Natural lighting	0	0	2	5	0	7	3.71	0.49	0.74	3
11	No. Of patients	0	0	2	5	0	7	3.71	0.49	0.74	3
12	Ease of direction	0	0	3	3	1	7	3.71	0.76	0.74	3
13	Ward fixtures and fittings	0	0	3	3	1	7	3.71	0.76	0.74	3
14	Furniture arrangement	0	0	3	3	1	7	3.71	0.76	0.74	3
15	Archiving and storage	0	0	2	5	0	7	3.71	0.49	0.74	3
16	Cooling system(AC)	0	1	2	3	1	7	3.57	0.98	0.71	4
17	Signs of direction	0	0	3	4	0	7	3.57	0.53	0.71	4
18	Type of materials used in construction	0	1	2	3	1	7	3.57	0.98	0.71	4
19	Spatial comfort	0	1	2	4	0	7	3.43	0.79	0.69	5
20	Service quality	0	1	2	4	0	7	3.43	0.79	0.69	5
21	Location of room	0	0	4	3	0	7	3.43	0.53	0.69	5
22	Acoustic privacy	0	0	4	3	0	7	3.43	0.53	0.69	5
23	No. of patients per room	0	0	4	3	0	7	3.43	0.53	0.69	5
24	Appearance of the building	1	1	0	4	1	7	3.43	1.40	0.69	5
25	Colours/painting on walls	0	1	3	2	1	7	3.43	0.98	0.69	5
26	Cleanliness of area provided to eat	0	1	4	1	1	7	3.29	0.95	0.66	6
27	Visual privacy	0	1	3	3	0	7	3.29	0.76	0.66	6
28	Quality of bed/lining	0	1	4	2	0	7	3.14	0.69	0.63	7
29	Cleanliness of bathroom	0	2	3	1	1	7	3.14	1.07	0.63	7
30	Level of waste disposal	0	1	4	2	0	7	3.14	0.69	0.63	7
31	Cleanliness of external environment	1	1	3	1	1	7	3.00	1.29	0.60	8
32	Conversation privacy	1	1	2	3	0	7	3.00	1.15	0.60	8
33	Design of building	1	1	2	3	0	7	3.00	1.15	0.60	8

Source: Field Survey 2017

Table 4.20shows 33factors which was ranked by respondents to assess the satisfaction of patients using the pharmacy department building in Kontagora General Hospital. Thirty – three (33) important factors were identified here with relative importance index ranging between 0.80 and 0.60. These important factors range from Circulation

spacewhich was the highest ranked (0.80) to Cleanliness of external environment, Conversation privacy, and Design of building (0.60). It can be inferred that the patients are very satisfied with the general setting of the building.

The results are in line with the findings of Eyiah-Botwe (2015) who identified provision of noise buffers as afactorconstituting end-users' satisfaction in buildings.The results also corroborates Aigbavboa and Thwala (2013) that the physical and social factors which influenced the occupants' satisfaction in terms of building design are: the number of bedrooms, size of the unit, space in the unit, position of the bedroom, position of the unit in the neighbourhood, and the condition of the exterior and interior finishes, ventilation in the unit, noise level, privacy in the units and safety in the units.

Table 4.21: Satisfaction Score of General Hospital Patients

Satisfaction Score	Bida	Kontagora	Minna	Pooled
≤ 2.9	12(26.7%)	21(42.0%)	20(41.7%)	53(37.1%)
3	9(20.0%)	6(12.0%)	5(10.4%)	20(14.0%)
≥3.1	24(53.3%)	23(46.0%)	23(47.9%)	70(49.0%)

Source: Field Survey 2017

Table 4.21 shows the satisfaction scores of the general hospital patients. Majority (53.3%) of the patients in Bida were satisfied with the services provided while 46.0% and 47.9% of patients in Kontagora and Minna general hospitals respectively were satisfied with the services provided. However, 14.0% were indifferent about the services provided.

Table 1.22: Factors Influencing Patients' Satisfaction With Hospital Buildings

Variables	Coefficient	Standard error	t-value	p-value
Sex	-0.180	0.073	-2.470	0.015
Age	0.021	0.007	2.950	0.004
Years of Education	0.004	0.008	0.480	0.631
Duration of stay	-0.008	0.004	-2.220	0.028
General ward	0.024	0.105	0.230	0.822
Private ward	0.029	0.128	0.230	0.820
PIB	0.233	0.111	2.100	0.037
PIK	-0.415	0.164	-2.540	0.012
Constant	2.598	0.245	10.61	0.000
Sigma	0.432	0.026		
LR chi2(8)	45.030			
Log likelihood	-84.534			

Source: Field Survey 2017

The result of the tobit regression is as shown on Table 4.22. Sex (β = -0.180, P<0.05), age (β = 0.021, P<0.01), duration of stay in the hospital (β = -0.008, P<0.05), Patient of Bida general hospital (β = 0.233, P<0.05) and patient of Kontagora general hospital(β = -0.415, P<0.05). The result revealed that male patients were more satisfied with the services provided by the general hospitals than the female patients. This may be as due to the fact that females access hospitals more and require the services of these hospitals more either during antenatal, child birth and post-natal among others. As patients grow older they get more satisfied with the services provided by the general hospitals. That is to say younger patients are less satisfied with general hospital services. This could be because younger patients have higher expectations as regards the services required. More so, older patients are more familiar with the inadequacies of the health care system. This is in line with Liu and Wang (2007); Alhusban and Abualrub (2009) who reported that older patients were more satisfied than younger patients with the services provided by general hospitals. Also, patients in Bida were more satisfied with the services provided when compared to their counterparts in Minna. While patients in Kontagora were less satisfied with the services provided by the general hospital than patients in Minna general

hospital.This could be because most of the residents in Kontagora depend solely on the general hospital and other healthcare centres while Minna has a specialist hospital in addition to the general hospital and other public healthcare facilities (Niger State Bureau of Statistics, 2012).

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

This research is a post occupancy evaluation of patient's satisfaction of government hospital buildings in Niger State with a view to improving the building performance of hospitals in Niger State. The following findings were identified from the research:

i. The predominant services mostly carried out by the General hospitals were microbiology laboratory services, pharmacy service and childbirth services as indicated by 86.7% of the patients in all the hospitals in the study area. Majority of the respondents are usually in need of these services, and therefore require appropriate building wards for effective performance of these services.

ii. Most (63.0%) of the patients in the various hospitals were either dissatisfied (37.1%) or indifferent (14.0%) with the services of the general hospitals.

iii. The factors that mostly influenced Patients' Satisfaction of General Hospital Buildings in Niger State were Sex ($\beta = -0.180$, $P<0.05$), age ($\beta = 0.021$, $P<0.01$), duration of stay in the hospital ($\beta = -0.008$, $P<0.05$), Patient of Bida general hospital ($\beta = 0.233$, $P<0.05$) and patient of Kontagora general hospital ($\beta = -0.415$, $P<0.05$).

5.2 Conclusion

i. The predominant services mostly carried out by the General hospitals were microbiology laboratory services, pharmacy service and childbirth services.

ii. Most of the patients in the various hospitals were either dissatisfied or indifferent with the services of the general hospitals.

iii. The factors that mostly influenced Patients' Satisfaction of General Hospital Buildings in Niger State were sex, age, duration of stay in the hospital patient of Bida general hospital and patient of Kontagora general hospital.

5.3 Recommendations

Based on the findings of this study, the following recommendations were made with a view to improving the building performance of hospitals in Niger State:

i. Government should provide modern facilities in general hospitals so as to increase the scope and quality of services rendered.

ii. Proper facility management procedures should be put in place in all general hospitals so as to improve the usability of the facilities and make it habitable for patients.

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QUESTIONNAIRE

DEPARTMENT OF BUILDING,
FACULTY OF ENVIRONMENTAL DESIGN,
AHMADU BELLO UNIVERSITY-ZARIA

A Post Occupancy Evaluation of Patient's Satisfaction with Government Hospital Buildings

Dear Respondent,

I am undertaking a research as part of my M.Sc. Program in the Department of Building, Ahmadu Bello University-Zaria. A Post Occupancy Evaluation of Patient's Satisfaction with Government Hospital Buildings.The study, if successfully completed, will provide a clear insight as regards improving the building performance of hospitals in Niger State, which will inform researchers, management and other stakeholders of the way forward towards improving health facilities in the construction industry.

The questionnaire will take you an average of 15 minutes to complete. I would be grateful if you spare your time to answer the questions.

The information provided will be treated confidentially and used for data analysis only.

I would be glad to share the summary of my findings with you, if you provide your contact details at the end of the questionnaire.

Thank you very much for your time.

Nwokobia Lynda

(Researcher)

SECTION 1

Socio-Demographic Characteristics

Please indicate with a tick(✓) in the appropriate column provided:

1. Gender Male ☐ Female ☐

2. Age _____

3. Marital status? Single ☐ Married ☐ Widowed/Separated ☐

4. What is your educational qualification? Primary☐Secondary ☐High school ☐ Post-graduate ☐Others☐

5. What describes your best? Student ☐ Unemployed ☐ Self-employed ☐ Public sector ☐ Private sector ☐

6. Have you been admitted in a general hospital before? Yes☐ No☐

7. How long did you stay in the Hospital? Few hours☐A day☐ One week☐One month☐

8. What type of ward were you admitted? General ward ☐ Private ward☐Amenity☐

9. General Hospital in; Minna☐Bida☐Kontagora☐

SECTION 2

Satisfaction of the Patients with the General Setting of Emergency Department Building in General Hospital

Indicate the extent to which you agree with the following as Factors of Patients' Satisfaction of General Hospitals Buildings. Use a scale of 1-5, (where 1=strongly disagree, 2= Disagree, 3= Neutral, 4=Agree, 5=Strongly Agree.)

S/N	Factors	1	2	3	4	5
1	**Noise**					
	Acoustic control(from outside of the building)					
	Noise from airconditioning/equipments					
	Noise distraction from people talking in lobbies, within, etc.					
2	**Ventilation**					
	Indoor					
	Cooling system(AC)					
	Moisture control to prevent bad smell					
	Adequacy of openings					
3	**Comfortability**					
	Spatial comfort					
	Service quality					
	Thermal comfort					
	Circulation space					
4	**Ease of movement**					
	Traffic within ward					
	Car parking lot					
	Handicapped patient accessibility					
	Pedestrian walkway traffic control					
5	**Illumination(lighting)**					
	Artificial lighting					
	Natural lighting					
	External lighting					
6	**Cleanliness**					
	Quality of bed/lining					
	Cleanliness of bathroom					
	Cleanliness of external environment					
	Cleanliness of area provided to eat					
	Level of waste disposal					
7	**Congestions**					
	No. Of patients					
	No. Of beds					
8	**Privacy**					
	Location of room					

	Acoustic privacy					
	No. of patients per room					
	Conversation privacy					
	Visual privacy					
9	**Size of ward**					
	Signs of direction					
	Ease of direction					
	Circulation space					
10	**Aesthetics**					
	Type of materials used in construction					
	Appearance of the building					
	Protection against dampness					
	Design of building					
	Colours/painting on walls					
	Ward fixtures and fittings					
	Furniture arrangement					
	Amount of space available for fixtures					
	Archiving and storage					

SECTION 3

CHECKLIST

General Hospital: _____

Date: _____

Please tick as appropriate **(√)**

S/N	Services	Tick
A	**Core services**	
1	Polyclinic Services	
2	Emergency Health Services	
3	Biochemistry Laboratory Services	
4	Microbiology Laboratory Services	
5	Pathology Laboratory Services	
6	Imaging Services	
7	Endoscopy Services	
8	Clinics	
9	Operating Room Services	
10	Intensive Care Services	
11	New-born Intensive Care Services	
12	Pharmacy Services	
13	Sterilization Services	
14	Transfusion Medicine Services	
15	Oral and Dental Health Services	
16	Physiotherapy Services	
17	Dialysis Services	
18	Childbirth Services	
19	Psychiatry Services	
20	Nuclear Medicine Services	
B	**Support Service**	
1	Patient File and Archive Services	
2	Kitchen Services	
3	Laundry Services	
4	Morgue Services	