INTEGRATING THERAPEUTIC TECHNIQUES IN DRUG ADDICT CENTRE DESIGN; PROPOSED REHABILITATION CENTRE,TUDUN WADA, KANO.

By

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NIGERIA

MARCH, 2015

DECLARATION

I declare that the work in the thesis entitled *Integrating therapeutic techniques in drug addicts centre design; proposed rehabilitation centre Tudun-wada, Kano* has been performed my me in the Department of Architecture.The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at this or any other institution.

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CERTIFICATION

This thesis titled INTEGRATING THERAPEUTIC TECHNIQUES IN DRUG ADDICTS CENTRE DESIGN; PROPOSED REHABILITATION CENTRE, TUDUN WADA, KANO by SAMEER ANGALE HABIBU, meets the regulations governing the award of the degree of master of science in architecture of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is adoringly dedicated to my conscientious Parents Alhaji Habibu Ibrahim Mai Angale and Hajiya Hadiza Usman with admiration and gratitude.

ACKNOWLEDGEMENT

In the course of writing this thesis, I became greatly indebted to several People, but firstly to my Creator, the Almighty ALLAH (S.W.T) who gave me the wisdom, knowledge ,and endurance as well as everything, Once again ALHAMDULILLAH.

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ABSTRACT

Drug addiction is one of the worst global pestilence that affects virtually all sectors of society in the world. This assumed an alarming proportion particularly in the developing countries like Nigeria whereby young people at their tender age regardless of their social, economic, religious or ethnic background are delved into drugs and substance abuse. Continuous abuse of drugs lead to addiction which distorts and changes the structure of the human brain hence erodes person's self control, ability of making sound decisions and accompanying many medical issues such as cardiovascular disease, cancer, mental disorders and so on. The widespread of this menace triggered the government to the creation of agencies to fight drug peddlers and treatment centres for rehabilitation of the infected ones. However, these treatment centres were created focusing primarily on detention approach of treatment instead of medication and mind abstinence, neglecting the patients' mental, psychological, social, and spiritual needs, which are the important ingredients that contribute towards achieving effective treatment. This study aimed to integrate therapeutic techniques in drug addicts centre design through systematic arrangement functions, connection to nature, adopting courtyard system, employing colour therapy and artworks on walls. For the purpose of this study, visual survey, observation checklists and structured interview were used as instruments of data collection. The raw data collected were arranged and organised in more compacted forms using tables and charts. The major findings are that therapeutic techniques that play important role in inducing healing process of the addicts for effective and holistic treatment are not yet employed in the centres that were considered as case studies, there is no provision for outpatients unit, the centres admit both males and females, but no provision for female accommodation. However, there is also no provision for out door recreational activities. One of the contributions to knowledge of this study is that integrating therapeutic techniques such as use of soft lanscape elements to enhance connection with natural environment,use balcony

plantings, use of artificial water body, use court yard system and stack effect to enhance the indoor air quality, use of brighter colours and inspiring artworks on walls, and also provision of recreational facilities. etc contribute to the stay of the addicts as such, stimulates their healing process and well being. Finally, some of the recommendations made are that (i) the government should provide more treatment facilities that will help in mitigating this menace of drug abuse and also emphasise on making the centres more supportive and therapeutic by the application of therapeutic techniques.(ii) there is need for architects to make it of paramount importance to incorporate therapeutic principles in the design of rehabilitation centres and other relevant facilities in order to enhance the confinement of the drug addicts as well as the staff for their well being (iii) the National Drug Law Enforcement Agency (NDLEA) should collaborate with other stakeholders such as religious institutions and non-governmental organisations to be counselling the society on issues of drug abuse and addiction.

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CHAPTER ONE

1 INTRODUCTION

1.1 Background of Study

All architecture is shelter, all great architecture involve the design of space that contains cuddles, exalts or stimulates the persons in that space Coates (1997). Building contains spaces that end up shaping the inhabitants within it, so when one is considering individuals with drug abuse problems, their temporary social containment so to speak, must not look or feel anything like an exclusion Churchill (2001). The problem of drug abuse mostly by the youths is becoming rampant to extent that the situation appears to be such that no one can claim ignorance of what is happening.

Drug abuse refer to as the continued use of psychoactive substances at a level that violates approved social practices. Typically, use of a substance meets social disapproval when it has negative consequences for people's health, endangers their relationships with other people or is threatening to others in society. Even though people believed that, the substance with these consequences can produce social disapproval; drugs are now widely abused especially across the developed world. A recent survey in UK of 1996 reported in Watt (1997) found that over 5 million people used cannabis, 1 million amphetamines, 900,000 LSD and over 500,000 ecstasies1. In Kano Metropolis, people socially disregard the abuse of drugs for it threatens people's social relationship and security as it relates to politics in the state. Theonye (2004) defined drug abuse principally as the application of drugs for purposes other than of which they are produced. This meaning indicates clearly how drugs like Benylin, Codeine, Valium 5/10 and Roche that are meant to cure cough, put to sleep or common headache and pain are used excessively to produce result different from the stated. This

practice appears to be a common social problem amidst youth in urban setting similar to that of Kano Metropolis. Lauer (1992) refers to drug abuse as the improper use of drugs to the degree that the consequences are defined as detrimental to the user or to the society due to behaviour that deviates from accepted norms. Radda (2005) believed that, drug abuse is the excessive and persistent use usually by self-administration, of any drug without due regard for accepted practice. The vast arrays of drugs are agents that act on the central nervous system to engender significant effects on mood, social feelings and behaviour that result to mental impairment in the addicts. This impairment requires a supportive facility that contribute to their healing process and It must therefore emulate a world which embraces them through spaces, encouraging gradual community involvement, a therapeutic process that does not resemble a hospital or penitentiary.

A rehabilitation inner and outer space that provides them with the means of understanding what went wrong and how to work-through the group- towards building their own strength to surmount physical and psychological obstacles on the road to recovery and active inclusion. Such therapeutic community buildings must not be designed to remind long term absence from life, but a temporary home away from home, a pathway back to individual stability and societal development. And this short term abode must be enriched with approaches to healing that bring about changes from the inside out. One of them is expression through the art of creating effective therapeutic spaces to enhance recovery.

Building spaces and what is between them make different lives, influence how we think, feel, and even make us behave the way we are Christopher (1990). Many

specialists of various fields, including sociologists, therapists and architects have repeatedly argued about how place and the design of its spaces communicate with the human psyche, affect the way in which people react to their lives and how they develop. And this might be said to be rather crucial for any individual who requires long term constant care or needs to recover from physical, social and emotional instability such as the multi-faceted break down and loss of self brought about by drug addiction.

It is important to note from the outset that architecture is not a treatment, but can most significantly become part of the healing process through the creation of spaces that foster and provide meaning to those activities utilized to achieve gradual rehabilitation through a therapeutic environment. Building space, form, as well as environment and location are essential elements of this architectural therapy. Spaces can be insidious shapers of person and community or they can nourish and spur development both social and individual Christopher (1990). It is a setting which readies for social inclusion and does not bunch up people as a group of patients who simply need to take their medication or stay indoors for a prolonged period of time but as active recipients of change and individuality. Not merely a number behind a ‘health facility’ door.

Architectural design can provide the corner stone of this individuality, with spaces built as an interactive process as opposed to ‘holding a disorder within’, even the little things in the design of a building can play their part in the psychology of the healing equation; such as the way windows reflect the sunlight in a therapeutic community residence Leibrock (2000) . The power of a healing environment comes from the design details that empower patients to take responsibility for their own health Christopher (1990). Before delving into how building design can interconnect with the healing process and

activities in providing healing for individuals with long term recurring drug addiction problems, one must provide a detailed outlook of the approach that can serve this type of architecture-drug addiction rehabilitation approach. And this is the concept, or rather the healing principle of the therapeutic environment.

1.2 Problem Statement

Drug addiction is a disease as the abuse of drugs lead to changes in the structure and function of the underlying organ. Although it is true that for most people the initial decision to take drugs is voluntary, over time the changes in the brain caused by repeated drug abuse can affect a person's self-control and ability to make sound decisions, and at the same time create an intense impulse to take drugs Volkow (2010).

This problem mostly by the youths is becoming rampant to extent that the situation appears to be such that no one can claim ignorance of what is happening. The widespread of this menace has become pandemic within individuals as such putting the society in a state of agony. In Nigeria, the problem assumed an alarming proportion whereby people regardless of their social, economic, and ethnic background were affected with drug abuse and addiction National Drug Law and Enforcement Agency (NDLEA, 2011).

This threatens the government to creation of agencies to fight drug abusers and peddlers, as well as treatment centres to rehabilitate these addicts. However these centres were created without taking cognisance of healing principles guiding therapeutic centres. Focusing mostly on detention approach instead of medication and mind abstinence to drugs, neglecting the patients' mental, psychological, social and spiritual needs, which are the most important elements that help in achieving effective treatment. Usually, it is been experienced that when a patient is on medication that is

he or she stops taking drugs they experience a lot of physical and psychological side effects such as depression, anxiety, sleeplessness, restlessness and other mood disorder. As such for this reason, a successful treatment of drug addiction is accomplished when the mindset of the addicts let go off destructive thoughts that form anger, grief and pain which result to hindrance in healing process, however, this can be achieved through the provision of supportive, contributive, curative and therapeutic environment Levine (1987)

Drug addiction is similar to other diseases such as stroke, cancer etc that disrupts the normal healthy functioning of the underlying organ Volkow (2010). These diseases need serious attention and treatment as well as a facility that induces the healing processes of the patients Ulrich, (2002).

Majority of these drug addicts are in a tolerance state whereby they feel flat, lifeless depressed and suffer from brain impairment (NDLEA, 2011). Therefore when one is considering individuals with drug abuse problems, the design of their temporary social containment so to speak must not look or feel anything like an exclusion, Facility like the drug addicts rehabilitation centre should be an environment that embraces the addicts through effective building spaces and therapeutic environment inner and outer that provides them the means of understanding what went wrong and how to work through the group towards building their own strength to surmount physical and psychological obstacles on the road to recovery.

It is important to note that architecture is not a treatment, but can most significantly become part of the healing process through the creation of spaces that foster and provide meaning t

.o those activities utilized to achieve gradual rehabilitation through a therapeutic environment. Effective building space as well as environment are essential elements of architectural therapy that contribute and hasten the healing process of the drug addicts through systematic arrangement of functions and activities, connection to nature as well as engagement in cognitive activities Christopher (1990).

1.3 Aim and Objectives

1.3.1 Aim

The aim of the study is to integrate therapeutic techniques in drug addicts centre design to enhance spatial efficiency for holistic treatment.

1.3.2 Objectives of the Study

The above mentioned aim will be achieved through the following objectives;

I. To study the therapeutic techniques as it applies to rehabilitation centre.
II. To study the condition of some selected rehabilitation centres.
III. To identify the nature of the drug addicts.
IV. To assess the aspects of therapeutic techniques present in the centres.
V. To propose a befitting design of centre that effectively contributes to the healing process and recovery of the addicts.

1.4 Research Questions

I. What is the condition of the spaces?
II. How adequate are the supportive and therapeutic facilities provided in the centres?.
III. what is the characteristics of the drug addicts?
IV. What aspect of the therapeutic techniques are being employed in the centres?

1.5 Scope of the Study

The problem of drug abuse and addiction is global problem that touched every country in the world, World Health Organisation (WHO, 2002). In Nigeria, the problem assumes more alarm in the northern part of the country particularly North-western (NDLEA, 2013), therefore this study have been delimited to rehabilitation centres in the three geo-political zones (North-East, North-Central, North-West). However the scope of the study considered those drug addicts that are in a tolerance state.

1.6 Justification of the Study

Youths are believed to be the most valuable asset for engendering any societal development. They are the engines and pillars upon which every human society depends. Human history indicated how the youth served to depend and develop their various societies, which always promote and give to the society economic balance, political stability and social justice. Gessel (1956) in Radda (2005) refers to youth as the young people whose years fall between 10 and 16. The report of the Political Bureau (1997) in Abdullahi (2003) classified youth as those between 6-30 years. This latter classification conforms to the formal education years, tampering with which may endanger the youth's life and subsequently the society at large.

Drug abuse seems to be a major problem that affects their human creativity, mental capability and productive human potentials. Other problems linked to drug abuse and addiction includes reckless driving, traffic violation, inducing fear and insecurity to the public etc. (Madden,1984). This usage reflects the blanket meaning of drug abuse connoting medical or social patterns within a given socio- cultural environment Garba (2003). In their study, Abdullahi and Haruna (1992) in Abdullahi (2003) found out that, 77% of the respondents that abused drugs did it to work hard and become materially

successful or to be able to forget their problems. Their findings indicate the existence of drug abuse and related incidences in Kano Metropolis. From January 2003 –November 2008, NDLEA record, Kano office, shows that over 1528 youth were arrested by the Agency for drug abuse. Their ages ranged between 15-33 years.

On the same vein, the record of Dawanau psychiatric clinic indicated that from January – November 2008, over 9,799 mental cases were reported to the hospital. Out of this figure, 6,365 (64.9 percent) cases were youth from Kano Metropolis. Over 5,103 (80 percent) of this figure were drug induced patients (D.I.Ps.).

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Rehabilitation centres

Drug rehabilitation (often **drug rehab** or just **rehab**) is a term for the processes of medical or psychotherapeutic treatment, for dependency on psychoactive substances such as alcohol, prescription drugs, and street drugs such as cocaine, heroin or amphetamines Ermina (2011). The general intent is to enable the patient to cease substance abuse, in order to avoid the psychological, legal, financial, social, and physical consequences that can be caused, especially by extreme abuse.

Recovery from the devastating physical and mental effects of drug_addiction can be a very difficult and time-consuming process for an addict, so treatment is often rendered in a secure and private institution known as a *drug rehabilitation/ treatment centre*. A drug rehabilitation centre can work on;

I. An outpatient basis.
II. Inpatient basis.

Most centres practice the in-patient approach where the clients are housed on campus and heavily supervised during their long-term treatment programs. A person who seeks help in a drug_rehabilitation centre may enter of his or her own free will or be ordered into treatment as a condition of a drug-related criminal conviction. Some centres maintain an open door policy for voluntary patients, while other are much more restrictive.

A number of addiction and behavioural specialists work in a drug rehabilitation_centre, from physicians who monitor a client's physical health to clinical psychiatrists who

address the client's emotional and mental issues during recovery. A drug rehabilitation centre is often located in a secluded area, far removed from any outsiders who might provide illegal drugs to clients or disrupt their efforts to recover from an addiction. Visitors to a drug rehabilitation centre, if permitted, are usually screened for contraband and may have very restricted access to a recovering addict.

The setting of a drug rehabilitation centre can vary from institution to institution, but in general the physical grounds and architectural details create a peaceful or reflective atmosphere in order to facilitate a client's recovery. Some centres encourage residents to work on arts and crafts, while others provide alternative treatments such as music, dance or drama therapies. Since many drug addicts have physical as well as emotional issues, they are often encouraged to play sports, tend gardens or take walks around the facility's grounds.

While a drug rehabilitation centre does provide a tranquil atmosphere under idyllic settings, it also employs the latest medical and psychological methods available to treat the underlying causes of drug addiction or substance_abuse. Many clients suffer painful physical withdrawal symptoms as the drugs leave their systems, while others must face difficult emotional challenges as they recall traumatic events during group and individual_therapy sessions. A successful drug rehabilitation centre is prepared to handle any medical emergencies which may arise during treatment sessions, including threats of suicide or harm against other patients or staff members.

Treatment in a drug rehabilitation centre can be expensive, although many insurance policies do recognize drug rehabilitation as a legitimate medical_procedure. Some government agencies also subsidize much of the cost of a drug rehabilitation centre visit for indigent addicts or those who have been ordered into a drug treatment program

through court order or other involuntary arrangement. Some drug rehabilitation centres are affiliated with local hospitals, while others work independently or are considered non-profit organizations.

2.2 Therapeutic community

One of the most widely accepted definition of the therapeutic community for drug addicts is an environment in which ‘people live together in an organized and structured way in order to promote change and make possible a drug free life in the outside society Ottenberg (1993). It must only be a foundation or facility in name. In essence, the therapeutic community should become ‘society away from society’, a shadow of reality for those with the determination or even so, the decisive push by family and relatives to rediscover and re-coordinate that inner creativity self, the social and individual personality lost through drug abuse. As argued, this type of healing process, its residential philosophy aside (and this is where architectural design comes in), does not usually apply to a fixed setting but rather to the principles of the care that is offered a communal approach which is also democratic, collaborative and encourages participation Ohara (2010).

Thomas Main was the British psychoanalyst who coined this term in the 1950s, as the response of psychoanalysis to the failure of psychiatry, incarceration programmes which viewed addicts as mere criminals and stigmatized them as outcasts or even mentally disturbed through abuse, as well as purely medication approaches. Strangely enough though the therapeutic community model developed by Maine and other analysts was based on a world war two experience in Britain, as army psychiatrists, who had to deal with hundreds of traumatized soldiers returning from the front, considered, in their desperation from the failure of the conventional medication or one to one

therapy approach, to apply a group method that would allow those who had suffered severe distress to overcome their psychological fears and return to the front as physically and emotionally healthy as possible. “ The psychiatrists at Northfield Hospital in Birmingham decided to focus on the unit as a whole rather than on individual problems; they structured the wards as communities, encouraging mutual support and cooperation in living.” Malcom bruce (2005). Instead of medication treatment therefore, they provided the necessary tools to the community of patients in dealing with their own problems, making them part of the process with which they could overcome their traumatic experiences.

As Crampling notes, this later became known as the ‘living-learning’ method. Maine took this and applied a psychoanalytic approach to it. Some later appropriately dubbed it ‘social psychiatry’. It formed the beginnings of an attempt to consider drug rehabilitation as a psychological awakening through a group environment, in which members (not patients) and experienced professionals interact in a setting promoting trust and individuals are encouraged to become part of a community with the goal of rebuilding their social skills, such as responsibility and integration. This community philosophy essentially places the healing process into the hands of addicts themselves in a controlled and voluntary but not institutionalized environment, finding methods that allow them to rebuild their ability of dealing independently with their own problems.

Many of those seeking or being encouraged by their environment to follow the therapeutic community approach have gone through an extended period of social and behavioural dysfunction, the substance problems gradually eroding-in spite of what educational or professional capabilities they might have had-every sense of societal

responsibility, creating a situation whereby they need to essentially re-invent themselves, develop integration skills and individual creativity. This is why this form of residential therapeutic community involves an internal hierarchy of jobs and progressive responsibilities, and a variety of medical, educational, and vocational services.

Architecture fits into this process, as the outer shell providing the necessary support to the inner self-corrective therapy. There are of course no guarantees of success in such cases. However, at least the connection of interior design and community spirit as a means of moulding a socially functioning individual forms an alternative that puts the individual first, as opposed to the medication institution like processes that have not managed to make any headway, both in attracting the trust of addicts who make the step to rehabilitation, as well as eradicating existing prejudices and public opinion views.

The therapeutic community, as said earlier said is not about being locked in, but a home in which the individual with the need for care, becomes part of the method of their gradual return to physical and emotional health, they become involved in the decision-making process, improving their creativity through the group. The basic premise is to become the change within themselves, to sense that even though they live in a treatment community, the environment surrounding them is one in which they feel not part of the problem, but part of the solution on their way to re-learning the social process.

2.2.1 Components and basic structure of Therapeutic Communities

Program is a crucial aspect in architectural healing environments. The different programs the centre provides for its patients determine the success of its healing

environment. In order to ensure a setting that encompasses all of one's health, there must be stimulation to the mind, body, and spirit. Consequently, the centre will be split between the overarching program titles of Body, Mind, and Spirit. The associated spaces under these titles will have programmatic relationships with the other spaces in order to form a complete stimulation to the body, mind, and spirit.



Figure 2.1 Programmatic relationship in rehab centre

Source: Brian (2012)

The body plays an important role to the recovery or sustained balance of a patient's well being. Studies have shown that exercise increases the ability of the body to produce chemicals to reduce the likelihood of depression and other mental illnesses Waxman (1984), Not only is physical exercise important for recovering patients, but also for healthy individuals as well. The positive aspects of physical movement should become integrated to centres that care for the entirety of an individual's well being. Individual physical activity is one way of releasing endorphins into the body Zeisel (2003). However, group physical activity is another form of physical activity that can force the interaction between other patients inside a comfortable and social common

space. Social interaction and physical exercise together create an excellent combination for an optimal healing environment engaging physical activity Waxman (1984).

The body must be fed in order to survive the world. Through proper nutrition the person can balance their health and feel good. Thus, the program must integrate spaces where individuals can choose nutritious meals to feed their physical form. Spaces focused on teaching people how to cook and eat nutritiously balanced diets should also be integrated. Their knowledge of how to cook for themselves healthy meals at home provides them the power to help treat themselves outside of the centre as well.



Figure 2.2 Programmatic Structure of activities in rehab centre

Source: Brian (2012)

Spaces that allow the individual to connect with their spirituality are a crucial part of treating the person's overall wellness. First, it gives them the education of personal meditation to employ in their own lives outside of the centre. Second, it engages the awareness of their body and mind, making them present in the moment. The process of centering one's self helps the person shift their focus on the importance of their health and simplicity of life. Thirdly, it is a way to strip the mind of all the unnecessary

thoughts that confuses the mind into oblivion. The spiritual programs should be both intimate and collective, defined fluidly with natural elements that transcend peacefulness to the solitude of the space Ulrich (1984). All aspects of each program must provide the individual the tools to integrate into their lives to sustain their equilibrium in life. This can only be completely achieved by educating the people. Thus, each space must have ways in which the individual can have “take-home” knowledge in order to improve their life without the centre's presence in their life.

2.3 Drug abuse and Addiction

2.3.1 Drug abuse

Scientifically, drug is defined as a substance that affects the function of living cells used in medicine to diagnose, cure, or prevent the occurrence of diseases and disorders. Chafetz (1972) cited in Joseph (1980) defined drug as any substance, which chemically alters the structure or function of a living organism. Sociologically, drug is any habit-forming substance that directly affects the brain or the body function, like mood, perception or consciousness that has a potential for misuse and may be harmful to the user or to society.

According to world book Medical encyclopaedia, Drug Abuse is the harmful use of mind altering drugs. It added that the term usually refers to problem with illegal drugs, which also include harmful use of legal prescription drugs, Such as in self medication. Drug abuse is a global health and social problem (world journal of medical sciences 1(2): 133 – 138, 2006). Although it is true that for most people the initial decision to take drugs is voluntary, over time the changes in the brain caused by repeated drug abuse can affect a person's self-control and ability to make sound decisions, and at the same time create an intense impulse to take drugs.

Sullivan and Thompson (1994) refer to drug abuse as the continued use of psychoactive substances at a level that violates approved social practices. Typically, use of a substance meets social disapproval when it has negative consequences for people's health, endangers their relationships with other people or is threatening to others in society. Even though people believed that, the substance with these consequences can produce social disapproval; drugs are now widely abused especially across the developed world. However Drug abuse can be principally expressed as the application of drugs for purposes other than of which they are produced. This meaning indicates clearly how drugs like Benylin, Codeine, Valium 5/10 and Roche that are meant to cure cough, put to sleep or common headache and pain are used excessively to produce result different from the stated Theonye (2004).

2.3.2 Drug abuse in Nigeria

Abdullahi (2003) in their studies on perception of Drug Abuse amongst Nigerian undergraduates identified dependence and addiction as one of the major consequence of drug abuse, characterized by compulsive drug craving seeking behaviours are use that persist even in the face of negative consequences. These changes are maladaptive and inappropriate to the social or environmental setting, therefore may place the individual at risk of harm. Drug use among young people should be a matter of concern to all Nigerians especially the government, school heads, the leaders of religious groups and other NGOs.

Experiment with drugs during adolescence (11 – 25 years) is common. At this age, they try so many new things. They use drugs for many reasons, including curiosity, because it feels good, to reduce stress, or to feel grown up. Using alcohol and tobacco at a young age increase the risk of using other drugs later. In one of the WHO's World heart

Foundation's data, posit that in Nigeria, 22.1% of schools youth age between 12-17 years use tobacco, in South Africa, it is 19.4%, 15.1% in Ghana and 16.2% in Kenya. Majority of the Nigerian youths ignorantly depend on one form of drug or the other for their various daily activities – social, educational, political, moral etc. Such drugs include: Tobacco, Indian hemp, cocaine, morphine, Heroine, Alcohol, ephedrine, Madras, Caffeine, Glue, Barbiturates, Amphetamines, and so on

The government of Nigeria seems to lose sight of its responsibilities, though it claims that tobacco should be regulated in a market oriented frame work, which strikes an optimal balance and need to ensure healthy work force, the fear is that youths are lured into early death from cardio Vascular Diseases (CVD), lung cancer and other tobacco related diseases. With this danger in mind, the Secretary-General of African heart Network, Dr. Kingsley Akinroye urged Nigerians not to be partnership with industries that are injurious to them even if they cannot prevent their establishment. This was a reaction to the multi-billion naira investment deal between the last administration and British American Tobacco (BAT) to build a tobacco plantation in Ibadan for production of tobacco related products at the detriment of Nigerians. Already, Nigerian youths are being offered cigarettes through promotions and musical concerts. Some teens will experiment and stop, or continue to use occasionally without significant problems. Others will develop addiction, moving on to more dangerous drugs and causing significant harm to themselves and the society at large.

Despite the effort of many concerned bodies to curb this menace, many firms and individuals still present these drugs as though they are harmless. They give them

slogans such as “” – “for greatness” – “for brighter life”, __ “for taste” etc. which often lure irrational youths into drugs and alcoholism.

DRUG	STREET NAME (S)	MODEOF ADMINISTRATION	HARMFUL EFFECT(S)
Cocaine	Coke, Snow, Rock, Coco, Crack,Speed, pee, Columbian gold	Sniffing, Snorting, inhaling,	Hallucination, Diarrhea, Nausea, Insomnia and Influenza
Opium	Brown sugar, Stuff, Smark,Shit,etc	Injecting, Ingesting, Swallowed	Strong and quick cure of illness different from normality
Heroin	Thai white	Smoking, Injecting, fumes absorption	Euphoria(false feeling), Physical and Psychological imbalance
Cannabis	Marijuana, Pot, Gra, Hashish, Charas, Indian hemp, Ganja, Ganye, Wiwi, Chalu,and Dope	Wrapped and smoked (alone or in tobacco's mixture). Also chewed or tea made	A psychogenic substance (producing a psychotic state when taken in a high dose, false sensory perceptions, Delusions, Drowsiness or Coma.

Figure 2.3 Some abused drugs and their effects

Source: NDLEA (2011)

Reports from all over the world about this menace for instance are grim. The British officer for National Statistics reports that 12% of pupils aged (11 – 15) had used drugs. Amphetamines are used among students Barbiturates are used by youths with suicidal tendencies rather than for addictive purpose. Madras abuse once reached epidemic proportions among students Anumonye (1980). However, cannabis (marijuana) appears to be the most commonly abused drug by our youths. Marijuana is in everywhere in our cities, motor parks, Street corners, joints on campuses, uncompleted buildings, under flyovers etc. From a survey of Ring Road outlets in Benin City, Ajegule in Lagos, Mabushi in Abuja, under flyover in Onitsha etc will amaze you of the number of youths involved in the intake of cannabis Abudu (2005). Cannabis is popularly known as “’igbo’, ‘ganja’, ‘weed’, morocco, Indian hemp’ ‘herb’ ‘pot; ‘hash’ marijuana”. It comes from the Cannabis hemp plant, which is grown around the world. It grows profusely in this tropical climate with little or no care. Farms of the plant scattered over parts of Nigeria.

In July 2005, Daily Sun reported of a man who fingered members of his community as dealers in this illicit drug. The man who was being held by narcotic agent said every member of his community in Delta State is involved in the cultivation and sales of weeds, identified by NDLEA as cannabis sativa. Speaking further, the man said "we are all involved, is our God given resource control, everybody in our village owns an Indian hemp farm so it is not a crime".

From the ongoing revelation, there is indication that African farmers (Nigerians in particular) are shifting from traditional food crop production to cannabis at the detriment of the consumers (mostly youths). This will definitely promote lawlessness and leads to food shortage throughout the nation. According to Mr. Shaepe – the Secretary of the UN drug agency, the popularity of cannabis as cash crop grew in Africa, as consumption of the drug increased in North America and Europe; farmers, he said, have learned that they can earn much more money growing cannabis then traditional food crops.

2.3.3 Causes of drug abuse

Studies have revealed that most of the drug addicts started smoking from their youths. As they grow older they seek new thrills and gradually go into hard drug abuse. A nationwide survey of high school students reported that 65% used drugs to have good time with their friends 54% wanted to experiment to see what it is like, 20% to 40% used it to alter their moods, to feel good, to relax, to relief tension and to overcome boredom and problems Anumonye (1980).

Therefore, there is no single factor that could be defined as the solely responsible for the abuse of drugs but Abudu (2005) listed the following factors as frequently found among both Nigerians and other nationalities:

I. Parental neglects of their children.

II. The prevalence of drugs in the community.

III. Pathological family background – broken homes, illegitimate relationships, alcoholic parents or parent's involvement in antisocial and illegal activities.

IV. Peer pressure influence.

V. Imitation of film stars and teenage idols.

VI. Media adverts – Radio, TV, Billboard inter, Magazines, Newspapers.

VII. Ambition.

VIII. Urbanization and unemployment.

IX. Ignorance of the dangers of illegal drug use.

X. Alienation – they feel isolated and want to belong

2.3.4 Consequences of Drug Abuse

Garba (2005) believes that drugs affect all sectors of society in all countries. In particular, drug abuse affects the freedom and development of young people, the world's most valuable asset. Joseph (1980) observed that, young people have tended to use drugs more than adults and with increasing frequency. As youth deepen into drug abuse, their productive human potentials are threatened. This might spread to the general society producing wider social, cultural, political and economic damages.



Plate I Consequences of drug abuse

Source: NIDA (2010)

Borodo (2005) observed that consequences of drug abuse in our society today particularly in Kano Metropolis, consist of; increasing number of youth becoming lunatics in the streets with increasing burden on government as well as increased cases of crimes and other societal ills. Report shows that over 82,000Kg of Indian hemp was impounded by the agency between January and August this year, NDLEA (2011).. Drug abuse serves as one of the avenues through which people manoeuvre their ways to achieve economic, educational and even political successes. Many acts of violence, physical assaults, rape or murder are generally linked to substance abuse.

Substance abuse is the worst of plagues. It knows no season and no boundaries. No mosquito will be identified, no microbe isolated, no vaccine invented to end its reign. It is a pestilence with all the classic trappings of social disruption, suffering and death-and one terrible defining difference, we invite it to kill, and maim and diminish us (www.drugscope.org, 2007)

2.4 Drug addiction

Drug addiction is a chronic, often relapsing brain disease that causes compulsive drug seeking and use, despite harmful consequences to the drug addict and those around them. Drug addiction is a brain disease because the abuse of drugs leads to changes in the structure and function of the brain. Although it is true that for most people the initial decision to take drugs is voluntary, over time the changes in the brain caused by repeated drug abuse can affect a person's self-control and ability to make sound decisions, and at the same time create an intense impulse to take drugs. Many people do not understand why people become addicted to drugs or how drugs change the brain to foster compulsive drug abuse. They mistakenly view drug abuse and addiction as strictly a social problem and may characterize those who take drugs as morally weak.

One very common belief is that drug abusers should be able to just stop taking drugs if they are only willing to change their behaviour.

What people often underestimate is the complexity of drug addiction that it is a disease that impacts the brain, and because of that, stopping drug abuse is not simply a matter of willpower. Through scientific advances we now know much more about how exactly drugs work in the brain, and we also know that drug addiction can be successfully treated to help people stop abusing drugs and resume productive lives. NIDA (2010)

2.5 Drugs and the Brain

Drugs are chemicals that tap into the brain's communication system and disrupt the way nerve cells normally send, receive, and process information. There are at least two ways that drugs are able to do this: by imitating the brain's natural chemical messengers, and/or over stimulating the "reward circuit" of the brain. Olds and Milner(1954).

Some drugs, such as marijuana and heroin, have a similar structure to chemical messengers, called neurotransmitters, which are naturally produced by the brain. Because of this similarity, these drugs are able to "fool" the brain's receptors and activate nerve cells to send abnormal messages.

Other drugs, such as cocaine or methamphetamine, can cause the nerve cells to release abnormally large amounts of natural neurotransmitters, or prevent the normal recycling of these brain chemicals, which is needed to shut off the signal between neurons. This disruption produces a greatly amplified message that ultimately disrupts normal communication patterns. Olds and Milner(1954).

Nearly all drugs, directly or indirectly, target the brain's reward system by flooding the circuit with dopamine. Dopamine is a neurotransmitter present in regions of the brain that control movement, emotion, motivation, and feelings of pleasure. The

overstimulation of this system, which normally responds to natural behaviours that are linked to survival (eating, spending time with loved ones, etc), produces euphoric effects in response to the drugs. This reaction sets in motion a pattern that "teaches" people to repeat the behaviour of abusing drugs. NIDA (2010)

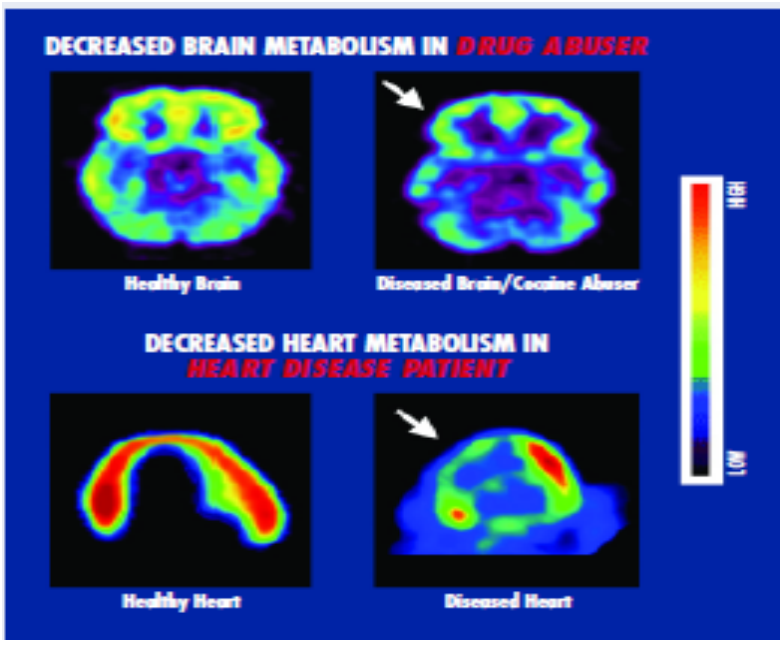


Plate II Distortion of the Brain structurewith persistence of drug abuse

Source: NIDA, (2010)

As a person continues to abuse drugs, the brain adapts to the dopamine surges by producing less dopamine or reducing dopamine receptors. The user must therefore keep abusing drugs to bring his or her dopamine function back to "normal" or use more drugs to achieve a dopamine high. Long-term drug abuse causes changes in other brain chemical systems and circuits, as well. Brain imaging studies of drug-addicted individuals show changes in areas of the brain that are critical to judgment, decision-making, learning and memory, and behaviour control. Together, these changes can drive an abuser to seek out and take drugs compulsively -- in other words, to become addicted to drugs.

However, some People become addicted while others do not, of course phenomena like these happened but there is no single factor that can predicts whether or not a person will become addicted to drugs. Risk for addiction is influenced by a person's biology, social environment, and age or stage of development. The more risk factors an individual has, the greater the chance that taking drugs can lead to addiction. For example:

a) **Biology:** The genes that people are born with in combination with environmental influences; account for about half of their addiction vulnerability. Additionally, gender, ethnicity, and the presence of other mental disorders may influence risk for drug abuse and addiction.

b) **Environment:** A person's environment includes many different influences -- from family and friends to socioeconomic status and quality of life, in general. Factors such as peer pressure, physical and sexual abuse, stress, and parental involvement can greatly influence the course of drug abuse and addiction in a person's life.

c) **Development:** Genetic and environmental factors interact with critical developmental stages in a person's life to affect addiction vulnerability, and adolescents experience a double challenge. Although taking drugs at any age can lead to addiction, the earlier that drug use begins, the more likely it is to progress to more serious abuse. And because adolescents' brains are still developing in the areas that govern decision making, judgment, and self-control, they are especially prone to risk-taking behaviours, including trying drugs of abuse.

Drug addiction is a preventable disease. Research has shown that prevention programs that involve the family, schools, communities, and the media are effective in reducing drug abuse. Although many events and cultural factors affect drug abuse trends, when youths perceive drug abuse as harmful, they reduce their drug taking. It is necessary, therefore, to help youth and the general public to understand the risks of drug abuse and for teachers, parents, and health care professionals to keep sending the message that drug addiction can be prevented if a person never abuses drugs.

2.6 Treatment and Recovery

Addiction is a treatable disease. Discoveries in the science of addiction have led to advances in drug abuse treatment that help people stop abusing drugs and resume their productive lives. Addiction need not be a life sentence. Like other chronic diseases, addiction can be managed successfully. Treatment enables people to counteract addiction's powerful disruptive effects on brain and behaviour and regain control of their lives.

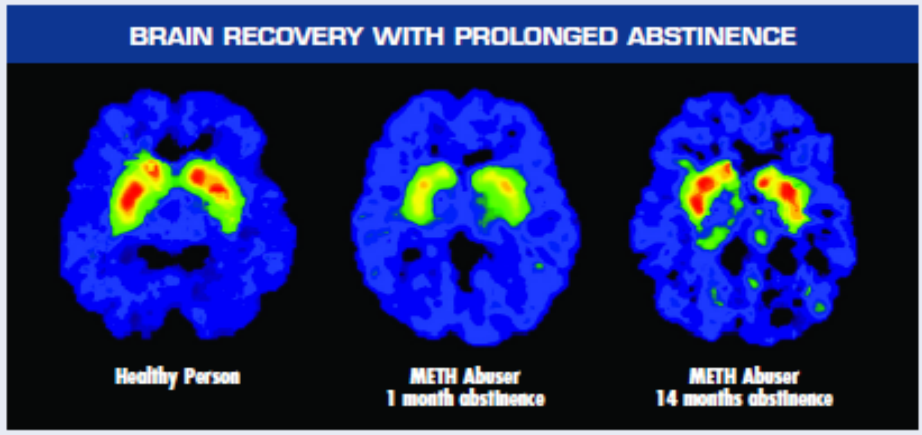


Plate III Brain recovery with abstinence

Source: NIDA, (2010)

The chronic nature of the disease means that relapsing to drug abuse is not only possible, but likely. Relapse rates (i.e., how often symptoms recur) for drug addiction are similar to those for other well-characterized chronic medical illnesses such as

diabetes, hypertension, and asthma, which also have both physiological and behavioural components. Treatment of chronic diseases involves changing deeply imbedded behaviours, and relapse does not mean treatment failure. For the addicted patient, lapses back to drug abuse indicate that treatment needs to be reinstated or adjusted, or that alternate treatment is needed. Research shows that combining treatment medications, where available, with behavioural therapy is the best way to ensure success for most patients. Treatment approaches must be tailored to address each patient's drug abuse patterns and drug-related medical, psychiatric, and social problems.

Different types of medications may be useful at different stages of treatment to help a patient stop abusing drugs, stay in treatment, and avoid relapse.

I. ***Treating Withdrawal.*** When patients first stop abusing drugs, they can experience a variety of physical and emotional symptoms, including depression, anxiety, and other mood disorders; restlessness; and sleeplessness. Certain treatment medications are designed to reduce these symptoms, which makes it easier to stop the abuse.

II. ***Staying in Treatment.*** Some treatment medications are used to help the brain adapt gradually to the absence of the abused drug. These medications act slowly to stave off drug cravings, and have a calming effect on body systems. They can help patients focus on counselling and other psychotherapies related to their drug treatment.

III. ***Preventing Relapse.*** Science has taught us that stress, cues linked to the drug experience (e.g., people, places, things, moods), and exposure to drugs are the most common triggers for relapse. Medications are being developed to interfere with these triggers to help patients sustain recovery. Ermina (2011)

Behavioural treatments help engage people in drug abuse treatment, modifying their attitudes and behaviours related to drug abuse and increasing their life skills to handle stressful circumstances and environmental cues that may trigger intense craving for drugs and prompt another cycle of compulsive abuse. Moreover, behavioural therapies can enhance the effectiveness of medications and help people remain in treatment longer. Getting an addicted person to stop abusing drugs is just one part of a long and complex recovery process. When people enter treatment, addic0tion has often taken over their lives. The compulsion to get drugs, take drugs, and experience the effects of drugs has dominated their every waking moment, and drug abuse has taken the place of all the things they used to enjoy doing. It has disrupted how they function in their family lives, at work, and in the community, and has made them more likely to suffer from other serious illnesses (www.drugabuse.gov, 2010). Because addiction can affect so many aspects of a person's life, treatment must address the needs of the whole person to be successful. This is why the best programs incorporate a variety of rehabilitative services into their comprehensive treatment regimens. Treatment counsellors select from a menu of services for meeting the individual medical, psychological, social, vocational, and legal needs of their patients to foster their recovery from addiction.

2.7 Healing Architecture

We do healing design which you refer to as 'healing architecture', I would define it as creating environments that make you feel good. Varawalla (2011). To a certain extent, we generalise by saying that if you feel good you will 'heal' faster. I do not think in that sense that a surgical wound will heal faster, but your mind will heal faster," adds Varawalla. So, basically, it means that an environment that accentuates the healing

process is 'healthy'. "Healthy-hospital design is a harmonious blend of nature and architecture, that promotes health and aids early recovery in those who are sick . The argument is that patients get personal attention from the staff only few times in a day and are left alone most of the time. This is where an environment can play a contributory factor to their sense of well-being and actual recovery. The quality of space in such buildings affects the outcome of medical care, and architectural design, thus playing an important role in the healing process. Health centres should provide a cheerful, inviting ambience, and a caring and healing environment. In order to achieve a healthy design, it needs a multi-disciplinary approach involving architects, healthcare professionals, interior designers, landscape architects, environmental scientists, clinical psychologists to form a perfect ensemble of healing-architecture.

2.7.1 Benefits of healing design

i. Support clinical excellence in the treatment of physical body.
ii. Support the psycho-social and spiritual needs of the patients.
iii. Produces measurable positive effects on patients outcomes.

2.7.2 Evidence-Based Design

Evidence-based design, or **EBD,** is a field of study emphasizing credible evidence to influence design. This approach has become popular in healthcare to improve patient and staff well-being, patient healing, stress reduction and safety. Evidence-based design is a relatively new field, borrowing terminology and ideas from disciplines such as environmental psychology, architecture, neuroscience and behavioural economics.

Studies have examined how the physical environment can influence well-being, promote healing, relieve patient pain and stress and reduce medical errors, infections and falls Cama (2009). Many hospitals, community health centres and residential care

centres are adopting evidence-based design for new construction, expansion and remodelling.

EBD is a process used by architects, interior designers and facility managers in the planning, design, and construction of commercial buildings. An individual using evidence-based design makes decisions based on the best information available from research, project evaluations and evidence gathered from client operations. Critical thinking is required to develop appropriate solutions to design problems, since available information will rarely offer a precise fit to a client's situation. Therefore, research specific to a project's objectives is required. An evidence-based design should result in improvements to an organization's outcomes, economic performance, productivity and customer satisfaction.

The process is particularly suited to healthcare, because of the unusually high stakes and the financial and clinical outcomes that can be impacted by the built environment; however, it may be used in other fields. Its positive effect is demonstrated by patients (who have higher-quality stays) and families; physicians, who practice based on medical evidence, and administrators, who reduce costs and improve organizational effectiveness.

EBD is applicable to many types of commercial building projects. The building itself can help reduce stress experienced by patients, their families and caregivers. The healthcare environment is multifaceted; it is a work environment for staff, a healing environment for patients and families, a business environment and a cultural environment for the organization to fulfil its mission.

Healthcare design may come from many areas:

A- Environmental psychologists: Focus on stress reduction:

1. Social support (patients, family, staff)
2. Control (privacy, choices, escape)
3. Positive distractions (artwork, music, entertainment)
4. Nature (plants, flowers, water, wildlife, nature sounds)

B- Clinicians: Focus on medical and scientific literature:

1. Treatment modalities (models of care and technology)
2. Quality and safety (infections, errors, falls)
3. Exercise (exertion, rehabilitation)

C- Administration: Refers to management literature:

1. Financial performance (margin, cost per patient day, nursing hours)
2. Operational efficiency (transfers, utilization, resource conservation)
3. Satisfaction (patient, staff, physician turnover)

D- Evidence-based metrics: Includes research tools and methods for practitioners:

1. Work measurement (time studies)
2. Efficiency designs
3. Patient and resource workflow

About 1,200 environmentally-relevant studies have been identified by the Center for Health Design. The primary aim of hospital designers and administrators is to create a healing space which reduces stress, helps health and healing and improves patient and staff safety.

Healing spaces have existed since ancient Greece. People who were ill visited temples in the hope of having a dream in which the god would reveal a cure. In 1860 Florence Nightingale identified fresh air as "the very first canon of nursing," and emphasized the importance of quiet, proper lighting, warmth and clean water. Nightingale applied statistics to nursing, writing "Diagram of the causes of mortality in the army in the East" Hall (2009). This statistical study led to advances in sanitation, although the germ theory of disease was not yet fully accepted. A 1984 study by Roger Ulrich found that surgical patients with a view of nature suffered fewer complications, used less pain medication and were discharged sooner than those who looked out on a brick wall. Studies also exist about the psychological effects of lighting, carpeting and noise on critical-care patients, and evidence links physical environment with improvement of patients and staff safety, wellness and satisfaction Kirk (2003).

EBD continues research and building practices developed during the 1960s. In the US and UK during the 1970s, architectural researchers studied the impact of hospital layout on staff effectiveness. Centres for Health Design focuses on EBD practices, their uses and application to each step of the design process. More than 600 studies with environmental-design relevance have been identified.

2.7.3 Basic Principles of Healing Architecture

Over the years many pioneers have come-up with different principles of Healing Architecture which are all inter-related. Based on this study the Principles of Healing Architecture postulated by. Coates (1997) are:

1. Unity of form and function
2. Harmony with nature and site
3. Natural ventilation

4. Exposure to natural/ day lighting
5. Noise reduction
6. Positive distraction
7. Colour luminosity and natural artwork

2.8 Biophilic Design

Biophilic Design is an innovative way of designing the places where we live, work, and learn. We need nature in a deep and fundamental fashion, but we have often designed our cities and suburbs in ways that both degrade the environment and alienate us from nature. The recent trend in green architecture has decreased the environmental impact of the built environment, but it has accomplished little in the way of reconnecting us to the natural world, the missing piece in the puzzle of sustainable development. Come on a journey from our evolutionary past and the origins of architecture to the world's most celebrated buildings in a search for the architecture of life. Together, we will encounter buildings that connect people and nature –hospitals where patients heal faster, schools where children's test scores are higher, offices where workers are more productive, and communities where people know more of their neighbours and families thrive. Biophilic Design points the way toward creating healthy and productive habitats for modern humans.

The term "biophilia" literally means "love of life or living systems." It was first used by Fromm (2006) to describe a psychological_orientation of being attracted to all that is alive and vital. He uses the term in the same sense when he suggests that biophilia describes "the connections that human beings subconsciously seek with the rest of life." He proposed the possibility that the deep affiliations humans have with nature are

rooted in our biology. Unlike phobias, which are the aversions and fears that people have of things in the natural world, philias are the attractions and positive feelings that people have toward certain habitats, activities, and objects in their natural surroundings. Too many people, "nature" means plants as in a park or forest, but the weather and animals are also closely involved.

As creatures of the earth, humans respond to its natural features, which can also be incorporated into constructed design. The modern history of architecture is characterized by building movements and styles, often imposed by an elite few who deemed this “good” architecture. The rigid geometry of Modern Architecture, for example, holds few relationships to the outside world. Conversely, “great architects in the past were better able to discern those qualities, and to reproduce them in their buildings because they were more engaged with their immediate surroundings.” As a consequence, buildings provided protection with the benefits of natural elements. The premise of biophilic design “aims not only to reduce the harm that stems from the built environment, but also to make the built environment more pleasing and enjoyable. It seeks both to avoid and minimize harmful impacts on the natural environment, as well as to provide and restore beneficial contacts between people and nature in the built environment.” Architecture in and of itself is not harmful, and its benefits of shelter and community cannot be overlooked. However, built environments can certainly cause stress. Biophilic design provides the answer to this predicament, preventing harm to both people and nature while facilitating a beneficial link between the two Kellert (2011). Too often, a distinction has been made between architecture and environment, cutting people off from a psychologically- developed need to commune with nature. When architects overstep their role, using “images and surface effects” to “supplant everyday human desires and sensibilities in the name of artistic endeavour, humans are

left to live out their lives in a series of ill-fitting, over exaggerated and often idiosyncratic formal architectural schemes." Biophilic design does not advocate tree houses or cave-dwelling, but it does provide the nature-based features that prompt complex thinking in humans. Though not technically biophilic design, the nature-communing architecture of Frank Lloyd Wright's Falling water arguably speaks to the human soul much more than a box-like "machine for living" by Le Corbusier. Not an architectural style, biophilic design must avoid becoming such.

Designers can often become caught up with the potential of new technology, pushing its limits but not in the service of its users. Because of these risks, the "green" aspect of biophilic design must not overwhelm its overarching goals of creating an ideal environment for people Kellert (2011). Biophilic design affords humans a host of benefits. Using particular landscapes can reduce stress and enhance well-being because we gravitate toward certain configurations and natural contents. These landscapes were the environments prehistoric people inhabited throughout their evolution, and the human brain adapted to respond to these types of spaces. In built environments, we have obstructed the connection developed over millennia. We are so accustomed to our built habitats that we do not notice their deleterious effects, and as a result, stress has become a chronic issue in modern society. Eliminating some of the distinction between built and natural allows biophilic design to impart the benefits of both types of environments Joye (2007).

One crucial element of the natural landscape to human health is sunlight. We are evolutionarily programmed to respond positively to well-lighted or sunny areas over dark or overcast settings Kellert (2011). People can expect these spaces to foster restoration, improve emotional well-being, and promote health . Distractions of modern

life induce stress, especially the artefacts (i.e. cell phones, laptops, etc.) to which we are so attached. The rates of technological progress have far exceeded rates of psychological evolution, leaving us ill-equipped to cope with our lifestyle. Biophilia expert Yannick Joye states, “by including elements of ancestral habitats in the built environment, one can counter potential deleterious effects, which stem from this dominance, [of uniform/modernist environments], resulting in more positive effects and more relaxed physiological and psychological states” Joye (2007). Because biophilia attempts to integrate ancestral and current habitats, it can alleviate the stress caused by the brain’s constant attempts to function in a modern environment it has not yet evolved to handle .

2.8.1 Features of boiphilic design

I. Natural lighting
II. Natural ventilation
III. Natural materials
IV. Views and prospects of nature
V. Shapes and forms that mimic natural features and processes

2.8.2 Benefits Of Boiphilic Design

The additional emphasis here on biophilic design should not be interpreted as advocating a subjective aesthetic over the more rational, objective standard of technical efficiency that characterises low environmental impact design. Indeed, the opposite is the case. Satisfactions and benefits associated with biophilic design foster adaptive behaviour that is Instrumental to human welfare including better health, reduced stress, improved emotional well-being, enhanced productivity and increased problem solving and creativity.

Design and development that satisfy only people's physical and material needs will not succeed if they deny other boiphilic affinities for nature that are crucial to people's long term physical, mental and spiritual well being.

2.9 Therapeutic garden

A Therapeutic Garden is an outdoor garden space that has been specifically designed to meet the physical, psychological, social and spiritual needs of the people using the garden as well as their caregivers, family members and friends. It can be found in a variety of settings such as hospitals, skilled nursing homes, assisted living residences, continuing care retirement communities, out-patient cancer centres, hospice residences, and other related healthcare, retreat buildings and residential environments. The focus of the gardens is primarily on incorporating plants and friendly wildlife (i.e. flora and fauna) into the space.

2.9.1 Types of Therapeutic Gardens

i. **Alzheimer's gardens**: adult day care programs and dementia residences.

ii. **Healing gardens**: acute care hospitals, skilled nursing facilities and other healthcare facilities.

iii. **Rehabilitation gardens**: rehabilitation hospitals.

iv. **Restorative gardens**: psychiatric hospitals.

v. **Senior community gardens**: assisted living, continuing care retirement communities and other senior living residences.

vi. **Cancer gardens**: chemotherapy facilities.

vii. **Enabling gardens**: vocational schools, arboretum.

viii. **Meditation gardens**: religious institutions and other faith based settings.

2.10 Natural Ventilation

Natural ventilation is clearly a valuable tool for sustainable development as it relies only on natural air movement, and can save significant amounts of fossil fuel based energy by reducing the need for mechanical ventilation and air conditioning. Reducing electrical energy used for cooling contributes to the reduction of greenhouse gas emissions from the electrical generating plant providing the energy. From the earliest times building designers have made use of naturally induced air movement to address two basic needs in buildings: the removal of foul air and moisture, and personal thermal comfort. Since the 1950s the use of mechanical ventilation and, particularly, air conditioning has been adopted as a means of compensating for excess heat gains experienced in many modern lightweight and highly glazed buildings. This increased use of mechanical services has provided building designers and clients with a great deal of freedom in terms of envelope design and internal flexibility. However, the cost has been much higher energy consumption and the introduction of centralised control systems, rather than user-based controls. The need to reduce our consumption of energy and to give users more control over their immediate environments, are good reasons for designers now to re-evaluate the role of natural ventilation in buildings and to become familiar with the basic principles involved. Air movement in and around buildings is a complex, three-dimensional phenomenon. At present the tools available to design for good natural ventilation are either inexact rules of thumb, or complicated wind tunnel or computer based modelling techniques.

The principal factors affecting natural air movement around and within buildings are:

i. the site and local landscaping features
ii. the building form and building envelope design
iii. the internal planning and room design.

2.11 Natural/ Day lighting

Day lighting design could aspire to the same inspirational effect. If people like something, it stands to reason they will consider it valuable and that when they have it they will be more satisfied and productive than when they don't have it. This is all the justification architects need to introduce day lighting into building design. While day lighting can be employed to conserve energy and can enhance visibility, the principal values of day lighting are more intangible. Many factors are involved with the use of daylight in buildings: - aesthetics: the play of light from windows on surfaces and textures casting interesting shadows; the endless variety of mood and appearances due to the movement of the sun; - psychological response: the sense of well-being associated with daylight and the sense of orientation that comes with being "connected" with the exterior; - health: improved resistance to infections, skin disorders, and cardiovascular impairment; - energy/cost: reduction in electric use and related air conditioning load from electric lighting.

2.11.1 Physiological benefits of day lighting

A number of physiological benefits derive from lighting to humans, animals, and plants. Some types of growth, orientation, sexual stimulation, migration patterns, egg production, and other attributes are dependent on light content, duration, and intensity.

i. *Full-spectrum lighting.* A trend in recent years has been to stimulate the use of so-called "full spectrum" electric lamps in buildings on the assumption that humans evolved in the natural environment and that, therefore, the sunlight's total spectrum must be useful and valuable. It is a simple matter to accord with this assumption by using daylight whenever possible. Ultraviolet radiation, for instance, is essential to human health. It prevents rickets, helps keep the skin in a healthy condition, is responsible for the production of vitamin D in the body

(thus reducing the incidence of broken bones in the elderly), and it destroys germs. Ultraviolet dilates the capillaries of the skin, reduces blood pressure, quickens the pulse rate and appetite, stimulates energetic activity, produces a feeling of well-being, reduces fatigue, and may even increase work output. There are dangers from overexposure to ultraviolet such as skin cancer, wrinkles, and possible eye damage, but most of the benefits and none of the liabilities have been directly associated with the use of daylight in buildings.

ii. *Stimulus.* The human organism is not adapted to unrelieved or steady stimuli or to the complete lack of stimuli. Uniformity in the environment produces monotony when humans are exposed to it for long periods. The constantly changing nature of daylight automatically and naturally responds to the need of the body and mind for a change of stimuli. Although the body responds to steady-state conditions by changing itself, if the monotony is long continued, the body's ability to respond to stimuli will gradually deteriorate. People require reasonable stimuli to remain sensitive and alert. On the other hand, overstimulation from lighting (such as direct bright light in the eye) can lead to emotional as well as physical fatigue. The goal in lighting design is to avoid excessive stimulation from direct light sources while providing some visual flexibility and stimuli. The proper introduction of daylight into the interior environment is the most effective way to provide such variation.

2.12 Healing spaces

Spaces for healing represent some of the most personal and complex services provided: intimate personal information must be shared with strangers; complex and often frightening situations might occur; difficult decisions are constantly made; and the staff speaks an entirely different language. The building itself can help to reduce the stress

experienced by patients, their families, and the teams caring for them. The rehabilitation environment is a work environment for the staffs, a healing environment for patients and, a business environment for the provision of healthcare, and a cultural environment for the organization to fulfil its mission and vision. In order to realize these environments, facility designs must be linked to the organization's goals and objectives Kellert (2011). Traditional models of rehabilitation centres bring the people out of their environment in urban areas to the rural areas. The belief is that by taking the patients away from the negative distractions of urban environments and into the positive distractions of rural environments, the healing process will occur quicker and more effectively. An untraditional approach is to bring these natural elements, from the traditional approach, into the urban environment.

Historically, areas for rehabilitation are placed outside of the urban fabric. This focus demonstrates the effort to disengage sufferers from the physical complexity and stimuli of an urban habitat. The removal sets a distance between the urban patient and their everyday life. Arguably, this displacement provides a challenge to the longevity of the success the individual has made in rehab. The environment of the rehabilitation centre and the patient's home is comparatively a dramatic difference. Mentally one begins to associate their "healed self" with the facility and their "old self" with their home. The shift sets a possibility of imbalance and even relapse of the issues treated. We build the buildings that end up shaping us Churchill (2001).

If drug addiction rehabilitation is mostly about bringing positive feelings to the fore and helping to build a new identity for members of therapeutic communities, then architectural design, is perhaps the most decisive of factors in how space is utilized,

both in practical terms and landscape wise, to uplift the spirit and provide the necessary environment in which community daily life and activities can become most effective. Christopher (1990) believes that buildings have the life the architect gives them, a personality that is either positive or negative, and that aura is captured by those who reside in them. " The more 'felt' are buildings, the more connected to rhythms of day they value the individuals they will house…environment can heal as well as harm places of spirit nourish both individual and society". Christopher, (1990). A host of studies have shown that the surrounding environment, the 'place' as a physical sense, is associated with drug addiction risks. Starting from this premise it can be said that building design is more than just a backdrop to health issues, but is more of a forefront. A wide ranging research paper pointing to the need for safer environment interventions, even though its main topic might be drug injection in public, comes to a conclusion highly relevant to the importance of place as both physical and social in nature.

Place is not simply a set of coordinates, but is constructed through finding meaning in the social and built forms we inhabit Ulrich (1984). In other words, the building or a city and the way it is designed does not just form slabs of concrete, but is literally a social construction, that can have an influence on those who reside in it. As outlined earlier, this is more true of people, in this case, addicts who are in a process of rehabilitation, a tough community healing programme that seeks to root out their negativity. In such an instance, the energy and individuality their residence might project could be crucial in how they respond to this process. Colour, they way they are able to move within the building, staircases, connections between rooms, surrounding nature can all play a role, as will be analyzed, not just in underpinning the mood of the residents, but also whether they feel welcome in the building, whether it forms a

connection to their emotions and physical presence and by extension if it provides a motivation for them to follow the programme.

2.12.1 Building Form

Form refers to the shape or configuration of a building. Form and its opposite, space, constitute primary elements of architecture. The reciprocal relationship is essential, given the intention of architecture to provide internal sheltered space for human occupation. Both form and space are given shape and scale in the design process Norman (2004).

The language of forms in architecture also has a correlation to the feeling one obtains from the space. For example the natural environment has soft edges, but no right angles (Redstone). However, the right angles in our everyday life are endless in the built environment. The architecture of a healing environment can take on the qualities of natural conditions through imitation in form. While one might feel constrained and boxed in rectilinear spaces, the fluidity of an organic space creates no such feeling. Without right angles, the spaces become seemingly less harmful and comforting to the human eye. “ It is not the rectangle which is the problem, but its life-sapping characteristics. Where materials, textures, colours, light, living line and human activity can reinvest such forms and spaces with life, the materially practical and culturally normal characteristics of rectangles can be used to advantage. None the less, in general, one feels on much safer ground with non rectangular, or shape moderated spaces.” Ulrich (1984)

2.12.2 Colour Therapy

Colours in architecture provide visual stimuli for the occupant that can elicit positive and negative emotions based on its environment. Whether the emotions one experiences are through acquired knowledge and/or personal history, there is evidence that colours provoke emotions on average in the same way with few exceptions.

Whether these associations were learned in childhood or not, our culture transcends these messages of colour associations early in one's life. Sometimes colours guide us through life both literally and figuratively. For example, in our country a stoplight on green means go. In most cases the green light is associated with positive emotions because of the action that follows. Very rarely would a green provoke negative emotions. A red light can sometimes elicit frustration and anger. This proves the power of colour to guide actions and emotional responses. It gives some insight at how colours become engraved in or minds to manifest reactions.

Why do these associations occur with colours? An example to explain this answer is the concept of warm and cool colours. Some might answer that cool and warm colours are the way they are because it just is. However, this concept can be traced back to nature. The associated properties describing the colours relates back to the physical environment in which we live in. How does colour become integrated into the design? Due to the power of colour to evoke emotion, it can become a tool integrated in the architecture to highlight and instigate the individual through a sequential experience in the architectural healing environment. The properties of the colour can also set the tone

for spaces as well, eliciting certain emotion were necessary.

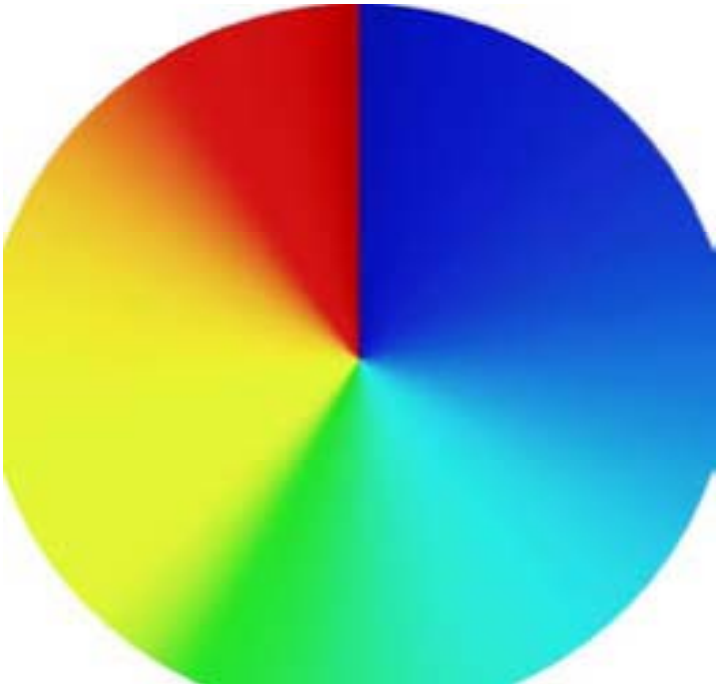


Figure 2.4 Colour Wheel

Source: Brian (2012)

According to colour therapy, colours are capable of influencing many aspects of our lives, including our mood, mental state and energy level. Each colour is thought to be associated with one of seven energy centres, or chakras. If a person's is thought to be out of balance or weak, the colour it's associated with is believed to help strengthen it. The concept of colour therapy is based on the fact that our physiologic functions respond in predictable manner to colours.

Carl Jung (2007), a renowned psychiatrist and proponent of art therapy, encouraged his patients to use colour because he felt this would help them express some of the deeper parts of their psyche. It is believed that the colour choices you make reflect a deeper meaning about your personality traits. For example, introverts and extroverts are likely to choose different colours – blue and red respectively.

2.12.3 Art Therapy

Nanda (2007) who has a doctorate in architecture with a specialization in health-care systems and design, says scientific studies show that art can aid in the recovery of patients, shorten hospital stays and help manage pain. But she says it has to be the right art and vivid paintings of landscapes, friendly faces and familiar objects can lower blood pressure and heart rate, while abstract pictures can have the opposite effect.



Plate IV Art work on wall showing caring and protection

Source: www.artwork.com

Nanda and two university professors did a study at Houston's St. Luke's Episcopal Hospital using two types of art. In the first group were images that had been proven to calm patients, including green landscapes, water scenes, cultural artefacts and emotionally expressive pictures of people. The second group contained abstract pieces by artists such as Vincent van Gogh. When asked which they preferred, most patients chose images from the first group.



Plate V Art works on interior Wall depicting hope

Source: www.artwork.com

Studies have confirmed that abstract art allows patients to project their own anxieties onto the image. Thus, pictures that clearly portray pleasant images are more soothing. When you are under stress and anxiety, if you see an image that is ambiguous, you interpret it negatively. Nanda (2007). Environmental psychologists began studying health care in the 1960s. In 1984, scientists found that postoperative patients healed more quickly and successfully if they had park-view windows. Through the 1980s, scientists became more interested in the role of art in hospitals. The concept of therapeutic design has become more popular in the last decade.

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is the plan or the conceptual structure of the research and type of approach adopted in the study. It serves as a blueprint for the measurement of variables, collection and analysis of data Abdullahi (2012). This chapter therefore outlines the research design, the population of the study, sample and sampling procedure, instruments of data collection, administration of instruments and data analysis to be used for the study.

3.2 Research Design

The purpose of a research design is to indicate what observation to make, how to make them, and how to analyze the quantitative aspects of the observations. This research study has been design in line with Case study research method.

Case study is a method for learning about a complex instance, based on a comprehensive understanding of that instance obtained by extensive description and analysis of that instance taken as a whole and in its context (General Accounting Office Program Evaluation and Methodology Division (GAOPEMD),1990).

3.3 Population of the study

Population is the aggregate of all the elements that share some common set of characteristics and that comprise the universe of the purpose of the research problem. The population parameters are typically numbers. Information about population parameters may be obtained by taking a census or a sample. A census involves a complete enumeration of the elements of a population. The population parameters can be calculated directly in a straight forward way after the census is enumerated.

The population of the study consisted of drug rehabilitation centres in the Northern part of the country (local case study) and other rehabilitation centres outside the country(international case study) that applied the healing principles.

3.4 Sampling and Sampling Technique

Sampling as the process of selecting elements from the population in such a way that the sample elements selected represent the population. Purposive sampling was used for this study because it's one of the most suitable sampling techniques when it comes to case study research. Case study selection is comparable to sampling in a quantitative research and that those cases are usually purposively selected Oluigbo (2010). Rigasa drug addicts centre, Kaduna and kiru drug addicts centre , Kano were purposely selected because of the standard of their facilities and services. These centres were chosen because they are located in North-west geo-political zone which has the highest consumers of illicit drugs in the country NDLEA (2008).

3.5 Instrument Of Data Collection

The instruments of data collection used in this research are: Visual survey, Observation and interview.

3.5.1 Visual survey

This was done by looking and identifying what has been achieved by existing treatment centres and how are the techniques and principles of healing have been applied. In Visual survey photographs and sketches were taken. The checklist of the visual survey includes; dimension of spaces, shape of spaces , floor surfaces, ceilings heights, nature of the environment, wall finishing, openings etc.

3.5.2 Observation:

This instrument of data collection was used to observe the movement, attitude, and activities of the addicts and the working personnel within the spaces of the centres.

3.6 Administration of Research Instrument

Introductory letters were made to introduce the researcher to the head/managers of the building where he had given the opportunity to go round the buildings to snap some pictures and do some sketches. Unfortunately, in Kiru and Rigasa rehab centres that chance was not given. Some parts of the building that were snapped include; administrative blocks, workshops, classes, sleeping area etc.

3.7 Data analysis procedure

The raw data collected was organised in a compacted form, where it was coded, scored, tabulated and summarized using tables and charts.

CHAPTER FOUR

4 DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This is the chapter whereby the raw data collected are organised in more compacted form. The data collected were coded, scored, tabulated and summarized using descriptive statistics. This chapter presents the analysis along with the findings. The analysis and findings are arranged in line with the research questions as follows;

4.2 Research Question One

(a) What is the condition of the spaces?

The condition of the spaces both inner and outer were observed using a checklist (see appendix 2), The spatial organisation in the four centre are similar whereby the buildings on the site were haphazardly arranged. This is as a result of the continuous change of function which resulted in the isolation of buildings in a non-harmonious arrangement. Though some of the facilities were arranged and planned around a central open. The composition of forms in each of the four centres is rectilinear in shape. The survey also reveals that the inner spaces of the four centres have insufficient exposure to natural lighting. The walls were also not painted like in the case of Rigasa Rehab but in other centres were painted monochromatically with cream paint but with no any natural artwork on them. It also reveals that the spaces lack good orientation as such led to insufficient and copious ventilation. However it reveals that outer spaces of all the centres are not exposed or blend with natural green except in Plateau Rehab where scattered trees and shrubs were present, also in all the centres there is no defined landscape features.

Table 4.1 Condition of spaces of the studied centres

S/n	**Centre**	**Exposure to natural lighting**	**Natural air/ventilation**	**Natural green/vegetation**	**Application of colour as therapy**	**Artworks on walls**
1.	Rigasa rehab centre	It has insufficient exposure to natural day lighting as it has a deep planning approach especially in the accommodation unit.	It has no cross ventilation In accommodation due to provision of only a single small high-level window.	There is no natural green on site let alone defined landscape elements.	The walls internally and externally were left unpainted	Natural or any motivational artworks were yet to be employed
2.	Sani Abacha rehab centre	The spaces are quiet exposed to natural lighting as most of the facilities were centred around a central open	The presence of the courtyard help to have a free movement of air into the spaces	There is natural green on the site but without defined landscape elements.	The walls were painted with cream	No artworks on walls

3.	Plateau rehab centre	There is quiet exposure to natural lighting in the spaces as most of the facilities were centred around a central open	The presence of the courtyard help to have a free movement of air into the spaces	The centre has good exposure to natural green, shrubs and grasses are scattered on the site but no defined landscape elements.	The walls were painted with off-white paint	No artworks on walls
4.	Kiru rehab centre	It has insufficient exposure to natural day lighting as it has a deep planning approach especially in the accommodation unit.	It has no cross ventilation In accommodation unit due to lack of adequate openings in the spaces.	There is no natural green on site let alone defined landscape elements.	Both the internal and external walls were painted with ridge brown paint.	There is no any artwork on walls.

Source: Author's field work (2014)

4.3 Research Question two

(a) How adequate are the supportive and therapeutic facilities provided in the centres?

Table 4.1 was an inventory of facilities recorded during the physical survey carried out in the centres. In all the centres workshops are used as occupational therapy to direct their minds on what they supposed to be doing even after their discharge. However the survey also shows that most of the centres do not have enough recreational facilities for relaxation, social therapy, and exercise. The survey also shows that the centres had no enough therapy rooms for treatment.

Table 4.2 Availabe supportive and rehabilitative facilities present in the centres

Centre	Patients ward/hall		Class room		Counselling room		Therapy room		Recreational facility (if any)	Vocational facility(if any)
	No. available	Aver.carrry cap	No. available	Aver.carrry cap	No. available	Aver.carrry cap	No. available	Aver.carrry cap		
Rigasa Rehab Centre, Kaduna	1	100	1	45	1	180	1	45	_	workshops
Sani Abacha Rehab Centre.	4	200	2	100	2	100	1	20	_	workshops

Bauchi										
Plateau Rehab Centre. Jos	2	250	2	50	1	50	1	30	_	workshops
Kiru Rehab Centre. Kano	1	180	1	45	1	90	1	25	_	Workshops

Source: Author's Fieldwork (2014)

4.4 Research Question Three

(a) Who are the drug addicts?

It has found that the four centres admit both males and females for treatment. The Kiru Rehab centre had the highest number of patients (340) of which 93% were male and 7% female. Followed by Rigasa Rehab with 298 patients; 94% male and 6% female, it has also been found here that some of the female addicts are married. The Plateau Rehab had 273 patients of which 92% were male and 8% female. The centre with least number of patients was Sani Abacha rehab which had a total number of 209 of which 96% were male and 6% female.

On the staff - patient ratio, the centres were within the ratio of 1/12 – 1/14, except Kiru Rehab that had a ratio of 1/18. Moreover, it has also been found that the centres adopt different methods of treatment, Rigasa Rehab and Kiru Rehab adopted both traditional and medical approach for their treatment while Plateau and Sani Abacha Rehab adopted

only medical approach for the treatment of their patients. The traditional approach involves using local concoction of herbs gotten from specified medicinal trees and shrubs. The medical approach involves using scientific approach of using antipsychotic drugs such as methadone, naltrexone for treatment.

The cases of relapse whereby patients go back into their former state of drug abuse was experienced by the four centres. the cases of relapse were relatively higher in Kiru Rehab centre with 7.1% cases than the other three centres. Plateau Rehab had 4.8% , Sani Rehab had 3.4% cases of relapse. Lastly, the Rigasa Rehab had the least of such phenomenon with 0.8%.

Table 4.3 Some basic causes or influences of the Addicts into drug abuse and addiction

Centre	Idleness	Illiteracy	Peer pressure	Environment	Family break-up	% of addicts
Rigasa Rehab Centre. Kaduna.	90	30	102	48	28	26
Sani Abacha Rehab. Centre. Bauchi.	75	21	56	36	23	18.7
Plateau Rehab Centre. Jos	88	34	73	54	24	24.4

Kiru Rehab Centre. Kano.	113	54	65	34	74	30.4
total	336 (33%)	139 (12.4%)	296 (26.4%)	172 (15.4%)	149 (13.3%)	1120 (100%)

Source: Author's Field work (2014)

From the table above, it made it be known that most of the addicts in each of the four centres were victims of idleness or unemployment. Sani rehab had the highest percentage of such victims with 35.8%, followed by Kiru rehab with 33.2% then plateau rehab with 32.3%. Rigasa rehab had the least of such victims with just 30.2%. other causes of the addicts to abuse drugs also includes peer pressure, illiteracy, family break-up and environmental exposure/influence (see table 4.3)

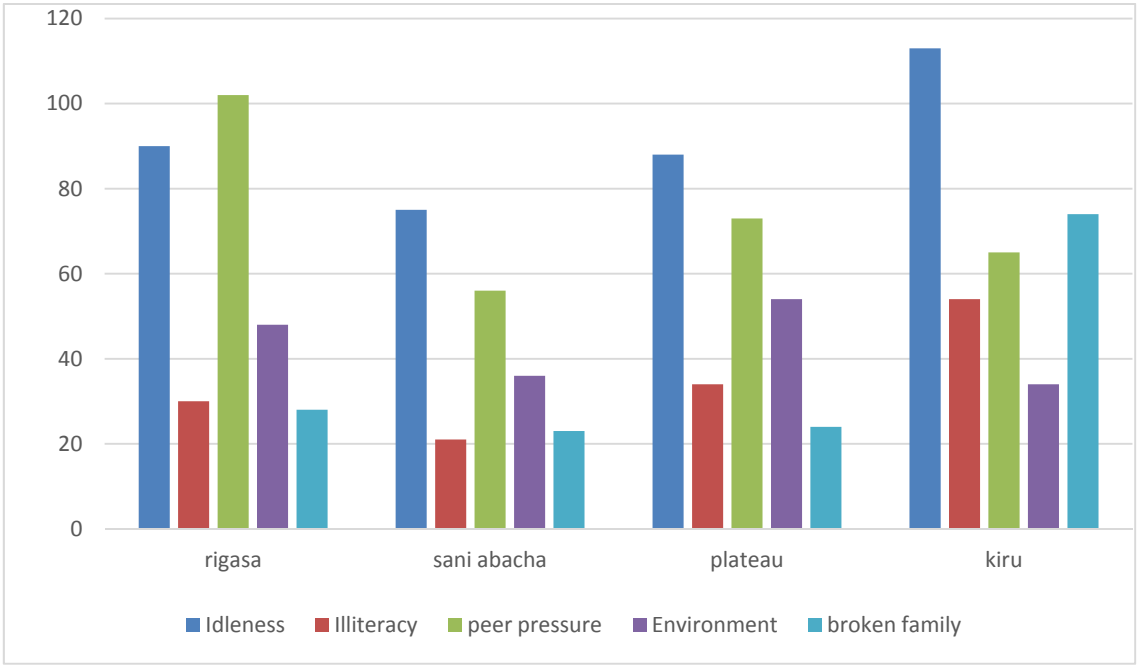


Figure 4.1 some basic instigators of drug abuse and addiction

Source: Author's Field work (2014).

Table 4.4 Some Substances abused by the addicts

Centre	Cannabis	Solvent	Opiates	Amphitamines	Mixed
Rigasa Rehab Centre. Kaduna	23 (7.7%)	12 (4.0%)	84 (28.2%)	32 (28.2%)	147 (49.3%)
Sani Abacha Rehab Centre. Bauchi	17 (8.1%)	15 (7.2%)	54 (25.8%)	21 (10.0%)	102 (48.8%)
Plateau Rehab Centre. Jos	11 (4.0%)	22 (8.0%)	42 (15.4%)	21 (7.7%)	174 (63.7%)
Kuri Rehab Centre. Kano	43 (12.6%)	31 (9.1%)	23 (6.7%)	24 (7.0%)	219 (64.4%)

Source; Author's Fieldwork (2014)

The table below reveals that most of the addicts in the four centres were not abusing only one or single substance but multiple (see table 4.4). the table also shows that the Kiru Rehab had 64.4% of its patients addicted to multiple substances, Plateau had 63.7%, Rigasa had 49.3% and Sani Abacha had 48.8%.

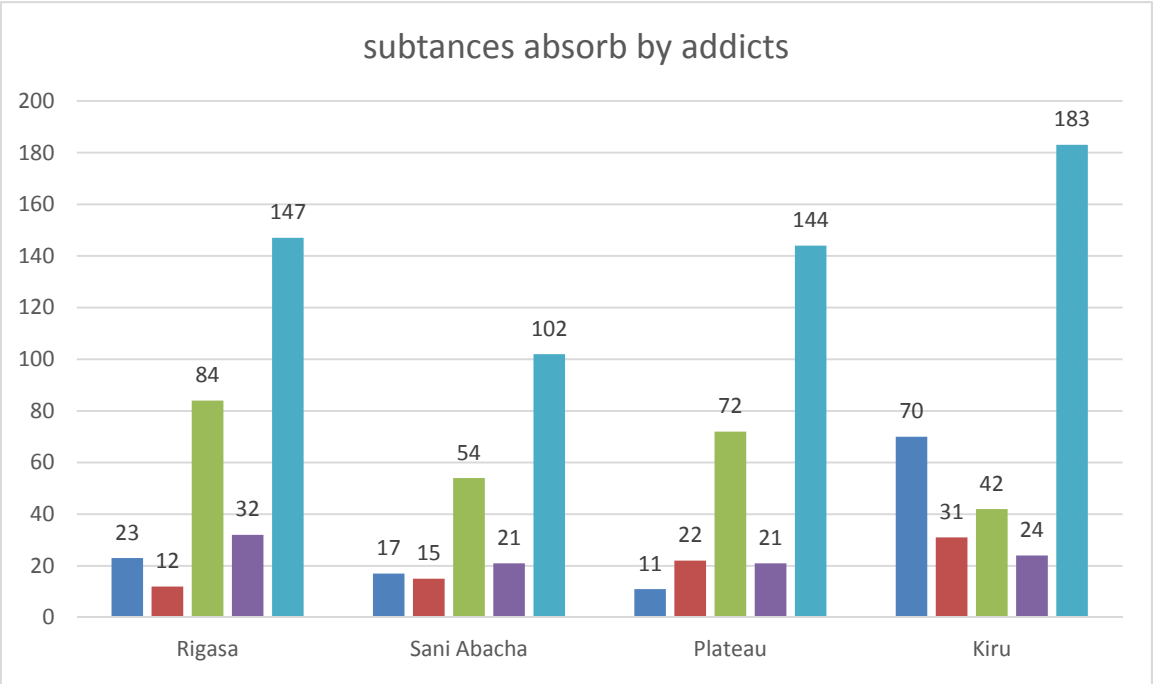


Figure 4.2 Substances commonly absorbed by the addicts

Source; Author's Fieldwork (2014).

4.5 Research Question Four

(a)What aspect of the therapeutic techniques are present in the centres?

All the centres studied are yet to employed many therapeutic techniques in enhancing the stay and well being of the addicts, but only the plateau rehab centre have some few naturally grown green that makes the environment a little bit conducive than the other centres. However, the centres adopt a court yard system of arrangement that help in good admittance of daylight to the spaces. It has also been found that the centres paid most emphasis on occupational rather than the well being the patients. Moreover, when discussing with health care personnel in the centres about their opinion regarding the impact of the living spaces of the addict. The clinical psychologists in both Rigasa and Kiru are of the view that the living spaces of the centres internally and externally are re poor and unfavourable for treatment of people with drug addiction problem, while Sani Rehab and Plateau Rehab described the spaces as fair for treatment. However, it is also

reveals that the psychiatrists of all the centres except that of Sani Rehab centre described the impact of the spaces as unfavourable for healing and treatment of drug addicts. Lastly the therapists of all the centres are of the view that the spaces are fair for treatment except that of Kiru Rehab centre that described the spaces as adverse and unsupportive for treatment of the addicts.

CHAPTER FIVE

5 DISSCUSION OF FINDINGS

This study integrates therapeutic techniques in drug addict centre design in order to provide effective and contributive environment for treatment. The chapter discusses the general findings from the interview conducted and the observation checklist surveyed. Recommendations and views from the recovered patients and professional personnel working in the studied facilities are also discussed. The discussion is arranged in research questions format.

From the first research question, it reveal that the centres studied lack awareness of principles or techniques that contribute, induce and hasten healing and recovery of the drug addicts. The spaces of the centres are handicap in terms of providing basic ingredients that support and contribute to healing. The inner and outer spaces have no green except in Plateau Rehab centre that has some small naturally grown trees around the building. It is worth noting that the study found that presence of green in and around the buildings exhilarate patients mood and reduce self-reported symptoms of physical discomfort which can positively influence healing of the addicts Ulrich (2004). However the study also reveals that fluidal or non rectilinear forms of spaces have positive impact on the patients psyche, this makes the patients feel on much safer ground. The non rectilinear forms have more exposure to sunlight and this help in admittance of ample lighting into the spaces Brian (2012).

Furthermore, It has been found that some of the centres are still having the monstrous notion of taking drug addicts to be criminals therefore, maltreating and depriving them of necessary measures that can comfort and enhance their stay in the centre. Saying some heartless and merciless statements such as “ they (the addicts) forced themselves

to be taken drugs likewise they should force themselves to stop taking it" forgetting that their (the drug addicts) addiction to those substances has become something involuntary because of distortion in the structure of the brain which creates an intense impulse to take drug more and more.

However, the spaces both inner and outer in all the four centres are not favourable for the treatment of people having problem with their underlying organ (brain) which is responsible for all cognitions like decision making, reasoning, learning and so on.

The study also reveals that the centres were found to be admitting both male and female for treatment. The methods of treatment includes traditional and medical approach. Some of the centres; Rigasa rehab and Kiru rehab combined the two methods for treating their patients. While plateau and Sani rehab practice only medical approach. The traditional approach involves using local concoction of herbs gotten from specified medicinal trees and shrubs. The medical approach involves using scientific approach of using antipsychotic drugs such as methadone, naltrexone for treatment.

Furthermore, the study unveils that most of the addicts in the four centres were victims of idleness and peer group pressure which serves as the influence for the menace they found themselves in. Other influences that caused the addicts to abuse and addiction include; environmental influence, illiteracy and pathological family background. It worth noting that the problem of drug abuse and addiction is a pandemic that cuts across the strata of every society regardless of social, economical, ethnic and religious background.

Moreover the study also reveals that the addicts were found to be addicted to multiple substances such as opiates, amphetamines, marijuana (weed), cocaine, solvents, lizards dungs, etc. But only few addicts found addicted to a single substance. Some of the

common reasons for abusing drugs at beginning as said by the addicts include; to feel good, to do better, to feel better and to feel what others feel.

The study however reveals that medical professionals working in the centres were of the view that the spaces are unfavourable and unsupportive for treatment of patients especially (addicts) that are suffering from mental and psychological trauma. The impacts of the spaces include; depression , dejection, poor concentration, lack of energy, and so on. All of these effects contributed to negative output, retard healing process and general rate of recovery of the addicts which ultimately defeats the aim of the establishment.

CHAPTER SIX

6 DESIGN PRELIMINARIES

6.1 Introduction

The proposed building shall be a comprehensive centre that integrate different functions/ units, which is hoped to cater for the rehabilitation of the addicts. However, the different units such as the administrative unit, treatment unit, vocational unit, accommodation unit and supporting unit are all provided in order achieve a holistic and effective treatment. The proposed centre would intend to:

I. Incorporate the research findings of the study in the proposed rehab centre.
II. To create an environment that foster meaning to the stay of the addicts while on treatment.

6.2 Client's Brief

Drug abuse and addiction has become a threat and a great problem that is seriously disturbing the society. The widespread of this menace has become rampant in such a way that it affects all the different strata of people in the society. Due to increment of youths getting involved into this vice and the consequences it causes to the them and to the society at large, the Kano state government in her agenda took the oath of eradicating all drug peddlers in the state and intend to rehabilitate the infected youths through creating a standard rehabilitation centre that will accommodate about 700-500 patients which is to be located at Tudun-Wada local government, Kano state. The design of the centre should take into cognisance the principles and techniques of healing as well as the multi-faceted approaches of treatments in order to have affective outcome. Some of the basic requirement that the client wants include;

I. Administrative Unit

II. Treatment Unit

III. Vocational Unit

IV. Counselling Unit

V. Dietary Unit

VI. Auxiliary Facilities

VII. Accommodation Unit

6.3 Design Case Studies

The design case study will focus on a thorough examination of some selected existing rehabilitation centres in Nigeria. Emphasis would be made on general design of the centre and some specific healing techniques improvised in the centres. Four local rehabilitation centres were chosen for the assessment but only two i.e Ibrahim Sani Abacha and plateau rehabilitation centre are discussed because of some limitations encountered during data collection. Then two other international rehabilitation centres were also chosen. The following rehabilitation centres have been chosen for the assessment

I. Ibrahim Sani Abacha rehabilitation centre, Bauchi.

II. Plateau rehabilitation centre, Jos

III. Groot klimmendaal rehabilitation centre, Neitherland

IV. Palo Alto rehabilitation centre, Westmoreland

6.3.1 Case Study One: Ibrahim Sani Abacha rehabilitation Centre,Bauchi

6.3.1.1 Brief introduction

Client:	Bauchi State Government of Nigeria.
Location:	Games village, Bauchi state Nigeria.
Architect:	Directorate Physical Facilities.

Contractor:	Palace Peace Investment LTD.
Construction date:	1989 – 1990.
Function:	Rehabilitative, Social, Occupational and Educational.
Context:	Urban.
Style:	Functionalism.
Climate:	Tropical.

The centre was established in 1990 by the Bauchi state government initially as a women centre under the ministry of women affairs, later by 1994 it was developed in to a ministry for social development and later on, developed to become the ministry of social welfare and social development with the department of social rehabilitation under the ministry of social development. The department of social rehabilitation covers the rehabilitation of people with disabilities. It was by the year 2006 that the centre introduced the department for the rehabilitation of drugs addicted due to the increase in the number of drug addicts in the society, The also centre offer vocational training and education to improve the rehabilitees socio-economic background, prepare rehabilitees for integration through social rehabilitation, offers guidance and counselling services.

The construction of the building started on December 10, 1989, and was completed and commission by Then Bauchi State Governor, Joshua Madaki on September 12, 1990. The Bauchi state government finance the feeding, accommodation and the working materials for the rehabilitees in the rehabilitation centre.

The centre presently has seventy students comprising of fifty-five drug addicts and fifteen physically challenged students. The drug addicted students were placed on a boarding programme with two students per room, while the physically challenged students were also on a day programme as in the Plateau State Rehabilitation Centre.



Plate VI Entrance approach of Ibrahim Sani Abacha Rehab Centre,Bauchi.

Source: Author's Field work (2014)

6.3.1.2 Design and planning

The centre is a single storey building and the approach was not a mono-structure approach, that is to say different units of the centre are detached from each but inter-connected with series of walk ways and corridors. The centre has two administrative

blocks that consists three and five offices respectively, it has counselling unit, stores and six skills acquisition laboratories. A security post room was also found in the centre. The accommodation unit is located far away from the central core of the centre for privacy and noise reduction. The centre adopted a courtyard system of planning whereby units or sections of the centre were arranged around a central open-core. This system of planning helps in admittance of daylight into the living spaces as well as natural air. The main building materials used in the centre includes; Sandcrete blocks, reinforced concrete, steel pipes and aluminium roofing.



Plate VII Walkways interconnecting Units

Source: Author's Filed work, (2014)

6.3.1.3 Environmental features

The buildings on the site were haphazardly arranged as a result of the continuous change of function which resulted in the isolation of buildings in a non-harmonious arrangement. Though some of the structures were arranged and planned around a central open core.Trees and Shrubs were evidenced on the site and alots of grasses were also present that forms part of the building but with no defined landscaping features.However open spaces for relaxation and recreation, were not also found as such healing or meditative gardens were yet to be incorporated. The centre lacks clear defined parking spaces for visitors, so vehicles sre parked at any spaces found. The only defined parking spaces that can be identified are for the Director, Assistant director, Accountant, Chief therapist and other specialists.



Plate VIII Entrance way to the Centre with no defined footways and landscape elements
Source: Author's Filed work (2014).



Plate IX Adminstrative block with no defined parking space.

Source: Author's Field work (2014).

6.3.1.4 Interior Features

The interior features or elements refer to the those elements that exhilarate the mood of the patients especially in the spaces that they stay much more longer like their rooms. This elements directly or indirectly affect the immune system of the patients that consequently has effect on the healing process. These elements include; presence of green around the spaces, exposure of the interior spaces to outside of the environment(nature), good flow of natural air within the spaces, and exposure of the spaces to natural daylight. However other features such as colours and natural artworks on interior walls also help in correcting the mood of the patients. So considering these features, the centre can be said to have achieved some and others are yet to. For example there is no green within the interior spaces and also the use of colours and artworks as therapy were also not employed.



Plate X Vocation and classes section

Source: Author's Field work (2014)

6.3.2 Case Study Two: Plateau Rehabilitation Centre, Plateau

6.3.2.1 Brief introduction

Client:	Plateau State Government of Nigeria.
Location:	Zaria Road – Jos, Plateau state.
Architect:	Directorate Physical Facilities.
Contractor:	Palace Peace Investment LTD.
Construction date:	1981 – 1982.
Function:	Rehabilitative, Social, Occupational and Educational.
Context:	Urban.
Style:	Functionalism.
Climate:	Tropical.

The centre was established in 1982 by the plateau state government to train people with disabilities to become self-reliant in the society. Due to the increase in the number of drug addicts in the society, the centre later introduces the system which also provides room for the rehabilitation of drug addicts in 2004. The centre offer vocational training and education to improve the rehabilitees socio-economic background, prepare rehabilitees for integration through social rehabilitation, offers guidance and counselling services and assist in placement services and follow up for the employment of the rehabilitated people.

The construction of the building started on October 20, 1981, and was completed and commission by Then Plateau State Governor, Solomon Lar on May 12, 1982. It is easily accessible from Zaria road which serve as the main entrance road of the city from Zaria. Covering an area of 3000sq.m and standing over 4m tall. The Plateau state government finance the feeding, accommodation and the working materials for the rehabilitees in the rehabilitation centre.

The centre presently has ninety students comprising of fifty drug addicts and fourty physically challenged students. The drug addicted students were placed on a boarding programme with five students per room, while the physically challenged students were on a day programme.

6.3.2.2 Design and planning

The centre is located along Zaria road, with its entrances facing the road at the eastern direction and the site is functionally and spatially coherent, facilitating the flow of people to, from, and within the site. The centre is strategically located to allow easy access from the major road. Plateau rehabilitation centre is also a single storey building and the approach was quiet a mono-structure approach unlike the Ibrahim Sani Abacha

rehabilitation centre, this implies that the different units of the centre are not distinctively detached from each other but are like a one-single structure inter-connected with series of walk ways and corridors. The accommodation unit was the only unit that is separated from the other units which is located far away from the central core of the centre for privacy and noise reduction**.** The centre has an administrative block consisting of 4 offices, reception/ counselling unit, 2 junk stores, 10 skills acquisition laboratories, 2 classrooms ,accommodation and a cafeteria/ noise reduction dining hall. The centre adopted a courtyard system of planning whereby units or sections of the centre were arranged around a central open-core. This system of planning helps in good admittance of daylight into the living spaces as well as natural air. The main building materials used in the centre includes; Sandcrete blocks, reinforced concrete, steel pipes and aluminium roofing. Reinforced concrete columns and steel pipes were used as the main structural system of the centre.



Plate XI Undefined parking space

Source: Author's Field work (2014)



Plate XII An open Courtyard in the accomodation section

Source: Author's Field work (2014).

6.3.2.3 Environmental features

The different units of the centre were systematically arranged as they adopted a monolithic design approach. Many of the structures were arranged and planned around a central open core. Trees and Shrubs were evidenced on the site and alots of grasses were also present that forms part of the building but with no defined landscaping features. However open spaces for relaxation and recreation, were not also found as such healing or meditative gardens were yet to be incorporated . The centre lacks clear defined parking spaces for visitors, so vehicles sre parked at any spaces found. The only

defined parking spaces that can be identified are for the Director, Assistant director, Accountant, Chief therapist and other specialists

Source: Author's filed work

6.3.2.4 Interior features

The interior features or elements refer to the those elements that exhilarate the mood of the patients especially in the spaces that they stay much more longer like their rooms. This elements directly or indirectly affect the immune system of the patients that consequently has effect on the healing process. These elements include; presence of green around the spaces, exposure of the interior spaces to outside of the environment(nature), good flow of natural air within the spaces, and exposure of the spaces to natural daylight. However other features such as colours and natural artworks on interior walls also help in correcting the mood of the patients. So considering these features, the centre can be said to have achieved some and others are yet to. For example there is no green within the interior spaces and also the use of colours and artworks as therapy were also not employed.



Plate XIII Walkway linking to accommodation section

Source: Author's Field work (2014)



Plate XIV Out door environment with no defined landscape

Source: Author's field work (2014)

6.3.3 Case Study three: Groot Klimmendaal rehab centre

6.3.3.1 Brief introduction

Location:	Outside forest, Arnhem, Netherlands.
Architect:	Koen Van Velsen
Contractor:	Palace Peace Investment LTD.
Construction date:	2011
Function:	Rehabilitative, Social,Restorative and Educational.
Context:	Urban.
Style:	Functionalism.
Climate	Temperate

Groot klimmendaal rehab was one of the six shortlisted projects for the year 2010 Mies Van der Rohe's award. The Mies van der Rohe award is the highest European distinction in architecture. The award is granted after every two years by the European Union. The main objectives of the award are to distinguish and reward excellence in architecture and draw attention to the major contribution by European professionals to the development of new ideas and technology. The centre was awarded building of the year 2010 by the Dutch Assocation of Architects, Winner of the first Hedy d'Ancona Award 2010 for excellent healthcare architecture, Winner of the Arnhem Heuvelink Award 2010 and winner of the Dutch Design Award 2010 public award and category commercial interior.

6.3.3.2 Design and planning

The centre is a 3 storey building cladded in brown anodised aluminium. It comprises of offices, clinic, sport facilities, swimming pool, a restaurant and theatre. The facilities in the centre are both by patients and the local community. The centre has a wooden staircase connecting all floors of the building while atria and light wells visually connect spaces and allow natural light to penetrate.

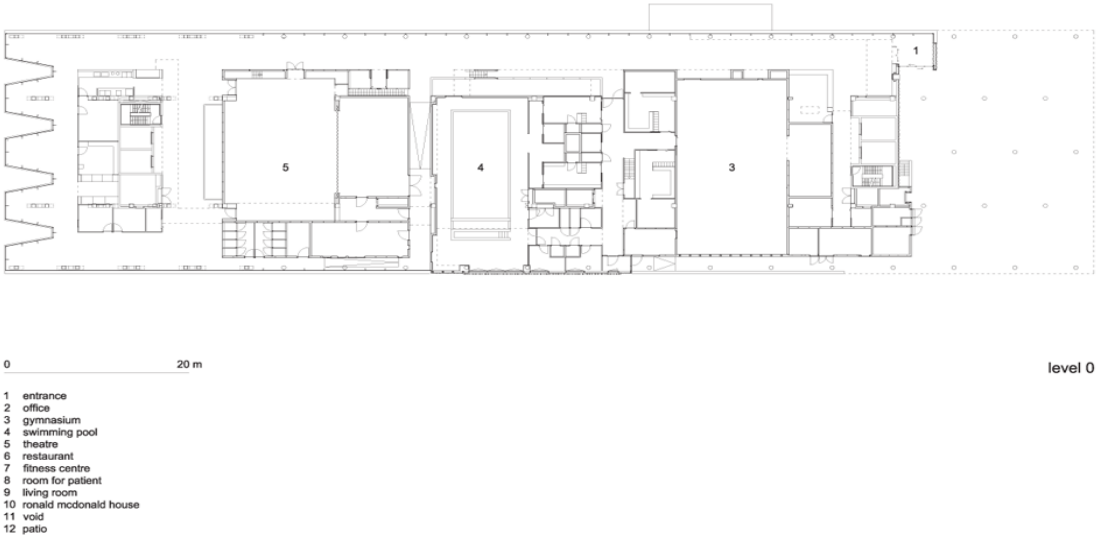


Figure 6.1 Ground floor plan

Source: www.worldbuildingdirectory.com



Figure 6.2 First floor plan

Source: www.worldbuildingdirectory.com

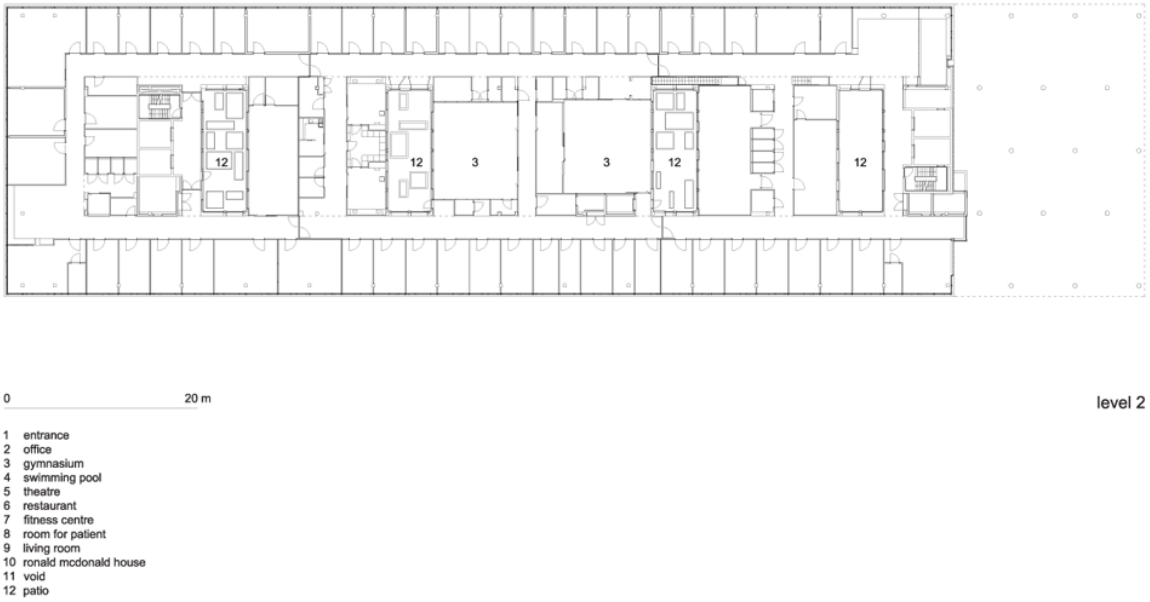


Figure 6.3 Second floor plan

Source: www.worldbuildingdirectory.com

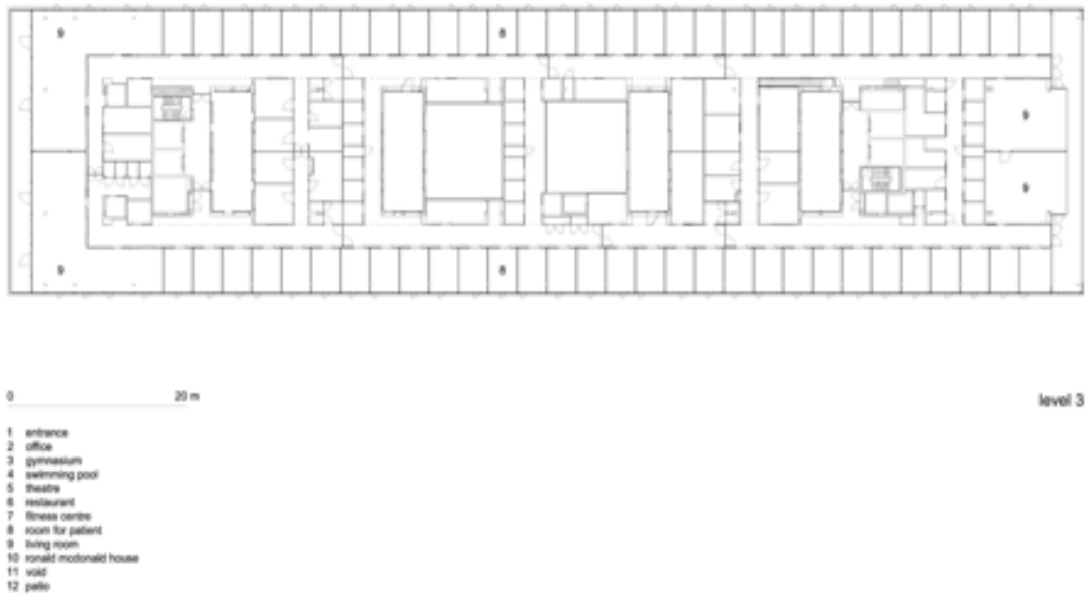


Figure 6.4 Third floor plan

Source: www.worldbuildingdirectory.com

6.3.3.3 External features

The different units of the centre were orderly arranged at the central core of the facility, adopting a kind of concentric design approach. The accommodation unit were arranged at the peripheral of the centre, then the offices,the sporting facilities, restaurant and theatre. Trees and Shrubs were evidenced on the site and alots of grasses were also present that forms part of the building with a defined landscaping features. However open spaces for relaxation and recreation, were incorporated with a designated healing or meditative gardens . The centre has a defined parking spaces for visitors, as such vehicles a re parked at a specified space.



Plate XV Approach view of the Centre

Source: www.worldbuildingdirectory.com



Plate XVI External environment surrounded with green

Source: www.worldbuildingdirectory.com

6.3.3.4 Interior Features

The interior features or elements refer to the those elements that exhilarate the mood of the patients especially in the spaces that they stay much more longer like their rooms. This elements directly or indirectly affect the immune system of the patients that consequently has effect on the healing process. These elements include; presence of green around the spaces, exposure of the interior spaces to outside of the environment (nature), good flow of natural air within the spaces, and exposure of the spaces to natural daylight. However other features such as colours and natural artworks on interior walls also help in correcting the mood of the patients. So considering these features, the centre can be said to have achieved a lot of these.



Plate XVII Use of brighter and colouful paints as therapy

Source: www.worldbuildingdirectory.com



Plate XVIII Connecting the interior with the exterior

Source: www.worldbuildingdirectory.com

6.3.4 Case Study three: VA Palo Alto rehabilitation centre

6.3.4.1 Brief introductions

Location:	Latrobe, Westmoreland
Architect:	The design partnership, LLP
Construction date:	2010
Function:	Rehabilitative, Social,Restorative and Educational.
Context:	Urban.
Style:	Functionalism.
Climate	Temperate

Alto Palo rehabilitation centre is a centre that offers a lot of medical services which include; intravenous therapies, Wound care, Respiratory and Cardiac services, while skilled rehabilitation services include physical, Occupational, Speech, and Respiratory for persons with drug addiction problem, brain injuries, depression, psychological instability. therapy services are provided by therapists and other medical professionals. General and restorative services provide assistance with daily living needs.

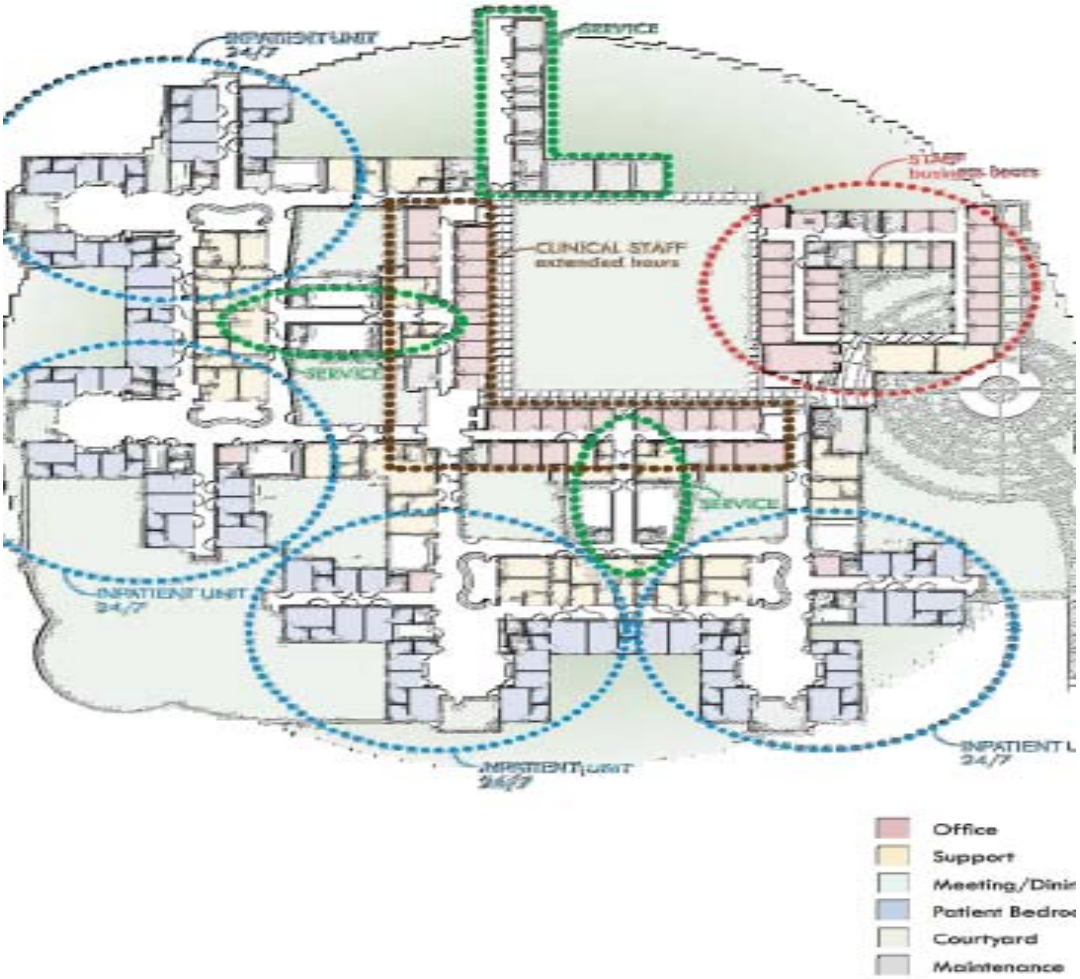


Figure 6.5 Site layout of the centre

Source: www.naphs.com

6.3.4.2 Design and planning

Palo Alto is a single storey facility with multiple courtyards that allow for direct patient access. The design incorporated a village-like design which allows for a more home-like feel and greater visual access to the outdoors. In addition, a single storey design allows direct access to and use of designated outdoor areas by patients. The has four inpatient units that are arranged around a large central courtyard. Each inpatient unit has courtyards within the unit as well. The floor plan incorporates an open, pod-like design, with a residential feel. A central nursing station has visibility down the three patient wings and direct observation of patient activity areas, the entrance to the unit and a

central outdoor courtyard. one patient room wing has a large open dayroom/activity space directly off of the bedrooms. The second wing acts as a "flex" wing. This unit and the adjacent unit are able to adjust the number of beds in this wing based on patient occupancy at the time.

6.3.4.3 External features

The different units of the centre were orderly arranged at the central core of the facility, adopting a kind of concentric design approach. The accommodation unit were arranged at the peripheral of the centre, then the offices,the sporting facilities, restaurant and theatre. Trees and Shrubs were evidenced on the site and alots of grasses were also present that forms part of the building with a defined landscaping features. However open spaces for relaxation and recreation, were incorporated with a designated healing or meditative gardens . The centre has a defined parking spaces for visitors, as such vehicles a re parked at a specified space.

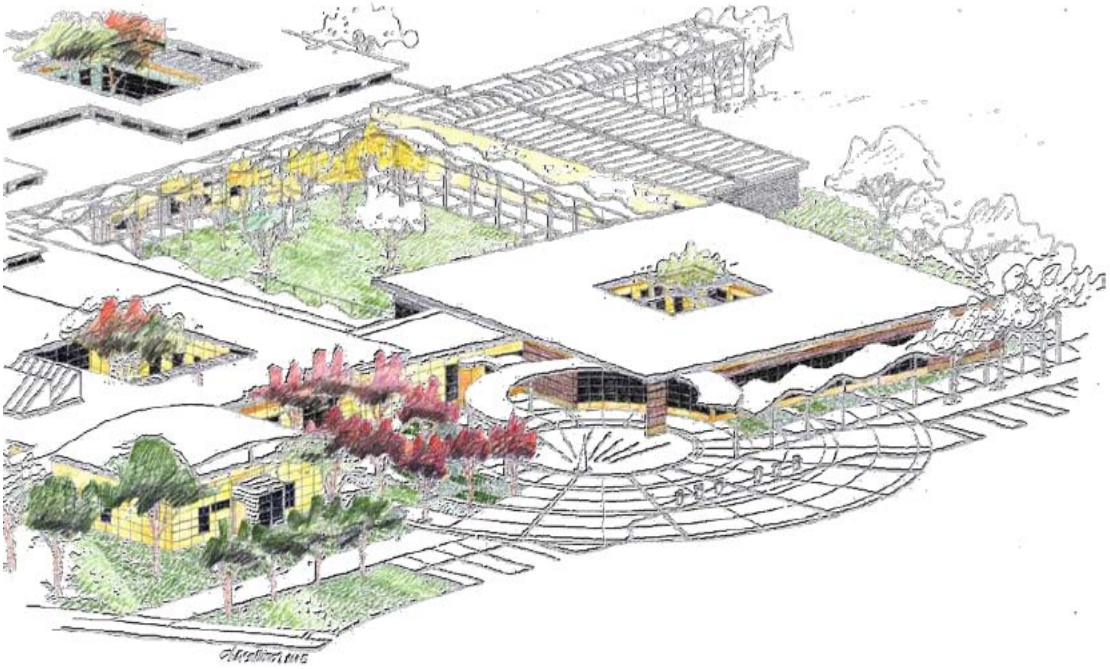


Figure 6.6 Aerial vew of the centre

source: www.naphs.org

6.3.4.4 Interior features

The interior features or elements refer to the those elements that exhilarate the mood of the patients especially in the spaces that they stay much more longer like their rooms. This elements directly or indirectly affect the immune system of the patients that consequently has effect on the healing process. These elements include; presence of green around the spaces, exposure of the interior spaces to outside of the environment (nature), good flow of natural air within the spaces, and exposure of the spaces to natural daylight. However other features such as colours and natural artworks on interior walls also help in correcting the mood of the patients. So considering these features, the centre can be said to have achieved a lot of these.



Plate XIX Interior view of the therapist station

Source: www.naphs.org

6.3.5 Case study summary

Table 6.1 Case study summaryof the four centres

s/n	Variables	Case study 1 Rigasa rehab	Case study 2 Ibrahim Sani Abacha	Case study 3 plateau rehab centre	Case study 4 kiru rehab centre	Case study 5 Groot klimmendaal rehab centre	Case study 6 Alto Palo
1.	Exposure to natural lighting	1	2	2	1	3	3
2.	Exposure to natural air	1	3	3	2	4	3
3.	Exposure to Natural green and designated healing garden	1	3	4	1	5	4
4.	Application of colours scheme	1	1	1	1	5	2
5.	application	1	1	1	1	2	3

	Natural artwork on wall						

keys: 1=Poor

2=Fair

3=Good

4=Very good

5=Excellent

Source: Author's Field Work, (2014)

6.4 Study Area

The study area is Tudun-wada town, the capital of Tudun-wada local government area of Kano state. Tudun Wada is located at the southern part of the state and fall within the latitude 12'00'N longitude 8'13'E. It is created in1992 during the military administration. It covers an area of approximately 734km2 and has a population of about 256,732 . The local government shares common boundaries with Sumaila to the east, some part of Kaduna state to the west, Doguwa to the south and Rano/Kibiya to the north. it is located within the Sudan savannah region of Northern Nigeria with two distinct climates; that is rainy and dry season.



Figure 6.7 Map showingthe location of the study area

Source:Wikimediacommons

6.5 Site Selection

Rehabilitation or reformatory centre is one of the most delicate module of design that comprises multifaceted approach of treatments as such when it comes to the selection of where this kind of facility to be located, a rational consideration need to be done. Site selection plays an important role in rehab construction and management. From the Government aspect, appropriate site selection for rehab centre will help optimise the allocation of medical resources, matching the provision of health care with social and economic demands, coordinating the urban and rural service development, and social

contradictions. From the aspect of the society, proper site selection will improve access to the health care, reduce time consumption for rescue, and the quality of wellness.

For the purpose of this study, two sites were chosen both of which are located in Kano state but in different local government area. The two sites were assessed based on a selection criteria specified to treatment centres in order to get a more suitable site for the intended facility. The criteria includes;

Criterion1-Existing treatment centres:-How far is the site from existing centre? What are the anticipated impacts on existing centre? (The farther away from the existing treatment centre the better).

Criterion2-**Residential area**:- How far is the site from the residential area? (The nearer the better)

Criterion3 Accessibility:- How far is the from the access road? (The nearer the better)

Criterion4-Lot Size:- Is the site capable of reasonable providing for the buildings future expansion and outdoor activities?

Criterion5- Site physical features:- Does the site has natural features such as greens(trees),the terrain of the site? is the site rocky. flat. steep?

Criterion6- Neighbourhood:- is the site located in an institutional? is the site located in a residential area? is the site located in a mixed use area? is it in rural, surban or urban setting?

Criterion7- Utilities:-is municipal water and water sewer available? is there adequate electrical services?



Figure 6.8 Google image of Site 1

Source: Google earth (June, 2014)



Figure 6.9 Google image of Site 2

Source: Google earth (June, 2014).

Table 6.2 Site selection criteria scoring summary

S/n	Criteria	Site 1	Site 2	Remarks
1	Distance from existing centre	3	4	Site 2 is closer to existing
2	Distance from residential areas	3	3	The two sites are have close distance to residential areas
3	Accessibility	2	4	Site 2 has more accessible qualities than site1
4	Lot size	3	3	Site 2 is more spacious, has better potentials for future expansion
5	Site physical features	4	4	Both sites have good physical features
6	Neighbourhood	2	2	Both have good view opportunity
7	Utilities	3	4	Site 2 has more utilities
Total		19	24	Site 2 is more suitable for intended facility

keys: 1=Poor

2=Fair

3=Good

4=Very good

5=Excellent

Source: Author's work (2014)

6.6 The Proposed Site

The site for the proposed facility is located in Tudun Wada local government of Kano state.The site is located along Tiga-dam road which is main tarred road to the site.The other access road to the west and north are untarred roads for residents access to their homes. The site is

dominated with trees and shrubs as well as grasses especially to the western part of the site, this will make it suitable for the location of accommodation and recreational facilities.

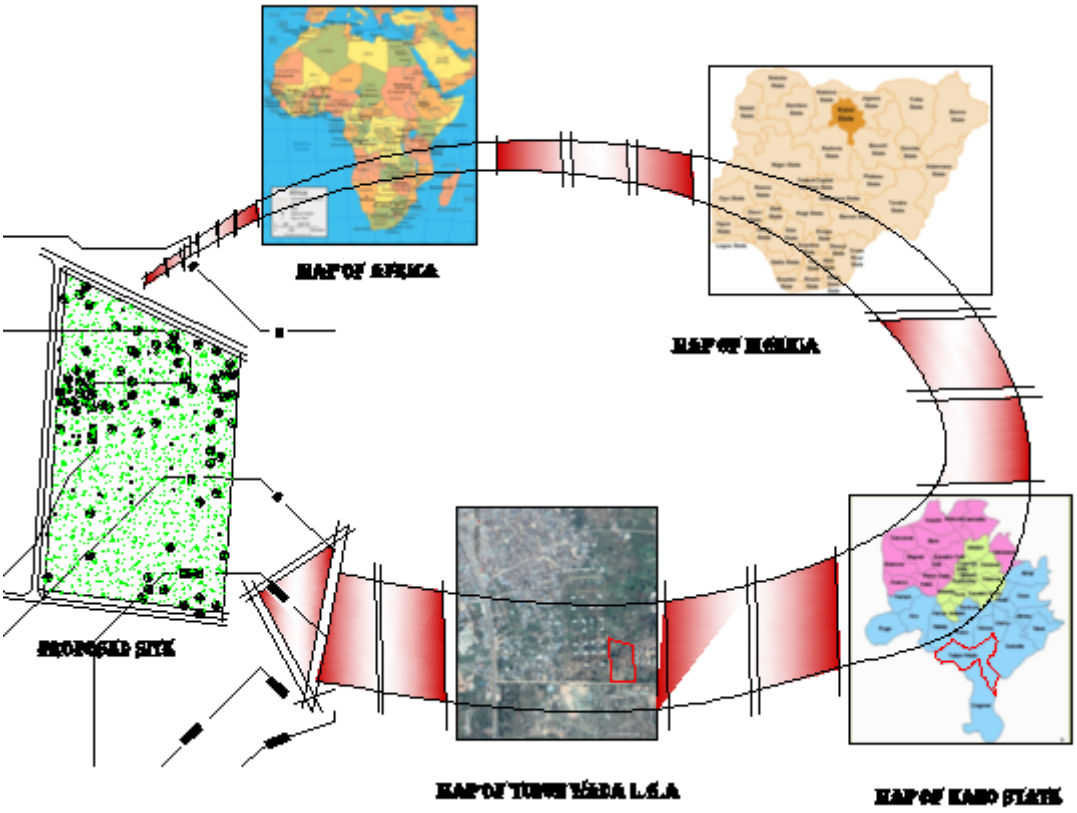


Figure 6.10 Location of the proposed site

Source: Author's work (2014)

6.6.1 Analysis of the site

6.6.1.1 Topography

The site is a relatively flat with a lowest level of -3000mm to the south and to the extreme east while the highest level is 2000mm towards the north west of the site. The soil nature of the site comprises of a brown reddish soil and a ferruginous tropical soil.

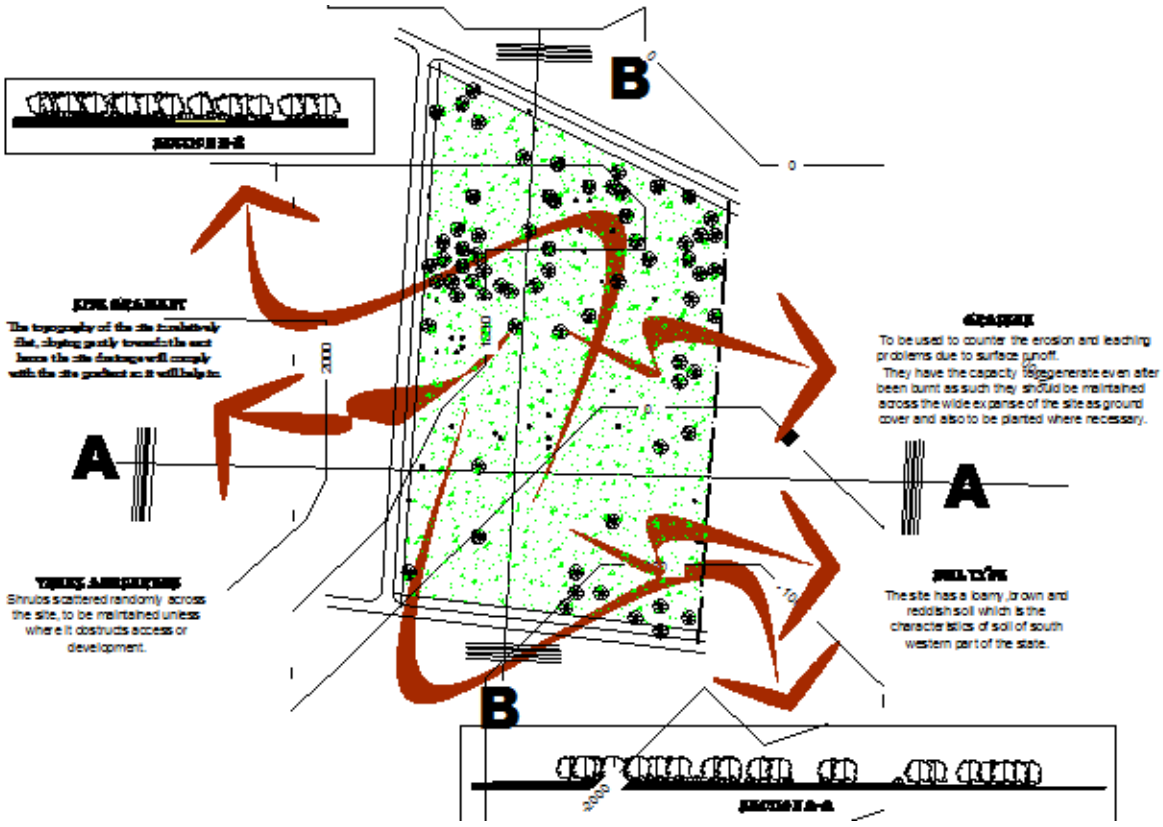


Figure 6.11 Topographical analysis of the Site

Source: Author's work (2014)

6.6.1.2 Vegetation

Vegetation of the site consists of Sudan and guinea savannah but both were being altered and replaced by secondary vegetation due to human activities such as bush fallowing, clearance for cultivation and so on. More than half of the site is bared with grasses even during the dry season although is not as green as during the rainy season.

The western and northern part of the site are densed with trees and shrubs. The effects of these tress help in making the microclimate of the site more conducive and supportive for treatment.



Plate XX View of the Site vegetation

Source: Author's Field work (2014)

6.6.1.3 Micro data analysis of the site

Climate as the weather conditions of a certain place or region, The climate of the site is characterised based on the following elements such as temperature, rainfall, sunshine/radiation, humidity. Wind.

6.6.1.3.1 Temperature:

The hot dry climate region where the site falls possesses two seasons and these seasons include; dry and rainy season with annual temperature of 8°C. The hottest month is

April with an approximate temperature of 33°C with a mean temperature of 26°C-33°C. However, the coldest month is January with 22.81. Therefore making the mean monthly temperature of the area where the site to be about 20°C-33°C.

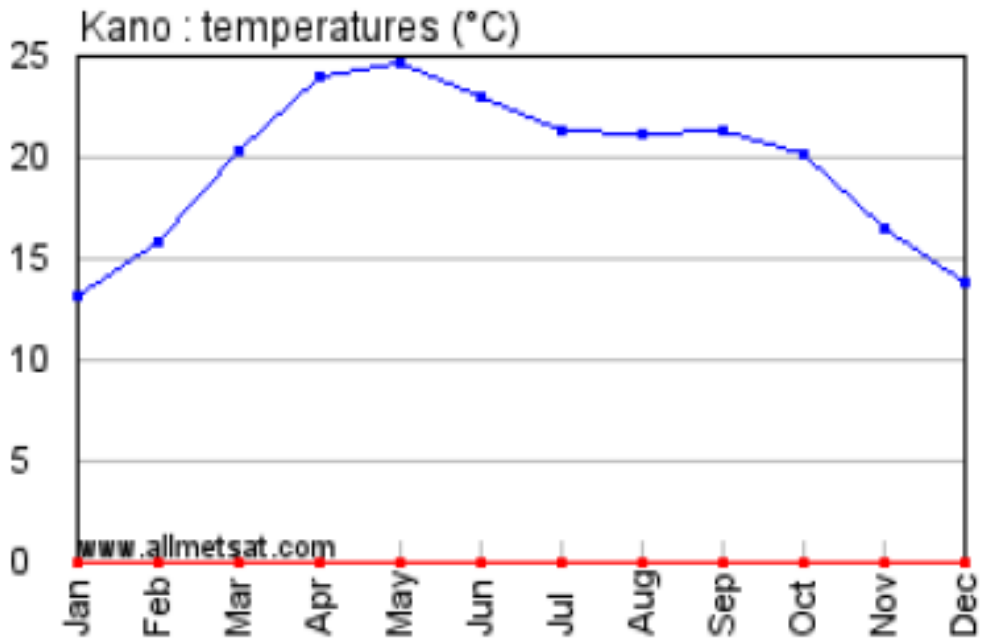


Figure 6.12 Monthly temperature Variation of the Site

Source: www.gaisma.com (2014)

6.6.1.3.2 Rainfall/Precipitation:

There are no clear monsoons but precipitation tends to be a dominant climatic element characterizing the two seasons. In the rainy season (April to November) the average rain recorded is between 1mm in the month of march to 228mm in the month of August, whereas in harmattan (November to march) that the average rain recorded is 0mm. On a balance scale there are 76 days annually on which greater than 0.1mm of precipitation occurs or 6 days on an average month. The month with the driest weather is January and December when on balance 0mm of rainfall occurs. The month with the wettest is August when on balance 311 of rain, sleet, hail falls across 21 days.

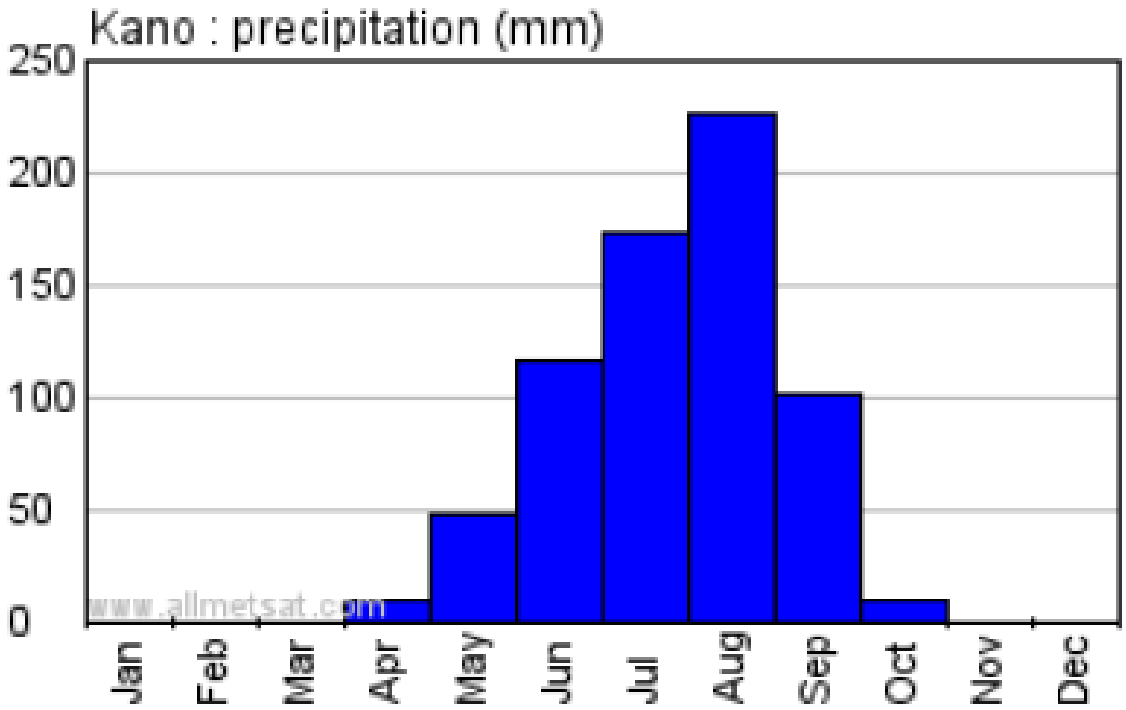


Figure 6.13 Monthly rainfall data of Kano state

Source: www.gaisma.com

6.6.1.3.3 Wind:

There are two major air masses that dominate Kano are the tropical continental and tropical maritime air masses. The continental air mass developed over Sahara desert from north Africa. It is usually warm, dry, light and dusty and blows from north east to the south west direction. It is refers to as North-east trade wind. The tropical maritime air mass blows from Indian ocean and over Atlantic ocean to the southern part of the country. It is usually warm with moisture and heavy, moves from the south west to the north east direction. It is refers to south west trade wind. The tropical maritime mass creates wet season and causes rainfall when the air mass dominates. The tropical air mass creates dry season and causes dryness when the air mass becomes dominate. The oscillation between these two air masses produces highly seasonal characteristics weather conditions of the country.

The wind speeds averagely varies from 2.0m/s to 4.0m/s, most of the wind comes from the south west and the direction of the prevailing winds is 108. The presence of southwest and north east prevailing winds are attributed to the displacement of the inter-tropical convergence zone. There are variations in the wind speed at different times of the day, lower speeds occur in the mornings and higher in the afternoon. On average the strongest winds occur around 1500h fortunately at the time when ventilation is mostly desirable for cooling purposes.

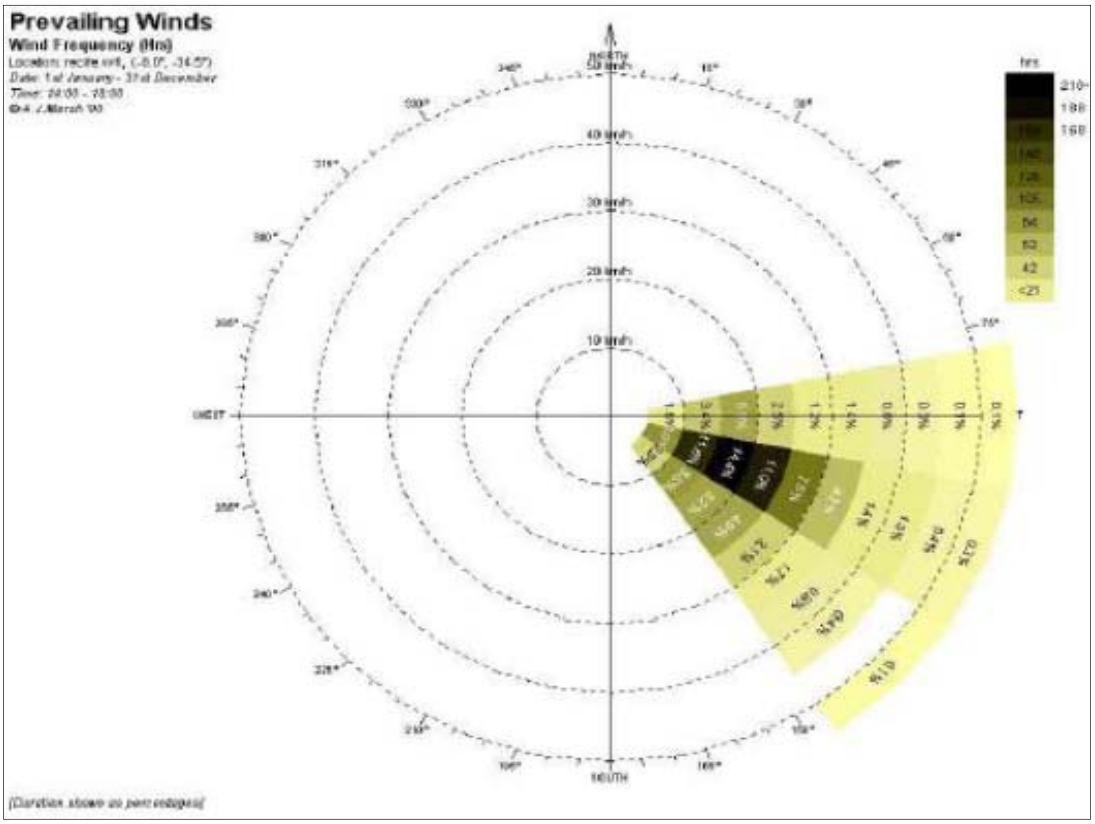


Figure 6.14 Wind direction and wind frequency of the site

Source: WikimediaCommo (2011)

6.6.1.3.4 Relative Humidity:

The relative humidity in the wet season is between 60 and 80% while in the dry season, it is about 67%. The relative humidity is usually very high between January and April with about 550%. It increases progressively between May and October to about 86% and decreases again between November and December to about 65%. The mean annual relative humidity is 75.5% with a standard deviation of 10.8 and coefficient of variation of 14.3

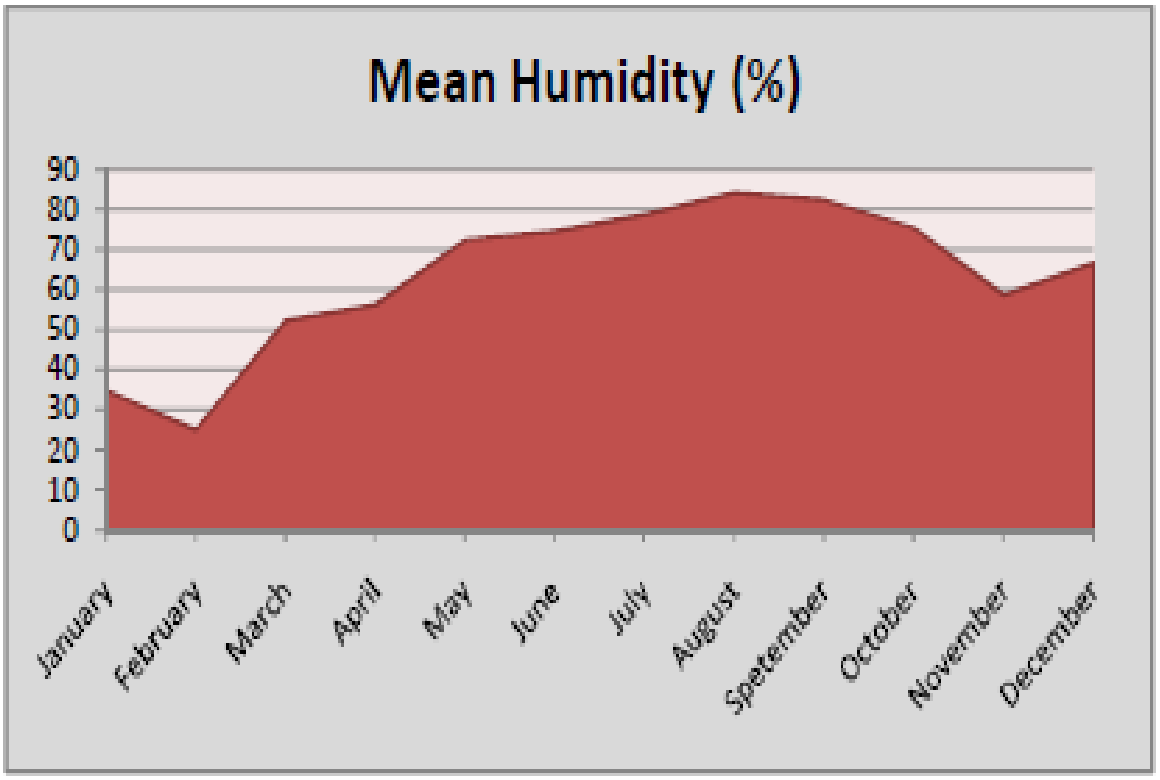


Figure 6.15 Frequency polygon of mean humidity of the site

Source: www.gaisma.com

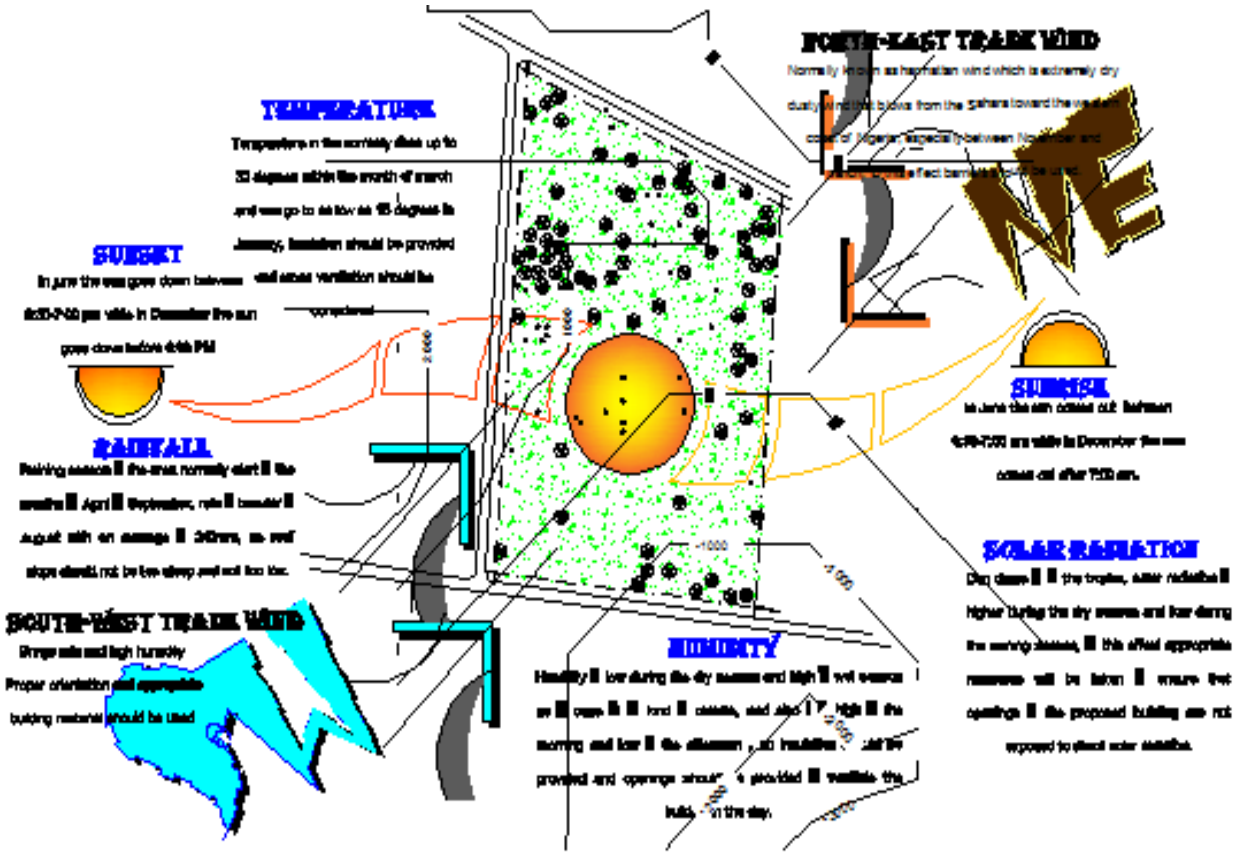


Figure 6.16 Site Climatic analysis of the site

Source: Author's Field work (2014)

6.6.1.4 Accessibility and Utilities

The site is readily accessible from Tiga-dam road. Major access to be provided from south of the site and alternative access from the North west side. However, there is electricity supply on the site , the electricity supply system is three-phase four wire grid system. The adjoining properties are fairly serviced with water. Both telephone service line and G.S.M were not found near the site.



Plate XXI View of the Main access road to the site

Source: Author's Field work (2014)

6.6.1.5 Visual quality

The site has a good visual quality especially to the western and northern part of the site due to the presence of trees and shrubs which serve to give good cooling effects. These effects of the trees and the microclimate provide a conducive and optimal restoring condition for the patients as well as the staffs. the trees can also serve as noise and sound barriers and acts as absorbent to direct solar radiation.

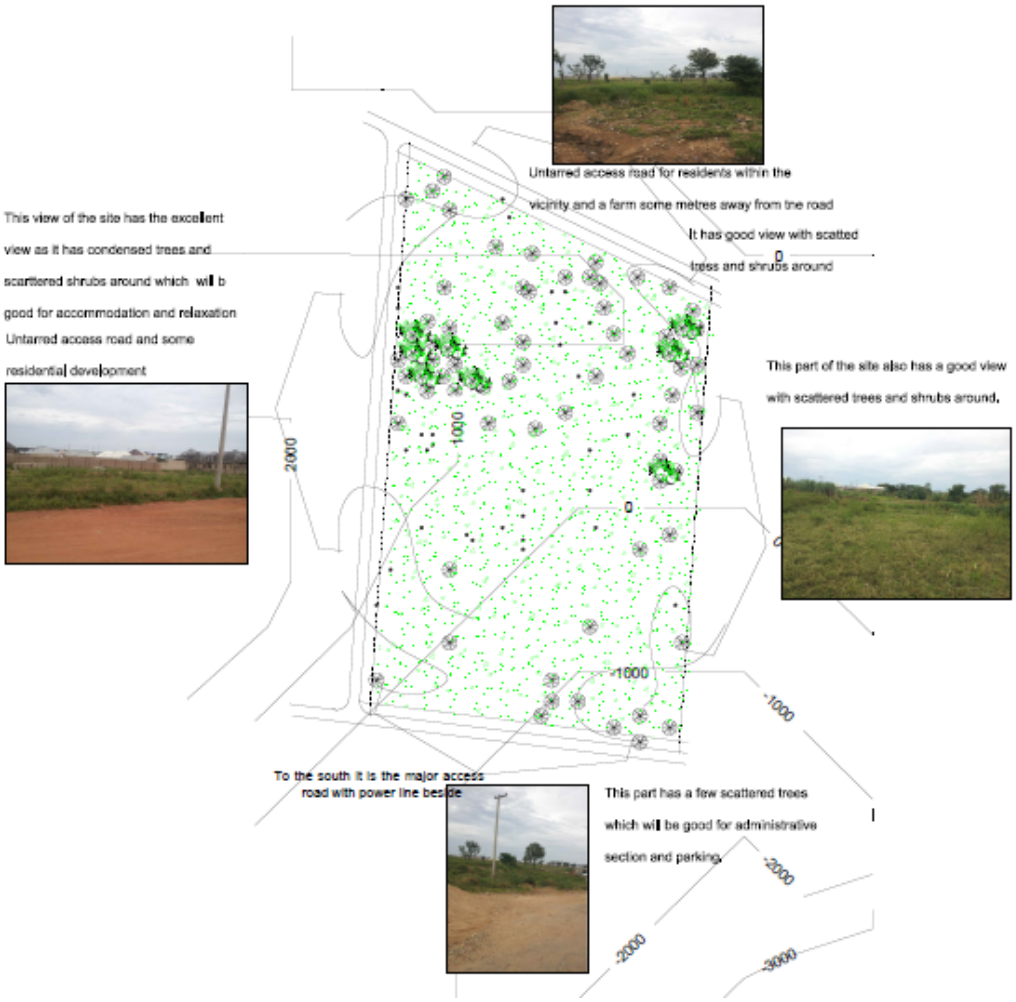


Figure 6.17 Visual analysis of the site

Source: Author's work (2014)

CHAPTER SEVEN

7 DESIGN REPORT

7.1 Introduction

This chapter encompasses the report of the architectural design of the proposed rehabilitation centre in Tudun-Wada, Kano. In this chapter, key design requirement and how the research findings are been incorporated into the design are discussed.

7.2 Design Brief

The widespread of drug abuse and addiction has become rampant in such a way that it affects all the different strata of people in the society. Due to increment of youths getting involved into this vice and the consequences it causes to the them and to the society at large, the Kano state government in her agenda took the oath of eradicating all drug peddlers in the state and intend to rehabilitate the infected youths through creating a standard rehabilitation centre that will accommodate about 700-500 patients which is to be located at Tudun-Wada local government, Kano state. The design of the centre should take into cognisance the principles and techniques of healing as well as the multi-faceted approaches of treatments in order to have affective outcome. Some of the basic requirement that the client wants include; Administrative unit, treatment unit, dietary unit, vocational unit, accommodation unit, auxilliary facilities and therapeutic garden. These can further be condensed into;

A. Adminstrative unit

I. Medical record

II. patient's registration and admission

III. Out patient waiting area

IV. accountant

V. Pharmacy and store

VI. Director's office

VII. Secretary and Conference

B-Treatment Unit

I. Waiting hall

II. Consultation and counselling rooms

III. Out patient lounge and visitation hall

IV. resuscitation room and medication

V. laboratory

C- Dietary

I. Dining hall

II. kitchen and stores

III. catering training room

D- Vocational Unit

I. Carpentry

II. Electrical and electronics

III. Tailoring

IV. Welding and fabrications

V. Shoe making

VI. Cafe and phone repairement

VII. Classes

D- Accommodation Unit

I. Male :double, triple, and group room

II. Female: single, double.

E- Auxiliary Unit

I. Therapeutic garden, counselling hall

II. Recreational and outdoor activities; exercise

7.3 Design Frame Work

7.3.1 Conventional frame work

The general design approach of drug addict rehabilitation centres points out that the key functional systems are administrative, housing, vocational, treatment and dietary. This is the conventional design approach that has been in the system of rehabilitation centres in Nigeria. No attention has been given to elements of therapeutic techniques that help to enhance the stay of the addicts while on treatment and also to contribute to their healing process and recovery

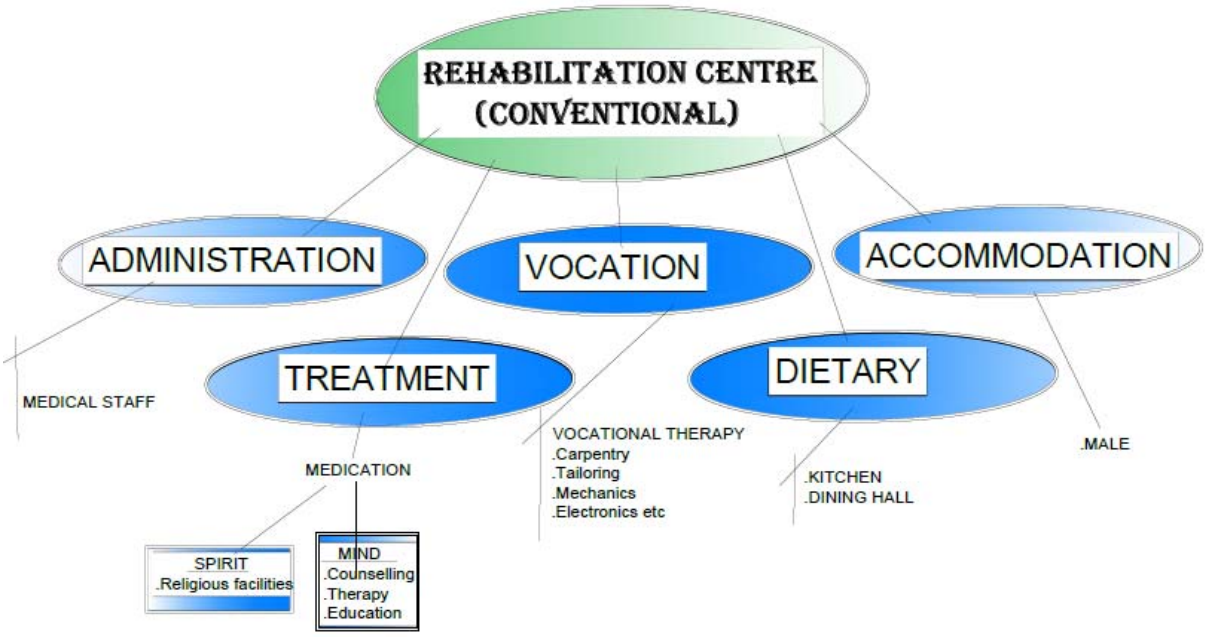


Figure 7.1 Conventional Design frame work

Source: Author's work (2014)

7.3.2 Proposed design frame work

The proposed design framework incorporates therapeutic techniques into the design of rehabilitation centre through creating good connection between the indoor and ambient environment by the use of courtyard system arrangement, use of soft landscape elements to enhance indoor air quality, use of balcony planting, use of stack effect principle by lowering window sill level, use of colours and artworks son walls. The framework also recognises body exercise as another ingredients of treatment that contribute to healing process and well being of the addict. it has been found that exercise increases the body ability to produce chemicals (Endorphin)that reduce depression and mental disorder(Waxman, 1984)

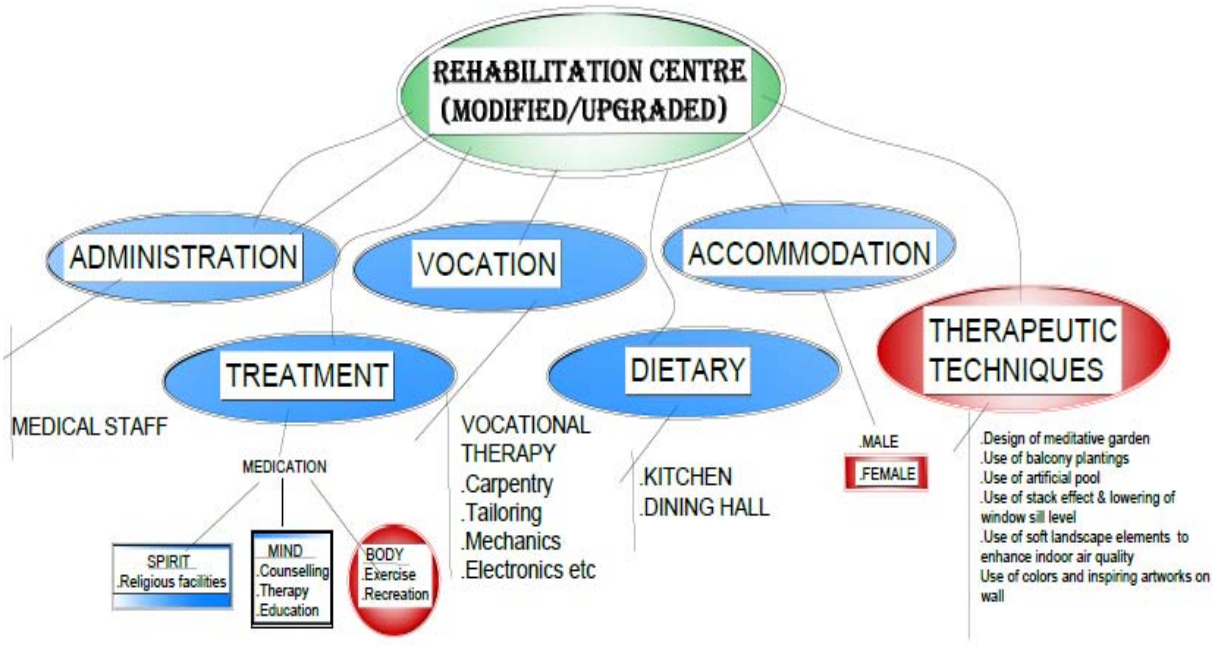


Figure 7.2 Modified/ New Frame work

Source: Author's work (2014)

7.4 Site Development Concept

The site concept was developed by mimicking the structure of the human brain which consists different parts with different functions interconnected with one another with a transmitter called neurons. Similarly, the proposed centre has different units or parts with different function. For instance the accommodation unit, vocational unit etc all connected with a free fluidal walkways.

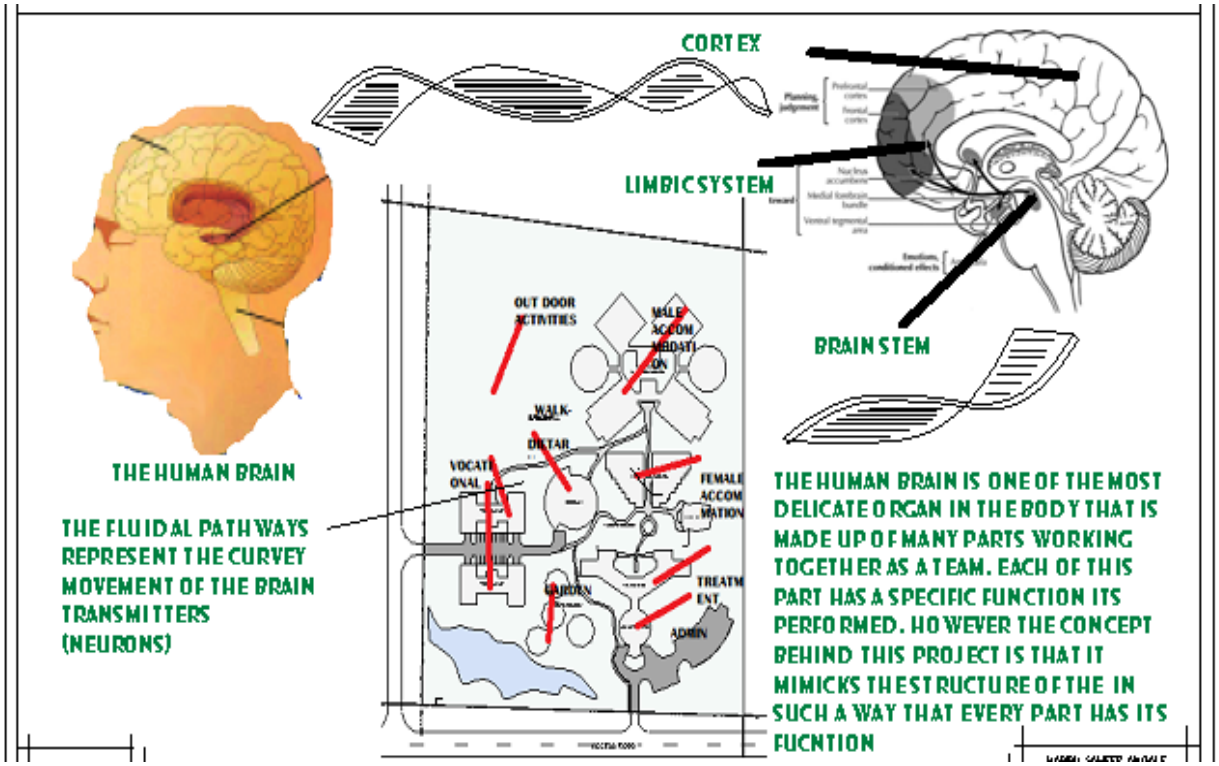


Figure 7.3 Concept Development

Source: Author's Work (2014)

7.5 Design Concept

The concept of the design was developed using different geometric shapes of buildings to depict different types of substances abused by the addicts. The spaces of the building were planned to have good view to the inside and the outside environment by means of arranging the rooms around internal courtyard for access to natural day lighting, ventilation and social interaction.

7.6 The Proposed Rehabilitation Centre Design

7.6.1 Site plan design

The site plan was designed in regard to the following considerations such site zoning, entrances and exits landscape elements. and walkways.

7.6.1.1 Site zoning

The site zoning involves arrangement of units or department into public and private, less traffic and high traffic, noisy and less noisy areas. From the site plan below it can be seen that units such as the administrative and vocational where much people and noise are expected were zoned at the public/noisy area. The treatment unit, counselling hall and garden were zoned at semi public and semi noisy area, while the accommodation unit ,recreational facilities were at the private and less noisy area.

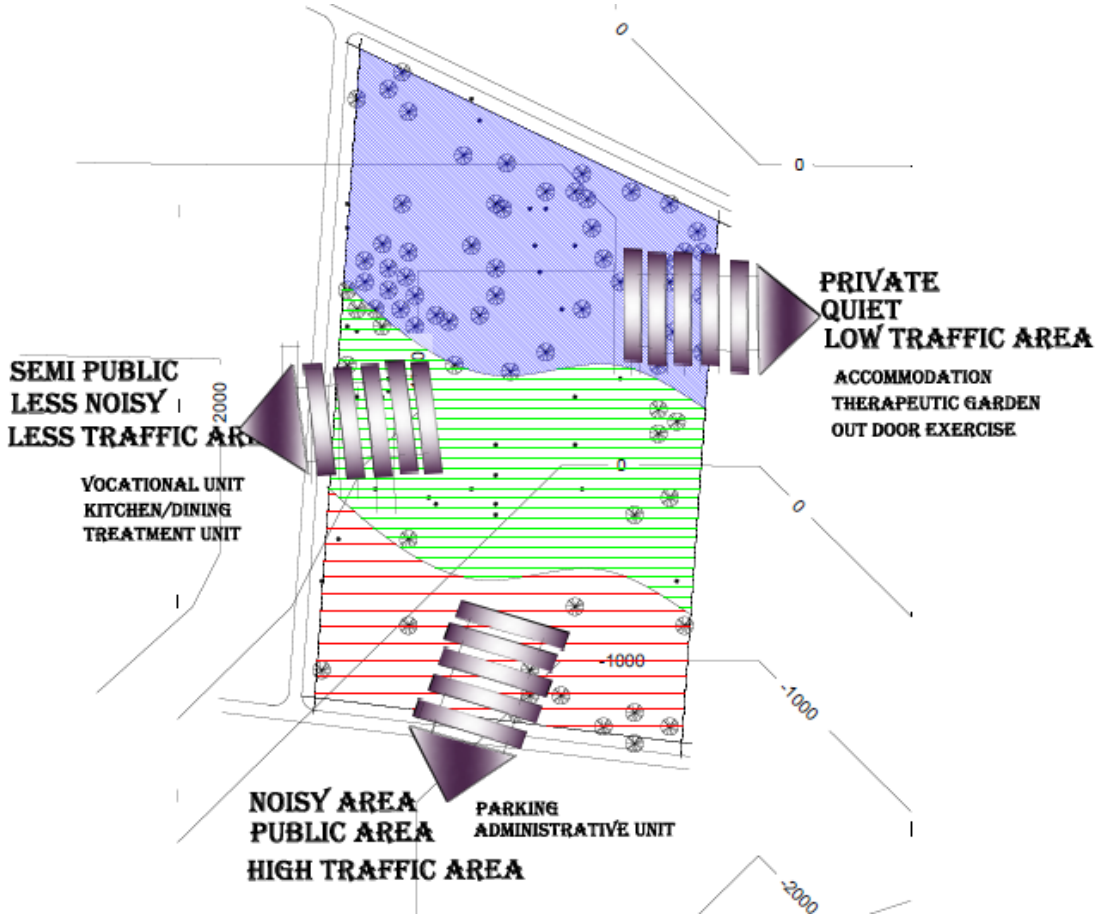


Figure 7.4 Site zoning

Source: Author's Work,(2014)

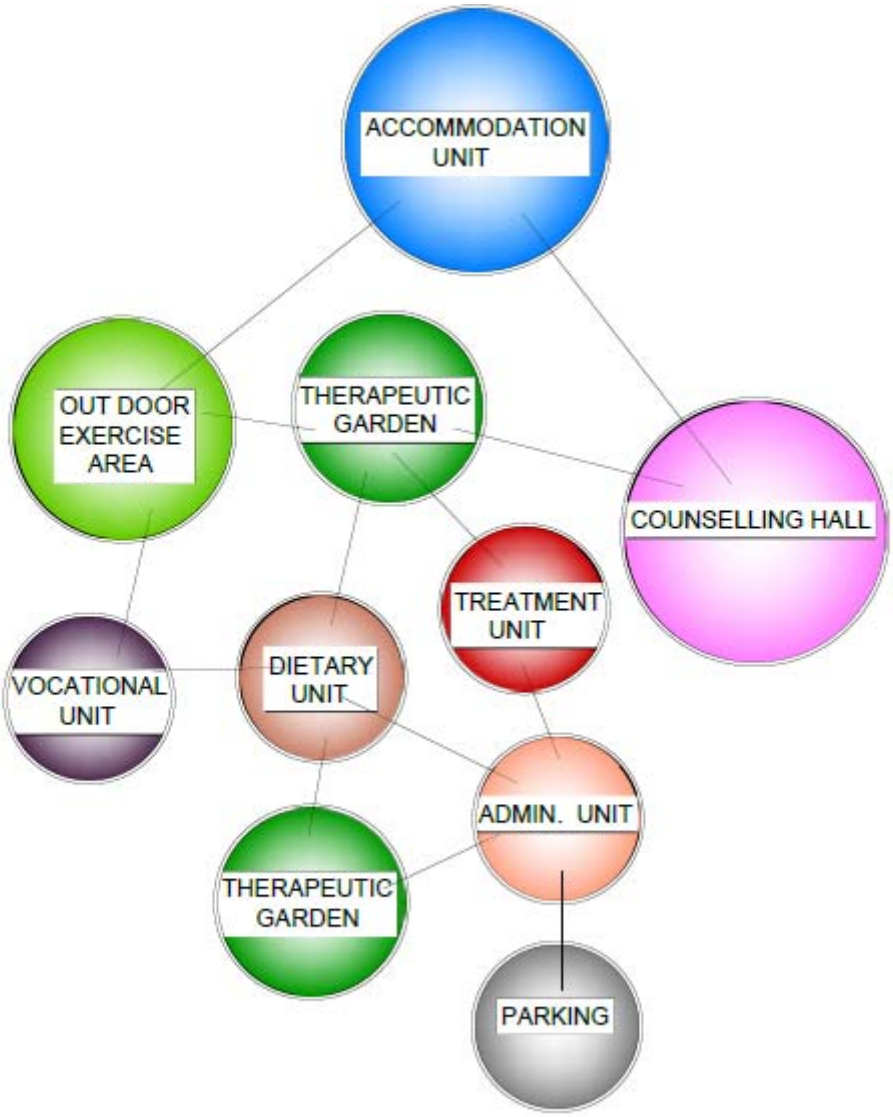


Figure 7.5 Functional relationship of the Units

Source: Author's Work (2014)

7.6.1.2 Site Entrance and exits

The major entrance to the site was tapped from the major road on the southern part of the site. The other entrance serves as the service entrance which is from the western part of the site. it leads directly to the service units to keep noise level confined to a specific area of the site and also to make ease for loading and off-loading of materials brought to vocational and dietary unit.

7.6.1.3 Landscape elements

The site vegetation was maintained and many soft landscapes elements were introduced to lessen the adverse temperature of the site and to improve air quality of the serenity

7.6.1.4 Walk ways

the site walkways that links individuals from one unit to the other were created based on abstraction principle that involves creating e curvy and fluidal pathways, this awakens the individual to the realisation of their problems and smoothly allows them to concentrate on the therapy.

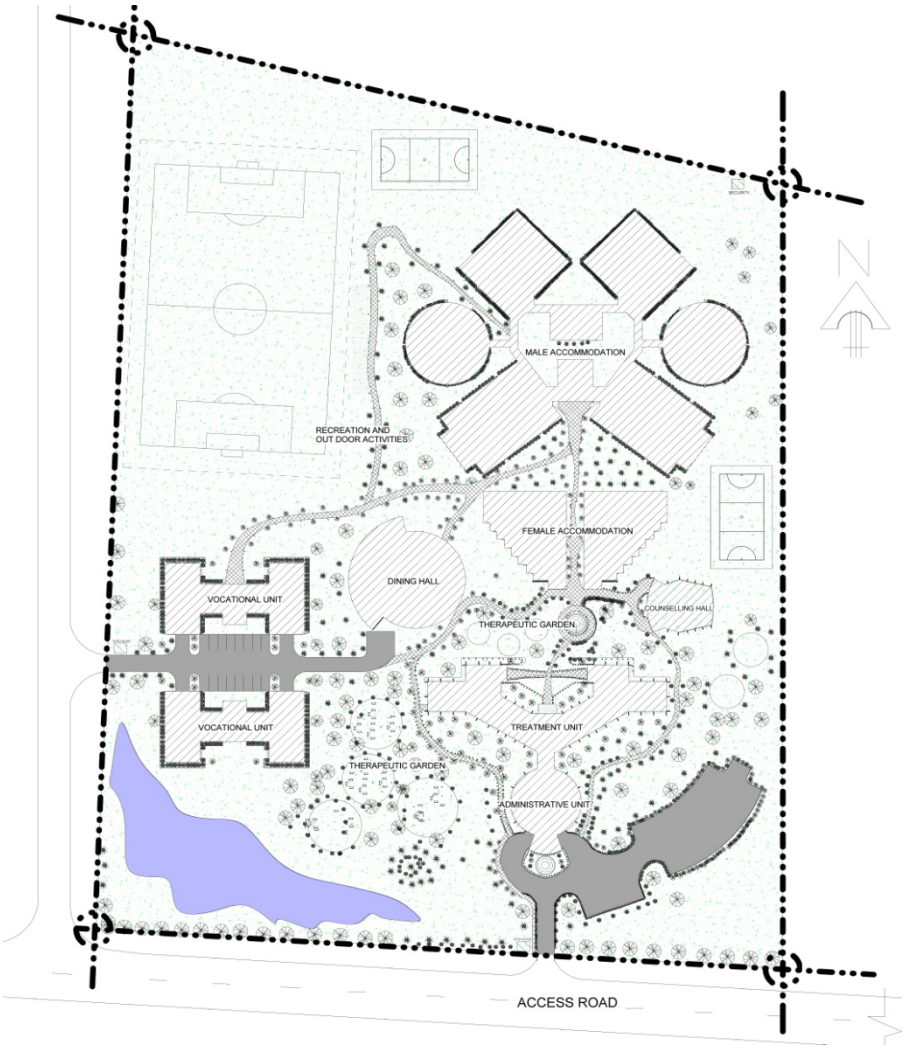


Figure 7.6 Site Plan of the proposed centre

Source: Author's work (2014)

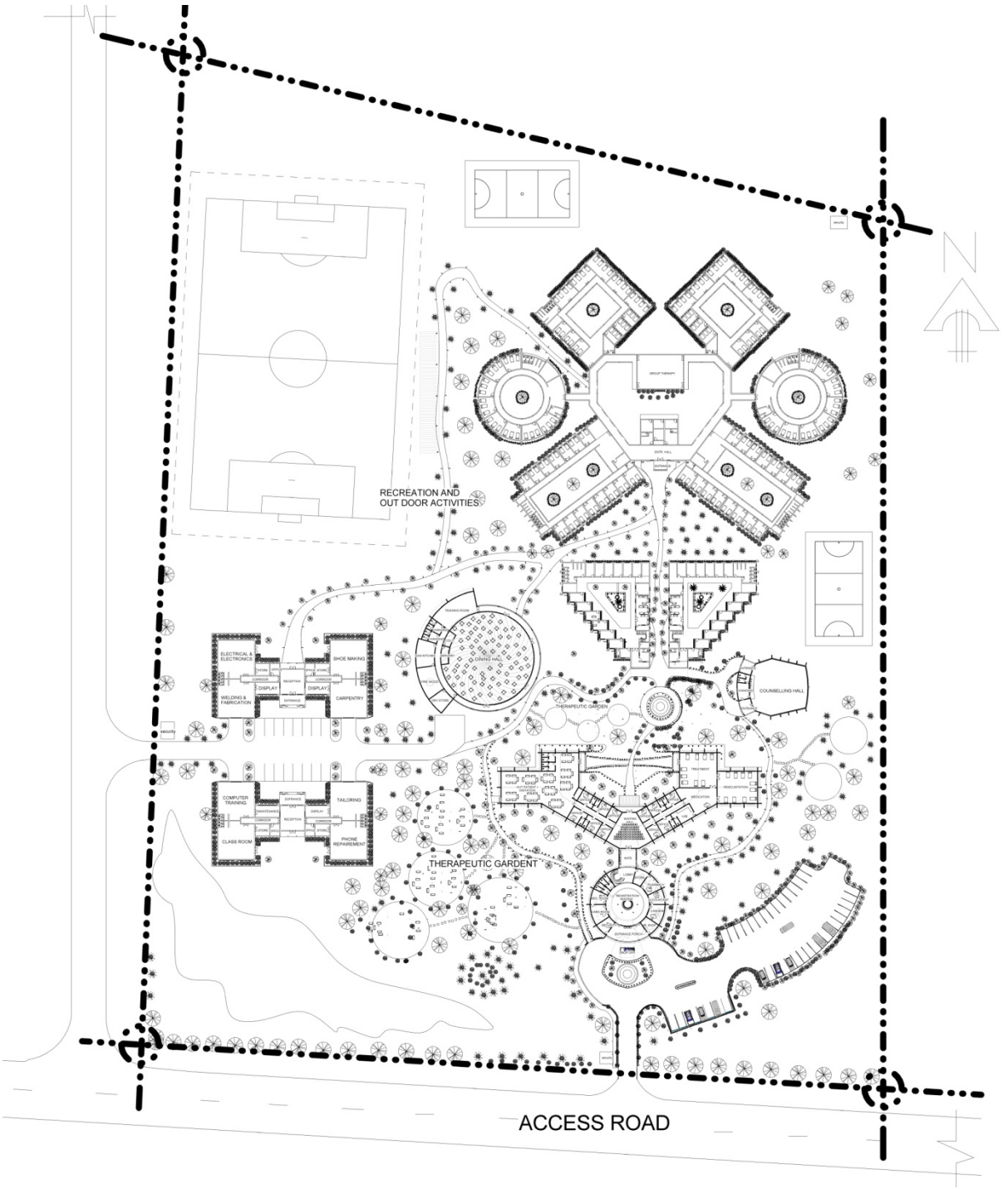


Figure 7.7 Plan on site of the proposed Centre

source: Author's work (2014)

7.6.2 Main buildings in the centre

7.6.2.1 Administrative Unit

The administrative unit is a two storey building with its ground floor which serves as the general outpatient department where outpatients day to day activities were performed. This floor consists of registration room, card room, waiting hall, cashier, Accountant and Pharmacy. This unit was designed in a curvilinear shape with an atrium above for lighting , plants were planted to enhance the indoor air quality and to create a vista within the space. The interior walls were painted with brighter colours and decorated with inspiring artworks. However, the next floor comprises offices for the Director, Assistant Director, Secretary, Conference room and conveniences.

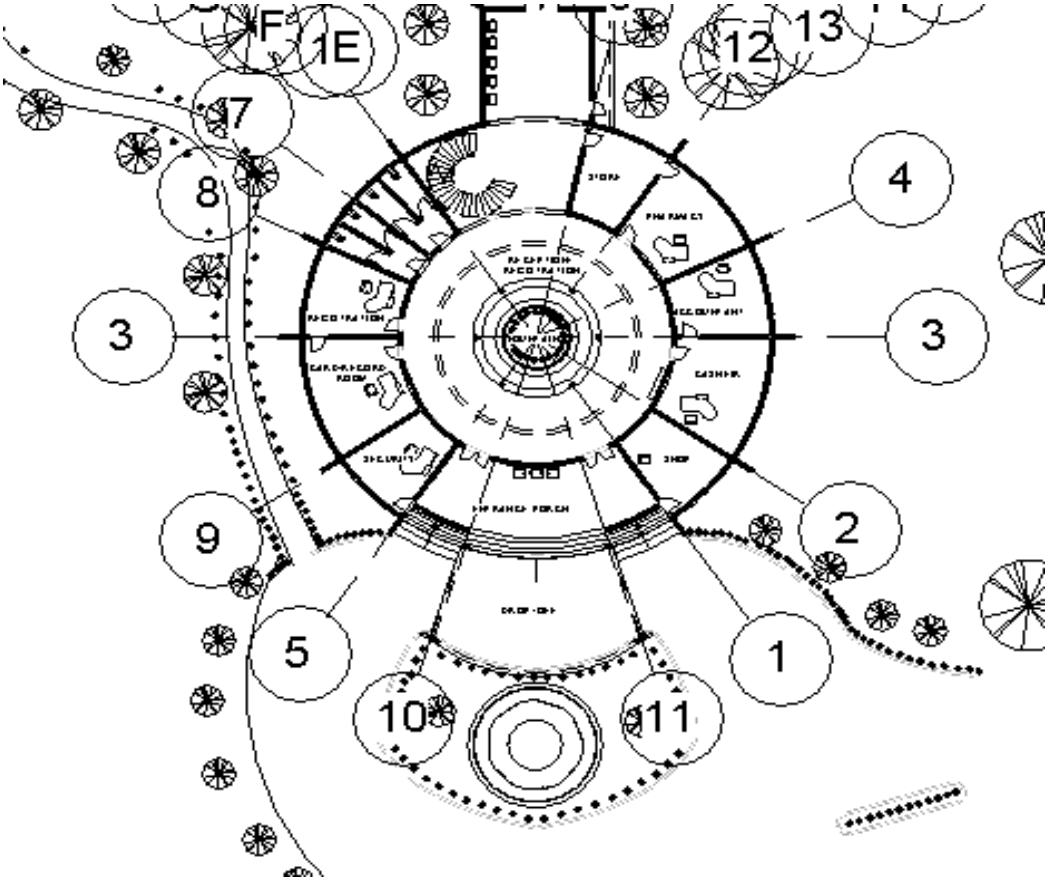


Figure 7.8 Ground floor Admin. Unit

Source Author's work (2014)

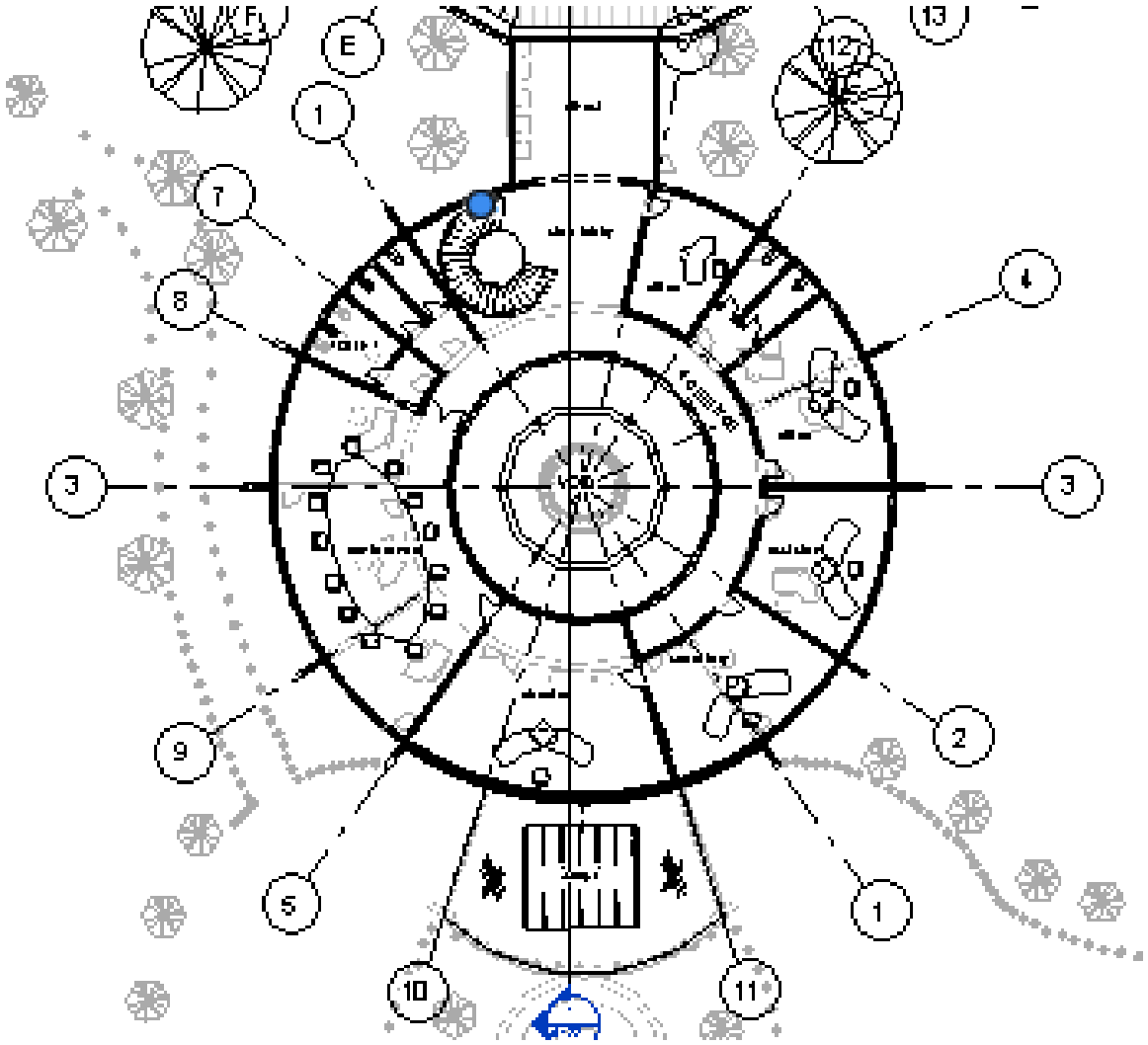


Figure 7.9 First floor plan Admin. Unit

Source: Author's work (2014)

7.6.2.2 Treatment unit

This is one of the core part in the centre that involves consultation, medication, and diagnosis, it is also here that the addicts are resuscitated before taking to the accommodation unit. The spaces was designed to have good view to the outdoor environment

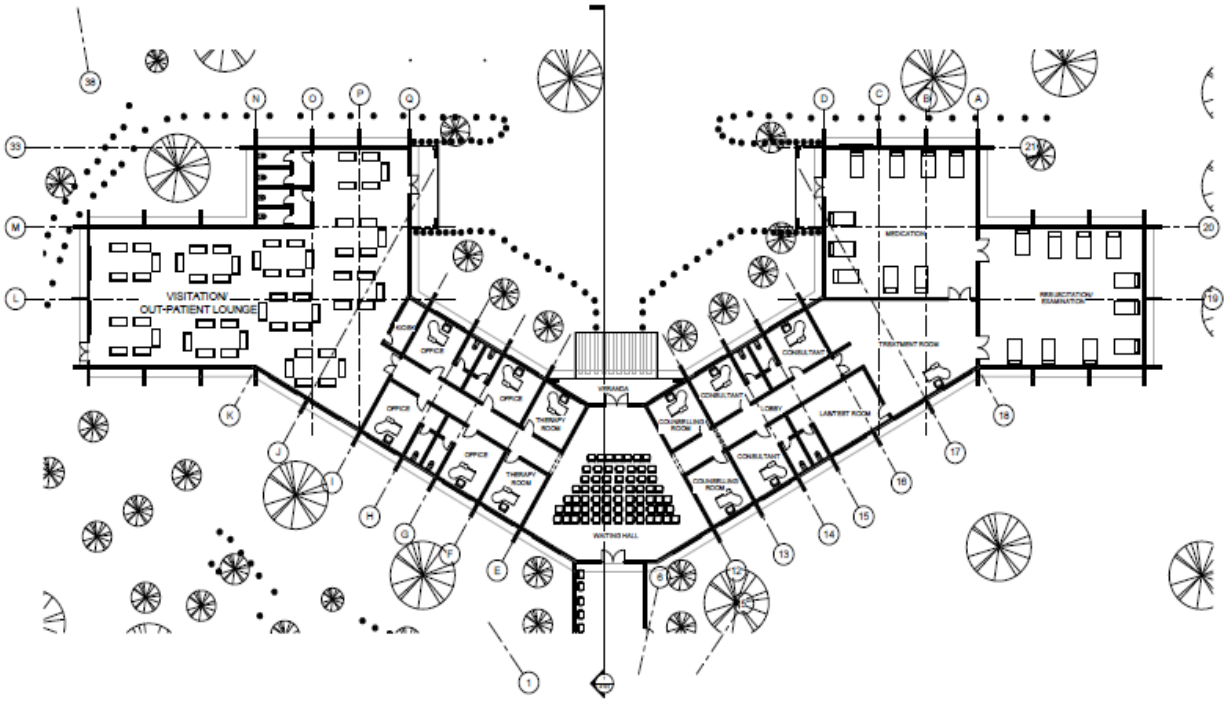


Figure 7.10 Floor plan of treatment Unit

Source: Author's work (2014)

7.6.2.3 Accommodation unit

This is the delicate part of the centre where the addicts spend much of their time. the accommodation unit is divided into two sections i.e. the male and female section. The male section consist of six blocks which were designed in systematic mono block concept. The patients are allocated to any block depending on the level of severeness of the addiction, and as time goes on while they are receiving the treatment, they are move from one block to the other.

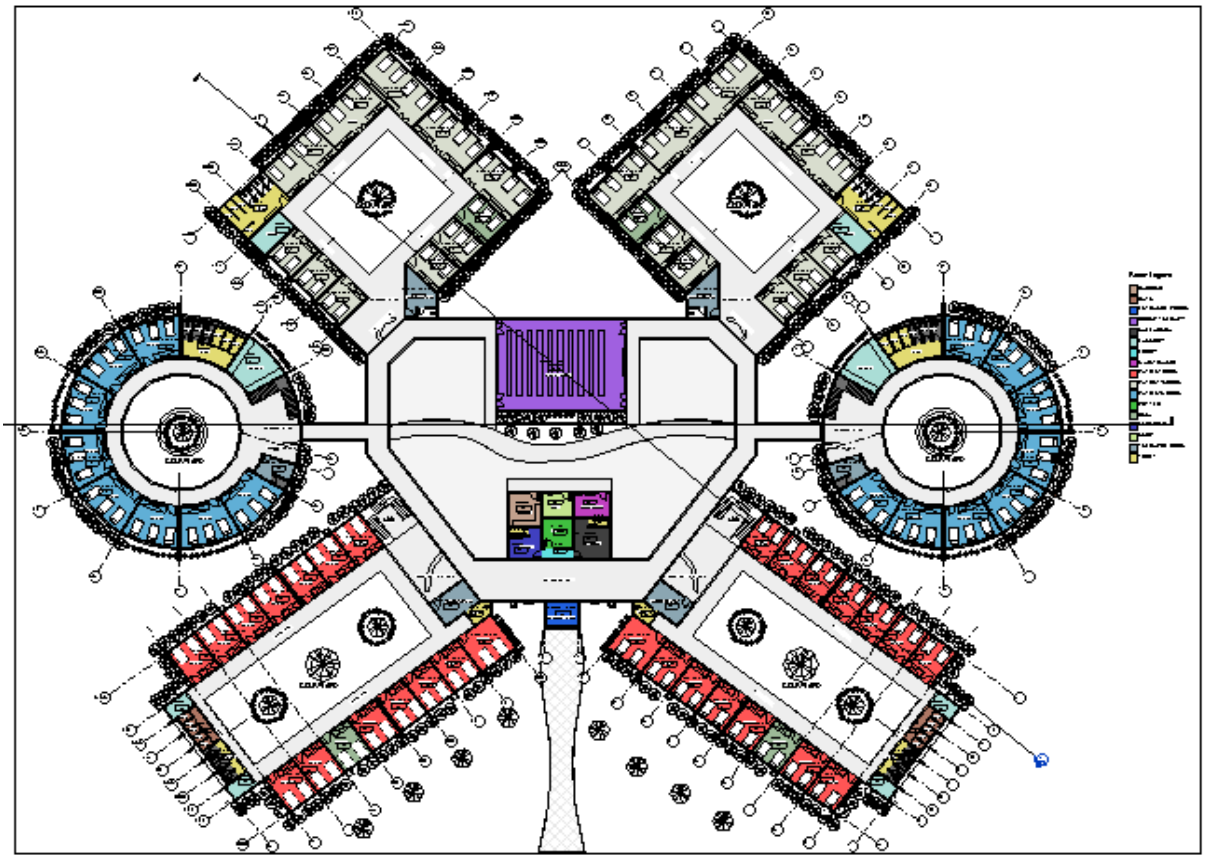


Figure 7.11 Ground floor Male Accommodation

Source: Author's Work (2014)

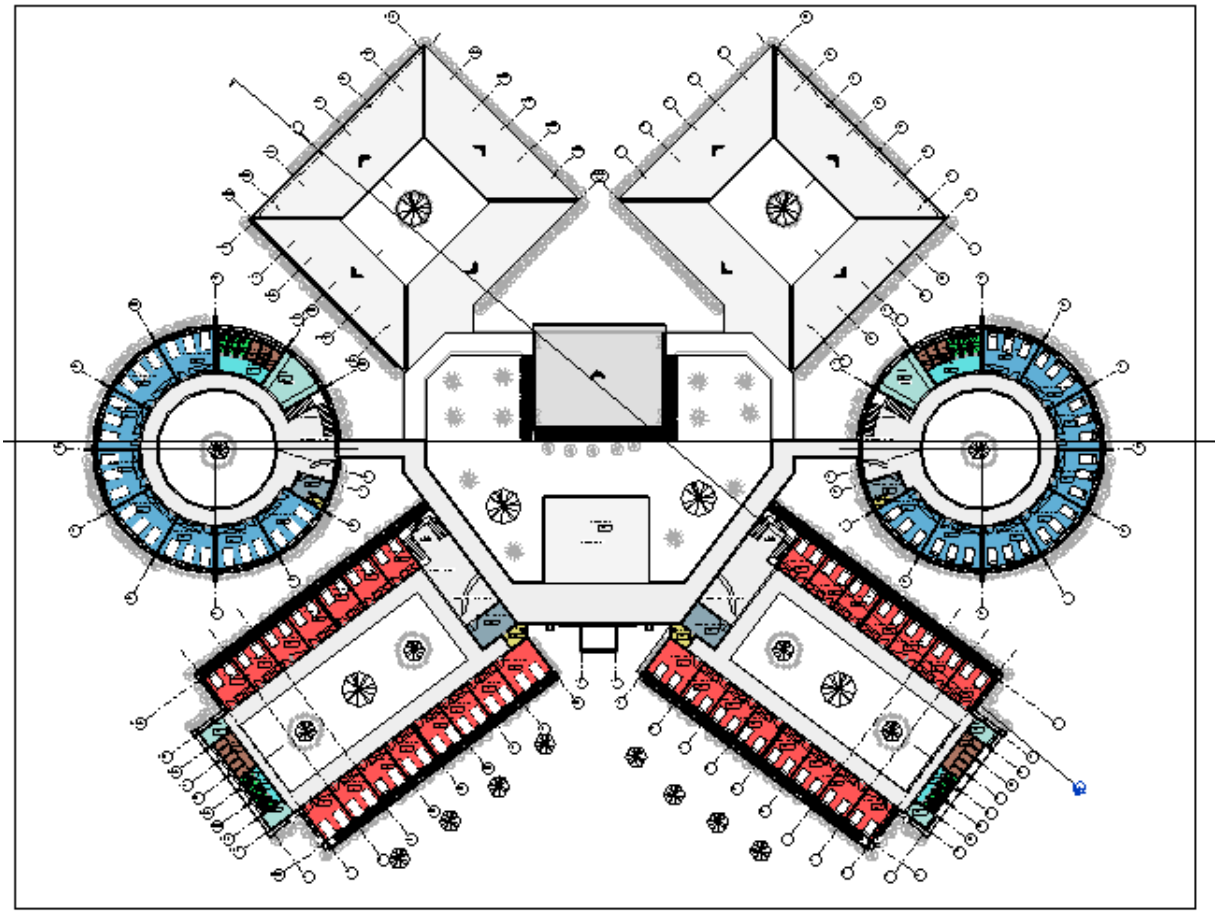


Figure 7.12 First floor plan Male accommodation

Source: Author's work (2014)

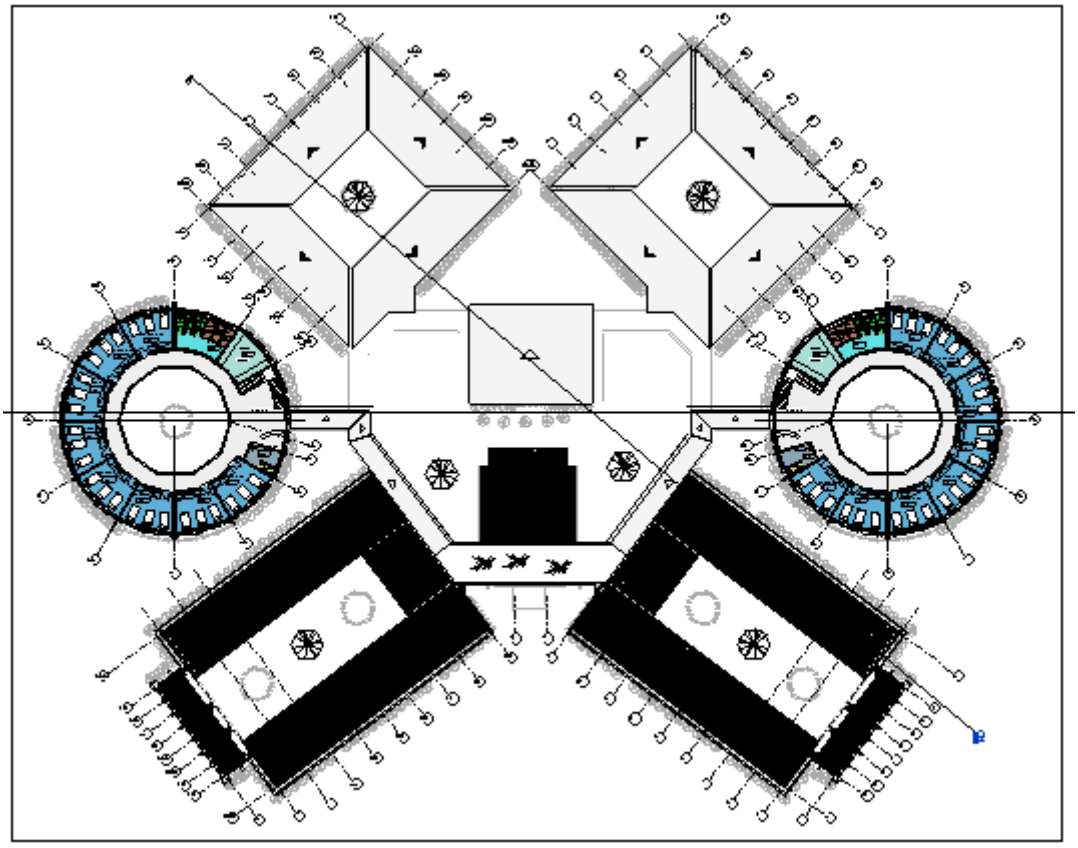


Figure 7.13 Second floor plan Male accommodation

Source: Author's work (2014)

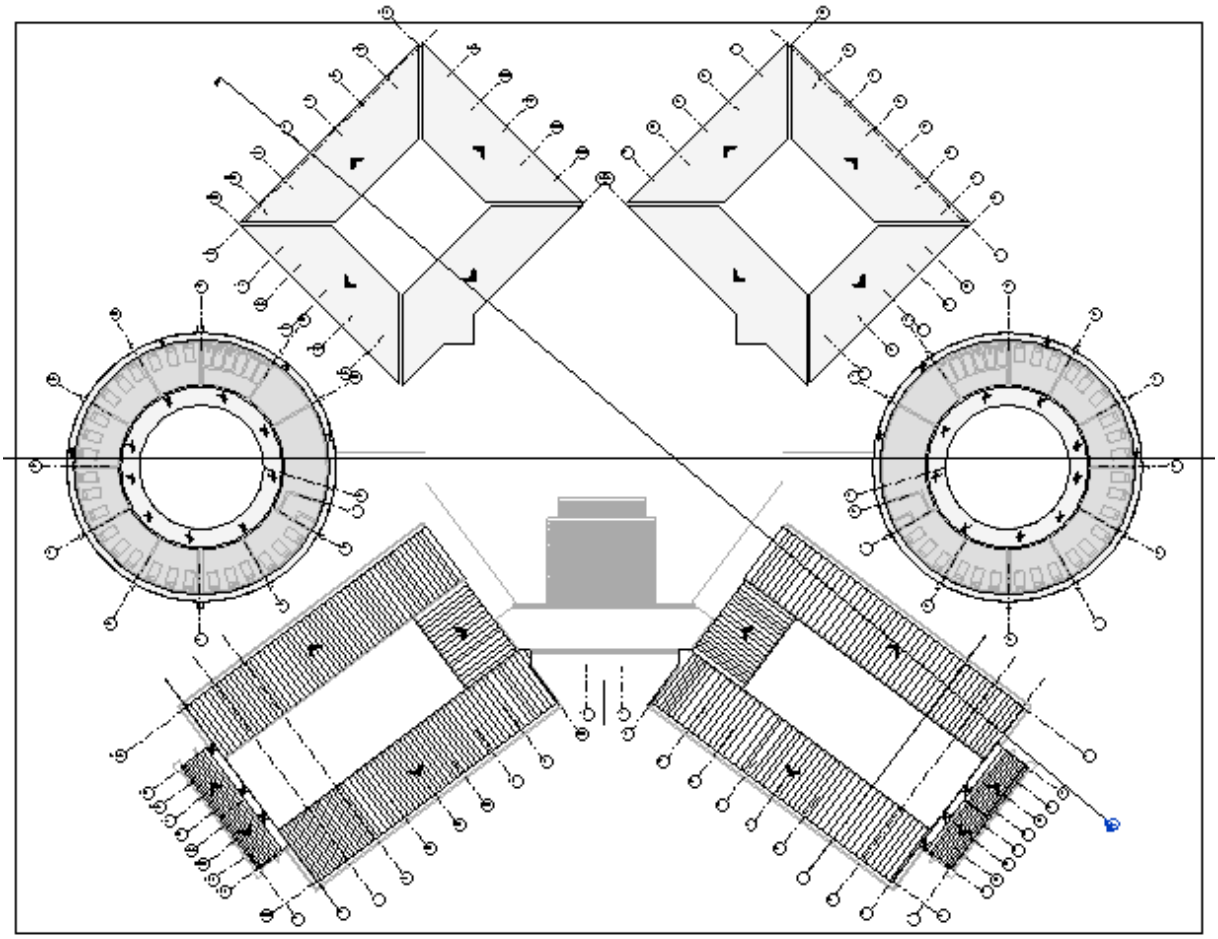


Figure 7.14 Roof planof Male accommodation

Source: Author's work (2014)

The rooms in all the blocks were designed to have good view to the outdoor environment, this was achieved by adopting courtyard system of arrangement. The rooms are classified into; room of two, room of three and group room. On the other hand, the female section has double room only. however other design feature that were adopted in the male section are also applied here.

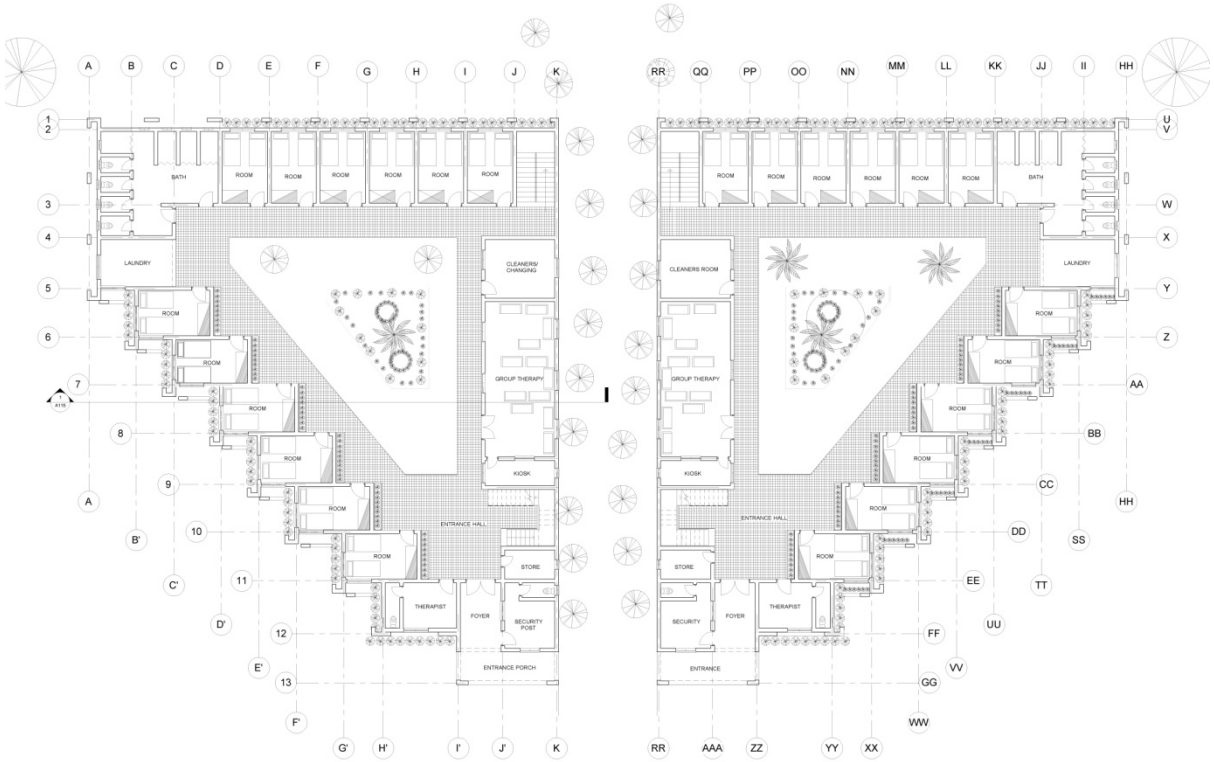


Figure 7.15 Ground floor Female accommodation

Source: Author's work (2014)

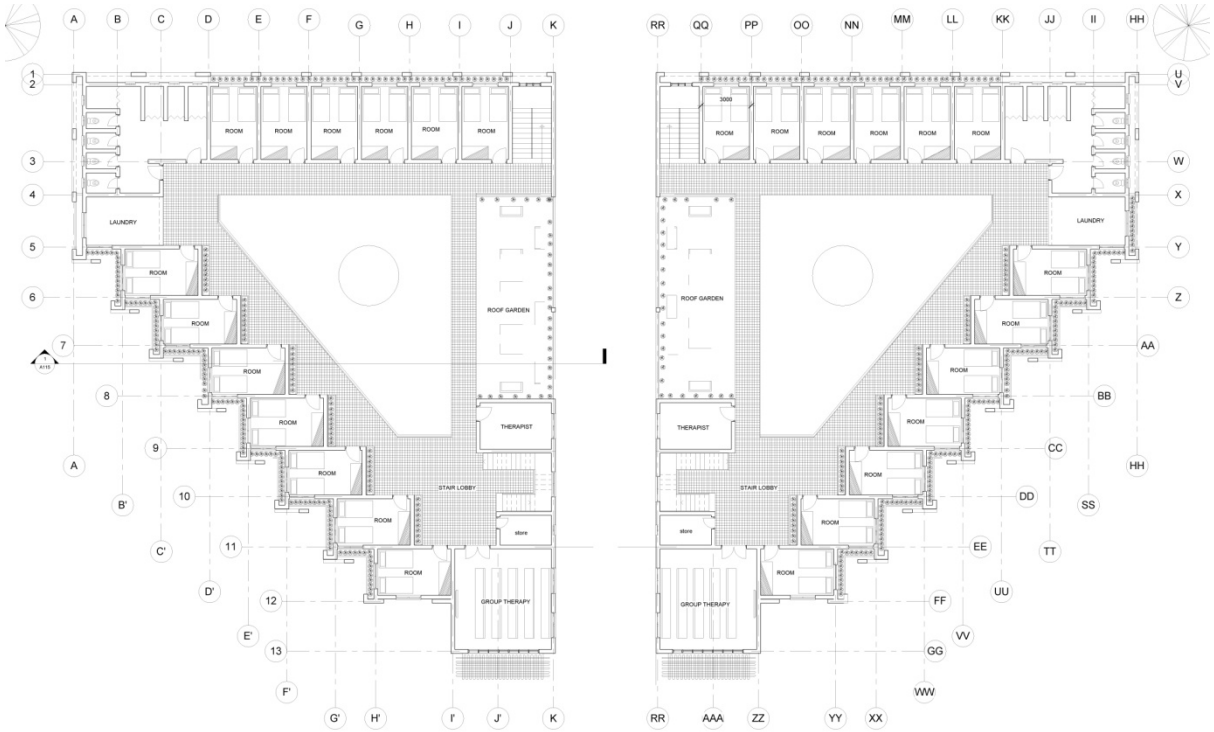


Figure 7.16 First floor plan accommodation

Source: Author's work (2014)

7.6.2.4 Vocational unit

This is the unit where the addicts spend much of their day time being engaged in learning and acquiring skills and other vocations to make them self reliant and let them get rid of evil thoughts.

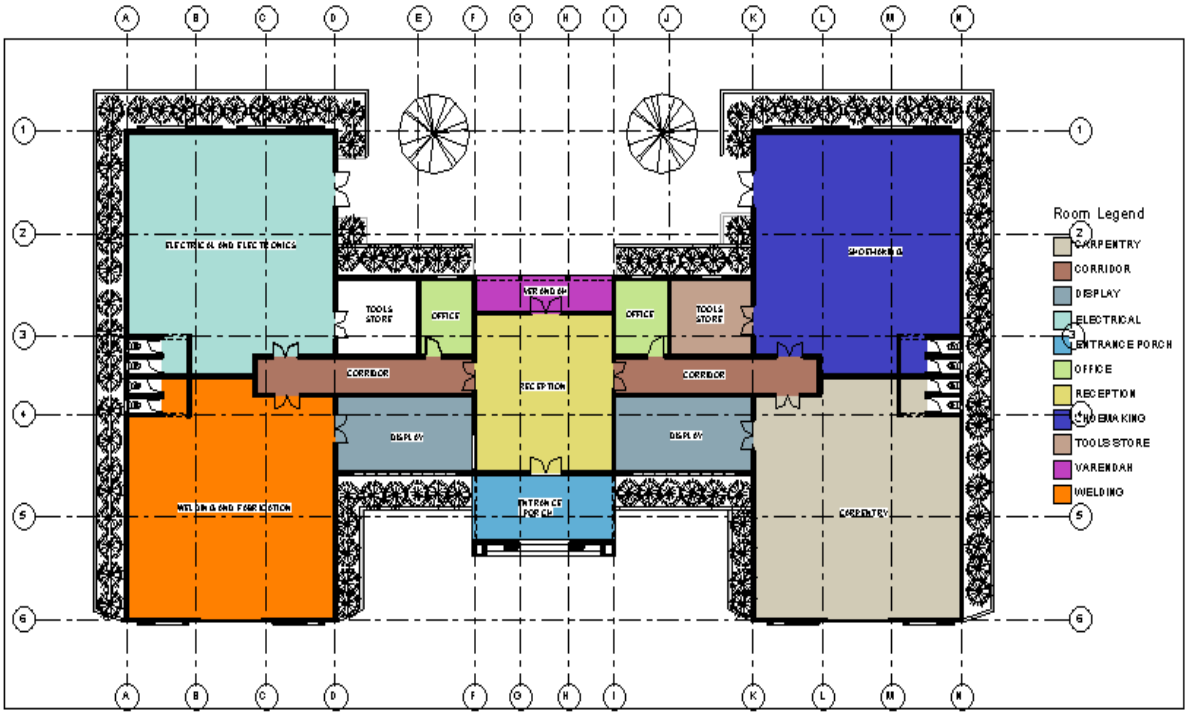


Figure 7.17 Vocational Unit

Source: Author's work (2014)

7.6.2.5 Dietary unit

This unit handles the dietary aspect of the centre. It comprises the Kitchens (firewood and gas), dining hall, store(dry and wet) . catering training room was also introduced in this unit for those patient that interested in catering service as their vocation.

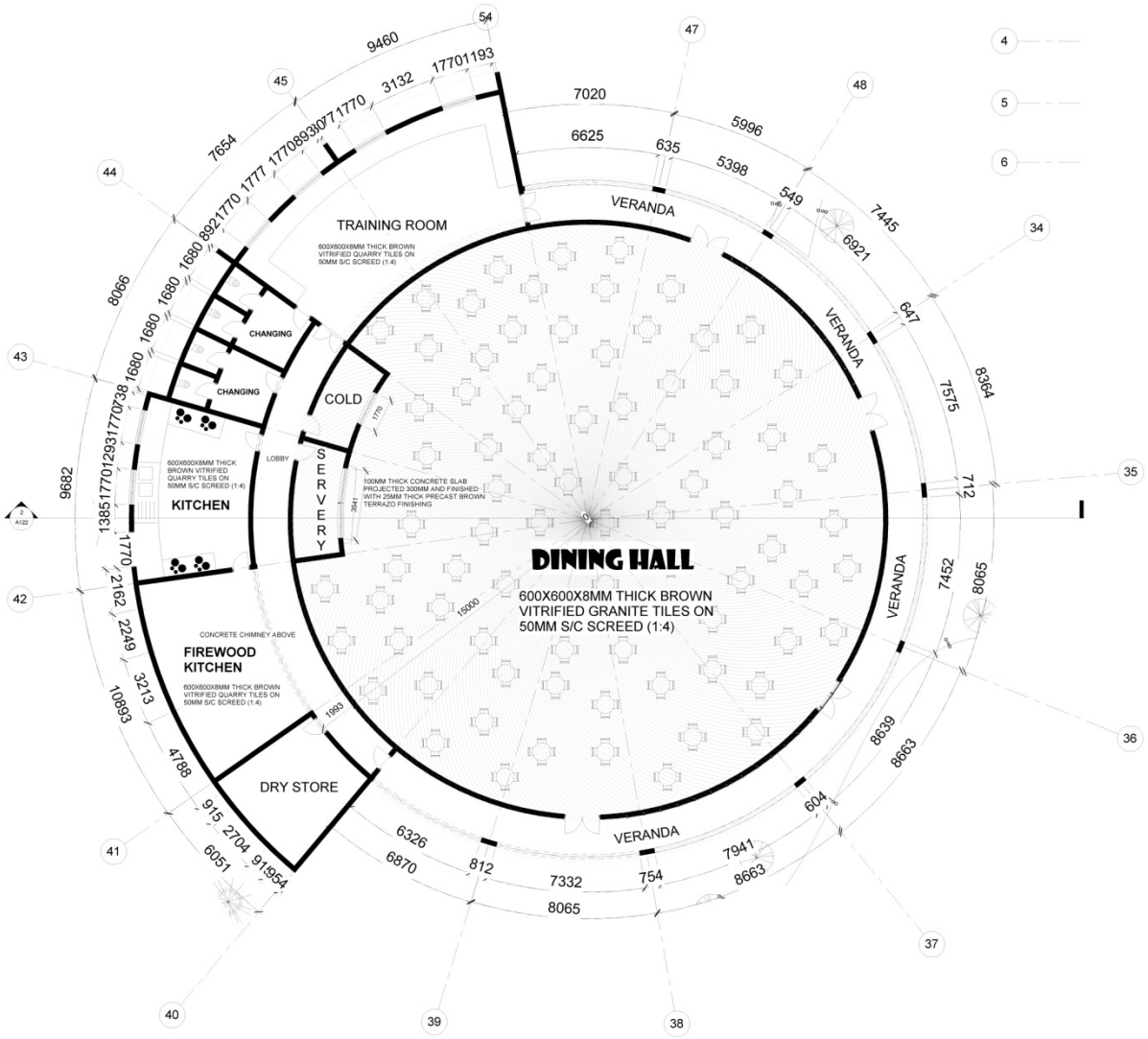


Figure 7.18 Dietary Unit

Source: Author's work (2014)

CHAPTER EIGHT

8 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

Most of drug addicts centres in the country have been designed and constructed making more emphasis on detention approach rather than medication, this implies that the centres are quite punitive instead of being curative. The techniques or principles used in rehabilitation centres which enhance the lives of the addicts and make them more submissive for treatment are yet to be employed. Supportive facilities are inadequate in all the centres whereby there is no provision for recreational therapy facilities that enhance relaxation and social interaction.

The centres admit both males and females, but with no provision for female accommodation. However, it has been found that the addicts are in a state of tolerance in such a way that they cannot do without the substances in their lives. Most of the addicts are victims of idleness, illiteracy, peer pressure, environmental influence and family break up. Many of the addicts were found to be addicted to multiple substances.

The mode of treatment for the addicts varies within the four centres studied. two of the centres; Rigasa and Kiru used traditional and medical approach for their treatment while Sani and Plateau used only the medical approach. The clinical psychologists and other professional personnel described that unfavourable and unsupportive spaces for treatment of patients especially (addicts) that are suffering from mental and psychological trauma, have negative impacts on the output of their recovery, healing process and general rate of recovery of the addicts.

8.2 Contribution to Knowledge of the Study

This study shows that architecture can serve as a tool in directing the psyche of patients that suffer from the trauma of drug addiction and make them submissive for treatment through connection to natural environment, access to daylight and natural ventilation, and landscape views, these create a therapeutic and supportive environment that foster meaning to their stay in the centre.

The study also demonstrated that applying healing principles and techniques as well as the provision of a comprehensive facility contribute to healing process of the addicts by reducing depression, stress, pain, anger, grief and mental illness as well.

8.3 Recommendations

1. The government should provide more treatment facilities that will help in mitigating this menace of drug abuse and also emphasise on making the centres more supportive and therapeutic by the application of healing techniques.

2.There is need for architects to make it of paramount important to incorporate healing principles in the design of rehab centres and other relevant facilities in order to enhance the stay of the patients as well as the staffs for their well being.

3. There is need for government to introduce subjects in secondary schools and many programmes in tertiary institutions in order to enlighten the students about the danger and consequences of drug abuse and addiction.

4. The National for Drug law enforcement Agency (NDLEA) should collaborate with other stakeholders such religious institutions and nongovernmental organisations to be counselling the society on issues of drug abuse and addiction

5. There should be good collaboration with NDLEA and stakeholders in charge of the centres to scrutinise the addicts and confirmed not guilty before admission into rehabilitation centres for treatment.

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APPENDICES

APPENDIX 1

DEPARTMENT OF ARCHITECTURE

AHMADU BELLO UNIVERSITY, ZARIA.

EVOLVING ARCHITECTURAL STANDARDS IN THE DESIGN OF DRUG ADDICTS REHAB CENTRE, ZARIA.

INTERVIEW SCHEDULE

What are the problems of spaces confronting your establishment?

What are the facilities available at the moment?

.....

How many patients are admitted? Monthly ( ) yearly ( )

What is total number of patients the facility can adequately accommodate?

.....

What is the current number of drug addict patients in the centre?

.....

What is the current number of patients per room/ward?

.....

What is the nature of treatment the centre offers?

.....

Do you have any programme schedule (patients daily routine)?

If yes , how does it works?.....

What is the total number of professional personals in the centre?.....

How many : i. Psychiatrist ( ), ii. psychologists ( ), iii. therapists ( )?

What kind of challenges mostly experience by the professionals from the addicts as they relate with them?.....

.....

What is the number of patients discharged from the centre?.....

What are the criteria for discharging patients on admisssion?.....

.....

Do you experience cases of relapse?.....

If yes, can you suggest the likely cause (s)?.....

.....

What can you say about the condition of the living spaces of these addicts?

.....

Based on your experience, are the spaces having any impact on their healing process?

.....

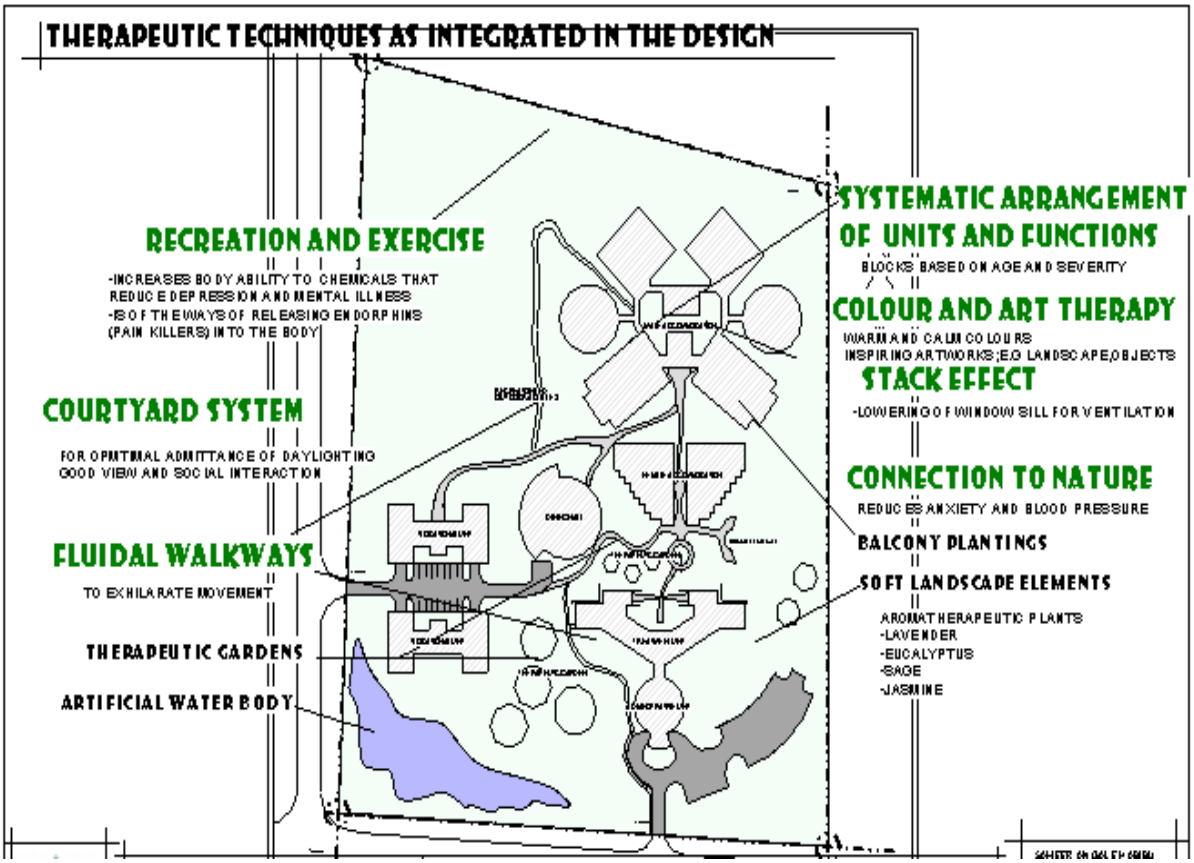
what can you suggest to be the focus areas that will contribute to healing and rate of recovery?

Thank you for your participation.

APPENDIX 2

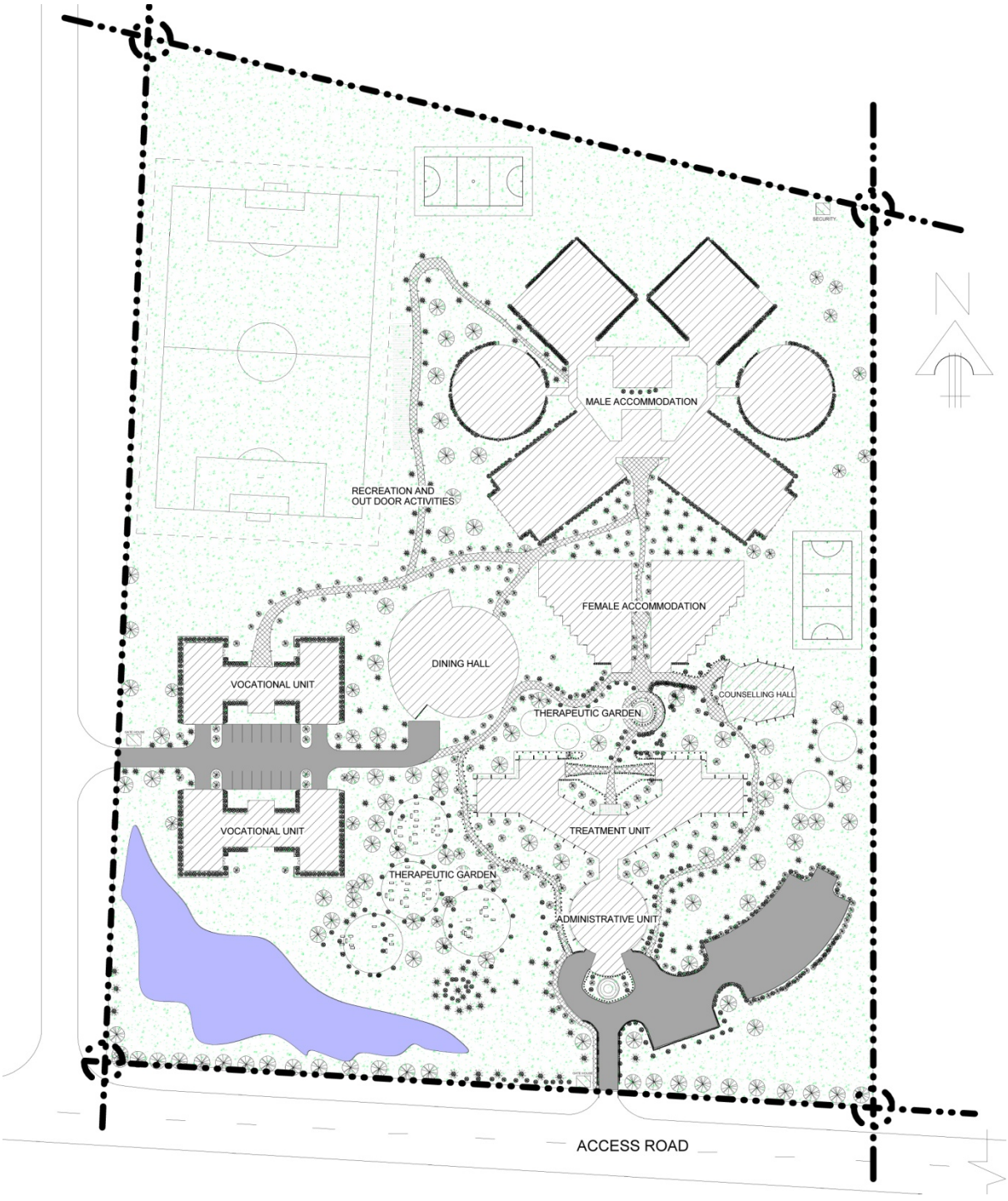
Are the spaces well ventilated?		
Are the windows exposed to external environment		
What is the size of the fenestrations		
Is there copius admittance of daylight into the spaces		
Is there buglar-proof attached to the window?		
Are the patients sleeping on bed?		
What is the floor finishing material?		
What is the walls finishing material/ colour type?		
What is the ceiling finishing of the spaces?		
What is the form of the space?		
What is the head room?		
Are there recreation facilities?		
What is the proximity of the centre to urban area?		
Is the centre well protected from out siders?		
Is the centre secured from escaping by the addicts		

APPENDIX 3



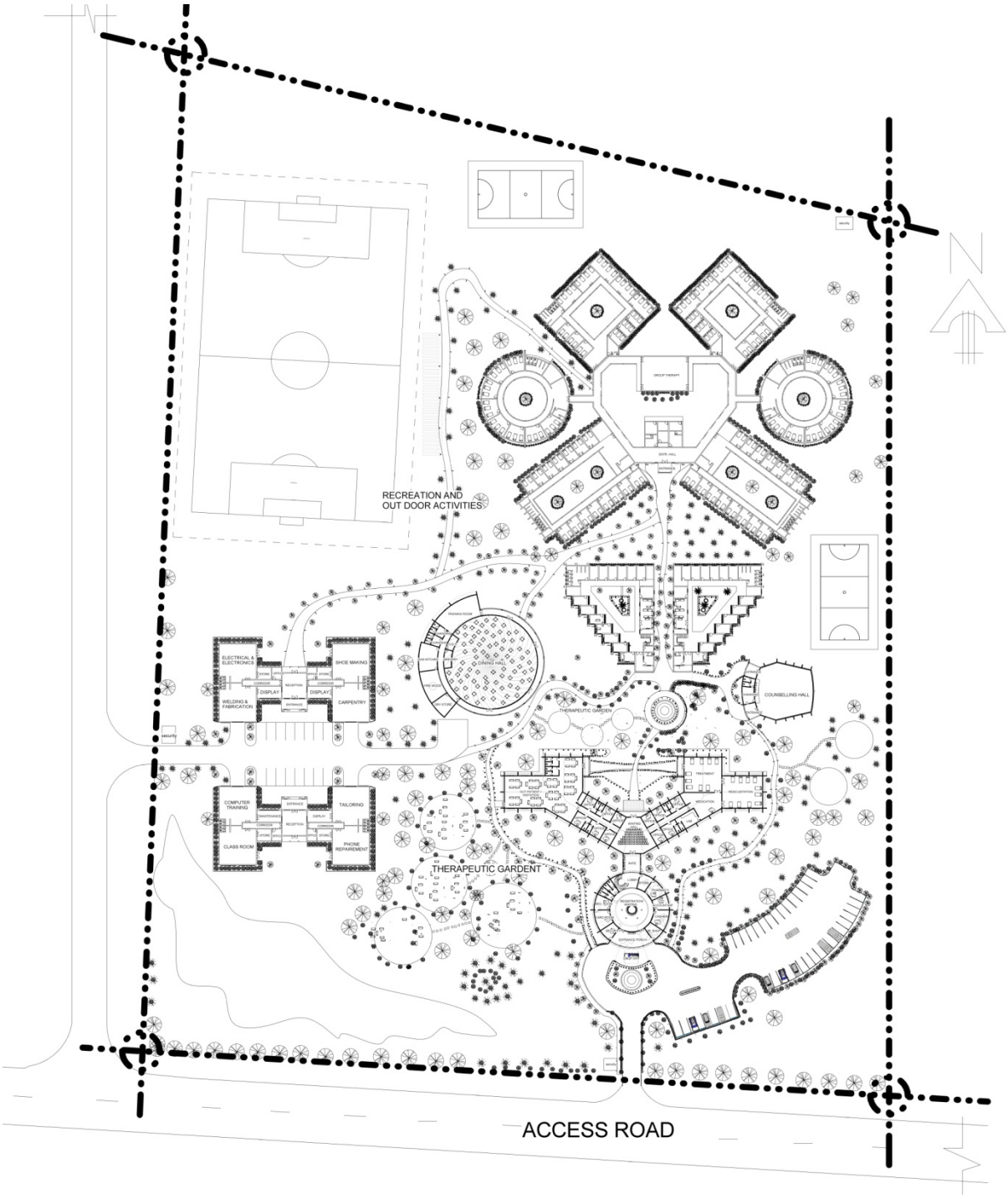
Site plan

Source: Author's work (2014)



Site plan

Source: Author's work (2014)



Plan on Site

Source: Author's work (2014)



Side View

Source: Author's work (2014)



Rear view

Source: Author's work (2014)



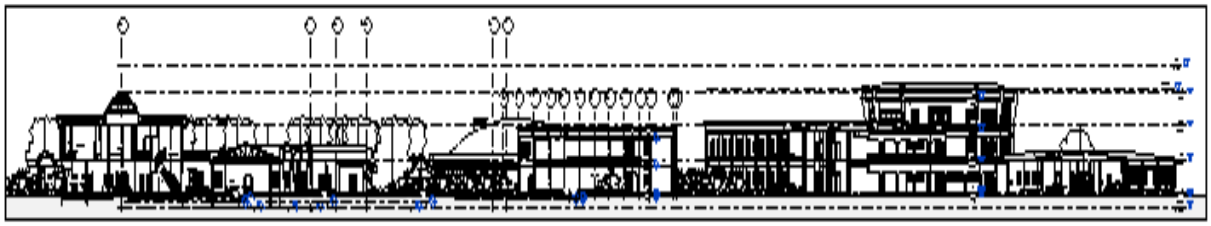
Approach view

Source: Author's work (2014)



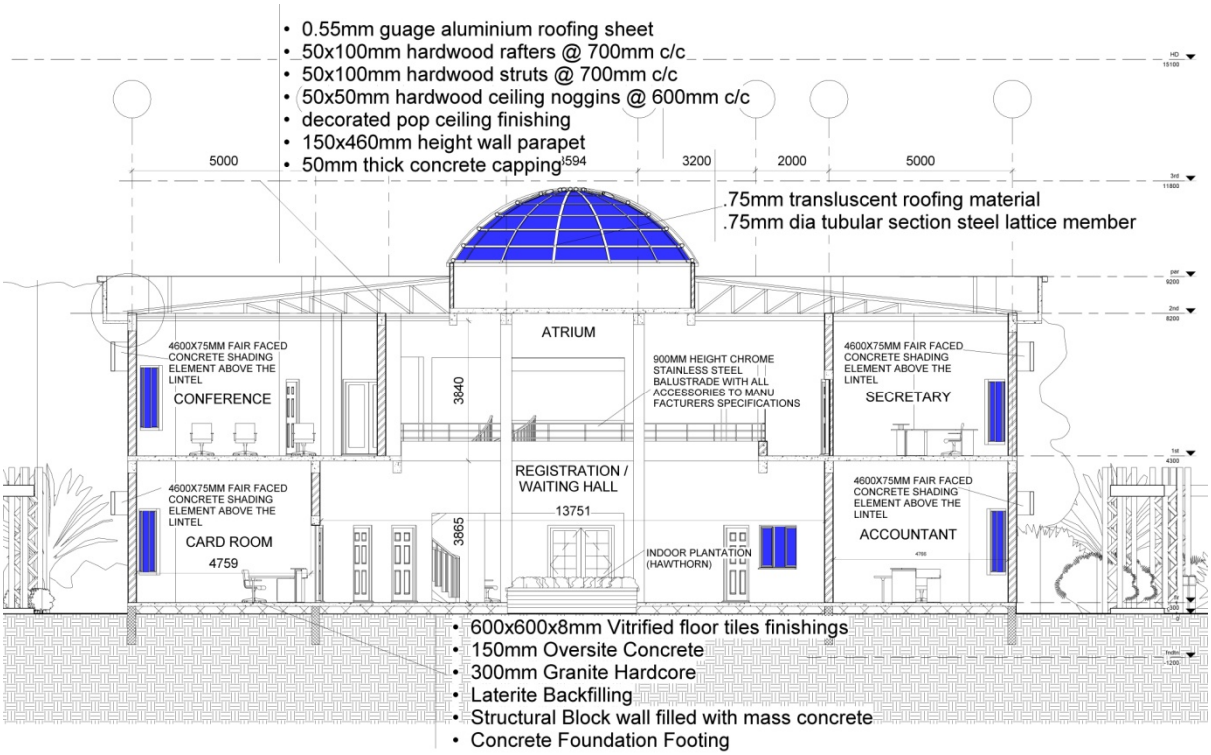
Side view

Source: Author's work (2014)



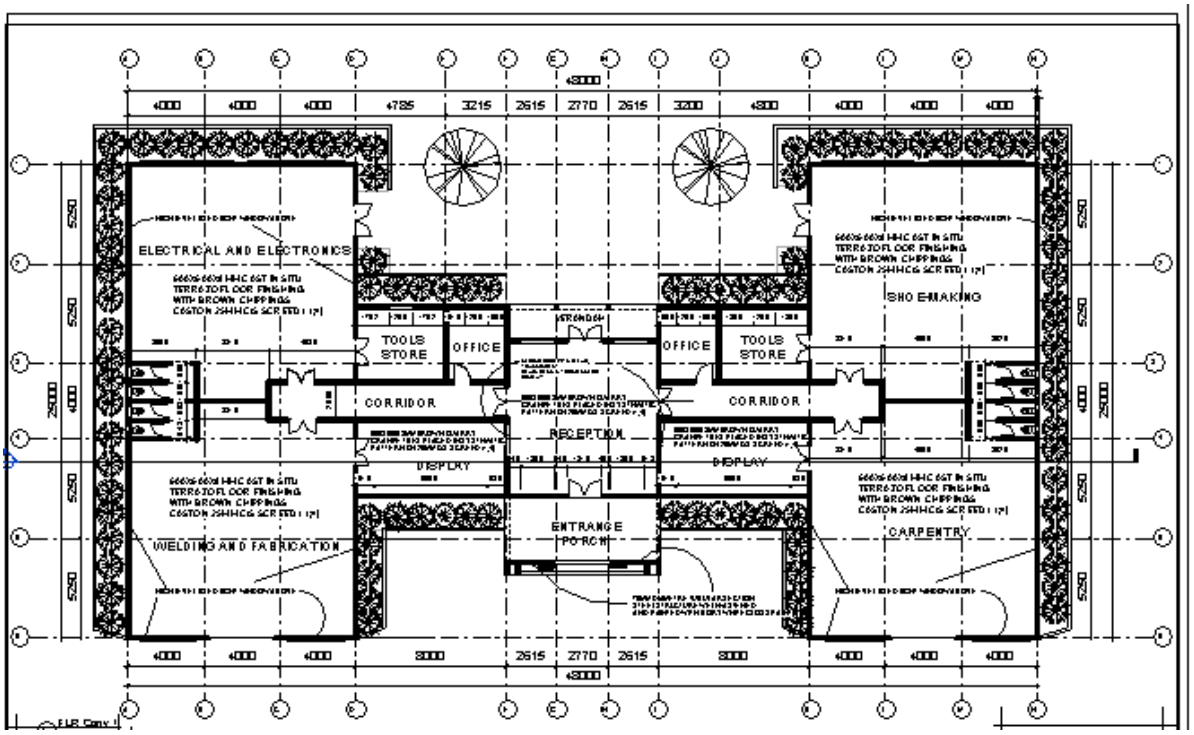
Section A-A

Source: Author's work, 2014



Section of the Admin. Unit

Source: Author's work, 2014



Plan Details of vocational Unit

Source: Author's work, 2014



3-D View of the Proposed rehabilitation Centre

Source: Author's work, (2014)



3-D View of the Proposed rehabilitation Centre

Source: Author's work, (2014)



3-D View of the Proposed rehabilitation Centre

Source: Author's work, (2014)



3-D View of the Proposed rehabilitation Centre

Source: Author's work, (2014)



3-D View of the Proposed rehabilitation Centre

Source: Author's work, (2014)