# COMMUNAL HEALING CENTER:

## *FOSTERING MENTAL HEALTH WELL-BEING IN NEPAL*

*Biratnagar, Nepal*

By:

PRASAMSA POKHAREL

*(750130)*

A thesis submitted in partial fulfillment
of the requirements for the
Degree of Bachelor of Architecture

Purbanchal University
KHWOPA ENGINEERING COLLEGE
DEPARTMENT OF ARCHITECTURE
Libali, Bhaktapur, Nepal

SEPTEMBER. 2024

# COMMUNAL HEALING CENTER:

*FOSTERING MENTAL HEALTH WELL-BEING IN NEPAL*

*Biratnagar, Nepal*

By:
PRASAMSA POKHAREL
*(750130)*

A thesis submitted in partial fulfillment
of the requirements for the
Degree of Bachelor of Architecture

Purbanchal University
KHWOPA ENGINEERING COLLEGE
DEPARTMENT OF ARCHITECTURE
Libali, Bhaktapur, Nepal

SEPTEMBER, 2024

An Undertaking of Bhaktapur Municipality
KHWOPA ENGINEERING COLLEGE
(Affiliated to Purbanchal University)
Estd. 2001
PAN No. 201382918

# CERTIFICATE

This is to certify that the thesis entitled **COMMUNAL HEALING CENTER - FOSTERING MENTAL HEALTH WELL-BEING IN NEPAL** at ***Biratnagar*** submitted to the Department of Architecture of Khwopa Engineering College by **Ms. Prasamsa Pokharel** of Class Roll No. 30 /B.Arch./075 has been declared successful for the partial fulfillment of the academic requirement towards the completion of the degree of Bachelor of Architecture of Purbanchal University.

.....
Ar. Sampurna Maharjan
Supervisor

.....
Ar. Rashish Lal Shrestha
Thesis Coordinator

.....
Ar. Ila Shrestha
(External Juror)

.....
Ar. Archana Bade Shrestha
Head of Department of Architecture

ktapur Municipality, Ward No.:8, Libali, Bhaktapur
977-01-512202, P.O.Box : 84, Bhaktapur
Tel: 977-01-5122094, 977-01-5122098
E-mail: info@khec.edu.np, URL: www.khec.edu.np

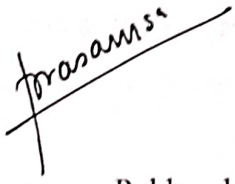
## Abstract:

In my architectural thesis, I explore the principles of architectural design to create a communal healing center in Biratnagar, Nepal, focused on mental health. Drawing from research at Shepard Pratt Mental Health Institution, Lakeshore Mental Health Home, National Institute of Mental Health and Neuro Sciences, Nobel Medical College in Biratnagar, and Birat Nursing Home, I aimed to design a center that brings nature into the site. The chosen location, adjacent to Nobel Medical College, allows for an effective approach to addressing local mental health concerns.

I used a combination of case studies, site analysis, and environmental psychology to inform the design process. My findings revealed that integrating natural elements within the center's design can significantly improve the well-being of its inhabitants by combating loneliness and promoting a healing microclimate.

## Declaration

I declare that this thesis titled "COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL" is my original work and has not been submitted for any other degree or qualification at any other institution. This work is a result of my own research and analysis, and all sources of information and ideas that have been referenced are properly acknowledged. I hereby give consent for my dissertation, if accepted to be available for photocopying and understand that my reference to or quotation from my thesis will receive an acknowledgement.



Prasamsa Pokharel

1st September, 2024

## Acknowledgement:

I would like to extend my sincerest thanks to all the people and organizations that had a hand in the preparation of this architectural thesis report.

To begin with, I would like to express my immense appreciation to my supervisor, Ar. Sampurna Maharjan, Thesis Coordinator Ar. Rashish Lal Shrestha, Department of Architecture Khwopa Engineering College. Your wise directions, much appreciated feedback, and continuous support were crucial in the development of this thesis. Your passion for the course as well as your professionalism in the architectural field has motivated me throughout the entire process.

I am also grateful for the valuable suggestions provided by Dr. Mukti Acharya from Nobel Medical College, Biratnagar. Your expertise, valuable opinions, and encouragement have been instrumental in comprehending the medical and functional arrows used in architectural construction of healthcare centers. I wish to state that this thesis has benefited greatly from your contributions.

In addition, I would like to express my deepest gratitude to the Birat Nursing Campus, Nobel Medical College Biratnagar. Your insights, recommendations, and professional advice have been valuable in orienting this thesis towards practical utility and meaningful relevancy. I would like to express my sincere gratitude to those who have offered their cooperation and support.

In conclusion, I extend my appreciation to my family and friends who encouraged me and stood by me all throughout this project. I would like to express my sincere gratitude for your support, as you always believed in me and my skills.

To all the people whose efforts helped in the production of this thesis, my sincere appreciation.

Sincerely,
Prasamsa Pokharel

# Table of Contents

# List of Figure

**THIS PAGE IS INTENTIONALLY LEFT BLANK**

# 1. Introduction:

Mental illness is a significant societal issue, yet there remains considerable reluctance to seek treatment due to pervasive stigma. This stigma is often tied to negative perceptions of mental health facilities, which are frequently viewed more as prisons than as places of healing. Despite efforts to improve mental health care environments, many facilities still carry a stigma, with people often associating them with penitentiaries, asylums, or panopticons.

The architecture of psychiatric hospitals, sometimes referred to as the "architecture of madness," encompasses both the physical structure and its perceived design. Unfortunately, in many cases, the architectural design fails to provide a comfortable and therapeutic environment. Some mental health facilities have not adapted to evolving healthcare needs, resulting in outdated layouts and poor functional adjacencies. This inadequacy hinders the ability to make necessary changes, meet technical standards, and create an environment conducive to patient healing .

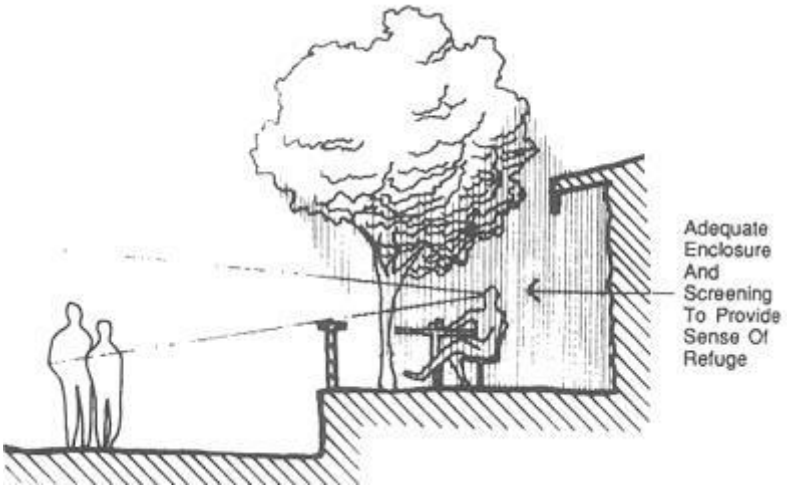



*Figure 1 A place of refuge (concept) / Source Research Gate*

**Concept of Refuge in Architectural Design:**

The provided diagram effectively illustrates the concept of "refuge" within the context of environmental and architectural design. The concept of refuge is integral to creating therapeutic spaces, especially in facilities designed to promote mental health and well-being. In this diagram, the spatial arrangement depicts an individual seated in a semi-enclosed area,

which is shielded by both a tree and an architectural barrier, such as a wall. This arrangement offers a sense of refuge by providing both physical protection and psychological comfort.

**Cross-Reference in Report:**

This image should be referenced in the report section discussing "Healing Environments" or "Therapeutic Spaces" within the communal healing center design. The concept of refuge is fundamental in designing spaces that foster mental well-being. By incorporating natural elements, such as trees, alongside architectural features like walls or screens, the design aims to create spaces where individuals feel secure and protected, thus reducing stress and promoting relaxation.

**Detailed Description:**

The diagram demonstrates how a combination of natural and architectural elements can create an environment that embodies the concept of refuge. The tree serves as a natural screen, providing shade and filtering light, while the wall acts as a physical barrier that blocks direct lines of sight from the surrounding area. This arrangement allows the individual seated beneath the tree to have a clear view of their surroundings, enhancing their sense of security and control over the environment. Such design principles are crucial in developing spaces that address the psychological needs of users, particularly in settings dedicated to mental health and healing. By offering a balance of protection and openness, these spaces contribute to a therapeutic atmosphere, essential for the well-being of the inhabitants.

Discussing the ideas connected to the architectural environment as a source of mental health stigma, it is possible to consider a great number of problematic aspects. Prominent features regarding the quality of mental health facilities require that in-patients' dignity and privacy are protected while maintaining security. Also, one requires competency in humanising the hospital environment and this should recognise regional and cultural differences. Therefore, it is possible to state that this approach enables the orientation towards the patient and engaging them on the personal and social levels during the therapy process. [1]

## 1.1 Project Background

The Communal Healing Centre project comes as a response to the high call of urgency for improved mental health care facilities in the country of Nepal. The country has been experiencing a serious crisis regarding mental health. The following are some of the daunting statistics related to the country's poor mental health:

18 suicides take place daily in Nepal, pointing to a serious need for effective mental health interventions.
8 out of every 10 individuals are reported to experience mental health issues, putting the weight on the issue.
94% of the population are unaware of their mental health condition, which can actually be a real case of concern.
Stigmatization towards mental health does not encourage people to seek help.
Current institutes in Nepal dealing with mental health do not have a design guideline, making it difficult for patients to get friendly environments to be treated properly and recover quickly.

## 1.2 Project Significance

The Communal Healing Centre is an imperative step toward resolving the mental health crisis in Nepal. The facility will not only infuse therapeutic design with functional elements to create an environment of healing and community but also ensure the well-being of the patients and staff. This project is not only going to raise the standards of care for mental health facilities in Nepal but is also aimed to help people come out of the stigmatization of mental health, improve the state of awareness, and bring more support to the people in need.

### 1.2.1 Justification and Significance of the Communal Healing Centre Project

The Communal Healing Centre project serves as a vital response to the pressing need for enhanced mental health care facilities in Nepal. The significance of the same moves far beyond architecture and spells deep implications for public health, social welfare, and

community well-being. Thus, the justification of working on this project is based on several factors:

- Mental Health Crisis:

Nepal is facing deep-rooted problems in the mental health sector. This is evidenced by grim statistics showing high suicide rates and extreme prevalence of mental health disorders. The horrible fact of 18 people killing themselves every day is an alarum to implement effective interventions in order to ease the sufferings of individuals with mental health conditions. The Communal Healing Centre attempts to lend a healing hand in the making of a supportive environment and a beacon of hope in the dark tunnel of mental illness.

- Critical Gap in Care:

Mental health institutes in Nepal, including the existing ones, have not been developed based on any design guidelines for patients, thus lacking the basic norms to offer effective treatment and rehabilitation. The Communal Healing Centre project aims to fill this gap by providing a well-designed facility purposefully designed for the psychological and emotional needs of the patients. In this manner, the center will carry out innovative architectural strategies with evidence-based design principles to raise the bar for mental health treatment delivery in Nepal.

- Stigma Reduction and Awareness Raising:

Mental illness is still highly stigmatized in Nepalese society. This has fueled negative stereotypes and created barriers to the people seeking help. This Communal Healing Centre will strive to break that stigma and create an environment where such persons feel welcome and a part of something bigger. By way of reaching out to the greater population through community sensitization and educational programs, the center will create awareness and empowerment towards a culture of understanding and acceptance.

- Architectural Innovation:

The Communal Healing Centre is an opportunity to pioneer new architectural innovation in the field of mental health care design. With therapeutic principles, sustainable practice, and a human-centered approach to healing, the center will create spaces that will inspire not only

healing but also connection, comfort, and resilience. The project represents interdisciplinary collaboration and creative design solutions that just embody and exemplify the transformative potential of architecture in promoting holistic well-being.

The Communal Healing Centre is a testament to the power of architecture in addressing pressing social and health challenges, in elevating human experiences to foster positive change. The project is a beacon of hope and resilience on the way to mental health and wellness.

## 1.3 History of mental health institutions:

The early history of mental institutions started in the thirteenth century in England when the first mental asylum was set up in London and other western countries. Despite the good intention of establishing early forms of hospitals, their settings were pathetic. Violent and nonviolent patients were neglected, displayed to the public for money, or left to starve to death. Torture in the form of beatings and chaining of prisoners was widely practiced. Benjamin Franklin in the eighteenth century paved way for the establishment of the first hospital for mentally ill in Philadelphia. However, it was not until 1773 that the first hospital solely for mental patients was put up in Williamsburg, Virginia. However, some factors were suboptimal, such as the geographic proximity to patients' homes and insufficient cleanliness.

Interest on the treatment of mental illness began in 1946 when President Truman signed the Public Law 487 aimed at enhancing mental health research, diagnosis, treatment, and community services. This marked the beginning of the deinstitutionalization movement where patients were slowly transitioned from institutions to the community setting. However, in society, mental disorders remained a shameful picture with under-staffed and over-crowded hospitals as depicted in the past.

Today mental hospitals are significant in society despite the fact that they are attached to some prejudice. Some patients cannot function in a free community, and community based services may not be sufficient to meet the need of some patients. About this, L. Bachrach argues that it is possible to get some therapeutic benefits in extending periods of hospitalization for chronic mental patients and when they need a safe haven. Although society

had a preference for deinstitutionalization, it was realized that both community service and institutional placements are required. State mental institutions should be perceived in a positive manner as these are places for those who need organized assistance. However, the general public has not viewed state mental institutions in a positive manner. [2]

Dr. Thomas Story Kirkbride, an American mental health reformist, came up with a new concept of a healing architecture, arguing that architecture could have a positive impact on patients suffering from mental health conditions. He was influenced by the European philosophy of 'moral treatment,' in which he gave importance to hope and modifying the physical landscape for people who were termed insane at that time. This philosophy included the use of proper light, nature, meaningful work, and social environment to encourage recovery.

Dr. Thomas Kirkbride, who served as the Chief Superintendent of the Pennsylvania Hospital for forty years, started the Kirkbride Model where he dreamed of establishing asylum that was therapeutic and beautiful with tall buildings, extensive garden, and auxiliary facilities. Nonetheless, while Kirkbride asylums seemed promising initially, problems such as overcrowding and funding issues began to unfold and hinder the usefulness of the model.

While Kirkbride envisioned a bright and positivist future for asylums in the 19th century, the custodial treatment model of the 20th century cast away the notions of 'curing' 'insanity' and instead portrayed an appalling image of asylums to the public. More and more people began leaving state mental hospitals as a result of advancements in psychiatric medications, federal social welfare, and changes in public opinion in the middle of the 20th century. The Community Mental Health Centers Act of 1963 sought to provide increased emphasis on community care as being more humane and less expensive to deliver than hospital based care.

However, it was not long before deinstitutionalization faced many challenges and the number of homeless and incarcerated people increased. The people with mental health problems experience prejudice, structural barriers, and costs. Evaluations of prior mental health facility designs indicate that there are many potential problems that should be avoided. Current initiatives call for better design as a part of care, noting that poor design of spaces inhibits care delivery and promotes staff turnover.[3]

## 1.4 Context of Nepal:

The mental health policy in Nepal was developed in 1997, which lacks initiation of implementation even at present. As it is the norm in several LMICs, funding for mental health is still constrained significantly. Outpatient services have been predominantly developed in the major cities leaving majority of the population in the rural areas with minimal access to mental health care. 22 psychiatrists and 0. There are approximately 6 psychologists for every 100, 000 citizens. The problem encountered in developing Mental Health Care Plan at district level include overworked health care personnel, shortage of psychotropic drugs in PHCs, no present supervision of MH in the existing system, no central authority in MoHP that co-ordinates development of MHCP. For these reasons, certain measures have been suggested, for example, engagement of MoHP, specially in the provision of psychotropic drugs and the assignment of a high ranking officer in the project. Finally, the study recommends the integration of National Health Training Centers (NHTC) in training programs to minimize the above mentioned challenges.

The history of mental health service delivery in Nepal started with mental health services provided just in general hospitals. The initial structures for outpatient psychiatric care were established in 1962, with inpatient care coming two years later in 1964. Mentioned mental health care facility was established in 1984 and shifted in its current location at Lagankhel, Lalitpur in 1985. This one is a small hospital with a capacity of 50 beds and it is the only mental hospital in Nepal as the country didn't have a mental asylum.

Outpatient psychiatric facilities are chiefly provided by the psychiatry sections of medical colleges, provincial government hospitals as well as a few private hospitals. There are Twenty-Five inpatient psychiatric facilities with a total of five hundred bed spaces. The clinics are specialized dealing with subfields of the professional such as child psychiatry, memory disorders, headache, and addiction. For instance, the Child and Adolescent Psychiatry Unit is located in Kanti Children's Hospital where there is only an outpatient department and no separate short-stay inpatient unit for children.
The study shows that a significant number of mental health services have been provided by NGOs. From the early of 1980's, the United Mission to Nepal (UMN) has started community

mental health services. In the coming years, other local and international NGOs like the Centre for Victims of Torture, Nepal (CVICT), the Centre for Mental Health and Counselling – Nepal (CMC-Nepal), and the Transcultural Psychosocial Organization Nepal (TPO Nepal) have provided mental health and psychosocial supports to those survived from civil conflict and the Bhutanese refugees. This has prompted NGOs to work closely with the Ministry of Health and Population (MoHP) for the progression of community mental health.
First, one major challenge for the development of mental health care in Nepal is the lack of a social protection system. Private provision is dominant in the majority of mental health services. But there has been a recent advancement as the government of Bangladesh has included depression, psychosis, alcohol use disorder, and epilepsy into the Department of Health Services' Basic Health Service Package 2075 (2018). Therefore, care and treatment for these conditions will have no charges hence including the following medications; diazepam, amitriptyline, chlorpromazine, trihexyphenidyl, phenobarbitone, carbamazepine, sodium valproate, risperidone, and thiamine. [5]

## 1.5 Environments in Mental Institutions:

The impact of interior environments on the well-being of patients and staff in mental health facilities has been extensively studied by various researchers (Christenfeld, Wagner, Pastva, and Acrish, 1989; Corey, Wallace, Harris, and Casey, 1986; Goffman, 1961; Malkins, 1992; Sommer, 1969). Scholars in the mental health field have long speculated that the physical surroundings affect both the treatment process and patients' perceptions of their surroundings (Brodsky and Platt, 1978; Corey, Wallace, Harris, and Casey, 1986; Grob, 1966). According to J. Malkin (1992), a common issue in the past was "stimulus deprivation caused by a bleak, colorless environment surrounding patients."

Ann Sloan Devlin conducted a study on staff perceptions of a psychiatric ward renovation, using a questionnaire to assess before-and-after effects. The results indicated significant improvements in the ratings of day hall furnishings and plants post-renovation (Devlin, 1992). Devlin (1992) also noted that studies have shown that even modest changes in decor, furnishings, and furniture arrangement can have therapeutic effects.

J. Malkin (1992) emphasized the importance of the architectural environment, stating that elements like bars on windows, concrete block walls, hard-surface floors, and uncomfortable furniture can impact a patient's self-esteem. The architectural detailing, style of furnishings, housekeeping, maintenance, lighting, space utilization, and color influence how viewers perceive the occupants' status, societal worth, and prognosis for recovery (Malkin, J., 1992).[2]

A. R. Foley and B. N. Lacy stressed the collaboration between psychiatry and architecture. They cautioned against unnecessary separation of patients from their community and emphasized the need to avoid preconceived architectural solutions that may misconceive mental illness (Foley, A. R. and Lacy, B. N., 1967).[2]

There is limited research on the perceptions or attitudes of laypersons, design professionals, or mental health community volunteers towards the physical environment of mental institutions. Understanding these attitudes is crucial in evaluating how the broader community perceives state mental institutions. [2]

## 1.6 Exploring Perceptions of Mental Health Facilities

Despite notable changes in the medical field, particularly the deinstitutionalization movement from the 1960s aimed at integrating patients into the community, public perceptions of mental health facilities have been slow to evolve. Community perceptions have been slow to change, maintaining a longstanding image of how mental health facilities should appear in today's society. The media continues to perpetuate the stereotype of the mentally ill as dangerous and deranged, as highlighted by Gallagher in 1987. Although healthcare reform is underway in the United States, including anticipated changes in mental illness care, mental health facilities seem to be the last in line for funding and consideration without further research. A social problem arises in prompting change and understanding of mental health institutions, given the historical societal concept of the mentally ill and their inhabiting facilities.

Various factors currently influence public opinions of these institutions, such as fear, misunderstanding, horror folk tales, and old stories, some of which may have had a basis in

truth. One critical factor influencing these perceptions that should not be overlooked is the impact of the physical environment. [2]


*Figure 2 Optimum healing Environment*

Environmental design plays a crucial role in healthcare settings, influencing both patient outcomes and staff well-being. This report explores the significance of supportive healthcare design in managing or eliminating stressors associated with poor health outcomes. It delves into various environmental factors, such as noise, safety, access to nature, and community integration, and their impact on mental health.

1. Supportive Healthcare Design (Ulrich, 2001): Ulrich highlights the importance of design choices in healthcare facilities to alleviate stress factors like loud noises, lack of privacy, and confusing wayfinding. Additionally, the report emphasizes the need for a less stressful work environment for staff to prevent high turnover.
2. Impact of Design Elements (Connellan et al., 2013): Connellan et al. conducted a comprehensive review identifying 13 major themes related to architecture, design, and positive mental health outcomes. Themes include security/privacy, light, therapeutic milieu, gardens, and the impact of architecture on mental health.
3. Children's Perspectives on Hospital Design (Lambert et al., 2014): Lambert et al. utilized arts-based research to explore young children's perspectives on hospital design. The study emphasizes the importance of a well-designed environment for children, considering factors such as safety, dignity, privacy, and family support.
4. Key Elements in Mental Health Facility Design History (Osborn, 2009): Examining the history of mental health facility design, Osborn discusses Dr. Kirkbride's model, initially successful but later facing challenges due to overcrowding and financial issues. The report reflects on the transition from optimistic 19th-century moral treatment to the 20th-century custodial treatment model.

5. Shift towards Deinstitutionalization (Curtis et al., 2009): Curtis et al. explore the shift towards deinstitutionalization, driven by psychiatric medications, federal programs, and changing public perceptions. The report highlights challenges, such as homelessness and incarceration, associated with this shift.

## 1.7 Research and Visioning

The already existing gap in the mental health care facilities in Nepal not only provides medical help to the patient but also leads to a healing and friendly environment. For that reason, our visioning process intends to change the research insights into workable design strategies that will meet the unique needs of the mental health patients in Nepal.

## 1.8 Goals and Objectives of the Communal Healing Centre Project

- 1. Nature-Integrated Design

Goal: The main goal of the Communal Healing Centre project is to manifest a therapeutic environment that will be integrally interfused with nature. Thus, the place will evoke a deep sense of serenity and connection for its residents.

Objectives

- Encourage the use of sustainable building materials and landscaping practices to minimize the center's ecological footprint and promote harmonious living with nature.
- Position interior courtyards and gardens as contemplative retreats, offering opportunities for reflection, rejuvenation, and connection with nature.

- 2. Communal Healing Practices

Goal: The paramount and leading inspiration of the Communal Healing Centre is to create a dynamic, collective sense of community, support, and belonging among patients, staff, and visitors, which will give birth to a state that is conducive to holistic healing and growth.

Objectives

- Promote a collaborative care model with active stakeholder participation to enhance ownership and empowerment.
- Design communal spaces that encourage social interaction, peer support, and shared experiences, fostering empathy and solidarity.
- Implement integrated wellness programs, group therapy, and community events focused on holistic healing, resilience, and communal well-being

## 3. Destigmatizing Mental Health

Goal: The most important goal of the Communal Healing Centre project will be to challenge prevalent myths, break social stigmas, and ultimately create a culture of acceptance and understanding of mental health issues in society.

Objectives:

- Create an inclusive, respectful environment that honors everyone's dignity, regardless of mental health status.
- Provide psychoeducation, workshops, and outreach programs to improve mental health literacy and foster empathy.
- Advocate through anti-stigma campaigns, encouraging open conversations about mental health and support-seeking without fear of discrimination.

## 4. Mental Health Awareness:

Goal: A core component of the Communal Healing Centre initiative is to have a pervasive reach of mental health awareness, self-awareness, and self-care practice to the community at large, thereby building a culture of well-being and resilience.

Objectives:

- Offer accessible mental health resources and workshops focused on literacy and personal growth.
- Engage with schools and community groups for mental health awareness and support.
- Foster a culture of openness and self-expression through honest conversations and diverse voices.

- The Communal Healing Centre will transform mental healthcare and drive cultural change toward compassion and inclusion, becoming a beacon of hope and healing for those facing mental health challenges.

## 1.9 Project Limitations

1. ***1. Focus on Psychological Services:***

Limitation: The Communal Healing Centre's project scope is mostly centered on giving psychological services and support to individuals experiencing mental health challenges. While psychological interventions are core to every holistic mental health care approach, the project may not delve deeper into the broad spectrum of mental disorders and conditions that demand specific treatments and interventions.

2. ***2. Failure to Address Specific Mental Health Conditions:***

Limitation: The Communal Healing Centre project may not be very extensive in terms of addressing particular mental health issues, such as lunatic syndrome, substance use disorders, and other specific psychiatric conditions. Such conditions would often require specific treatment modalities, specialized rehabilitation programs, and support services based on their unique complexities and challenges.

3. ***3. The Loneliness Epidemic as the Core Focus:***

Limitation: While the project will focus on the epidemic of loneliness, it may lose the ability to give equal importance to other essential mental health concerns. Though battling loneliness is a very relevant goal, focusing on only this factor may lose the chance to make the center respond to other equally pressing mental health needs among the people.

4. ***4. Emphasis on Communal Healing Modalities:***

Limitation: The core objective of the Communal Healing Centre's project is to stimulate healing by communal efforts rather than clinical interventions. While the former communal sustenance and peer interaction will be greatly beneficial to mental health recovery, the dependence of the project on these modalities of treatment will not completely respond to the varied needs and preferences of individuals who will require more traditional, clinical, treatment, and therapeutic interventions.

## 1.10 Methodology for the Communal Healing Centre Project

The development of a Communal Healing Centre for mental health in Biratnagar, Nepal, follows a structured and research-based approach. The methodology incorporates both qualitative and quantitative methods to ensure that the design is responsive to user needs, contextually appropriate, and sustainable.

1. Literature Review

**Objective:** To understand current trends in mental health facility design, evidence-based design principles, and the role of architecture in healing environments.

**Sources:** Research papers, case studies, and architectural documentation from facilities like Shepard Pratt Mental Health Institution, Lakeshore Mental Health Home, National Institute of Mental Health and Neuro Sciences, Nobel Medical College, and Birat Nursing Home.

**Outcome:** Identification of key design elements that influence mental health outcomes such as safety, privacy, access to nature, and the therapeutic use of light and space.

2. Site Analysis

**Objective:** To evaluate the physical, environmental, and social context of the proposed site next to Nobel Medical College in Biratnagar.

**Methods:**

Site visits and surveys to assess the topography, climate, and surrounding infrastructure.

SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) of the location.

**Outcome:** Determination of site-specific challenges and opportunities, such as incorporating nature into the design for therapeutic effects and addressing local mental health needs.

3. User Needs Assessment

**Objective:** To understand the needs of patients, families, healthcare providers, and the community.

**Methods:**

Surveys and interviews with mental health professionals, patients, and caregivers.

Focus groups with stakeholders including community leaders and local residents.

**Outcome:** Comprehensive understanding of how the design can promote healing, safety, and community integration. Emphasis on creating a space that fosters privacy, social interaction, and access to nature.

4. Design Development

**Objective:** To translate research findings into a functional and therapeutic architectural design.

**Methods:**

**Conceptual Design:** Incorporating elements such as natural light, greenery, and flexible spaces that can be adapted for various therapeutic uses.

5. Sustainability and Ecological Integration

**Objective:** To ensure the center operates in harmony with its environment and community.

**Methods:**

Use of sustainable materials and energy-efficient systems.

Landscape design to create healing gardens and green spaces.

**Outcome:** A facility that minimizes its environmental footprint and maximizes its positive impact on mental health through ecological integration.

# 2. Literature Review

- 2.1 History of Communal Healing Centers and Practices

1. Ancient and Indigenous Practices

**Traditional Healing Circles:** Many Indigenous cultures, including Native American, African, and Aboriginal communities, have long practiced communal healing through **healing circles**. These were gatherings where members shared stories, emotions, and prayers in a collective effort to heal mental, physical, and spiritual wounds. The belief was that healing happens through community support, not in isolation.

**Spiritual and Nature-Based Healing:** In ancient civilizations like those of Greece, India, and China, healing was often linked with nature and spirituality. Temples dedicated to gods like **Asclepius**, the Greek god of medicine, were built in serene natural settings. Similarly, in **Ayurvedic** and **Chinese medicine**, healing was communal, involving nature, rituals, and meditation.

2. Medieval and Renaissance Approaches

**Monastic Hospitals:** During the medieval period, monastic hospitals were among the first communal healing centers. Monks and nuns provided care for the sick within the monastery walls. They believed in the healing power of prayer, communal living, and self-discipline, integrating both **spiritual care and physical healing**.

**Early Asylums:** While often stigmatized today, early asylums, particularly in the **Islamic world**, were communal spaces where people with mental illnesses could live in structured environments. At institutions like **Al-Mansuri Hospital in Cairo**, the approach included music, occupational therapy, and communal support.

3. Modern Era (19th Century to Mid-20th Century)

**The Moral Treatment Movement:** In the early 19th century, figures like **Philippe Pinel** and **William Tuke** advocated for more humane approaches to treating the mentally ill. Their methods emphasized **communal care**, occupational therapy, and creating healing environments. **York Retreat** in England, founded by Tuke, was an early example of a healing center designed to provide a therapeutic community for individuals with mental health issues.

**Therapeutic Communities:** By the mid-20th century, **Maxwell Jones**, a Scottish psychiatrist, pioneered the **therapeutic community model**, particularly for those with psychological trauma or addiction. These centers promoted healing through shared responsibility, peer support, and open communication between patients and caregivers. This model spread worldwide and laid the foundation for modern communal mental health care.

4. Contemporary Communal Healing Centers (Late 20th Century to Present)

**Integration of Holistic Healing:** Modern communal healing centers often combine **traditional, medical, and holistic practices**. Centers like the **Esalen Institute** in California or the **Findhorn Foundation** in Scotland promote mental and physical healing through group therapy, meditation, nature immersion, and spiritual retreats.

**Community-Based Mental Health Care:** The deinstitutionalization movement, which gained momentum in the 1960s and 1970s, emphasized the need for mental health care to be delivered in community settings rather than large, isolated institutions. Modern communal healing centers now often focus on **outpatient care, peer support groups, and community integration**, rather than confining individuals to hospitals.

**Healing Through Design:** Today's communal healing centers, such as those found in mental health care and addiction recovery, prioritize **architectural design that promotes healing**. These centers incorporate nature, natural light, open communal spaces, and places for reflection, fostering an environment where mental health patients feel safe and supported.

5. Current Practices

**Peer Support and Shared Healing:** Peer support models, such as those in addiction recovery programs (e.g., **Alcoholics Anonymous**) and mental health group therapy, are central to communal healing practices today. These approaches emphasize mutual aid and the healing power of shared experiences.

**Holistic Health and Well-Being:** Many contemporary communal healing centers focus on the **holistic well-being** of individuals, incorporating yoga, mindfulness, and art therapy. Examples include centers designed to support survivors of trauma, such as **Veterans Healing Centers**, which focus on healing through community-building, creative expression, and therapeutic group activities.

## • 2.2 History of Communal Healing Centers in Nepal

1. Ancient Healing Traditions

**Shamanism and Indigenous Practices:** In Nepal, the foundation of communal healing centers can be traced back to the **shamanistic traditions** of Indigenous communities such as the **Rai**, **Limbu**, and **Tamang**. Traditional healers, known as **Jhankris** or **Dhami**, played a vital role in mental and spiritual healing through rituals, chants, and herbal medicine. Communities would gather around these healers for physical, emotional, and spiritual care, believing that illnesses, both mental and physical, were tied to spiritual imbalances.

**Ayurveda and Communal Healing:** Influenced by neighboring India, Nepal has a long history of **Ayurvedic medicine**, which views healing as a holistic process involving the mind, body, and spirit. Ayurvedic practices have often involved **community-based healing**, where families and community members sought remedies from local practitioners or traditional healers, fostering a communal approach to mental and physical health.

2. Buddhist and Hindu Spiritual Centers

**Monasteries as Healing Spaces:** Nepal, being home to both **Hindu** and **Buddhist** traditions, has a deep spiritual history that intertwines with healing. **Buddhist monasteries** and **Hindu temples** have long served as communal spaces for healing, offering meditation, spiritual guidance, and a sense of peace. In both traditions, healing was seen as a communal effort, where spiritual leaders guided individuals to overcome suffering through meditation, reflection, and communal rituals.

**Healing in Temples:** Certain temples in Nepal, such as the **Pashupatinath Temple** and **Swayambhunath Stupa**, have served as centers where people sought spiritual healing for both physical and mental ailments. Pilgrims would gather in these communal spaces, where the collective prayers and rituals aimed to heal through spiritual and communal bonding.

3. Early Mental Health Initiatives (1950s–1990s)

**Introduction of Western Medicine and Mental Health Care:** Nepal's first formal mental health initiatives emerged in the 1950s, following the introduction of Western medicine. **Mental hospitals** were established, such as the **Mental Hospital in Lagankhel, Lalitpur** (established in 1961), but these early institutions were more focused on confinement than communal healing. Mental illness was often stigmatized, and treatment was not integrated with traditional communal practices.

**Non-Governmental Organizations (NGOs) and Mental Health Advocacy:** In the 1990s, NGOs began playing an important role in shifting mental health care from isolated treatment centers to more community-based approaches. Organizations like **Transcultural Psychosocial Organization (TPO) Nepal** started promoting mental health awareness and worked on developing community-based programs to reduce stigma and bring healing to a wider population. These efforts laid the foundation for modern communal healing centers.

4. Modern Era (2000s–Present)

**Community-Based Mental Health Care:** In recent years, mental health care in Nepal has shifted towards more **community-oriented models**. Initiatives such as **community mental health programs** have been launched in collaboration with the government, NGOs, and international organizations like **WHO**. These programs aim to integrate mental health care into **primary health care systems** at the local level, ensuring that individuals receive treatment and support within their communities.

**Post-Earthquake Trauma Healing:** The devastating **2015 earthquake** led to widespread trauma, pushing for the establishment of community-based mental health services. Various communal healing centers were developed, focusing on **trauma counseling, resilience-building, and peer support**. Local healers, mental health professionals, and international aid organizations worked together to provide communal spaces for healing, integrating traditional practices with modern mental health care.

**Healing Centers in Monastic Communities:** Modern Buddhist monasteries and Hindu ashrams have embraced the idea of healing communities. Some monasteries, particularly in regions like **Lumbini** and **Kathmandu**, offer retreats, meditation programs, and mental health support in a communal setting, helping people find mental peace through shared spiritual practice.

**Integration of Traditional and Modern Practices:** Contemporary communal healing centers in Nepal, such as those operated by mental health-focused NGOs, often combine **traditional healing methods** with **modern therapeutic practices**. These centers focus on

creating **holistic environments** where people can heal emotionally and mentally through counseling, group therapy, meditation, yoga, and interaction with nature.

5. Current Practices and Future Trends

**Promoting Mental Health Literacy:** Today, there is a growing effort to integrate mental health awareness into schools and communities. Workshops and outreach programs are being developed to reduce stigma and promote communal healing. **Community counseling centers**, often led by trained local volunteers and mental health professionals, are becoming more common, especially in rural areas.

**Sustainable and Nature-Based Healing Centers:** Modern communal healing centers are increasingly focusing on **sustainability** and the healing power of nature. Many of these centers incorporate **natural light, open spaces, and green areas** to promote mental well-being, combining the ancient reverence for nature with modern environmental consciousness.

- ## 2.3 Design Elements and Their Impact:

1. Safety and Privacy: Emphasizing the importance of security and safety in psychiatric settings, the report discusses design choices that enhance patient safety and privacy, contributing to positive mental health outcomes.
2. Noise and Environmental Stressors: The impact of noise as an environmental stressor is explored, with recommendations for design considerations to mitigate its effects on mental health in healthcare settings.
3. Space and Layout: Clear and understandable wayfinding is discussed as a key factor in mental health design, with examples of how color design and thoughtful layout can improve the healthcare environment.
4. Nature: Access to nature is identified as a positive influence on mental and physical health outcomes. Studies indicate that exposure to green spaces can lead to decreased anxiety and improved overall well-being.
5. Light and Atmosphere: Natural light and atmosphere are explored in terms of their therapeutic effects. Research suggests that incorporating multisensory environments and considering salutogenic principles in design can contribute to a healing environment.
6. Community Integration: The report discusses the importance of healthcare facilities being transitional spaces that connect patients with the community. Balancing permeability with potential risks is identified as a design challenge.

7. Milieu Environments: The concept of a milieu environment, where the entire atmosphere influences therapeutic outcomes, is explored. The study by Nicholls et al. emphasizes the significance of social interactions in addition to physical structures.
8. Art in Healthcare Settings: The positive impact of art on mental health outcomes is highlighted, with evidence suggesting that exposure to visual arts and live music can reduce stress, anxiety, and improve overall well-being.

Understanding the interplay between environmental design and mental health outcomes is crucial for creating healthcare facilities that promote healing and well-being.

## • 2.4 Guidelines

1) Guidelines for Mental Health Services:
2) Recovery-Oriented Approach:
    a) Focus on patient and family needs.
    b) Emphasize rehabilitation and evidence-based practices.
    c) Prioritize community reintegration.
3) Therapeutically Enriching Environment:
    a) Create a home-like atmosphere.
    b) Ensure familiarity for patients.
    c) Provide visual and physical access to nature to aid healing.
    d) Uphold patient autonomy, respect, and privacy.
4) Safe and Secure Environment:
    a) Minimize physical hazards.
    b) Increase staff visibility and engagement.
    c) Utilize abuse-resistant materials and safety-promoting technologies.
    d) Implement personal duress alarms and pressure-sensitive door head alarms.
5) Integrated and Coordinated Services:
    a) Foster collaboration among care providers.
    b) Treat patients with multiple diagnoses in the same setting whenever possible.
    c) Use technology for seamless continuity of care.
6) Respectful and Inclusive Settings:
    a) Offer appropriate accommodations for specific patient groups.
    b) Safeguard the privacy and dignity of female Veterans.

c) Provide separation within inpatient units or distinct units as needed. [6]

## ▪ Outpatient Components in Mental Health Care System:

***5. Mental Health Clinic:***

- Provides general and specialized mental health services for evaluated, diagnosed, and treated Veterans.
- Services include diagnostic evaluations, treatment planning, individual/group/family psychotherapy, pharmacotherapy, cognitive and psychological assessments, patient education, and consultation services.
- Key design concepts:
- Create attractive, therapeutic patient spaces.
- Maintain privacy and dignity for diverse Veteran population.
- Ensure open, easily observed circulation areas.
- Use clear signage with large letters.
- Control acoustics in therapy room areas.
- Include identifiable reception and waiting areas, providing privacy.
- Separate sub-waiting areas for women patients and families.
- Wheelchair accessibility in all areas.
- Ample light in common hallways.
- Provide outdoor space for patients.
- Subdivide reception/waiting area into smaller waiting areas.
- Secure exposed devices with tamper-resistant fasteners.
- Ensure appropriate acoustic and light control in therapy rooms and tele-mental health spaces.

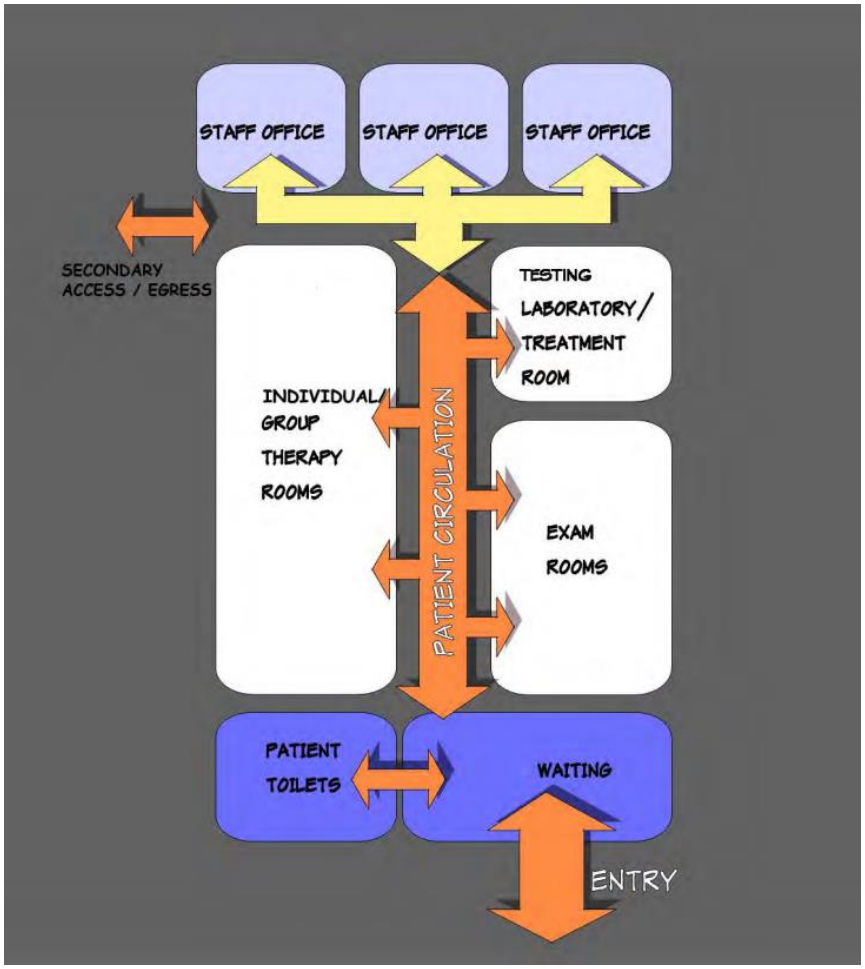



*Figure 3 Mental Health Clinic Relationship Diagram*

### *6. Substance Abuse Clinic:*

The Substance Abuse Clinic is designed to support patients dealing with various substance use disorders (SUD). It offers outpatient screening, diagnostic assessments, and treatment for Veterans facing chronic or recurring conditions related to substance use. This clinic caters to diverse Veteran populations, including those who are homeless, ethnic minorities, women, geriatric patients, individuals with PTSD and other psychiatric conditions, as well as those with infectious diseases, traumatic brain injury (TBI), and spinal cord injury (SCI).

Key Features of the Substance Abuse Clinic:

- Patient-Friendly Environment:
    - Design patient spaces to be attractive and therapeutic while ensuring safety.
    - Use wall color, trim, accent colors, and securely-anchored artwork to enhance the environment.
- Privacy and Dignity:
    - Maintain patient privacy and dignity, considering diverse treatment protocols.

- Open Circulation Areas:
    - Design open corridors easily observed from reception and nursing stations, free of blind corners.
- Outdoor Space:
    - Provide outdoor space for patients and families to decompress.
- Clear Signage:
    - Install clear signage with large letters for readability from a distance.
- Acoustic Control:
    - Ensure therapy room areas have appropriate acoustic control.
- Reception Area Design:
    - Include an identifiable reception area adjacent to a comfortable waiting area.
    - Subdivide the overall reception/waiting area into smaller sections easily observed from a central point.
- Wheelchair Accessibility:
    - All areas must be wheelchair-accessible, with corridors allowing passage for two wheelchairs.
- Ample Lighting:
    - Provide ample light in common hallways.
- Safety Measures:
    - Design areas like patient toilet rooms to minimize potential hazards.
    - Use tamper-resistant fasteners for exposed devices.
    - Install laminated glass in areas easily accessed by Veterans.

### *7. Psychosocial Rehabilitation Recovery Center (PRRC):*

The PRRC is a vital part of transforming mental health care in line with the President's New Freedom Commission report, VA Mental Health Strategic Plan (MHSP), and VHA Handbook 1160.01. It replaces existing Day Treatment Centers, day hospitals, and similar programs, aiming to shift from merely managing symptoms to helping Veterans integrate into the community with meaningful roles.

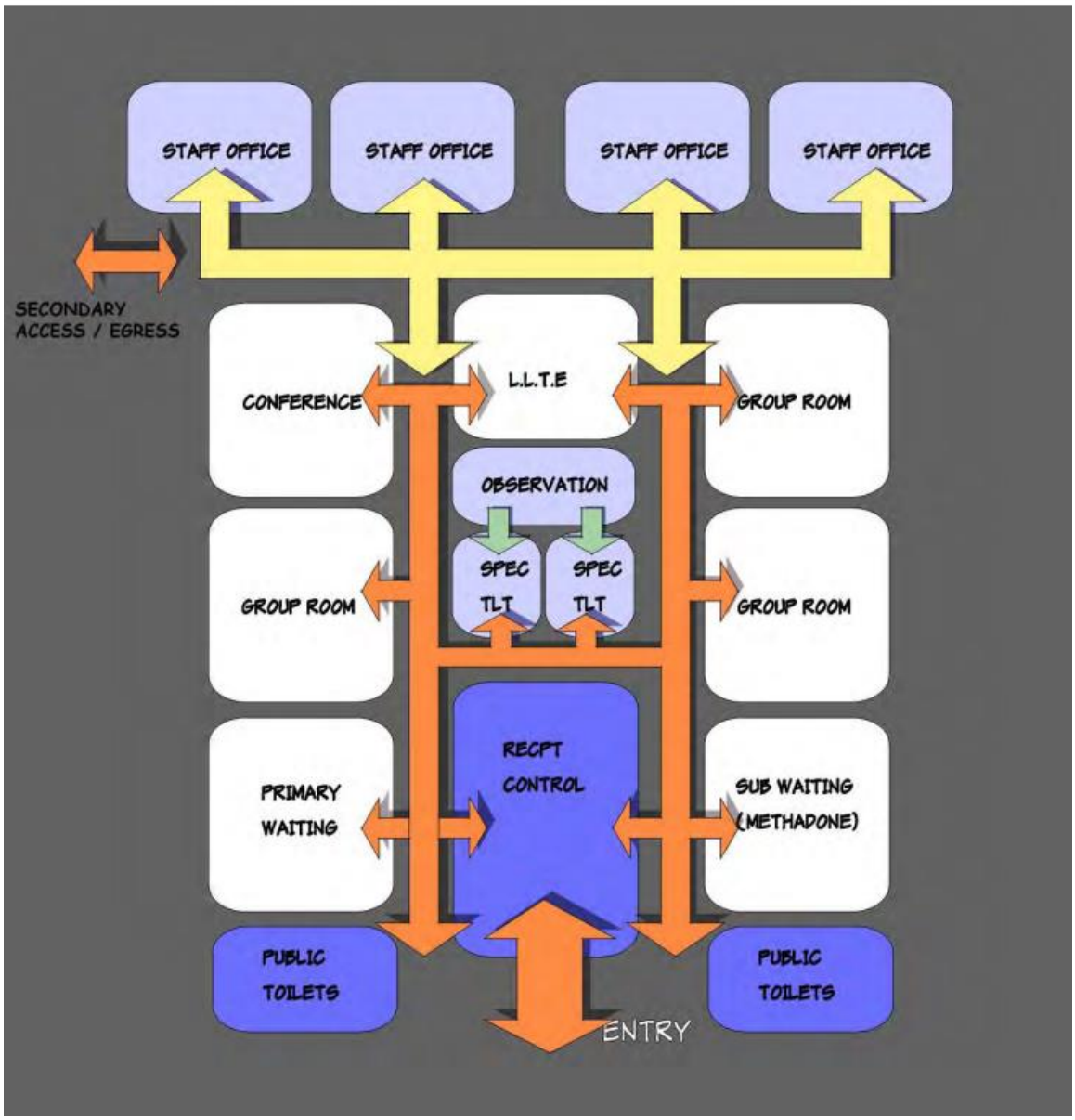



*Figure 4 Substance Abuse Clinic Relationship Diagram*

Design Criteria for PRRC:

- Location:
    - Ideally situated in the community, away from VA Medical Centers, or separated from mental health treatment centers.
- Patient Spaces:
    - Create attractive, open, and therapeutic environments without compromising safety, using colors, trim, accent colors, and artwork.
- Privacy and Dignity:
    - Maintain patient privacy and dignity, considering diverse treatment protocols.

- Clear Signage:
    - Ensure ample clear signage with large letters for readability, especially for those with imperfect vision.
- Acoustic Control:
    - Design therapy room areas with appropriate acoustic control.
- Reception/Waiting Area:
    - Subdivide waiting areas into smaller sections for different patient needs.
    - Include a communication center adjacent to the waiting room.
- Lighting:
    - Provide ample natural lighting wherever possible.
    - Supplemental lighting as required, including fixtures for seasonal affective disorder.
- Wheelchair Accessibility:
    - Ensure all areas are wheelchair accessible, with corridors allowing passage for two wheelchairs.
- Outdoor Space:
    - Incorporate an enclosed, attractive outdoor space for program participants to enjoy daily activities.
- Classrooms/Group Rooms:
    - Have a minimum of three rooms to support simultaneous programming for up to 30 Veterans each.
- Recovery Resource Area:
    - Provide a private area for Veterans to access recovery-related materials without interference.
- Kitchen:
    - Include a full kitchen for teaching independent living skills, such as food preparation and meal planning.
- Multipurpose Rooms:
    - Multi-family therapy, health screenings, occupational therapy, art, computer access, and sensory modulation.
- Storage Rooms:
    - For art supplies, occupational therapy materials, and other program necessities.
- Restrooms:

- Adequate access to restrooms adjacent to the PRRC, supporting staff and patients.

- Program Coordinator/Director Office:
  - Provide one per PRRC.
- Counselor Offices:
  - Provide offices for FTE positions authorized.
- Clerk Cubicles:
  - Provide one for each FTE position requiring a cubicle.
- Staff Spaces:
  - Include lounges and lockers for staff.

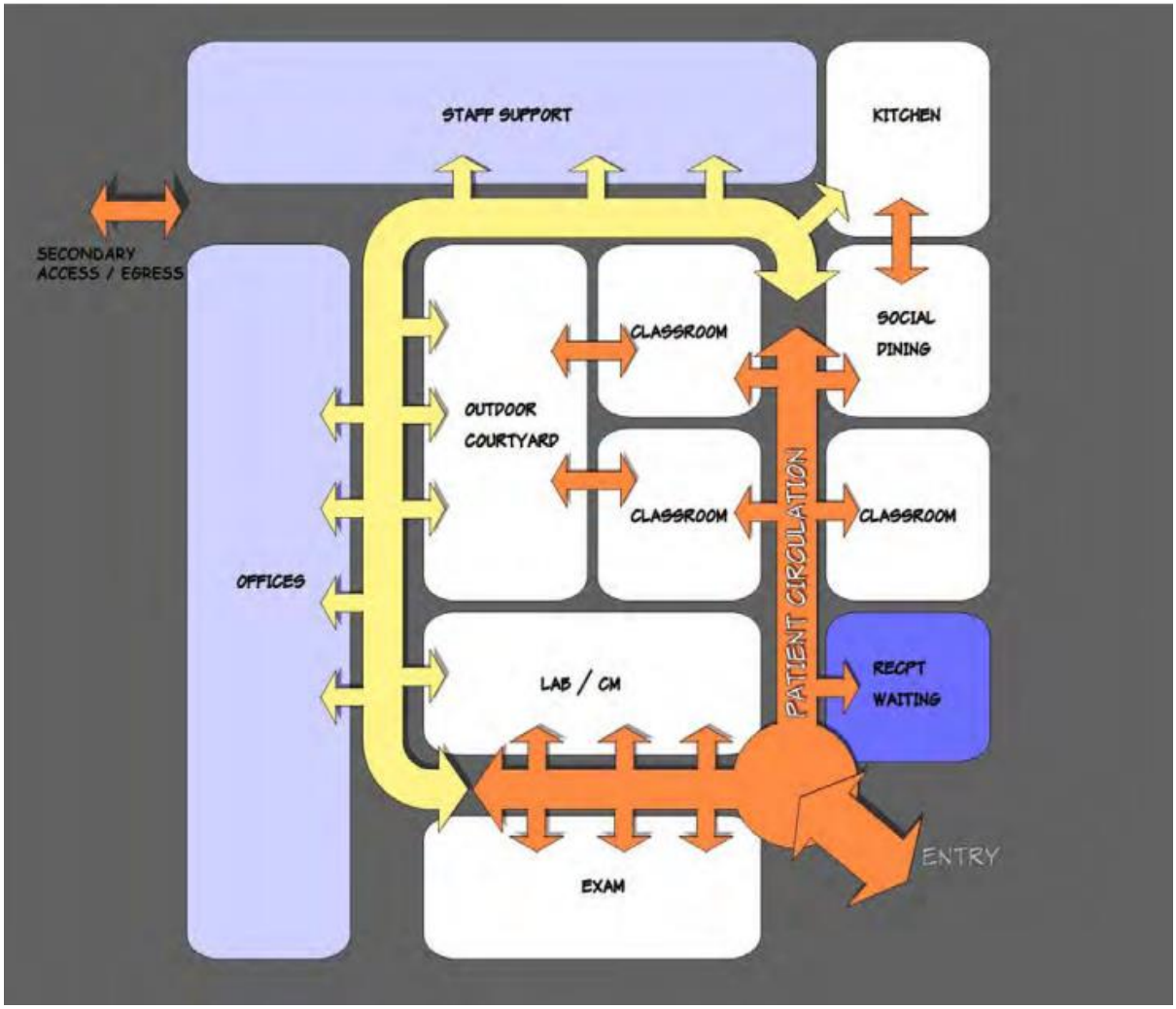



*Figure 5 Psychosocial Rehabilitation and Recovery Center*

### *8. Psychology Services:*

Psychology Services are a part of some medical centers, offering spaces for psychologists, mental health professionals, trainees, and administrative staff. If there's no Mental Health clinic nearby, patients can be seen here. The component includes offices, therapy rooms, waiting areas, and more.

Design Criteria for Psychology Services:

- Attractive Environment:
    - Make the space look appealing and not too much like a hospital.
- Open Corridors:
    - Keep hallways open, easily seen from the reception area, and without hidden corners.
- Acoustic Control:
    - Ensure therapy rooms have the right sound control.
- Aesthetic Elements:
    - Use colors, trim, accent colors, and securely-anchored artwork in common areas.
- Ample Lighting:
    - Provide good lighting in hallways.
- Waiting Area:
    - Include a waiting area for patients, families, and visitors. Make it private.
- Reception Area:
    - Have a reception area where patients can check-in, ideally near the waiting area.
- Clear Signage:
    - Use signs that are easy to read from a distance, especially for those with imperfect vision.
- Accessibility:
    - Ensure all areas are accessible, with corridors allowing passage for two wheelchairs.

### *9. Primary Care-Mental Health Integration Services:*

The VA is working hard to blend mental health services with primary care in their clinics. Research shows that many patients dealing with mental health issues like depression, anxiety, and alcohol misuse often don't get the best treatment. Sometimes, referrals to specialized care don't happen or don't result in effective treatments. To address this, the VA is incorporating evidence-based methods to provide high-quality, recovery-focused treatments directly within primary care settings.

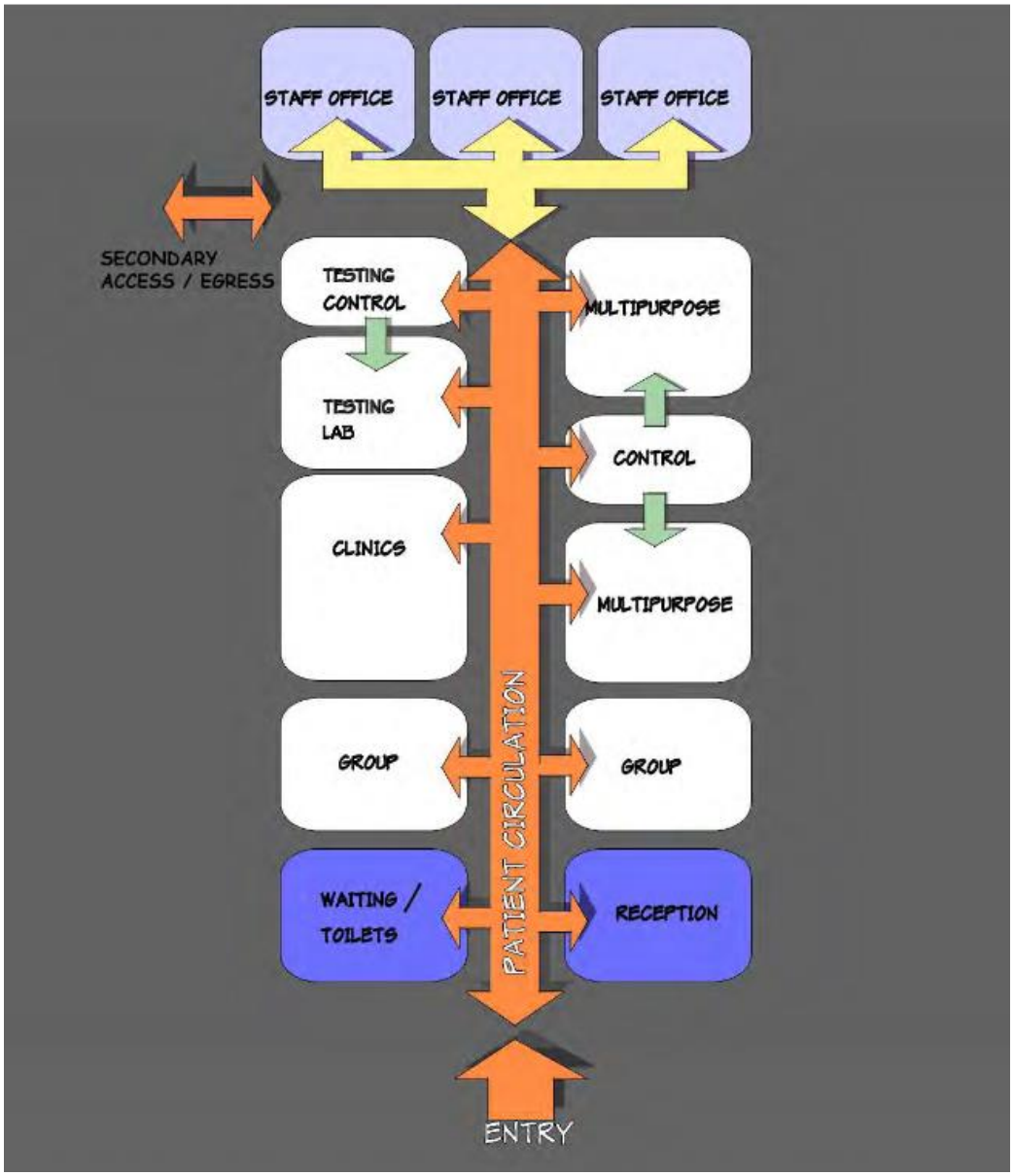



*Figure 6 Psychology Services Relationship Diagram*

Integrated Care Components:

- Co-Located Collaborative Care:

    - Mental health staff work closely with primary care providers, either in-person or through consultation.
- Care Management:
    - Nurses provide assessments, education, and follow-up, often over the phone or occasionally in person.

Key Design Concepts for Integration Spaces:

- Comfortable Environment:
    - Design the space to be attractive and welcoming, avoiding an institutional feel.
- Examination Rooms for Mental Health Staff:
    - Rooms for mental health staff should be in the primary care clinic itself to be easily accessible. Fixed locations are preferred to make them consistently available.
- Location of Care Managers:
    - Ideally, care managers should also be in the primary care clinic for better interaction. If not, there should be space available for their occasional use.
- Patient Privacy and Dignity:
    - Maintain patient privacy, especially for mental health or substance use treatment. Rooms used for therapy should have good acoustic control.
- Clear Signage:
    - Install clear and large signage that patients can read easily. This helps in identifying mental health staff locations for better collaboration.
- Waiting Area:
    - Have a waiting area for patients and families that offers some privacy from regular traffic.
- Ample Lighting in Hallways:
    - Make sure there's enough light in common hallways for everyone's comfort.
- Wheelchair Accessibility:
    - Ensure that all areas are wheelchair-accessible, and corridors should allow the passage of two wheelchairs.

## 2.5 Architecture Design Concept for Communal Healing Centre

- Connection to Place

To translate our comprehensive research into tangible architectural designs, we employ a visioning process that helps us formulate effective design strategies. This process allows us to conceptualize an environment that aligns with all research goals while fostering a healthy and healing atmosphere.

- Visioning Process:

### Aesthetic and Ambience:

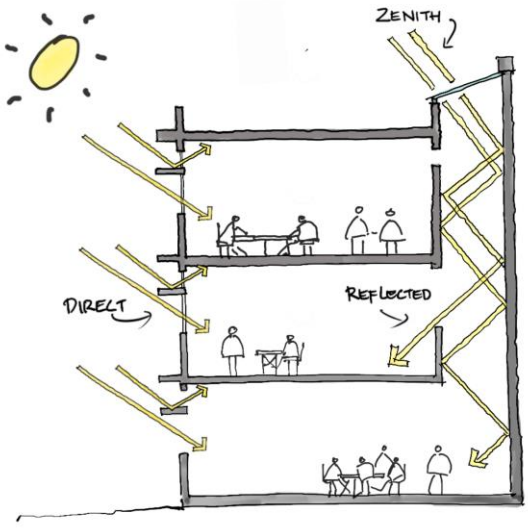



*Figure 7 Natural daylighting illustration*

- **Natural Daylight:** Incorporate ample natural light to create a bright and uplifting environment.
- **Calming Colors:** Use a palette of soothing and calming colors to enhance relaxation and tranquility.
- **Antiligature Design:** Implement designs that minimize the risk of self-harm, ensuring patient safety.

## Architectural Style:

- **Modern Yet Agrarian Architecture:** Blend contemporary design elements with traditional agrarian architecture to create a familiar yet innovative space.
- **Single-Floor Facility:** Design the center as a single-floor facility for ease of movement and accessibility.

## Spatial Organization:


*Figure 8 Illustration of interior courtyard*

- **Interior Courtyards:** Incorporate interior courtyards to provide natural light, fresh air, and a connection to nature.
- **Recreational Spaces:** Designate areas for recreation to promote physical activity and mental well-being.
- **Welcoming Atmosphere:** Ensure the facility feels welcoming, comfortable, and quiet to foster a sense of peace.

### Functional Layout:

- **One-Stop Care:** Provide all levels of care within the facility to create a seamless experience for patients.
- **Customizable Environments:** Offer multiple options for patients to choose their immediate environment, promoting autonomy and comfort.
- **Family and Alone Time:** Design spaces that cater to both family interactions and individual solitude.

### Staff and Patient Considerations:

- **Staff Respite Spaces:** Create dedicated spaces for staff to relax and recharge.
- **Safety Measures:** Implement designs that ensure patient safety and allow easy supervision of spaces.
- **Access to Daylight:** Ensure that all areas within the facility have access to natural daylight, promoting overall well-being.

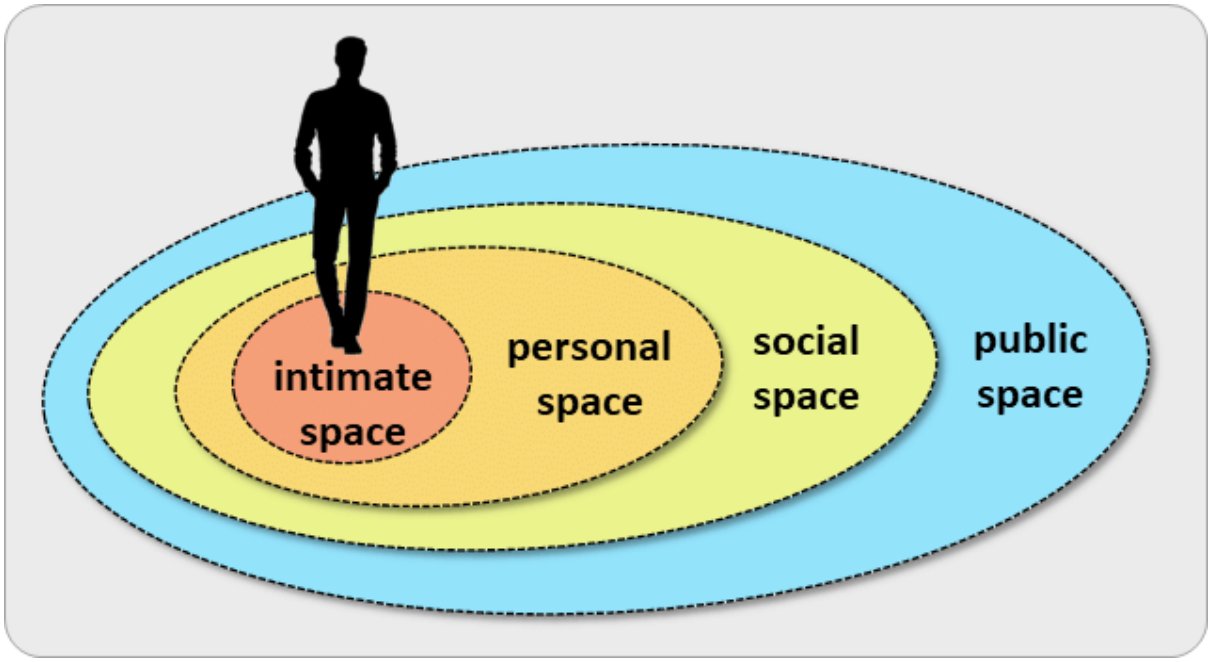



*Figure 9 Proximity space*

- **Proximity to Support Spaces:** Design the layout to ensure close proximity to essential support spaces for quick and efficient care.

### Microclimate Creation:

**Climate Adaptation:** Although the climatic conditions of Biratnagar, the healing centre is targeted to bring a microclimate effect within the site that additionally supports the healing process.

**Nature-Integrated Design**: Creation of a naturally integrated design in harmony with the landscape of the site in such a way as to foster a healing and supportive environment.

The Communal Healing Centre project will ensure that inculcating these design principles into it will make the space aesthetically appealing and simultaneously functional and supportive to both patients and staff. The environment will be conducive to healing, promoting a sense of safety, comfort, and community.

- ## Finding Report: Current Challenges in Mental Health Treatment and the Role of Architecture in Creating Healing Spaces

---

Introduction

Mental health treatment is faced with numerous challenges, from stigma and inadequate infrastructure to accessibility issues. Traditional psychiatric facilities often evoke fear and negative associations, contributing to societal reluctance in seeking care. However, research and case studies indicate that architecture can play a transformative role in reshaping mental health treatment environments, promoting healing through thoughtful design. This report explores the current challenges in mental health care and examines how architecture can significantly contribute to creating healing spaces.

---

Current Challenges in Mental Health Treatment

1. Stigma and Social Perception

One of the most pervasive challenges in mental health treatment is the stigma surrounding mental health disorders and treatment. This stigma prevents many from seeking the care they need. People often associate mental health facilities with confinement and asylums rather than places of healing.

**Survey Findings**:

A study in *The Lancet* (2016) revealed that nearly **75% of people in low- and middle-income countries** do not receive any mental health care due to stigma and lack of awareness.

In a 2020 survey conducted by the *World Health Organization (WHO)*, **1 in 4** people with mental health disorders reported experiencing discrimination in health care settings.

2. Inadequate Infrastructure

Many mental health facilities, especially in developing countries, suffer from a lack of adequate infrastructure. These spaces are often outdated, overcrowded, and unable to provide a comfortable and therapeutic environment conducive to healing.

**Key Challenges**:

Lack of privacy for patients, leading to increased anxiety.

Overcrowding, particularly in urban psychiatric facilities.

Inadequate lighting and ventilation, contributing to discomfort and stress.

3. Accessibility and Inequality

Mental health services are not equally accessible across populations. In rural areas, the lack of specialized care and limited availability of mental health professionals poses a significant barrier.

**Survey Findings**:

In Nepal, as per the *Nepal Health Research Council (NHRC)*, around **25% of individuals** suffer from mental health issues but only **11%** have access to the care they need.

Geographic and economic barriers prevent people in remote areas from receiving treatment, leading to the exacerbation of mental health conditions.

---

How Architecture Can Play a Role in Healing

Architecture can serve as a bridge to improve mental health treatment by creating spaces that not only support recovery but also foster emotional well-being and comfort. The impact of a well-designed space is profound, as evidenced by various studies linking environment to mental health outcomes.

1. Biophilic Design for Mental Health

Biophilic design, which integrates natural elements into the built environment, has been shown to significantly reduce stress, anxiety, and depression. Incorporating nature into healthcare settings provides patients with psychological comfort and helps create a sense of peace and tranquility.

**Case Study: Shepard Pratt Mental Health Institution**:

This facility incorporates **natural landscapes and courtyards** that serve as therapeutic environments for patients.

Studies on Shepard Pratt indicated that **patients exposed to natural environments** reported a **30% reduction in anxiety** and faster recovery times compared to traditional ward environments.

2. Space and Layout: Enhancing Movement and Interaction

The layout of a space directly affects how patients interact with each other, the staff, and their environment. Clear, open spaces encourage movement and reduce feelings of confinement. Flexibility in design allows for various therapeutic activities, promoting interaction and community-building.

**Key Architectural Features**:

**Wide corridors with clear sightlines**: Helps patients feel safe and reduces feelings of being trapped.

**Open-plan communal spaces**: Facilitates social interaction and peer support, both of which are vital in mental health recovery.

**Survey Findings**:

In a study conducted by *University College London* (2018), patients in psychiatric facilities with **well-designed communal areas** were found to have **improved mood** and were **less likely to experience isolation**.

3. Use of Light and Natural Ventilation

Natural light has been proven to enhance mood and reduce symptoms of depression. In mental health settings, access to natural light and well-ventilated rooms can contribute to a sense of calm and well-being.

**Case Study: Tampere Psychiatric Clinic, Finland**:

The clinic uses **large windows and skylights** to ensure that each patient room receives natural light.

Patients reported feeling **more relaxed and less anxious** when natural light was integrated into their surroundings.

4. Private and Quiet Spaces

Patients need quiet, private spaces to relax and reflect, especially in high-stress environments like psychiatric wards. Small, enclosed areas for personal reflection, such as meditation rooms or private gardens, can greatly enhance patient recovery.

**Case Study: Linder Center of Hope, USA**:

This facility has **dedicated quiet zones** where patients can retreat for personal reflection.

Survey results from the facility showed a **significant improvement in mood and cognitive function** in patients who used these spaces regularly.

5. Safety and Security: A Calm Environment

While safety is paramount in psychiatric care, it should not come at the expense of creating an oppressive or overly controlled environment. A balance needs to be struck between security and creating an open, welcoming space.

**Key Elements**:

**Safe, non-institutional design**: Reducing the feeling of being in a restrictive institution.

**Flexible furniture and safety-conscious materials**: Allow for a safe yet comfortable environment.

---

Recommendations for Future Architecture in Mental Health

**Implement Biophilic and Bioclimatic Design**: Utilize natural elements like water, plants, and natural lighting to create a healing environment. Design should reflect the local climate, as seen in the application of **bioclimatic design principles in Biratnagar, Nepal**.

**Prioritize Open Spaces and Communal Areas**: Integrate open-plan layouts with communal spaces to encourage social interaction and support systems, while ensuring private, quiet zones for personal reflection.

**Flexible and Adaptable Design**: Spaces should be designed to accommodate various therapeutic and recreational activities, creating a multifunctional environment that adapts to patient needs.

**Safety and Privacy**: While ensuring safety, design should avoid an institutional feel, promoting a more homelike atmosphere with respect to patient dignity and autonomy.

**Utilize Local and Sustainable Materials**: Using sustainable building materials and designing for the local environment reduces ecological impact and promotes a connection with nature, fostering a sense of belonging and comfort.

- Mental Health and Urban Green Spaces

Sero, GE, McCreary, L, Portal, C, Williams, J, Astell-Burt, T, and Abe, D., conducted an in-depth study on the role of green spaces in mental health. They exhaustively explored different approaches to predict improved mental health outcomes based on urban features. Their findings confirm that well-designed urban green areas positively affect societal mental health and highlight the importance of adhering to specific guidelines during their development.

- Bamboo Forest Therapy

A cross-sectional study investigated the impact of visiting bamboo forest facilities on male college students.

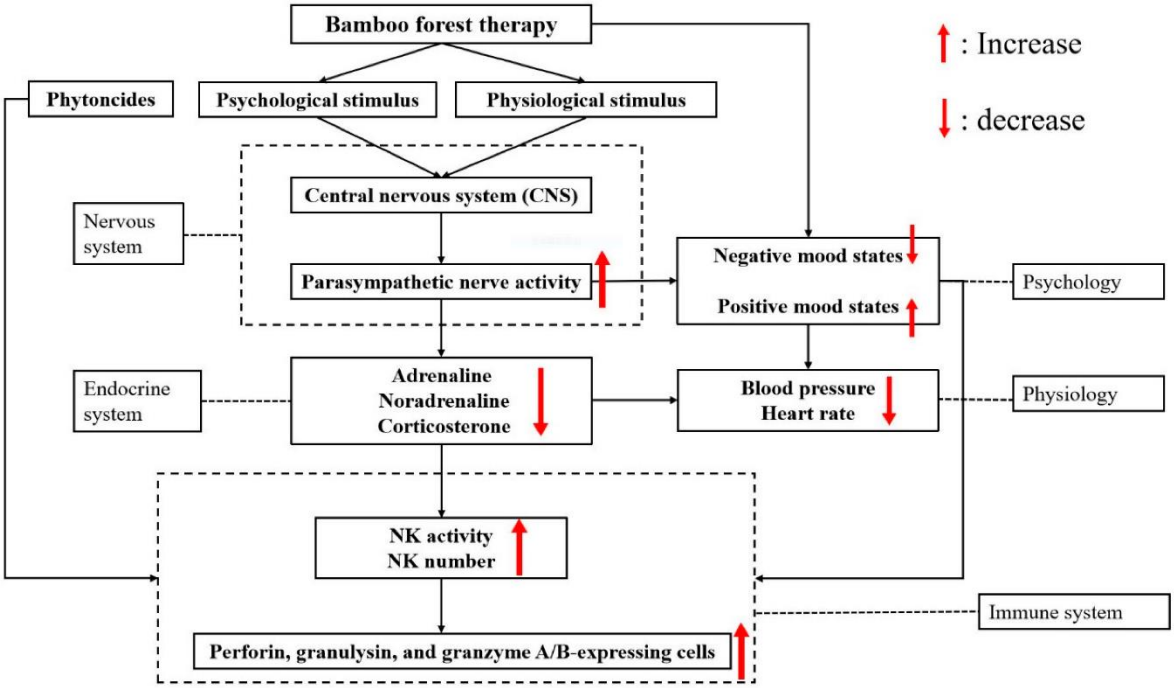



*Figure 10 Bamboo forest therapy and its impact on healing*

The results showed improved mood states, reduced negative emotions, and overall favorable physiological conditions among participants. However, more research is needed to understand the full impact on health, particularly concerning heart diseases.

- Green Spaces and Cardiovascular Risk Factors

Researchers examined the relationship between green spaces and cardiovascular health in Madrid. The study found that female residents in areas with higher green space density had lower levels of cardiovascular risk factors, except for obesity.

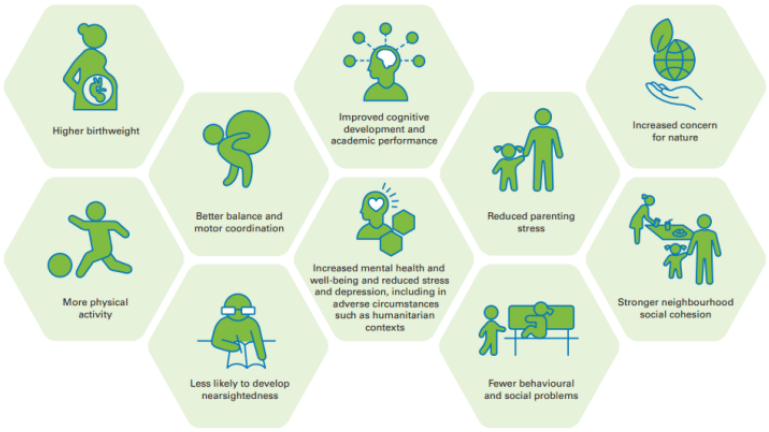



*Figure 11 Effects of green space in urban area*

Policymakers can use this evidence to create healthier urban environments that prioritize green areas.

- Protected Nature vs. City Environment for Happiness

Researchers compared the restorative effects of forest environments versus urban centers. Forest environments demonstrated significantly higher levels of restorative benefits for both psychological and physiological aspects.

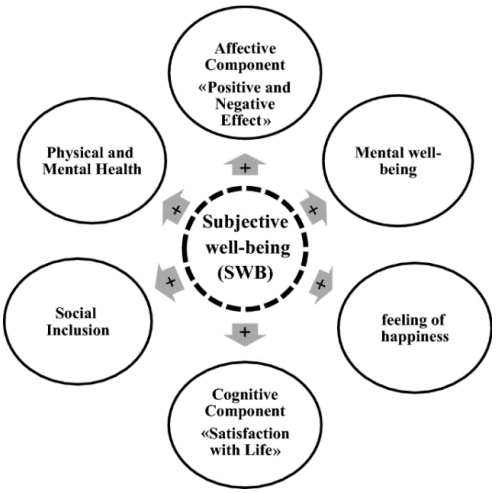



*Figure 12 Subjective Wellbeing*

Personalizing forest experience programs based on individual psychological characteristics could significantly boost the well-being of urban residents.

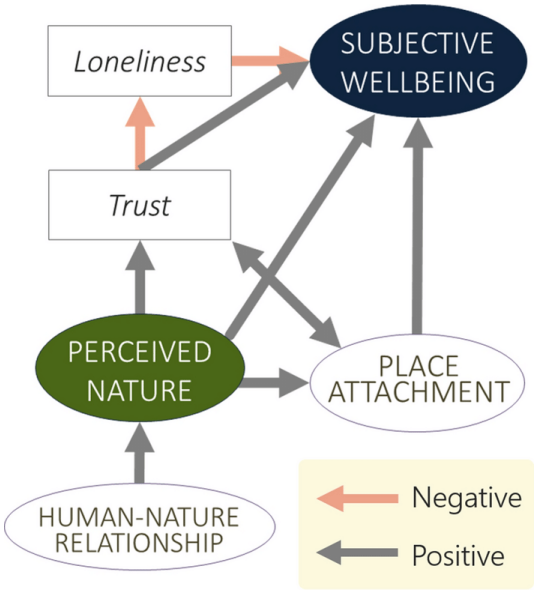



*Figure 13 Perceived nature and subjective wellbeing relationship*

- Greener Spaces as a Solution to Lower Rates of Crime

A literature review analyzed the complex relationship between green spaces and violent crime.

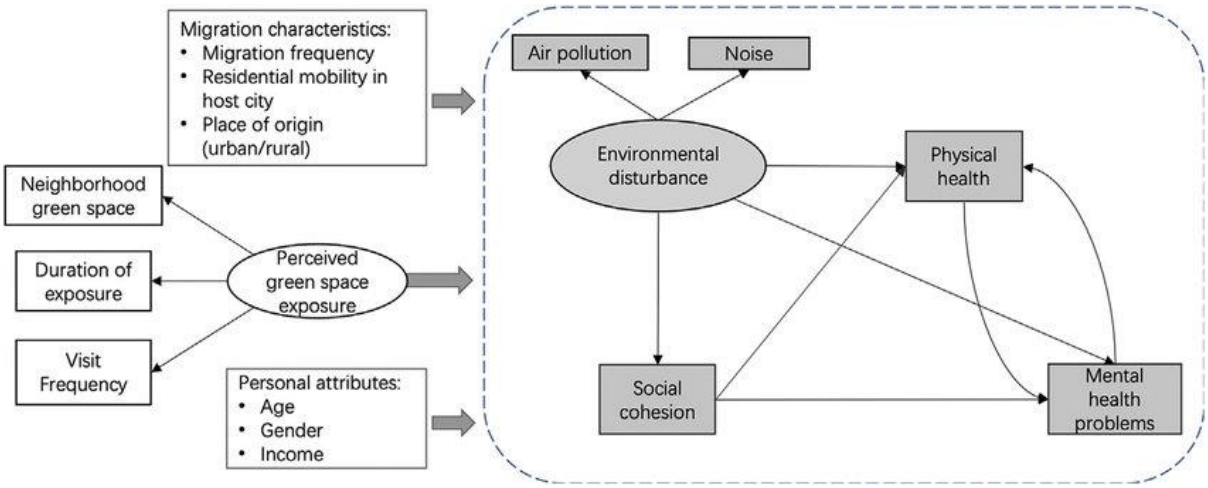



*Figure 14 Conceptual model of green space-mental health pathways*

Interventions such as vegetated streets, community gardens, and tree-planted areas were found to be inversely proportional to crime rates. More meta-analyses and qualitative studies are needed, especially concerning city parks and undeveloped green spaces.

- Soundscapes and Environments for People with Dementia

Authors emphasized the crucial role of acoustic environments for individuals with dementia. They proposed an intervention strategy to improve soundscapes in dementia care facilities.

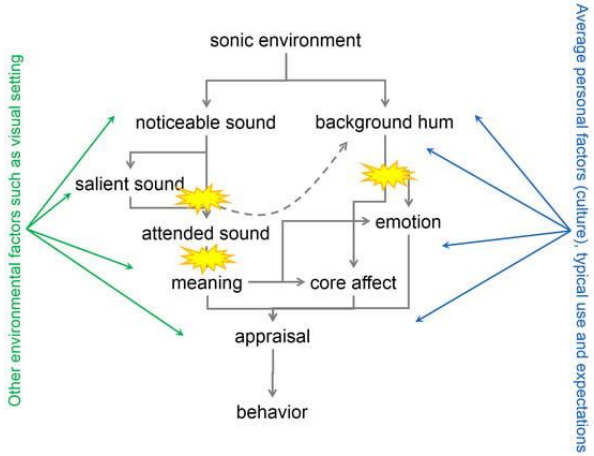



*Figure 15 Human perception model: from sonic environment to soundscape appraisal*

Integrating positive acoustic stimuli into designs is essential to support the safety and well-being of residents with dementia. [7]

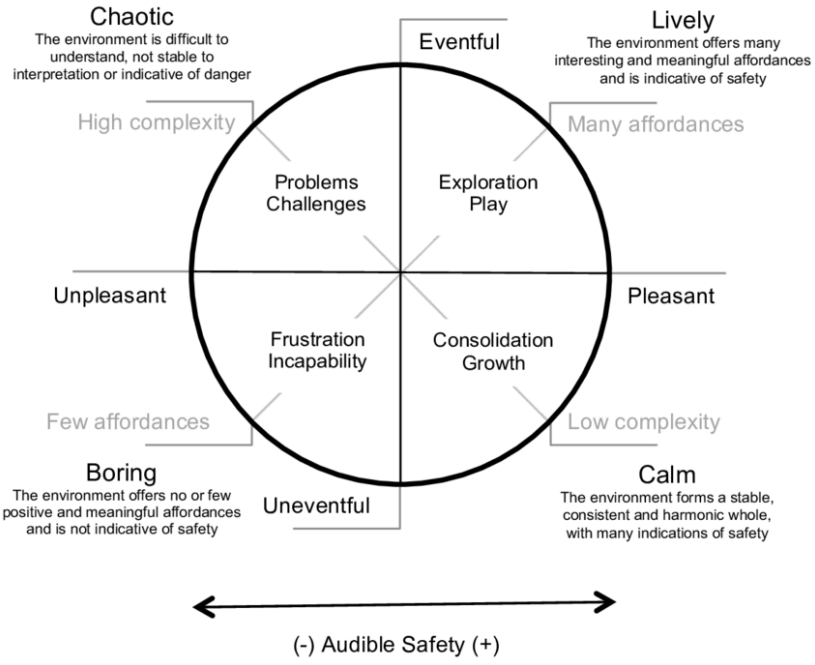



*Figure 16 Types of soundscapes*

- Design Guide for Services

**Patient Examination room**

Function:

The patient examination room will be used in both inpatient and outpatient settings for physical examinations, monitoring and assessments related to a mental health patient treatment plan. Individual consultation with mental health professionals will typically take place in their respective offices. Because of the safety threats posed by some of the equipment and supplies located in this room, patients should not be left unattended in this room at any time.

*Figure 17 Patient Examination Room*

**Architectural:**

Floor Finish: Sheet vinyl, linoleum or rubber flooring

Base: Rubber Base

Wall Finish: Gypsum Board, painted finish

Ceiling: Acoustic Tile

Ceiling Height: 9’-0” minimum

Noise (STC Rating): STC 40 minimum, STC 45 recommended

Hardware: VA Hardware #52

Doors: 3’-6” x 7’-0” wood.

Windows: Not required. If provided, inside face of glazing shall be laminated glass.

HVAC:

Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% - 50% Relative Humidity

Min. Air Supply Air Change/Hr: 6

Return Air: Permitted

Exhaust Air: Not Required

Room Noise Level: NC 35

Individual Temperature Control: Required

Room Air Balance: Neutral

**Treatment Room**

Function:

Provides space for patient treatments, assessments and examinations beyond what can be done in a standard examination room. Specific room equipment requirements should be established based on the particular facility and what services will be provided in this room. Because of the equipment housed in this room, patients should not be left unattended in this space.

*Figure 18Treatment room*

Space Requirement: 180 NSF [17.0 NSM]

Architectural:

Floor Finish: Sheet vinyl, linoleum or rubber flooring

Base: Sheet vinyl, linoleum or rubber flooring

Wall Finish: Rubber Base Gypsum Board, painted finish,

Ceiling: Acoustic Tile

Ceiling Height: 9’-0” minimum

Noise (STC Rating): STC 40 minimum, STC 45 recommended

Hardware: VA Hardware #52

Doors: 3’-6” x 7’-0” wood.

Windows: Not required. If provided, inside face of glazing shall be laminated glass.

HVAC:

Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% - 50% Relative Humidity

Min. Air Supply Air Change/Hr: 6

Return Air: Permitted

Exhaust Air: Not Required

Room Noise Level: NC 35

Individual Temperature Control: Required

Room Air Balance: Neutral

**Group Therapy Room**

Function:

This room may or may not have an adjacent control room.

Architectural:

Floor Finish: Carpet, carpet tile or resilient flooring.

Base: Rubber Base

Wall Finish: Gypsum Board - Painted

Ceiling: Acoustic Tile

Ceiling Height: 9’-0”

Min. Noise (STC Rating): STC 45 minimum.

Hardware: VA Hardware Set # 52

Doors: 3’-6” x 7’-0” wood with ½ light glazing. 3’-0” minimum width

Windows: Not required. If provided, inside layer of exterior window units shall be laminated glass.

Interior glazing shall be laminated glass. Integral blinds for sun control are preferred but not required

Mechanical:

Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity

Min. Air Supply Air Change/Hr: 6

Return Air: Permitted

Exhaust Air: Not Required

Room Noise Level: NC 35

Individual Temperature Control: Required

Room Air Balance: Neutral

**Group Testing Room**

Function: This space allows two to three patients to confer with a mental health professional in an office like setting. Furniture and door should be arranged in this space so both patients and professionals can exit the room without passing in front of the other.

Architectural:

Floor Finish: Carpet, carpet tile or resilient flooring

Base: Rubber Base
Wall Finish: Gypsum Board - Painted
Ceiling: Acoustic Tile with clips or Gypsum Board with Acoustical Plaster
Ceiling Height: 9’-6” Min. Noise (STC Rating): STC 45 minimum.
Hardware: VA Hardware Set # 52 Doors: 3’-6” x 7’-0” wood with ½ light glazing.
Windows: Not required. If provided, inside layer of exterior window units shall be laminated glass. Interior glazing shall be laminated glass. Integral blinds for sun control are preferred but not required.
Mechanical:
Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity
Min. Air Supply Air Change/Hr: 4
Return Air: Permitted
Exhaust Air: Not Required
Room Noise Level: NC 35
Individual Temperature Control: Preferred
Room Air Balance: Neutral

**Biofeedback Laboratory Treatment Room**

Function:
This space with the adjacent control room accommodates computerized equipment, such as biofeedback equipment, used in testing mental health outpatients. It should be noted that biofeedback equipment is more compact and portable. Dedicated rooms for this type of equipment are becoming less frequent in new VA facilities
Biofeedback Laboratory Treatment Room
Architectural:
Floor Finish: Sheet Vinyl, linoleum or rubber flooring
Base: Rubber Base
Wall Finish: Gypsum Board - Painted
Ceiling: Acoustic Tile
Ceiling Height: 9’-0” Min.
Noise (STC Rating): STC 45 minimum
Hardware: VA Hardware Set # 52
Doors: 3’-6” x 7’-0” wood with ½ light glazing. 3’-0” minimum

Windows: Exterior windows not required. One way mirrored interior glazing between lab and control room should be laminated glass

Mechanical:

Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity

Min. Air Supply Air Change/Hr: 4

Return Air: Permitted

Exhaust Air: Not Required

Room Noise Level: NC 35

Individual Temperature Control: Preferred

Room Air Balance: Neutral

**Office, Counselor**

Function:

These offices will be used by Social Work, Psychiatry, Nursing and other mental health professionals. Consultation with patients, family members and other professional staff may take place in these offices. Furniture should be located so that either patient or professional can exit the room without having to pass in front of each other.

*Figure 19 Office of Counselor*

Architectural:

Floor Finish: Carpet or carpet tile.

Base: Rubber Base

Wall Finish: Gypsum Board - Painted

Ceiling: Acoustic Tile

Ceiling Height: 9’-0” Min

Noise (STC Rating): STC 45 minimum.

Hardware: VA Hardware Set # 52

Doors: 3’-6” x 7’-0” wood with ½ light glazing. 3’-0” minimum width

Windows: Not required. If provided, inside layer of exterior window units shall be laminated glass. Interior glazing shall be laminated glass. Integral blinds for sun control are preferred but not required.

Mechanical:

Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity

Min. Air Supply Air Change/Hr: 4

Return Air: Permitted

Exhaust Air: Not Required Room

Noise Level: NC 35

Individual Temperature Control: Required.

Room Air Balance: Neutral

**Social Activities / Dining / Multi-Purpose**

*Figure 20 Social Activities area*

Function: This area will be used for a variety of non structured activities. All patient dining in the PRRC will occur in this room. It is recommended a teaching kitchen be adjacent to this space with a demountable wall partition so that patients can participate in hands on cooking instruction then dine in this area.

Architectural:

Floor Finish: Sheet vinyl, linoleum or rubber flooring.

Base: Rubber Base Wall Finish: Gypsum Board - Painted

Ceiling: Acoustic Tile with clips or Gypsum Board with Acoustical Plaster

Ceiling Height: 9’-6” Min.

Noise (STC Rating): Sound insulation from adjacent spaces critical. Provide STC 40 as a minimum and STC 45 for walls adjacent to resident rooms, group therapy rooms and conference rooms

Hardware: VA Hardware Set # 52
Doors: 3’-6” x 7’-0” wood with ½ light glazing if partitions are utilized.
Windows: Not required. If provided, inside layer of exterior window units shall be laminated glass. Interior glazing shall be laminated glass. Integral blinds for sun control are preferred but not required
Mechanical:
Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity
Min. Air Supply Air Change/Hr: 6
Return Air: Permitted
Exhaust Air: Not Required
Room Noise Level: NC 40
Individual Temperature Control: Required
Room Air Balance: Neutral

**Classroom / Group Room**

Function: This space will be used for a variety of educational programs for participants both with and without family members. This room may or may not have a control room/office adjacent to this space.

*Figure 21 Group Room/Class room*

Architectural:
Floor Finish: Sheet vinyl, linoleum or rubber flooring
Base: Rubber Base
Wall Finish: Gypsum Board - Painted
Ceiling: Acoustic Tile
Ceiling Height: 9’-6” Min.
Noise (STC Rating): Sound insulation from adjacent spaces critical. Provide STC 40 as a minimum and STC 45 for walls adjacent to group therapy rooms, conference rooms and other classrooms.
Hardware: VA Hardware Set # 40
Doors: 3’-6” x 7’-0” wood with ½ light glazing if partitions are utilized.
Windows: Not required. If provided, inside layer of exterior window units shall be laminated glass. Interior glazing shall be laminated glass. Integral blinds for sun control are preferred but not required
Mechanical:
Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity
Min. Air Supply Air Change/Hr: 6
Return Air: Permitted
Exhaust Air: Not Required
Room Noise Level: NC 35
Individual Temperature Control: Required
Room Air Balance: Neutral

**Occupational Therapy**

Function: This space is used for occupational and art therapy. A separate teaching kitchen will be used for food preparation and nutrition instruction. Specific activities in this space need to be confirmed on a project by project basis as a part of the programming process
Architectural:
Floor Finish: Sheet vinyl, linoleum or rubber flooring. Ceramic tile in kiln area
Base: Rubber Base
Wall Finish: Gypsum Board – Painted; Ceramic tile in kiln area
Ceiling: Acoustic Tile

Ceiling Height: 9’-6” Min.
Noise (STC Rating): Sound insulation from adjacent spaces critical. Provide STC 40 as a minimum and STC 45 for walls adjacent to group therapy rooms, conference rooms and other classrooms.
Hardware: VA Hardware Set # 40
Doors: 3’-6” x 7’-0” wood with ½ light glazing if partitions are utilized.
Windows: Not required. If provided, inside layer of exterior window units shall be laminated glass. Interior glazing shall be laminated glass. Integral blinds for sun control are preferred but not required
Mechanical:
Inside Design Condition: 70 degrees F (21C) to 75 degrees F (24C) year round 30% -50% Relative Humidity
Min. Air Supply Air Change/Hr: 6
Return Air: Permitted
Exhaust Air: Provide if a kiln is used in this area.
Room Noise Level: NC 35
Individual Temperature Control: Required
Room Air Balance: Neutral

- Roof

Now referring to the dwelling houses the optimal values of the roof slope in warm and temperate climate should be in the range of 25º up to 35º. This range is optimal for the effective water shedding, protection from the weather elements and insulation properties. Here's why this range is optimal:Here's why this range is optimal:

1. Efficient Water Runoff

25° to 35° Slope: Due to this slope range, the rainwater is able to flow readily off the roof surface hence eliminating the risk of water traps and roof leaks. I would say that it is steep enough to stop objects such as leaves from accumulating and obstructing the graceful flow of water in the gutters and downspouts.

2. Thermal Performance

Heat Reflection and Insulation: A moderate slope ensures that the building reflecting the sunshine more often and it lessens the heat it gains from the sun given that the climate is hot. It also enables provision of adequate attic area or air flow which can be of immense help in keeping the inside environment cooler.

Ventilation: The pitch also offer enough space for excellent roof venting like ridge and soffit vents that assist in removal of hot air to cool the inside environment.

3. Wind Resistance

Wind Load Management: A slope within this range is sufficiently steep to discourage uplift by powerful winds, and, at the same time, not overly steep that it encourages overbearing wind forces and is difficult to build.

4. Aesthetic Consideration

Proportional Appearance: The roof with the appropriate angle of 25-35 ° can be considered the most aesthetic when designing the house that corresponds to the construction of classical and modern architectural solutions for climate and temperate zones.

5. Material Compatibility

Roofing Materials: This slope range can be adapted to many hundreds of roofing types even traditional roofs that are of common use in warm climatic regions of the world such as tiling through to metal sheeting or indeed shingle. It is not too steep for the requirement of heavy loading such as clay or concrete tiles and at the same time gives adequate pitch for the lighter counterparts such as metallic.

In houses mainly located in warm and temperate regions, it is recommended that the roof slope range from 25-degrees to 35-degrees. It addresses aspects such as external water shed, internal thermal, external wind and the general architectural design performance. This range also enables the use of several roofing materials thus making it a suitable type of housing construction for the above regions.

- Materials Consideration

- Building Materials

- **Compressed Earth Blocks (CEBs)**:
    - **Sustainability**: CEBs are locally sourced and environmentally friendly. They have good thermal mass, which helps in maintaining stable indoor temperatures.
    - **Healing Environment**: The natural aesthetic of earth blocks creates a calming and grounding environment, contributing to a sense of connection with nature.
- **Bamboo**:
    - **Sustainability**: Bamboo is a rapidly renewable resource, and it is locally available, reducing transportation-related carbon emissions.
    - **Passive Cooling**: Bamboo structures are well-ventilated, allowing for natural airflow and cooling. It also provides a natural, soothing ambiance, enhancing the healing environment.
- **Recycled Timber**:
    - **Sustainability**: Using recycled timber reduces the demand for new wood and minimizes deforestation. Timber is also a carbon-sequestering material.
    - **Aesthetics**: Timber has a warm, inviting look that promotes a healing atmosphere.

- **Natural Stone**:
    - **Sustainability**: Local stones can be used for building foundations and landscaping, reducing environmental impact.
    - **Thermal Properties**: Stone has good thermal mass, helping to regulate indoor temperatures by absorbing and releasing heat slowly.

- Roofing Materials

- **Clay Tiles**:

    - **Sustainability**: Clay tiles are durable, recyclable, and have a lower environmental impact than many modern roofing materials.
    - **Passive Cooling**: They reflect solar radiation and cool down quickly at night, helping to maintain comfortable indoor temperatures.
- **Metal Roofing with Reflective Coating**:
    - **Sustainability**: Metal roofing is long-lasting and can be made from recycled materials. Reflective coatings reduce heat absorption.
    - **Passive Cooling**: Reflective coatings minimize heat gain, helping to keep the interior cool

## • Pavements and Walkways

- **Permeable Pavers**:
    - **Sustainability**: Permeable pavers allow water to percolate through, reducing runoff and helping to recharge groundwater.
    - **Cooling**: These pavers prevent heat buildup and contribute to cooling the surrounding area.
- **Natural Stone or Gravel Paths**:
    - **Sustainability**: Using locally sourced stone or gravel reduces the carbon footprint. Gravel paths also allow rainwater to infiltrate, promoting sustainable water management.
    - **Aesthetics**: Natural stone or gravel provides a rustic, tranquil atmosphere conducive to healing.
- **Recycled Rubber Pavement**:
    - **Sustainability**: Made from recycled tires, this pavement reduces waste and provides a cushioned, non-slip surface.
    - **Cooling**: Rubber pavements are less heat-absorbent than asphalt, contributing to cooler ground temperatures.

## • Landscape and Green Spaces

*Figure 22Landscape features in Communal Healing Center*

- **Native Plant Species**:
    - **Sustainability**: Native plants require less water, fertilizer, and maintenance. They support local wildlife and biodiversity.
    - **Healing Environment**: A landscape filled with native plants fosters a connection to the local environment and promotes relaxation and well-being.
- **Bamboo Groves**:
    - **Sustainability**: Bamboo is fast-growing and helps in carbon sequestration.
    - **Cooling**: Bamboo provides natural shade, reducing heat and creating cool, shaded areas for outdoor activities.
- **Planting Neem and Camphor Trees on the Site: Benefits and Considerations**

Neem (Azadirachta indica) and camphor (Cinnamomum camphora) trees can be effectively incorporated into the landscape design of the communal healing center at the site in Biratnagar. These trees offer several benefits, particularly in enhancing the environment for patient healing, though there are also some considerations to be aware of.

***Benefits for Patients***

1. **Neem Trees:**

- **Medicinal Properties**: Neem trees are known for their antibacterial, antifungal, and anti-inflammatory properties. Their presence on the site may contribute to a healthier environment by potentially reducing the spread of infections.
- **Air Purification**: Neem trees help purify the air by absorbing pollutants, thereby improving air quality, which is beneficial for patients with respiratory conditions.
- **Calming Environment**: The natural setting created by neem trees can promote a tranquil atmosphere, which may help in reducing stress and anxiety among patients.

2. **Camphor Trees:**
   - **Aromatic Healing**: Camphor trees emit a soothing aroma that can help alleviate stress, anxiety, and mild depression, creating a calming environment for patients.
   - **Respiratory Health**: The aroma of camphor is also known to support respiratory health by helping to clear nasal congestion, which can be beneficial for patients with breathing difficulties.
   - **Natural Mosquito Repellent**: Both neem and camphor trees act as natural insect repellents, particularly against mosquitoes, reducing the risk of vector-borne diseases like dengue and malaria.

**Considerations and Disadvantages**

1. **Neem Trees:**
   - **Allergic Reactions**: Some individuals may be allergic to neem, which could lead to skin irritation or respiratory issues, potentially affecting sensitive patients.
   - **Maintenance**: Neem trees tend to shed a significant amount of leaves and fruits, necessitating regular maintenance to keep the surroundings clean.
2. **Camphor Trees:**

- **Toxicity Concerns**: Camphor can be toxic if ingested in large amounts. Although the risk is minimal, it is important to be cautious, especially if children or pets are present.
- **Root System**: Camphor trees have aggressive root systems that may damage nearby structures, pavements, or underground utilities if not properly managed.
- **Potential Allergies**: The strong aroma of camphor may cause headaches or allergic reactions in some patients.

**Recommendations**

- **Strategic Planting**: Neem and camphor trees should be planted in locations where they can provide shade and improve air quality, while being placed away from buildings to prevent potential structural damage and minimize the impact of any allergic reactions.
- **Regular Maintenance**: It is advisable to implement regular maintenance routines to manage leaf shedding and root growth, ensuring that the landscape remains clean and safe.
- **Patient Monitoring**: Patients should be monitored for any allergic reactions to the trees, and alternative areas should be provided for those who may be sensitive to their presence.

*Figure 23 Landscapes and Parks at Communal Healing Center*

- **Water Features**:
    - **Sustainability**: Incorporate rainwater harvesting systems to feed water features, ensuring a sustainable water supply.
    - **Healing Environment**: Water features such as ponds or fountains can create a soothing auditory and visual environment, enhancing the healing experience.
- **Green Walls and Vertical Gardens**:
    - **Sustainability**: Green walls improve air quality, reduce heat, and support biodiversity.
    - **Passive Cooling**: Vertical gardens can insulate buildings, reducing heat gain, while also providing a calming, natural aesthetic.

## Ventilation and Cooling Design

- **Cross-Ventilation**:
    - Design the building layout to promote cross-ventilation, using large, operable windows on opposite sides of rooms to allow for natural air flow.
- **Clerestory Windows and Roof Vents**:
    - Incorporate clerestory windows and roof vents to allow hot air to escape, promoting passive cooling throughout the building.
- **Shaded Courtyards**:
    - Central courtyards with ample shade from trees or pergolas can serve as cool, communal gathering spaces that promote social interaction and relaxation.

## Human Anthropometry

Human anthropometry plays a crucial role in the design of a communal healing center by ensuring that the physical spaces and elements within the center are tailored to the diverse needs of its users. Here's why it's important:

1. **Comfort and Accessibility**: Anthropometry helps create spaces that accommodate people of all shapes, sizes, and abilities, ensuring that everyone can move comfortably and access services without physical barriers.
2. **Ergonomics**: By considering human body dimensions, designers can create furniture and facilities that reduce strain and fatigue, promoting a sense of ease and relaxation essential for healing environments.

3. **Safety**: Proper consideration of anthropometric data helps in designing spaces that minimize the risk of injury, such as appropriate seating heights, handrail placements, and corridor widths.
4. **Inclusivity**: Ensuring that the design meets the needs of different age groups, genders, and physical conditions fosters an inclusive environment where all individuals feel respected and cared for.
5. **Enhanced Therapeutic Environment**: A well-designed space that fits human dimensions can improve the overall therapeutic experience, making the center more effective in its mission to support mental health and well-being.

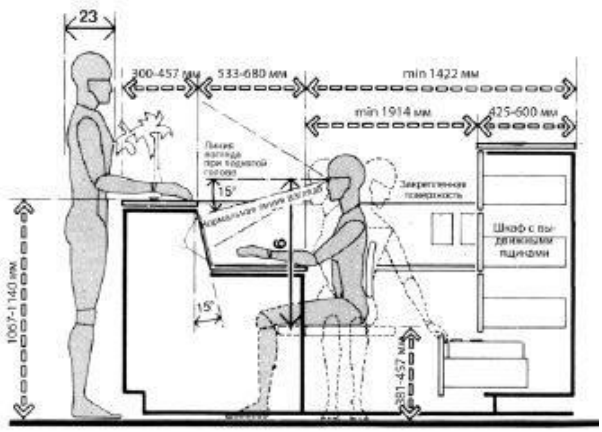



*Figure 24 Human Anthropometry*

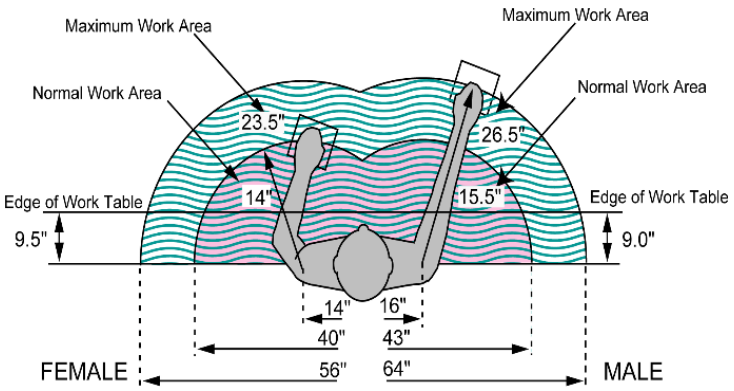



*Figure 25 Human Anthropometry in workspace*

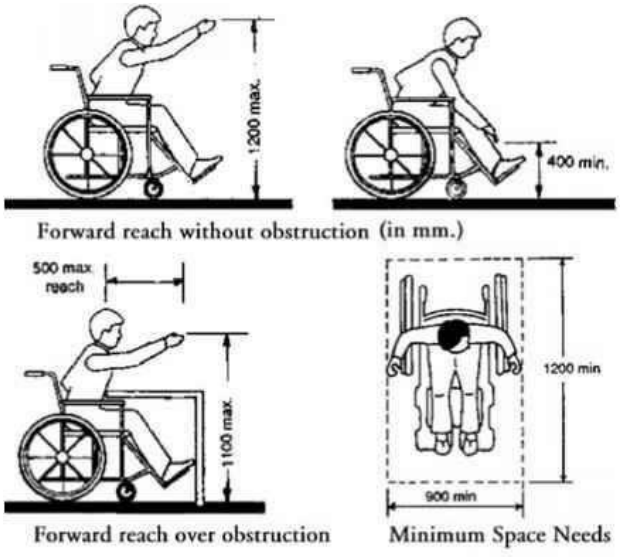



*Figure 26 Human Anthropometry for Wheelchair*

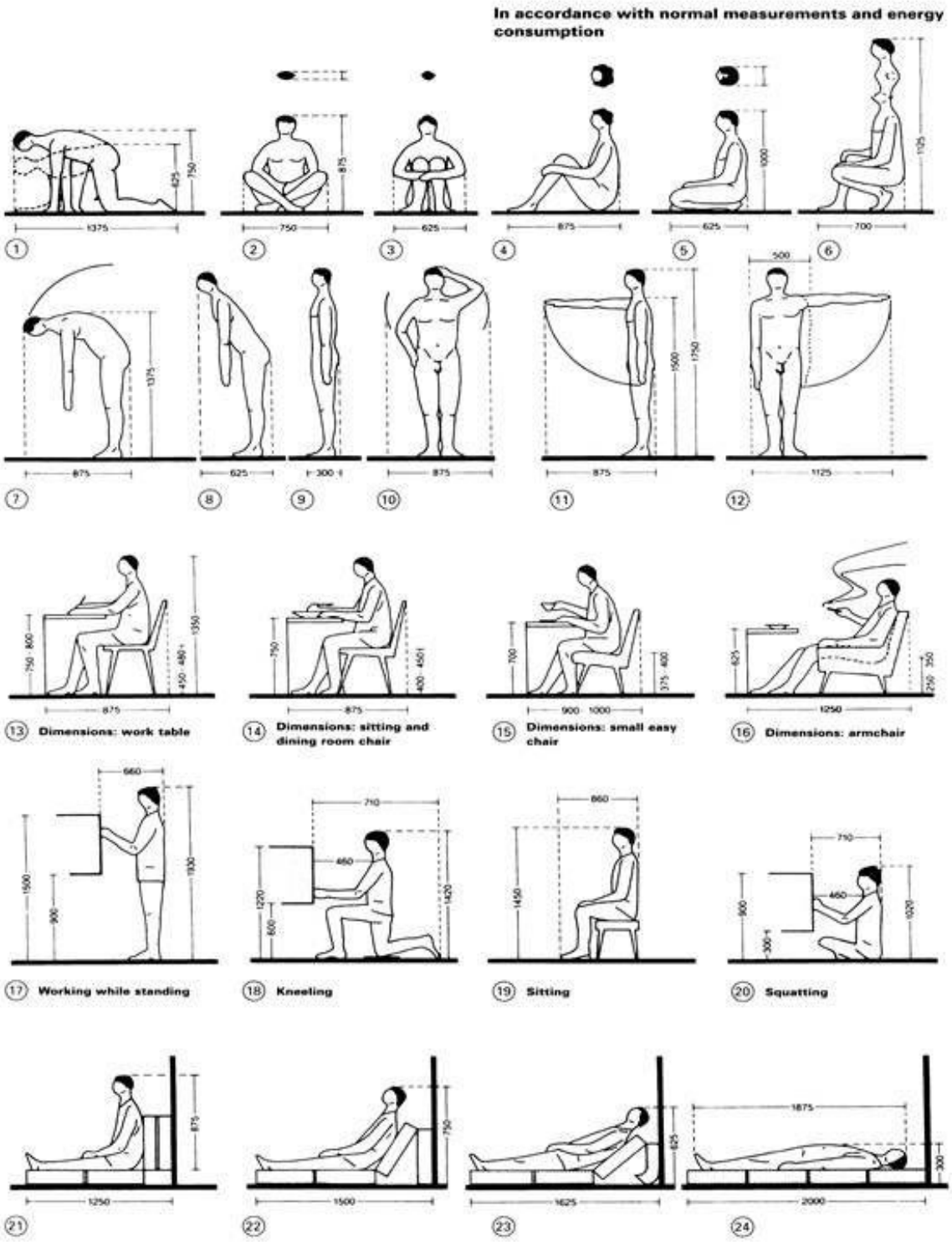



*Figure 27 Human Anthropometry in accordance to normal measurements and energy consumption*

# 3. Architectural Case Study:

## 3.1 Shepard Pratt Mental Health Institution

- Introduction

*Figure 28 Sheppard Pratt Mental Health Institution*

Shepard Pratt, located in the USA, stands as a testament to architectural innovation and mental healthcare excellence. Founded in the 19th century, Shepard Pratt has evolved into a renowned psychiatric hospital, pioneering advancements in patient care, treatment modalities, and architectural design. This comprehensive case study delves into the architectural elements, design philosophy, and therapeutic environment of Shepard Pratt, aiming to unravel the symbiotic relationship between architecture and mental health.

- Historical Context

*Figure 29 Sheppard Pratt Hospital Batlimore, USA /Source: Sheppardpratt.org*

- **Founding Vision:**

Established in the late 19th century, Shepard Pratt originated from the vision of philanthropist Moses Sheppard and psychiatrist Dr. Thomas Story Kirkbride.

*Figure 30 Renovation of the Institution / Source: Lewis Contractors*

- **Moral Treatment Movement:** The hospital's founding principles emphasized humane treatment, therapeutic landscapes, and architectural grandeur, reflecting the ideals of the moral treatment movement.
- **Campus Evolution:** Over the years, Shepard Pratt expanded its campus, integrating historical structures with contemporary facilities to create a cohesive architectural narrative.

## Architectural Features

1. Kirkbride Buildings

*Figure 31Sheppard Pratt Hospital/ Victorian Architecture*

- **Iconic Design:** Shepard Pratt's Kirkbride buildings, characterized by their linear layout and ornate Victorian architecture, serve as architectural landmarks.
- **Therapeutic Ideals:** These buildings were designed to maximize natural light, ventilation, and patient interaction, embodying the therapeutic ideals of the time.

## Therapeutic Landscapes

- **Expansive Grounds:** The hospital's grounds feature meticulously landscaped gardens, serene courtyards, and scenic walking paths.
- **Nature Integration:** Integrating nature into the built environment enhances the therapeutic experience and promotes healing.

Conclusion

Shepard Pratt’s architectural legacy continues to impact mental healthcare positively, emphasizing the vital role of thoughtful design in healing environments.

## 3.2 Lakeshore Mental Health Institute

- Introduction

*Figure 32 Lakeshore Mental Health Institute/ Source: Lakeshore Park*

Lakeshore Mental Health Institute, formerly known as the **East Tennessee Insane Asylum**, has a rich history of architectural innovation and mental healthcare excellence. Located in Knoxville, Tennessee, this psychiatric hospital has evolved over time, integrating historical structures with modern facilities. In this case study, we explore the architectural elements, design philosophy, and therapeutic environment of Lakeshore Mental Health Institute.

- Historical Context

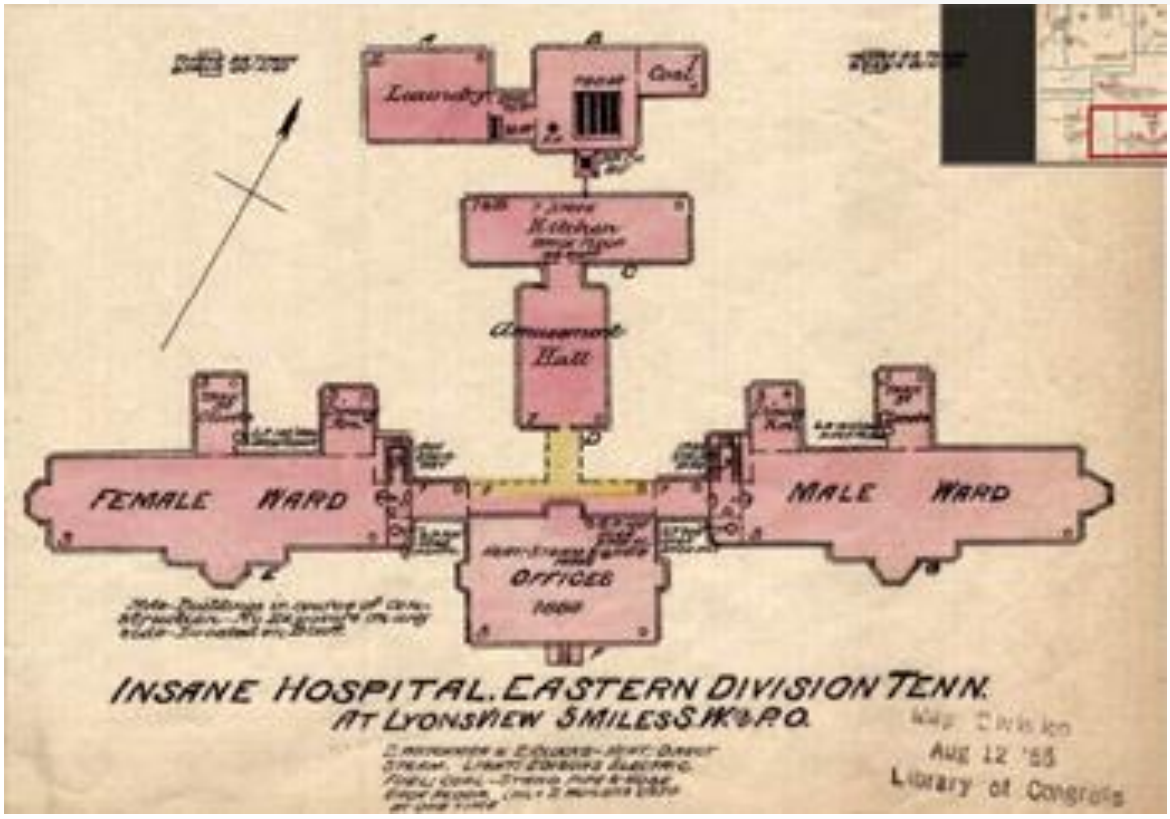



*Figure 33 Zoning of Lakeshore Mental health Institute/ Source: Lakeshore Park*

- **Founding Vision:**

Established in the late 19th century, Lakeshore originated from the vision of philanthropist Moses Sheppard and psychiatrist Dr. Thomas Story Kirkbride.

- **Moral Treatment Movement:** The hospital's founding principles emphasized humane treatment, therapeutic landscapes, and architectural grandeur, reflecting the ideals of the moral treatment movement.
- **Campus Evolution:** Over the years, Lakeshore expanded its campus, blending historical and contemporary structures seamlessly.

- Architectural Features

Kirkbride Buildings

*Figure 34 Lakeshore Psychiatric hospital/ Source: Lakeshore Archives*

- **Iconic Design:** Lakeshore's Kirkbride buildings, characterized by linear layouts and ornate Victorian architecture, serve as architectural landmarks.
- **Therapeutic Ideals:** These buildings were designed to maximize natural light, ventilation, and patient interaction, embodying the therapeutic ideals of their time.

- Therapeutic Landscapes

*Figure 35 Lakeshore psychiatric hospital grounds*

- **Expansive Grounds:** Lakeshore's grounds feature meticulously landscaped gardens, serene courtyards, and scenic walking paths.
- **Nature Integration:** Integrating nature into the built environment enhances the therapeutic experience and promotes healing.

Conclusion

Lakeshore Mental Health Institute's architectural legacy continues to impact mental healthcare positively, emphasizing the vital role of thoughtful design in healing environments.

## 3.3 NIMHANS

Introduction

*Figure 36 NIMHANS, Banglore / Source: NIMHANS*

The **National Institute of Mental Health and Neurosciences (NIMHANS)**, located in Bangalore, India, is a multidisciplinary institution dedicated to mental health and neuroscience. As an apex center for mental health education and research, NIMHANS operates autonomously under the Ministry of Health and Family Welfare. Let's explore its architectural features and design philosophy.


*Figure 37 NIMHANS Convention Centre, Banglore*

- Historical Context

- **Founding Vision:** NIMHANS was established with a vision to be a world leader in mental health and neurosciences.
- **Service, Manpower, and Research:** The institute prioritizes service, manpower development, and cutting-edge research.

- Architectural Features

1. State-of-the-Art Buildings

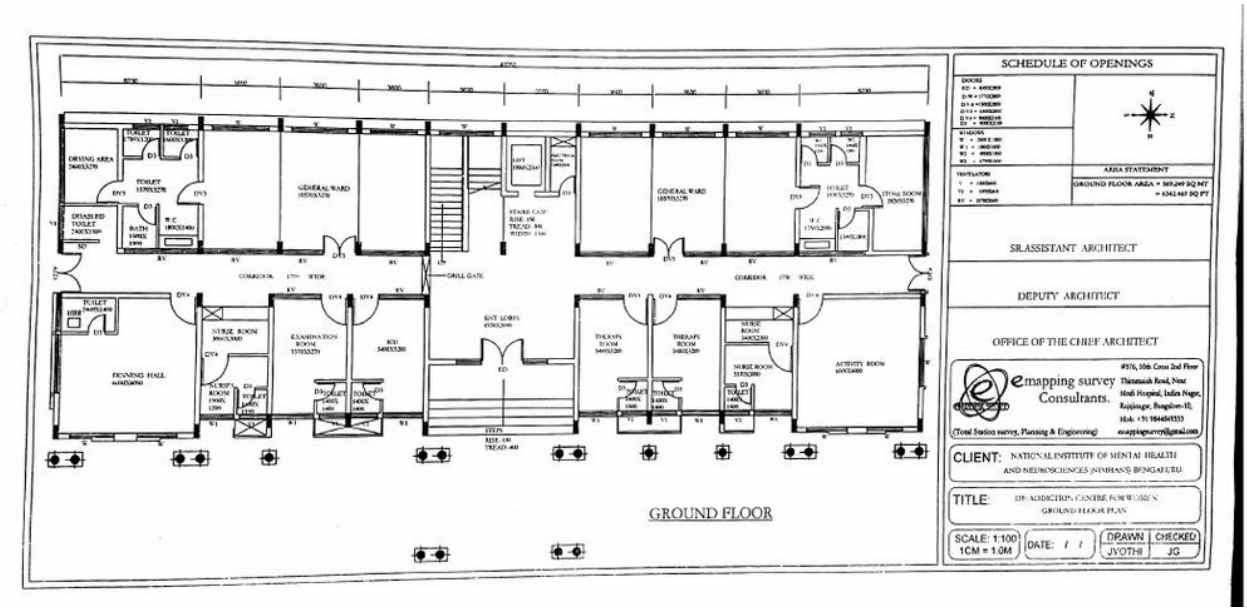



*Figure 38 NIMHANS addiction center ground floor plan*

- **Modern Design:** NIMHANS boasts contemporary buildings equipped with advanced facilities.
- **Patient-Centric Approach:** Architectural design emphasizes patient well-being, comfort, and accessibility.

2. Tranquil Spaces

- **Landscaping:** Serene courtyards, green spaces, and gardens provide therapeutic environments.
- **Integration of Nature:** NIMHANS integrates nature into the built environment, promoting healing.

Conclusion

NIMHANS continues to lead in mental health and neuroscience, demonstrating how thoughtful architecture contributes to patient care and well-being.

## ▪ 3.4 Vejle Psychiatric Hospital:

*Figure 39 Vejle Psychatric Hospital, Denmark*

- Introduction

- **Location**: Vejle, Denmark.

  Area: 353,473 sq.ft

  Beds: 91 single inpatient rooms, 15 bed division

*Figure 40 Vejle Psychiatric Centre Space Distribution pattern/ Source: Archdaily*

- **Description**:

The Vejle Psychiatric Hospital, designed by Arkitema Architects, opened in February 2017. It has been widely acknowledged for its healing architecture. The hospital focuses on outpatient treatment and features 91 beds, children's ambulatory, psychiatric emergency room (ER), and electroconvulsive therapy (ECT) facilities. The design emphasizes ample natural light, easy access to nature, transparent wards, and a thoughtful layout.

*Figure 41 Vejle Psychiatric Centre Outdoor landscape/ Source: Archdaily*

- **Notable Features**:
  - Decreased physical restraint by 50% since opening.

- Visionary mental health hospital with various specialized units.
- Emphasis on physical activity and minimal forceful intervention.
- Extroverted functions (ER reception, children's psychiatry) located invitingly, while wards are withdrawn within the building.
  - **Architectural Elements**: Ample light, outdoor spaces, transparent wards, and a clear hierarchical façade.

## 3.5 Tampere Psychiatric Clinic:

*Figure 42 Tampere Psychiatric Clinic Roof Plan/ Source: Archtizer*

- Introduction

**Location**: Tampere, Finland.

*Figure 43 3D rendered Tampere Psychiatric Clinic/ Source: CF Moller*

- **Description**:

The Tampere Psychiatric Clinic, designed by C.F. Møller Architects, serves as an extension to Tampere University Hospital. It provides 180 beds across various psychiatric healthcare units. The clinic's flexible structural concept supports patients' healing processes and staff well-being. Three U-shaped care buildings face a surrounding natural environment, creating a safe and secluded inner courtyard. The circular structure ensures efficiency and communication within the facility.

- **Notable Features**:

*Figure 44 Tampere Psychiatric Clinic Model/ Source: CF Moller*

Secluded location with contact to nature.

Flexible environments for patients and staff.

Inspired by natural garden-like environments and Tampere's industrial heritage.

- Architectural Elements:

Private, social, and public spaces indoors and outdoors, efficient department organization.

## ▪ 3.6 Lindner Center of HOPE:

*Figure 45 Linder Centre of HOPE Aerial View/Lindercentreofhope.org*

### • Introduction

**Location**: Mason, Ohio, USA.

**Description**: Lindner Center of HOPE provides patient-centered, scientifically-advanced care for mental illness and addiction. It offers residential treatment for adolescents and adults. The center's serene wooded setting promotes long-term healing. Notably, it has served over 50,000 patients and their families since 2008.

*Figure 46 Linder Centre of HOPE Entrance*

*Figure 47 Linder Centre of HOPE Landscape*

- **Notable Features**:

Nationally-ranked comprehensive mental health center.

Renowned research institute.

Inpatient and outpatient psychiatric diagnosis and treatment programs.

- **Architectural Elements**:

Serene wooded environment, patient-centered model

Note:

The **Kirkbride Plan** was a system of mental asylum design advocated by American psychiatrist **Thomas Story Kirkbride** in the mid-19th century. The asylums built in this design, often referred to as **Kirkbride Buildings**, were constructed during the mid-to-late-19th century in the United States. These hospitals followed specific structural features based on Kirkbride's theories regarding the healing of the mentally ill. Key elements included exposure to natural light, air circulation, and a "bat wing" style floor plan with numerous wings sprawling outward from the center. These buildings were once state-of-the-art mental healthcare facilities but have since become relics of an obsolete therapeutic method known as **Moral Treatment**.

| Feature | Lakeshore Mental Health Institution | Shepard Pratt Mental Health Clinic | National Institute of Mental Health and Neuro Sciences | Vejle Psychiatric Centre | Lindner Center of Hope | Tampere Psychiatric Clinic | Nobel Medical College, Biratnagar | Birat Nursing Home, Biratnagar |
|---|---|---|---|---|---|---|---|---|
| **Location** | Toronto, Canada | Towson, Maryland, USA | Bengaluru, India | Vejle, Denmark | Mason, Ohio, USA | Tampere, Finland | Biratnagar, Nepal | Biratnagar, Nepal |
| **Year Established** | 1888 | 1891 | 1954 | 2017 | 2008 | 1970s | 2004 | 1995 |
| **Architectural Style** | Historic Victorian | Modern, therapeutic design | Modern, functional design | Modern, sustainable architecture | Contemporary | Functional, patient-centric | Modern, functional | Functional |
| **Design Philosophy** | Healing environment with nature integration | Holistic, patient-centered care | Functional, efficient use of space | Healing architecture with sustainability | Emphasis on natural light and open spaces | Patient-centric, functional | Functional and modern | Patient care focused, functional |
| **Notable Features** | Large campus with green spaces, historic buildings | Extensive use of natural light, open spaces, art installations | Large academic and research facilities, green spaces | Sustainable design, therapeutic gardens, natural materials | Natural light, therapeutic design, comfortable patient spaces | Modern facilities, therapeutic environment | Modern facilities, teaching hospital, extensive healthcare services | Comprehensive healthcare services, focus on patient comfort |
| **Capacity** | Large, multiple buildings and wards | Large, comprehensive care facilities | Large, extensive inpatient and outpatient services | Medium, focused on sustainability and comfort | Medium, specialized in mental health care | Medium, comprehensive care | Large, serves wide range of medical and surgical cases | Medium, specialized medical and surgical care |
| **Technological Integration** | Moderate, historic buildings limit some modern integrations | High, state-of-the-art medical and therapeutic technologies | High, advanced medical and research technologies | High, integrates modern healthcare technologies | High, advanced mental health technologies | High, modern medical technologies | High, state-of-the-art medical technologies | Moderate, focusing on essential medical technologies |
| **Sustainability Features** | Limited due to historic nature | High, sustainable building practices | Moderate, with green spaces | High, focus on sustainable design and materials | Moderate, includes some sustainable practices | High, emphasis on energy efficiency | Moderate, includes some sustainable practices | Moderate, focusing on essential sustainable practices |
| **Community Integration** | Historic site with community engagement | Strong community programs and outreach | Extensive community and academic partnerships | Integrated into community with open gardens and public spaces | Community outreach and education programs | Community health programs and integration | Extensive community services and education programs | Community-focused healthcare services |

- Detailed Descriptions:

1. **Lakeshore Mental Health Institution**:
    - **Architectural Style**: Historic Victorian architecture featuring large green spaces and multiple buildings, some of which are heritage structures.
    - **Design Philosophy**: Emphasis on creating a healing environment by integrating nature and providing expansive outdoor spaces for patients.
    - **Technological Integration**: Limited by the historic nature of the buildings but includes modern medical facilities where possible.
2. **Shepard Pratt Mental Health Clinic**:
    - **Architectural Style**: Modern, therapeutic design emphasizing natural light and open spaces.
    - **Design Philosophy**: Holistic, patient-centered care focusing on creating a therapeutic environment through architecture.
    - **Technological Integration**: High, with state-of-the-art medical and therapeutic technologies.
3. **National Institute of Mental Health and Neuro Sciences (NIMHANS)**:
    - **Architectural Style**: Modern, functional design suitable for large academic and research facilities.
    - **Design Philosophy**: Focus on functional and efficient use of space to support extensive inpatient and outpatient services.
    - **Technological Integration**: High, incorporating advanced medical and research technologies.
4. **Vejle Psychiatric Centre**:
    - **Architectural Style**: Modern, sustainable architecture using natural materials and focusing on environmental integration.
    - **Design Philosophy**: Healing architecture that emphasizes sustainability and therapeutic gardens to enhance patient well-being.
    - **Technological Integration**: High, integrating modern healthcare technologies with sustainable practices.
5. **Lindner Center of Hope**:
    - **Architectural Style**: Contemporary design with an emphasis on natural light and open spaces.

- **Design Philosophy**: Creating a comfortable and therapeutic environment for mental health care through architectural design.
- **Technological Integration**: High, featuring advanced mental health technologies and patient care facilities.

6. **Tampere Psychiatric Clinic**:
   - **Architectural Style**: Functional, patient-centric design focusing on modern healthcare needs.
   - **Design Philosophy**: Emphasizes a patient-centric approach with modern facilities to support comprehensive mental health care.
   - **Technological Integration**: High, with a focus on integrating modern medical technologies.
7. **Nobel Medical College, Biratnagar**:
   - **Architectural Style**: Modern, functional design suitable for a teaching hospital.
   - **Design Philosophy**: Balances modern facilities with the educational needs of a teaching hospital, serving a wide range of medical cases.
   - **Technological Integration**: High, incorporating state-of-the-art medical technologies.
8. **Birat Nursing Home, Biratnagar**:
   - **Architectural Style**: Functional design focused on patient care.
   - **Design Philosophy**: Provides comprehensive healthcare services with a focus on patient comfort and care.
   - **Technological Integration**: Moderate, focusing on essential medical technologies to support patient care.

# 4. Site Analysis

- Introduction

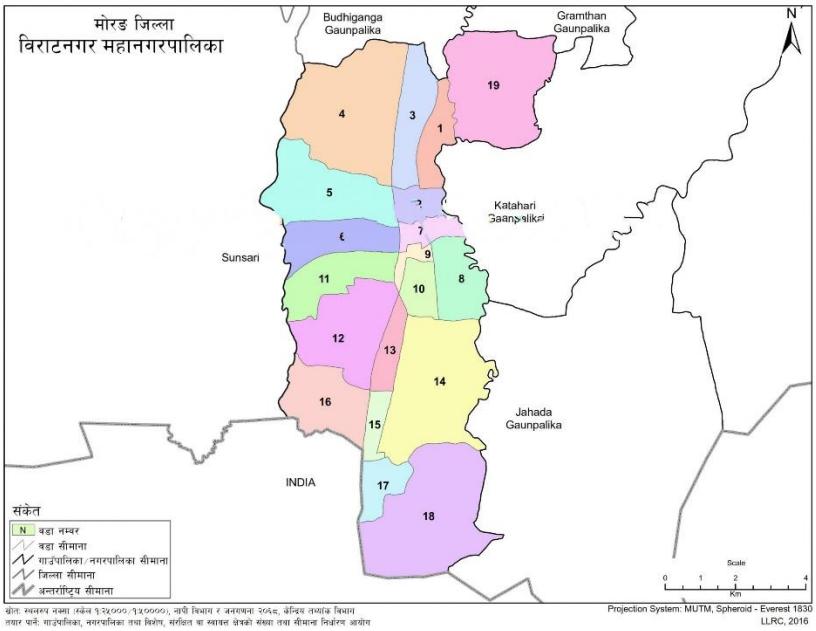



*Figure 48 Map of Biratnagar*

- Site Analysis for Kanchanbari, Biratnagar Metropolitan City-5

---

## ▪ General Information

- **Location**: Kanchanbari, Biratnagar Metropolitan City– 5, Biratnagar 56700, Nepal.
- **Coordinates**: Latitude: 26°29'38"N, Longitude: 87°16'20"E.
- **Elevation**: Approximately 80 meters (262 feet) above sea level.
- **Site Area**: 36 ropani (18,314.5 m²).

## ▪ Geographical Context

- **Climate**: Warm and temperate with distinct monsoon patterns.
    - **Summer (April to June)**: Hot and humid, temperatures range from 25°C to 35°C.

    - **Monsoon (July to September)**: Heavy rainfall, temperatures range from 20°C to 30°C.
    - **Winter (December to February)**: Mild and cool, temperatures range from 10°C to 20°C.
- **Topography**: The site is relatively flat, with a slight natural slope that could influence drainage and building orientation.
- **Soil Type**: Typically alluvial, known for being fertile but may have moderate to high water retention properties, which is crucial for foundation considerations.
- **Flood Risk**: Moderate risk due to proximity to the Koshi River, especially during the monsoon season. Flood mitigation measures should be incorporated into the site design.

*Figure 49 Site Location*

SITE ACCESS

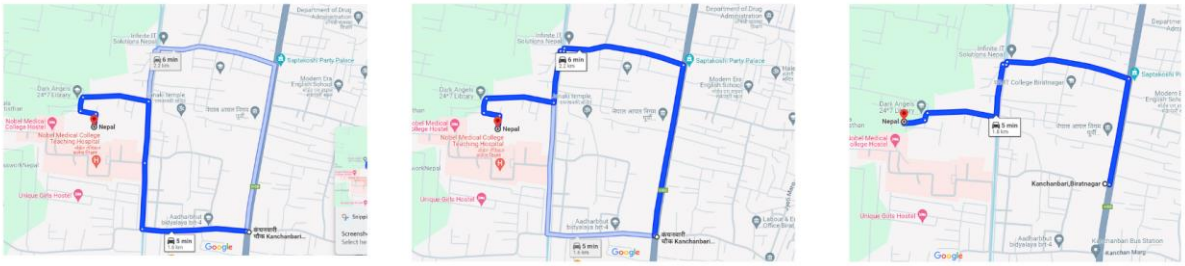


*Figure 50Access routes towards the site*

## ▪ Site Access and Circulation

- **Primary Access**: The primary access to the site is from the east, via the Dharan Biratnagar Road. The road provides direct connectivity to key urban centers and transport hubs.
- **Secondary Access**: Potential secondary access points from the north and south sides, depending on the development plan.
- **Pedestrian Pathways**: Pedestrian pathways should be integrated into the site design, ensuring safe and easy movement across the site. This is particularly important for a communal facility, encouraging walking and interaction.

## ▪ Surrounding Infrastructure and Accessibility

- **North**:
  - **Tankisinwari** (3.5 km)
  - **Duhabi** (8 km)
  - **Sonapur** (12 km)
- **East**:
  - **Janki Temple** (0.5 km)
  - **Nepal Oil Corporation** (0.9 km)
  - **Dharan Biratnagar Road** (1 km)
  - **Pokhariya** (2 km)
- **South**:
  - **Biratnagar Airport** (1 km)
  - **Birat Nursing Home** (3 km)

    - **Koshi Hospital** (4 km)
- **West**:
    - **Biratnagar Airport Viewpoint** (2 km)
    - **Ramgunj Belgachiya** (4.5 km)
    - **Oli Tole** (5.5 km)
    - **Chimadi** (8 km)
- **Major Roads**: The site is well-connected by the Dharan Biratnagar Road, a significant highway that facilitates easy access to major parts of the city and neighboring areas.
- **Public Transport**: Proximity to the main roads ensures access to public transport options like buses, taxis, and rickshaws, which are widely available in Biratnagar.
- **Utilities**: Availability of essential utilities such as electricity, water supply, and sewage systems. The site's proximity to urban infrastructure ensures ease of utility connections.


*Figure 51 Site Proximity*

## Zoning and Land Use

- **Current Zoning**: The site is within a mixed-use zone, with potential for residential, commercial, and institutional development. Surrounding areas include residential neighborhoods, commercial establishments, and public institutions.
- **Surrounding Land Use**:
    - **Residential**: Primarily in the northern and western areas.
    - **Commercial**: Along the eastern and southern boundaries, particularly near the Biratnagar Airport and Dharan Biratnagar Road.
    - **Public and Institutional**: Presence of educational institutions, hospitals, and government offices in the vicinity.

## Environmental Considerations

- **Vegetation**: The site is likely to have sparse vegetation typical of urban areas, with some trees and shrubs. Incorporating green spaces, including trees and plants, will be essential for enhancing the microclimate and providing shade.
- **Sun Path and Shading**: The site receives ample sunlight throughout the year. Buildings should be oriented to maximize natural light while minimizing heat gain, especially during the summer months. Overhangs, louvers, and strategically placed vegetation will help mitigate excessive heat.
- **Wind Patterns**: Prevailing winds are generally from the south-east during the monsoon season. Proper ventilation strategies should be incorporated to enhance natural cooling, such as cross-ventilation through well-placed openings.
- **Water Drainage**: Given the flat terrain, proper drainage systems must be designed to prevent waterlogging, especially during heavy rainfall in the monsoon season. The use of permeable surfaces and rainwater harvesting systems can be beneficial.

## Architectural and Design Considerations

- **Building Orientation**: Optimal building orientation should align with the east-west axis to minimize heat gain from the low-angle sun in the morning and evening. Large windows should be placed on the north and south façades to maximize daylight while minimizing direct solar exposure.

- **Ventilation**: Utilize passive ventilation strategies such as cross-ventilation, high ceilings, and operable windows. Roof vents and clerestory windows can also help in reducing indoor temperature and enhancing airflow.
- **Flood Mitigation**: Given the flood risk, buildings should be elevated on stilts or have raised foundations. Additionally, integrating flood-resistant materials and designing the landscape to manage stormwater effectively will be crucial.
- **Energy Efficiency**: Incorporate energy-efficient designs, such as insulated walls and roofs, reflective roofing materials, and possibly solar panels. Natural cooling techniques should be emphasized over mechanical cooling to reduce energy consumption.
- **Green Spaces**: Incorporate ample green spaces, which will help in reducing heat islands and improving air quality. These spaces can also serve as communal areas, enhancing the overall quality of life for users.
- **Safety and Security**: The site design should consider safety and security aspects, including well-lit pathways, secure fencing, and controlled access points.

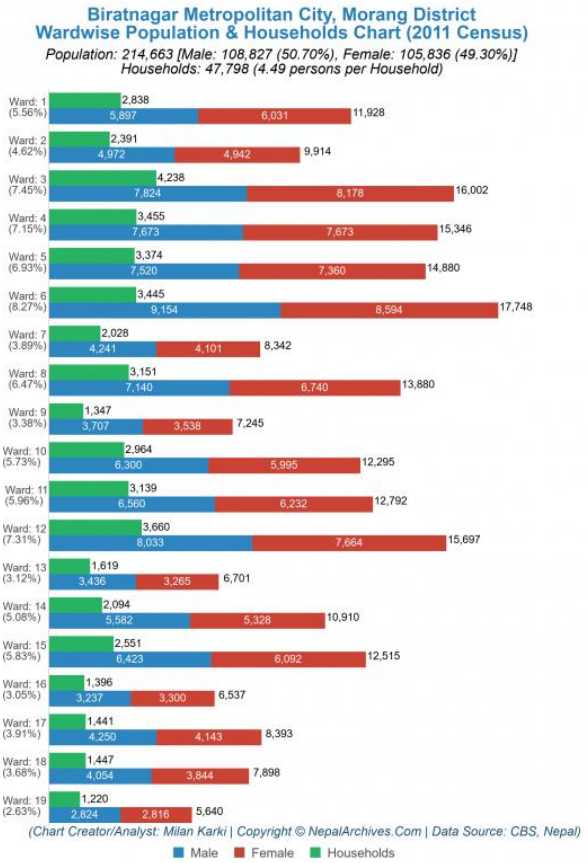



*Figure 52 Population data of Biratnagar*

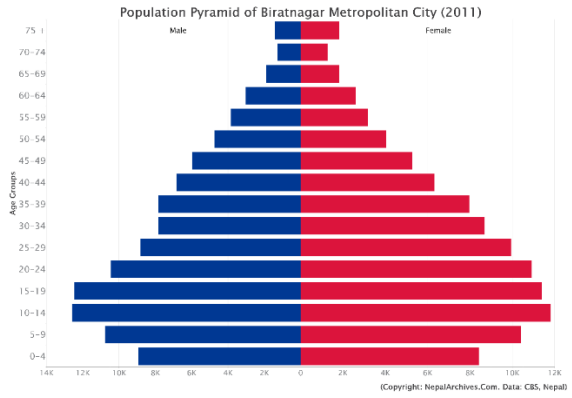



*Figure 53 Population pyramid of Biratnagar*

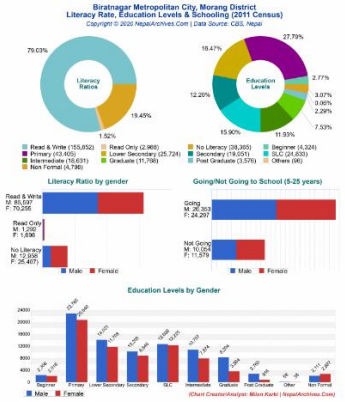



*Figure 54 Literacy rate in Biratnagar*

## ▪ Cultural and Social Factors

- **Community Engagement**: The design should reflect the cultural context of Biratnagar, incorporating local architectural styles and materials. Community spaces should be designed to encourage social interaction and cultural activities.
- **Noise Considerations**: Proximity to the Biratnagar Airport means that noise could be a concern. Soundproofing measures, such as double-glazed windows and acoustic insulation, should be considered, especially for sensitive areas like residential or healing centers.

## ▪ Development Potential

- **Mixed-Use Development**: The site's size and location make it suitable for mixed-use development, combining residential, commercial, and institutional functions. This could include housing, community centers, retail spaces, and healthcare facilities.
- **Sustainability**: Emphasize sustainable development practices, such as rainwater harvesting, solar energy use, and sustainable materials like compressed earth blocks for construction.
- **Future Growth**: The design should consider future expansion possibilities, with flexible spaces that can adapt to the growing needs of the community.

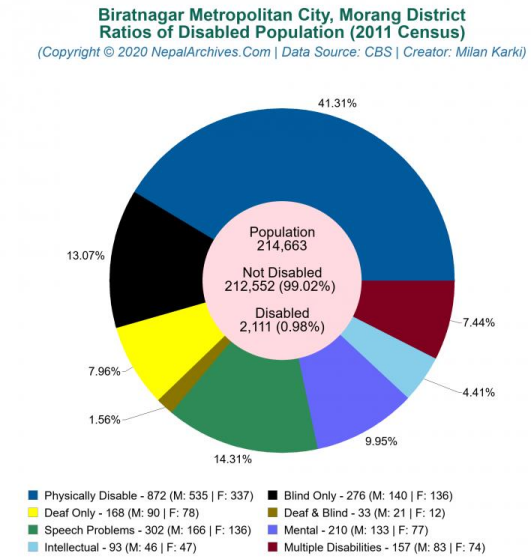



*Figure 55 Disabled population data of Biratnagar*

- Justification

- **Increasing Rate of Mental Health Patients**: Province 1 is witnessing a steady rise in the number of mental health patients, a concerning trend that requires immediate attention. Data indicates a constant increase in mental health cases, highlighting the urgent need for accessible and comprehensive mental health facilities.
- **Rapid Growth and Development**: Biratnagar is experiencing rapid growth and development, making it an ideal location for establishing essential services. The city is welcoming development initiatives at a greater pace, creating opportunities for addressing pressing societal needs such as mental health care.
- **Initiatives by Nobel Hospital**: Nobel Hospital is actively working to raise awareness about mental health issues and enhance treatment facilities. The proactive approach of institutions like Nobel Hospital aligns with the vision for development in the area, fostering a supportive environment for healthcare initiatives.
- **Strategic Location**: Situated in Biratnagar Metropolitan City, the selected site offers strategic advantages. Its proximity to neighboring cities like Duhabi and the anticipation of a ring road facility in the area further enhance accessibility and connectivity. This prime location ensures easy access to facilities and services, facilitating the delivery of quality care to the community.
- **Supportive Infrastructure and Facilities**: The site boasts supportive infrastructure and facilities, making it conducive to the establishment of mental health services.

With a focus on accessibility, amenities, and convenience, the site is poised to become a hub for comprehensive mental health care delivery.

In summary, the selection of Biratnagar as the site for mental health facilities is driven by the city's growth trajectory, the commitment of healthcare institutions, and the strategic advantages offered by its location. This decision reflects a proactive approach to addressing the evolving healthcare needs of the community and ensuring accessible and inclusive mental health services.

*Figure 56 Site and its proximity*

- Climate Data

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Nov | Oct | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Record high °C (°F) | 31.4 (88.52) | 34.35 (93.83) | 43.18 (109.72) | 45.14 (113.25) | 45.14 (113.25) | 43.18 (109.72) | 40.24 (104.43) | 40.24 (104.43) | 39.26 (102.67) | 37.29 (99.12) | 35.33 (95.59) | 31.4 (88.52) | 45.14 (113.25) |
| Average high °C (°F) | 24.26 (75.67) | 27.77 (81.99) | 33.66 (92.59) | 37.79 (100.02) | 38.15 (100.67) | 37.04 (98.67) | 33.65 (92.57) | 34.04 (93.27) | 33.0 (91.4) | 31.76 (89.17) | 29.67 (85.41) | 25.86 (78.55) | 32.22 (90.0) |
| Daily mean °C (°F) | 20.26 (68.47) | 23.62 (74.52) | 29.78 (85.6) | 34.2 (93.56) | 34.78 (94.6) | 34.18 (93.52) | 31.63 (88.93) | 31.89 (89.4) | 30.67 (87.21) | 28.77 (83.79) | 26.24 (79.23) | 22.32 (72.18) | 29.03 (84.25) |
| Average low °C (°F) | 13.97 (57.15) | 16.21 (61.18) | 21.09 (69.96) | 25.38 (77.68) | 26.88 (80.38) | 27.89 (82.2) | 27.24 (81.03) | 27.29 (81.12) | 26.03 (78.85) | 23.2 (73.76) | 19.99 (67.98) | 16.47 (61.65) | 22.64 (72.75) |
| Record low °C (°F) | 5.89 (42.6) | 9.81 (49.66) | 14.72 (58.5) | 20.61 (69.1) | 21.59 (70.86) | 22.57 (72.63) | 21.59 (70.86) | 23.55 (74.39) | 16.68 (62.02) | 17.67 (63.81) | 13.74 (56.73) | 10.8 (51.44) | 5.89 (42.6) |
| Average precipitation mm (inches) | 8.37 (0.33) | 15.73 (0.62) | 11.14 (0.44) | 35.17 (1.38) | 107.34 (4.23) | 212.44 (8.36) | 465.37 (18.32) | 338.48 (13.33) | 299.68 (11.8) | 69.12 (2.72) | 4.8 (0.19) | 3.12 (0.12) | 130.9 (5.15) |
| Average precipitation days (≥ 1.0 mm) | 1.79 | 2.23 | 2.5 | 6.69 | 14.18 | 18.91 | 24.18 | 21.41 | 19.72 | 7.31 | 1.87 | 0.8 | 10.14 |
| Average relative humidity (%) | 52.38 | 46.93 | 31.98 | 33.94 | 48.0 | 59.1 | 70.55 | 69.23 | 70.74 | 64.61 | 52.12 | 48.99 | 54.05 |
| Mean monthly sunshine hours | 8.39 | 8.42 | 10.67 | 12.51 | 13.11 | 12.96 | 12.14 | 12.13 | 10.45 | 10.99 | 9.53 | 8.44 | 10.82 |

*Figure 57 Climatic Data of Biratnagar Source: ClimateData.Org*

| Category | Data |
|---|---|
| **Country** | Nepal |
| **City** | Biratnagar, Kosi |
| **Longitude** | 87.271781 |
| **Latitude** | 26.4524746 |
| **Elevation** | None (0 ft) |
| **Annual High Temperature** | 32.22ºC (90.0ºF) |
| **Annual Low Temperature** | 22.64ºC (72.75ºF) |
| **Average Annual Precipitation** | 130.9 mm (5.15 in) |
| **Warmest Month** | May (38.15ºC / 100.67ºF) |
| **Coldest Month** | January (13.97ºC / 57.15ºF) |
| **Wettest Month** | July (465.37 mm / 18.32 in) |
| **Driest Month** | December (3.12 mm / 0.12 in) |
| **Number of Rainy Days (≥ 1.0 mm)** | 121.61 days (33.32%) |
| **Days with No Rain** | 243.39 days (66.68%) |
| **Average Humidity** | 54.05% |
| **Windflow Pattern** | Northeasterly in winter, southwesterly in summer |

| Temperature Data | |
|---|---|
| | |
| **Temperature** | **Data** |
| **Max Temperature** | 32.39ºC (90.3ºF) |
| **Average Temperature** | 30.06ºC (86.11ºF) |
| **Min Temperature** | 27.48ºC (81.46ºF) |
| | |

| Precipitation Data | |
|---|---|
| | |
| **Precipitation (mm)** | **Data** |
| **Max Precipitation** | 0.98 mm (0.04 in) |
| **Average Precipitation** | 0.04 mm (0.0 in) |
| **Min Precipitation** | 0.0 mm (0 in) |
| **Total Precipitation** | 1.28 mm (0.05 in) |

# 5. Program Formulation

## ▪ Program Analysis for Communal Healing Center Blocks

The Communal Healing Center is composed of several key blocks, each designed to fulfill specific functions in supporting mental health recovery and community well-being. Below is a program analysis for each block, detailing its purpose, functional requirements, and space planning considerations:

---

1. Triage Hub + Therapy Block

**Purpose**: The Triage Hub serves as the initial contact point for patients, where assessments and therapy sessions take place. It is critical for determining the level of care and providing immediate support.

**Key Spaces**:

Reception and Waiting Area: Calm and welcoming atmosphere with clear signage.

Assessment Rooms: Private rooms equipped for initial mental health evaluations.

Therapy Rooms: Individual and group therapy spaces with natural lighting and acoustic control.

Consultation Rooms: Spaces for consultations with family members and other professionals.

Support Rooms: Areas for staff discussions and coordination.

**Functional Requirements**:

Privacy and confidentiality.

Easy access to outdoor therapeutic spaces (gardens/courtyards).

Circulation paths that allow smooth patient flow without congestion.

Design to reduce anxiety, such as warm colors and soft lighting.

---

2. In-House Patient Block

**Purpose**: Provides residential care for patients needing prolonged treatment. It offers a healing and supportive environment where patients can stay and receive continuous care.

**Key Spaces**:

Patient Rooms: Single or shared rooms designed for comfort and privacy.

Common Areas: Lounges and communal spaces to promote social interaction among patients.

Nursing Stations: Centrally located for ease of patient monitoring and access to care.

Rehabilitation Rooms: Spaces for therapeutic activities such as art, music, or physical therapy.

Outdoor Access: Safe and controlled outdoor areas for relaxation and therapeutic activities.

**Functional Requirements**:

Security features to ensure patient safety, including controlled access.

Natural light and ventilation in patient rooms to support well-being.

Warm, homelike furniture and décor to reduce institutional feel.

Quiet, peaceful environments to promote rest and recovery.

---

3. Meditation Block

**Purpose**: This block provides a serene environment for meditation, mindfulness practices, and other forms of relaxation therapy aimed at promoting mental clarity and stress reduction.

**Key Spaces**:

Meditation Rooms: Quiet, acoustically treated spaces with natural elements such as plants or water features.

Open Meditation Halls: Larger areas for group meditation or yoga sessions.

Outdoor Meditation Gardens: Landscaped outdoor spaces designed for quiet reflection.

**Functional Requirements**:

Calm and minimalistic design with natural materials (wood, stone).

Soft lighting and controlled acoustics for peaceful ambiance.

Flexible spaces that accommodate both individual and group activities.

Connection to nature through windows, courtyards, or open-air spaces.

---

4. Administration Block

**Purpose**: The administrative hub of the center, this block handles all operations, management, and coordination of services.

**Key Spaces**:

Offices for Administrative Staff: Spaces for center directors, coordinators, and support staff.

Meeting Rooms: Rooms for staff meetings, case discussions, and planning sessions.

Reception Area: A welcoming space for administrative inquiries.

Staff Break Rooms: Areas where staff can relax and recharge.

**Functional Requirements**:

Efficient layout to streamline workflow and communication.

Clear division between patient-facing and non-patient-facing areas to ensure privacy.

Comfortable and functional furniture for staff well-being.

Secure data storage and IT infrastructure for patient records and administrative tasks.

---

5. Canteen/Café Block

**Purpose**: The Canteen or Café serves as a social space where patients, staff, and visitors can gather, relax, and enjoy healthy meals.

**Key Spaces**:

Dining Area: Comfortable seating arrangements with options for both individual and group dining.

Kitchen: Fully equipped for preparing nutritious meals, with consideration for special dietary needs.

Outdoor Seating: A terrace or garden dining area to allow for al fresco meals and socializing.

**Functional Requirements**:

A warm and inviting atmosphere to promote a sense of community.

Easy access for patients, including wheelchair accessibility.

Calm and welcoming décor, with soft colors and natural light.

Hygiene and cleanliness in both kitchen and dining areas.

---

## General Architectural Considerations

- **Circulation and Wayfinding**: Clear and simple circulation routes with clear signage and visual cues to reduce confusion and stress.
- **Biophilic Design**: Integration of nature through courtyards, gardens, and natural materials to enhance well-being.
- **Safety and Security**: All blocks must incorporate appropriate safety measures, especially in patient areas, while maintaining a welcoming atmosphere.
- **Accessibility**: All spaces should be fully accessible to individuals with disabilities.
- **Sustainability**: The use of energy-efficient systems, natural ventilation, and sustainable materials to create an eco-friendly environment.

## Guidelines

The guidelines and recommendations for communal healing centers, particularly in Nepal, are shaped by both national efforts and insights from mental health organizations like the Centre for Mental Health & Counselling-Nepal (CMC-Nepal) and international partners. These guidelines focus on creating access to mental health services, fostering psychosocial wellbeing, and integrating mental health into government programs.

**Key elements include**:

1. **Collaboration with Government**: Organizations work closely with government bodies to ensure access to mental health services at all levels—federal, provincial, and local. This includes training health professionals, building capacity in mental health literacy, and incorporating mental health into broader development projects [8] [9]
2. **Community Mental Health**: Emphasis on community-based care, ensuring that mental health services are accessible in rural and urban settings alike. This includes rehabilitation services, psychosocial counseling, and addressing barriers like stigma and discrimination. [9]
3. **Capacity Building**: Training programs for health workers, teachers, and counselors are key, ensuring that professionals are equipped to address both mental health and psychosocial needs [9]
4. **Safe, Inclusive Spaces**: Centers focus on providing safe environments for individuals seeking refuge from societal pressures, with particular attention to marginalized

groups including survivors of trauma, migrant workers, and individuals facing social exclusion [9]

| SN | BLOCK | AREA PER PERSON (M^2) | TOTAL AREA (M^2) |
|---|---|---|---|
| 1 | ADMIN | | |
| | A. ENTRY AREA | | |
| | RECEPTION | 1.5/ PERSON | 16 |
| | WAITING | 1.2 / PERSON | 16 |
| | TOILET (ACCESSIBLE) | 2.5 | 5 |
| | TOILET (PUBLIC) | 3 | 12 |
| | | | |
| | B. GENERAL ADMIN | | |
| | OFFICE/ CEO DIRECTOR | 16 | 20 |
| | ENSUIT TOILET | 2.5 | 5 |
| | OFFICE OPERATOR | 16 | 20 |
| | OFFICE WORKSTATION | 8 | 20 |
| | TELEPHONE OPERATOR | | 15 |
| | | | |
| | C. NURSING ADMIN | | |
| | SUPERVISORS | 16 | 20 |
| | | | |
| | D. FINANCE/ ACCOUNTS | | |
| | MANAGERS | 6 | 6 |
| | WORKSTATION | 16 | 16 |
| | | | |
| | E. HUMAN RESOURCE | | |
| | MANAGERS(HR) | 16 | 20 |
| | WORKSTATION | 20 | 20 |
| | INTERVIEW ROOM | 12 | 15 |
| | | | |
| | F. IT COMMUNICATON | | |
| | OFFICE MANAGERS | 16 | 20 |
| | OFFICE 4 PERSON SHARED | 20 | 25 |
| | SERVER ROOM | 10 | 15 |
| | | | |
| | G. MANAGEMENT | | |
| | OFFICE MANAGERS | 16 | 20 |
| | WORKSTATION | 20 | 20 |
| | | | |
| | H. SUPPORT AREAS | | |
| | BAY/ BEVRAGES/ PANTRY | 15 | 20 |
| | CLEANERS ROOM | 18 | 18 |
| | DISPOSAL ROOM | 12 | 15 |
| | STORE(FILES) | 8 | 10 |
| | STORE/ STATIONARY | 8 | 10 |
| | | | |
| | I. STAFF AREA | | |
| | MEETING ROOM | 80 | 100 |
| | COMPUTER ROOM | 48 | 50 |
| | STAFF LOUNGE | 12 | 80 |
| | TOILET | 6 | 24 |
| | | 423 | 653 |

| | | | |
|---|---|---|---|
| 2 | TRIAGE HUB (SCREENING AREA) | | |
| | RECEPTION | 1.2 | 8 |
| | WAITING AREA | 3.3 | 12 |
| | ASSESSMENT | 15.4 | 16 |
| | COUNSELING ROOM | 15.4 | 16 |
| | CRISIS INTREVENTION SPACE | 15.75 | 20 |
| | TELE HEALTH SPACE | 16 | 16 |
| | DOCUMENTATION ROOM | 10 | 10 |
| | COLLABORATIVE SPACE | 20 | 20 |
| | | | |
| 3 | RESIDENTIAL UNIT | | |
| | | | |
| 4 | AWARENESS HUB | 1.2 PER PERSON | 240 |
| | | | |
| 5 | RESEARCH HUB | 50 | 65 |
| | | | |
| 6 | PSYCHOLOGICAL SERVICE CENTRE | | |
| | TREATMENT ROOM | | 20 |
| | SOCIAL ACTIVITIES | | 50 |
| | CLASSROOM | | 60 |
| | OCCUPATIONAL THERAPY | | 60 |
| | TESTING CONTROL | | 20 |
| | CLINICS | | 30 |
| | MULTIPURPOSE | | 60 |
| | GROUP THERAPY | | 60 |
| | TESTING LAB | | 15 |
| | TESTING CONTROL | | 15 |
| | OFFICE | | 15 |
| | TOTAL | | 1481 |

## 6. Concept

The design of the Communal Healing Center is grounded in the belief that architecture plays a pivotal role in the healing process. By blending form, function, and nature, the center fosters a therapeutic environment where individuals can move freely, interact with others, and find solace. The design prioritizes the following key elements:

1. **Open-Plan Layout**: The center features a network of interconnected, open-plan spaces that encourage movement and interaction while still providing private areas for personal reflection and recovery. This seamless flow enhances the sense of mastery and comfort for users.
2. **Minimalist and Elegant Design**: The aesthetic approach is minimalist, with simple geometric shapes, organic accents, and neutral colors. These elements create a visually calming and comfortable environment that supports patients in their healing journey.
3. **Clear Navigation**: Corridors are wide and unobstructed, with clear signage to promote ease of movement. This reduces stress and fosters a sense of competence, helping users navigate the space confidently.
4. **Shared and Private Spaces**: The center offers communal spaces for social interaction and therapeutic activities, as well as private areas where individuals can retreat for peace and relaxation. This balance ensures that the needs of the entire community are met.
5. **Comfort and Warmth**: Soft lighting, homelike furniture, and warm, pale color schemes create a soothing atmosphere. Acoustic treatments and natural ventilation further improve the quality of the interior spaces, enhancing comfort and promoting relaxation.
6. **Refuge and Safety**: The center provides areas of refuge, designed to offer privacy and protection from external stressors. These spaces support feelings of safety and security, which are critical for mental health recovery.

- Applying Bioclimatic Design in Warm and Temperate Climates for Biratnagar
- Building Orientation

To optimize bioclimatic design in Biratnagar, it is advisable to orient buildings to minimize east and west-facing walls, as these receive the most sunlight. North and south elevations, on the other hand, receive minimal direct solar exposure. The further north a building is located, the more shading is required for south-facing walls, and vice versa. East and west elevations receive low levels of solar radiation in the morning and afternoon, respectively.

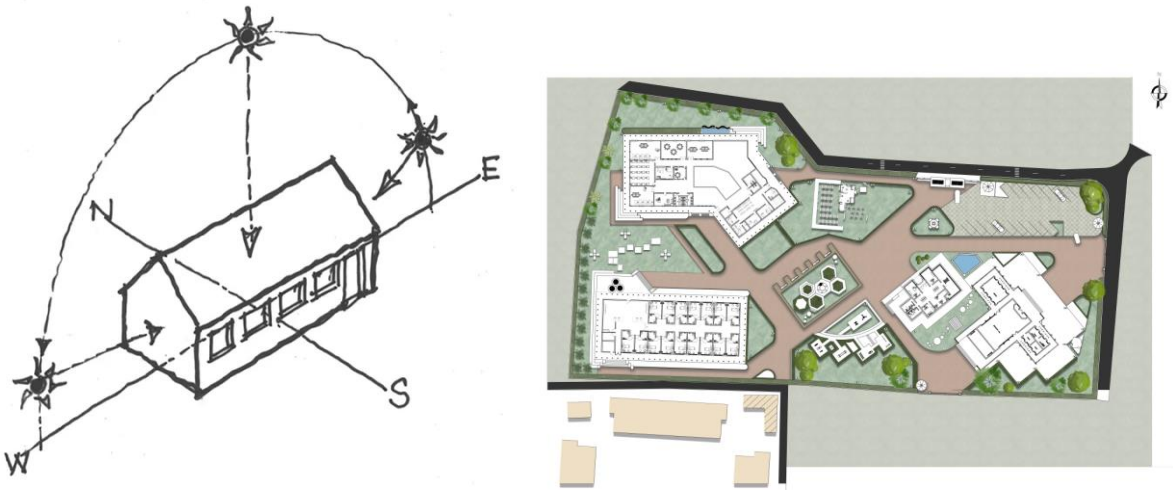



*Figure 58 Building Orientation*

Consequently, these walls should not have window openings, and windows should be provided on the north and south façades only. Energy-efficient master planning often results in buildings being aligned from east to west.

- Overhangs and Colonnades

To shield windows and walls from direct sunlight exposure, overhangs and colonnades should be employed. A large overhanging roof can protect windows and cool the exterior surfaces of the building and the surrounding area.

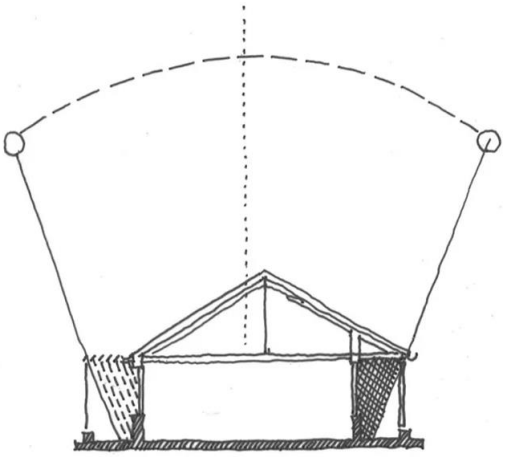


*Figure 59 Overhangs and Colonnades and its impact in passive heating/cooling*

Overhangs are especially vital where it is impossible to align buildings from east to west due to terrain features. In such cases, overhangs should be extended by constructing a colonnade around the entire building or only on the sensitive façades.

- Vegetation for Shading

Trees and climbing plants can be strategically used to provide shading for exposed windows and walls on the east and west façades. Vegetation can be planted to give shade to windows, walls, and roofs that receive high amounts of solar radiation.

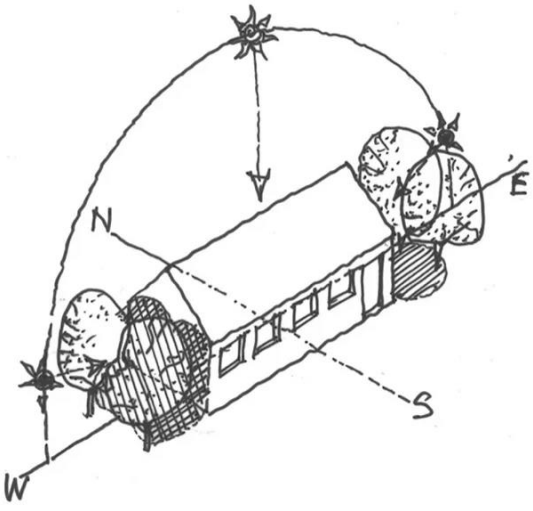



*Figure 60 Vegetation for shading*

For instance, the Umbrella tree, with its dense and broad leaves, can comfortably cover walls and one-story roofs. Vegetation can also be grown on façades and allowed to climb on wires or poles to form a natural screen or shade.

- Roof Colouring

A reflective or very light-colored roof finish can aid in reducing heat conduction to interior spaces by reflecting solar heat.

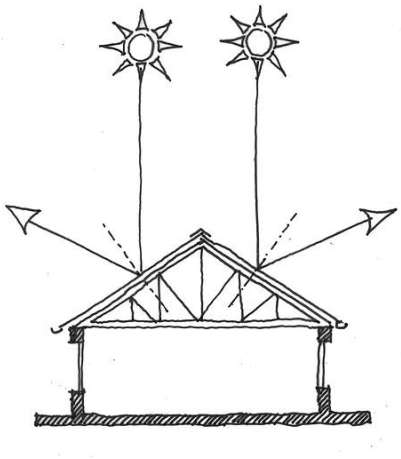


*Figure 61 Roof Coloring*

Choosing a reflective roofing material is the easiest and most efficient solution for preventing interior solar gain. Shiny metal sheet roofing is an excellent barrier against the penetration of solar radiation. Dark-coloured roofing materials should be avoided as they tend to absorb more heat from the sun. Clay tiled roofs absorb less heat than metal and radiate heat at a slower pace.

- Double Roof System

Adding a second skin beneath the roof can help cool a structure by decreasing the radiant temperature and increasing convection. Significant enhancement in thermal resistance can be attained by integrating an internal cladding or deck and providing airflow between the two layers.

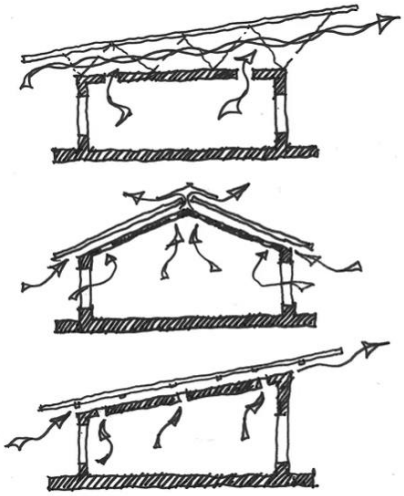


*Figure 62 Double roof System*

Generally, the greater this space, the higher the air circulation and the lower the temperature of the internal surface of the roof. Ideally, the ceiling should have some form of insulation or thermally absorbing characteristics, but a ventilated airspace alone offers substantial improvements compared to an exposed single-skin roof.

*Figure 63 Communal Healing Center (Biratnagar)*

## Reference:

[1] Shah, K. (2021). [Heaven in Meadows]. Available at: https://www.arch.tamu.edu/app/uploads/sites/3/2021/10/2021book_Shah.pdf (2021).

[2] Milan, P. J. (1995) 'Lakeshore Mental Health Institute - The Chota Building Lobby: A Case Study of Perceived Image.' Master's Thesis, University of Tennessee. Available at: https://trace.tennessee.edu/utk_gradthes/2687.

[3] Chappe, A. (2021). "The Effect of Architecture and Design on Mental Health and Implications for Open Art Studios." Expressive Therapies Capstone Theses, 511.

[4] Luitel, N. P., Jordans, M. J. D., Adhikari, A., Upadhaya, N., Hanlon, C., Lund, C., & Komproe, I. H. (2015). Mental health care in Nepal: current situation and challenges for development of a district mental health care plan. BMC Psychiatry, 15, 226. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4331482/

[5] Rai, Y., Gurung, D., & Gautam, K. (2021). Insight and challenges: mental health services in Nepal. BJPsych International, 1-4. doi: 10.1192/bji.2021.1

[6] Office of Construction & Facilities Management. (2017). "Mental Health Facilities Design Guide." Retrieved from https://www.wbdg.org/FFC/VA/VADEGUID/ARCHIVE/dgmh_2010_Rev2017.pdf

[7] Er, A., Ida, A., & Sternberg, E. M. (2020). Healing spaces: Designing physical environments to optimize health, wellbeing, and performance. *International Journal of Environmental Research and Public Health*, *17*(4), 1100. https://doi.org/10.3390/ijerph17041100

# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

**18**
SUICIDES PER DAY

**8/10**
PEOPLE HAVE MENTAL HEALTH ISSUES

**94%**
POPULATION ARE UNAWARE

PROVIENCE 3 BAGMATI HAS HIGHEST POPULATION DENSITY ACCROSS THE COUNTRY BUT PROVIENCE 1 HAS GROWING RATE OF PEOPLE SUFFERING FROM MENTAL AND BEHAVORIAL HEALTH ISSUES

Project Background

- Urgent need for improved mental health care in Nepal
- Alarming statistics:
  - 18 suicides daily
  - 8 in 10 individuals face mental health issues
  - 94% unaware of their mental health condition
- Stigmatization prevents seeking help
- Current facilities lack design guidelines

Research and Visioning

- Address the gap in mental health care facilities
- Create healing and friendly environments
- Transform research into effective design strategies

Project Significance

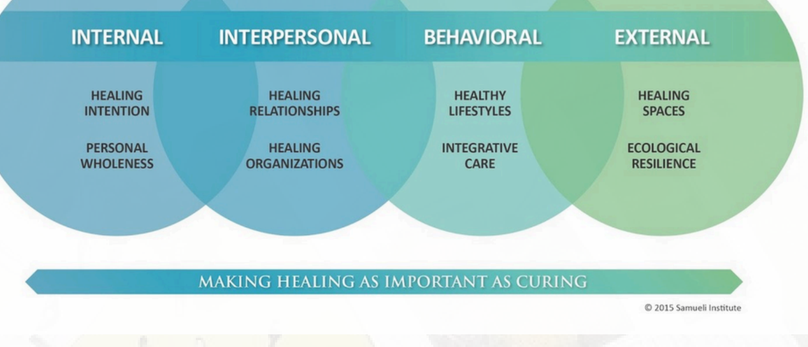
- Combines therapeutic design with functional elements
- Enhances well-being of patients and staff
- Raises standards of mental health care
- Reduces stigma and improves awareness

Justification and Significance

- Mental Health Crisis: High suicide rates and prevalence of disorders
- Critical Gap in Care: Lack of design guidelines in current facilities
- Stigma Reduction: Create an inclusive environment and raise awareness
- Architectural Innovation: Pioneering new designs for mental health care

Conclusion

- The Communal Healing Centre will be a beacon of hope and resilience, addressing mental health challenges and promoting wellness in Nepal.







Mental Illness in Society

- Significant stigma prevents seeking treatment
- Mental health facilities often viewed negatively
- Architecture of facilities perceived as "architecture of madness"

Early History of Mental Institutions

- 13th-century England: first mental asylum in London
- Poor conditions and treatment of patients
- 1773: first hospital for mental patients in Williamsburg, Virginia

Modern Mental Health Care

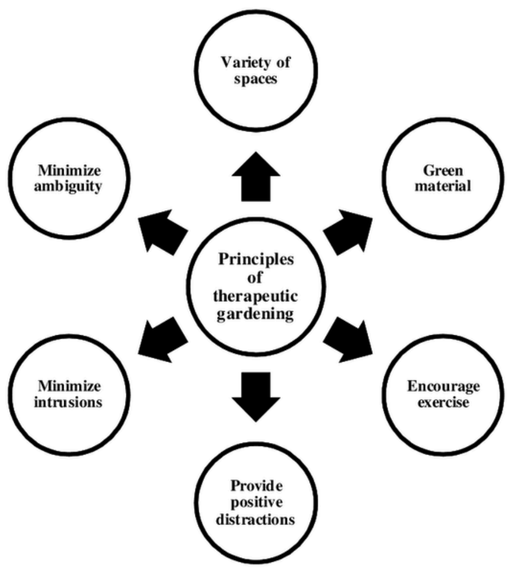
- 1946: President Truman's Public Law 487 for mental health improvement
- Deinstitutionalization movement: transitioning patients to community settings
- Persistent stigma and challenges in mental health care

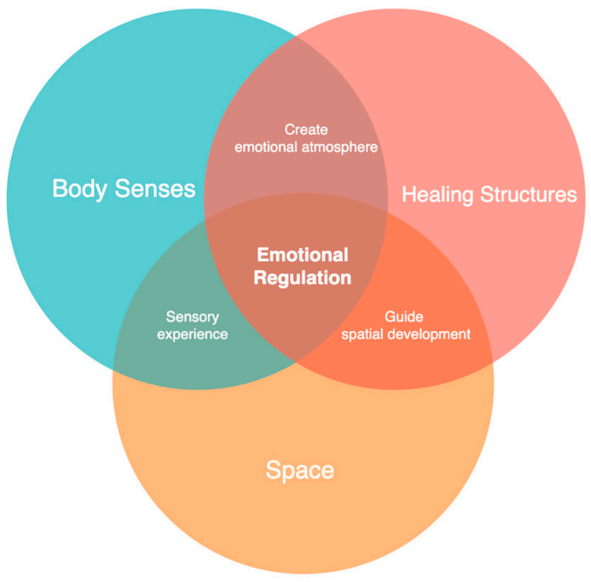
Mental Health in Nepal

- Mental health policy developed in 1997, lacks implementation
- Limited funding and resources, especially in rural areas
- 22 psychiatrists and 6 psychologists per 100,000 citizens
- Mental health services mainly in major cities
- NGOs play a significant role in providing mental health care

Mental Health Facility Design

- Poor design inhibits care delivery and increases staff turnover
- Better design needed for therapeutic and functional spaces
- Modest changes in decor and layout can have therapeutic effects



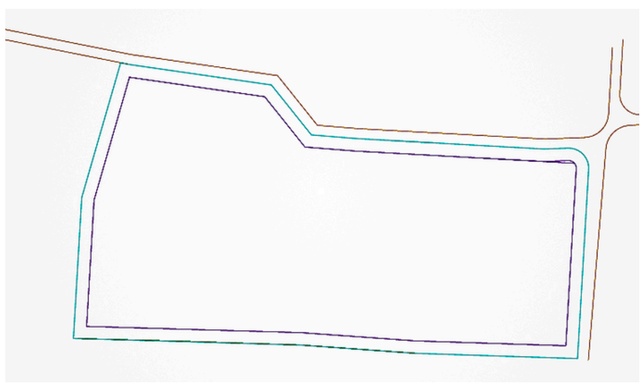



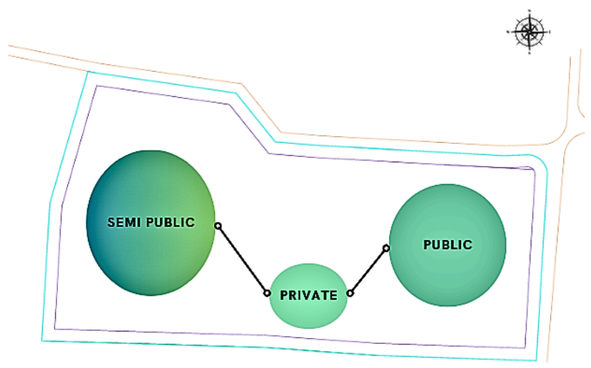

# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

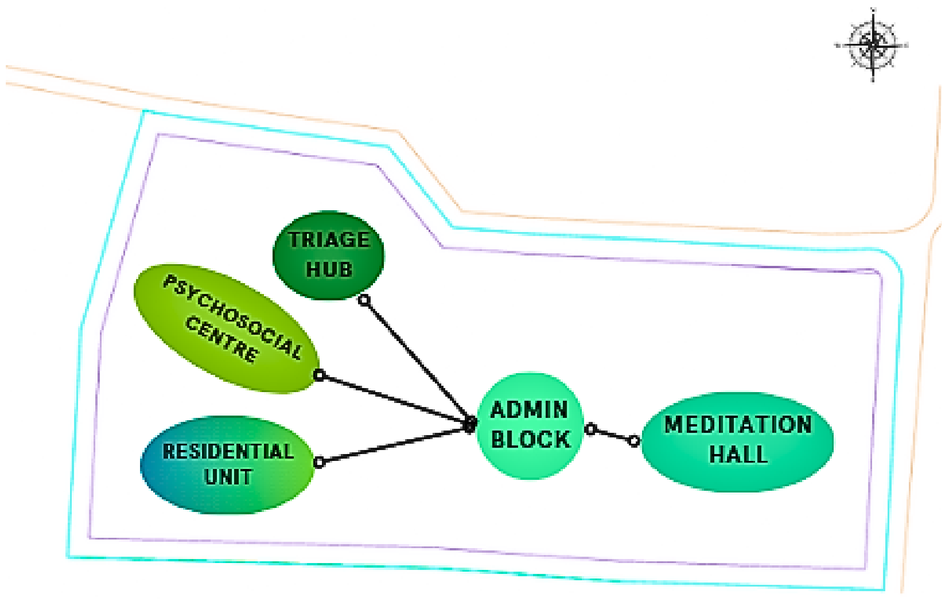
Architecture Design Concept for Communal Healing Centre

| CONCEPT | NEED | SOLUTION |
|---|---|---|
| **Social Dynamics** | Recognize the role of social interactions and supportive environments in promoting mental well-being within a home-like setting | Design living spaces that encourage socialization and community engagement through communal areas, shared kitchens, and outdoor spaces to foster connection and belonging among residents. |
| **Analogy to everyday life** | Translate mental health care principles into relatable, everyday scenarios that foster familiarity and comfort for residents. | Integrate everyday elements like domestic furnishings, recreational activities, and routines to create a homelike environment that enhances residents' comfort and well-being. |
| **Edge Connection** | Recognize the importance of peripheral relationships and external resources in providing holistic care and addressing diverse mental health needs. | Partner with community organizations, mental health professionals, and social service agencies to offer counseling, vocational training, and social activities, creating a comprehensive support network for residents. |

## SITE AND ZONING






**COMPLETELY LOCKED UNIT**

**MEDICALLY MANAGED WITHDRAWAL MANAGEMENT (MMWM) :** SHORT-TERM (LESS THAN 5 DAYS TOTAL) INPATIENT CARE FOR PATIENT REQUIRING MEDICAL ASSISTANCE IN THEIR DETOX EFFORTS

**CRISIS STABLIZATION UNIT (CSU):** SHORT TERM (LESS THAN 5 DAYS TOTAL) INPATIENT CARE FOR PATIENTS SUFFERING FROM ACUTE MENTAL ILLNESS

**SOFT LOCKED UNIT**

**CLINICALLY MANAGED WITHDRAWAL MANAGEMENT (CMWM):** SHORT TERM (3-5 DAYS TOTAL) CARE FOR PATIENT WHO REQUIRES SUPERVISION WHILE DETOXING

**UNLOCKED UNIT**

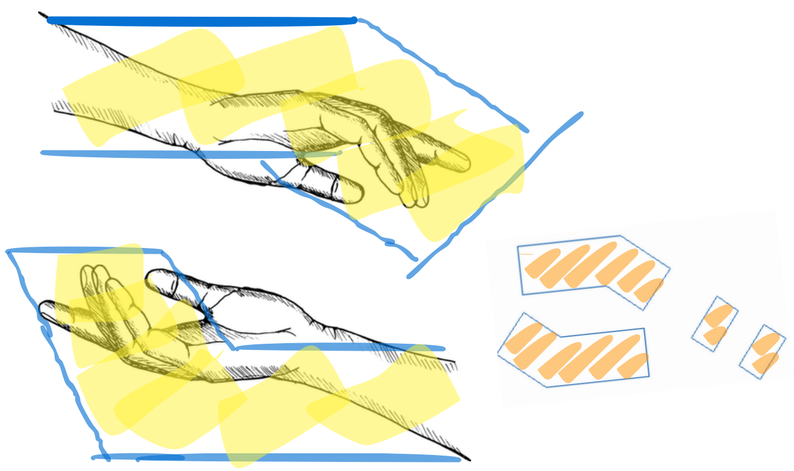
**INTENSIVE RESIDENTIAL TREATMENT (IRT):** 30 DAYS TOTAL INPATIENT CARE FOR PATIENT WITH MENTAL HEALTH DIAGNOSIS

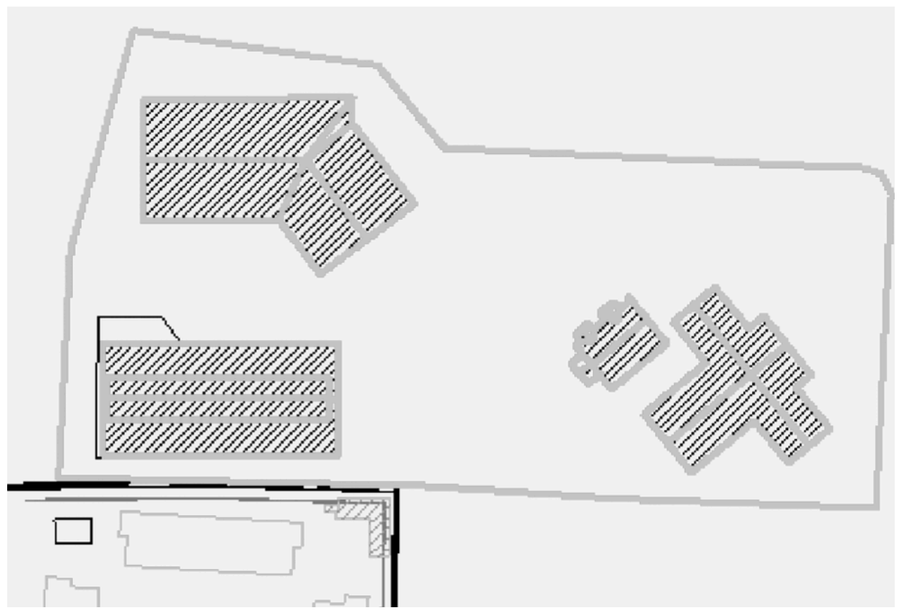
How do we want the facility to look and feel?

How should patients feel about the facility?

How should staff feel about the facility?

GESTURES





# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

## VISIONING PROCESS

- Natural Daylight: Maximize natural light for a bright environment.

- Calming Colors: Use soothing colors to promote relaxation.

- Antiligature Design: Ensure designs minimize self-harm risks.

## ARCHITECTURAL STYLE

-Modern Yet Agrarian Architecture: Combine contemporary design with traditional agrarian elements for a familiar, innovative space.

-Single-Floor Facility: Design the center as a single floor for easy movement and accessibility.

## SPATIAL ORGANIZATION

-Interior Courtyards: Include courtyards for natural light, fresh air, and a nature connection.

-Recreational Spaces: Create areas for physical activity and mental well-being.

-Welcoming Atmosphere: Design a comfortable, quiet space to foster peace.

## FUNCTIONAL LAYOUT

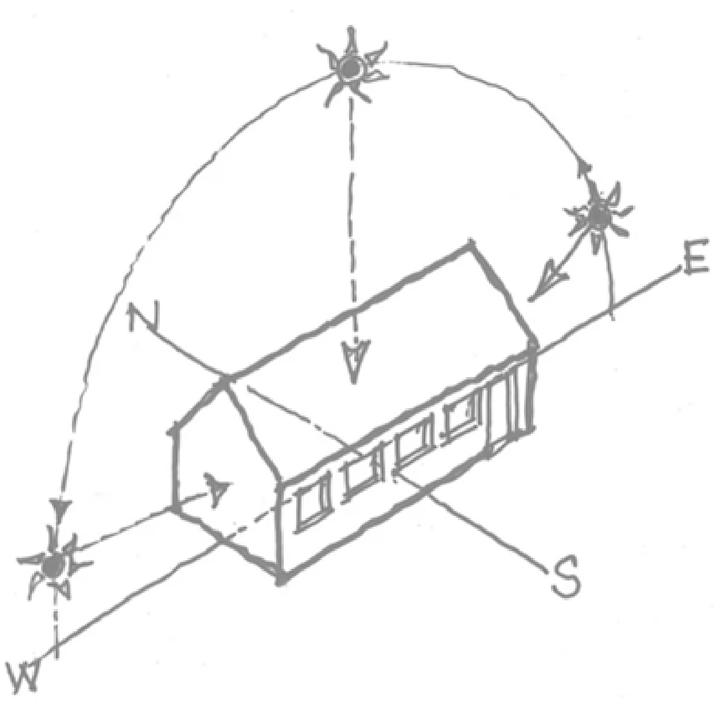
- One-Stop Care: Offer all levels of care within the facility for a seamless patient experience.
- Customizable Environments: Allow patients to choose their surroundings for comfort and autonomy.
- Family and Alone Time: Design spaces for both family interaction and individual solitude.

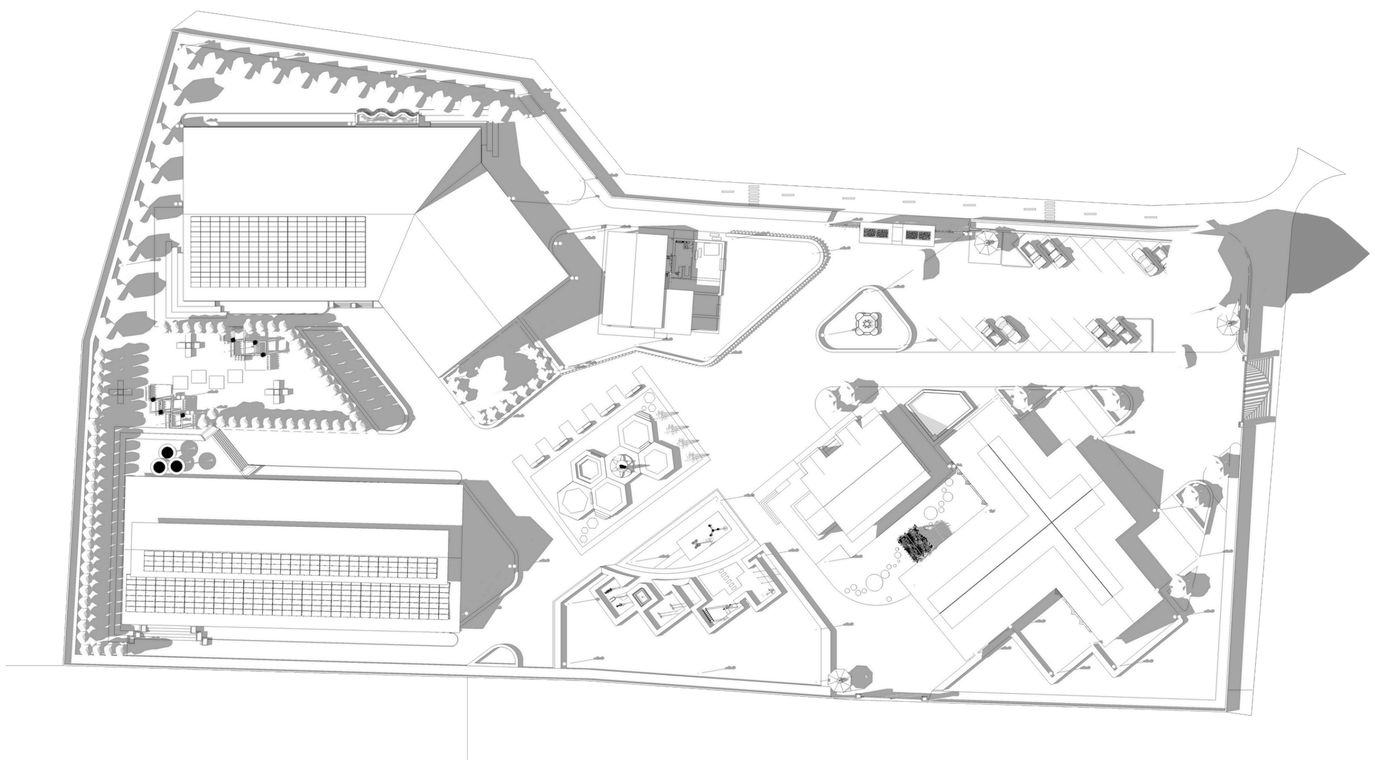
# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

- Applying Bioclimatic Design in Warm and Temperate Climates for Biratnagar

BUILDING ORIENTATION

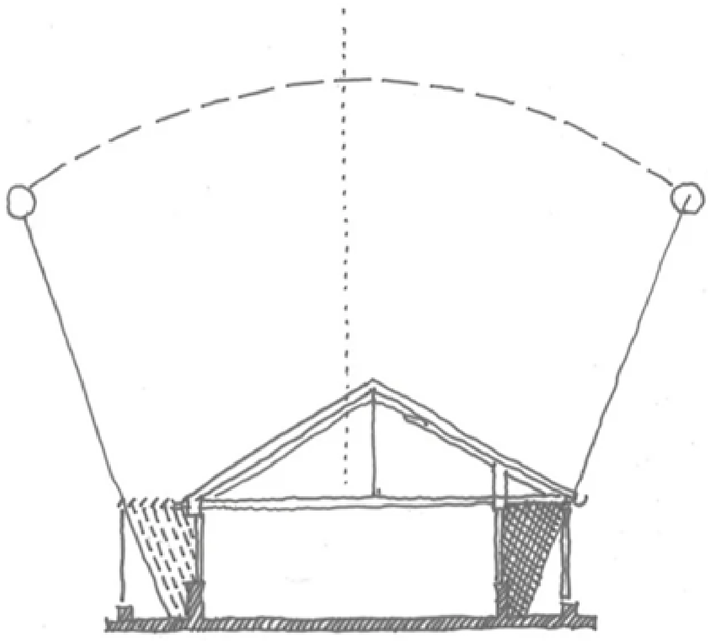
- Minimize East and West-Facing Walls: These walls receive the most sunlight.
- Prioritize North and South Orientations: North and south elevations receive minimal direct solar exposure.
- Adjust Shading Based on Latitude: More shading is needed for south-facing walls in northern locations and vice versa.
- Consider Solar Radiation Timing: East and west elevations receive lower solar radiation in the morning and afternoon, respectively.



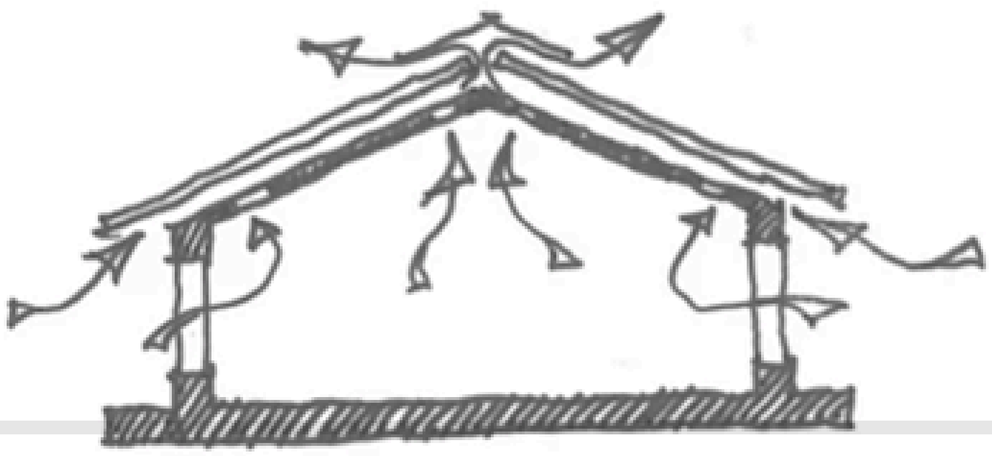
OVERHANGS AND COLLONADE

·Use of overhangs and colonnades to shield windows and walls from direct sunlight. A large overhanging roof protects windows, cool exterior surfaces, and the surrounding area.



ROOF

- Roof Colouring: Opt for reflective or light-colored roofs to reduce heat conduction and interior solar gain.
- Reflective Materials: Use shiny metal sheet roofing for effective solar heat reflection.
- Avoid Dark Colors: Dark roofs absorb more heat and should be avoided.
- Clay Tiles: Clay tiled roofs absorb and radiate heat more slowly than metal.



# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

- Mental Health and Urban Green Spaces:

Sero et al. found that well-designed urban green spaces improve mental health and stress the importance of specific development guidelines.

- Bamboo Forest Therapy:

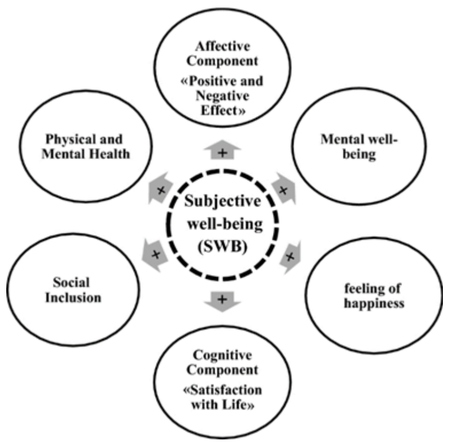
A study showed that bamboo forest visits improved mood and reduced negative emotions in male college students, though more research is needed on heart health impacts.

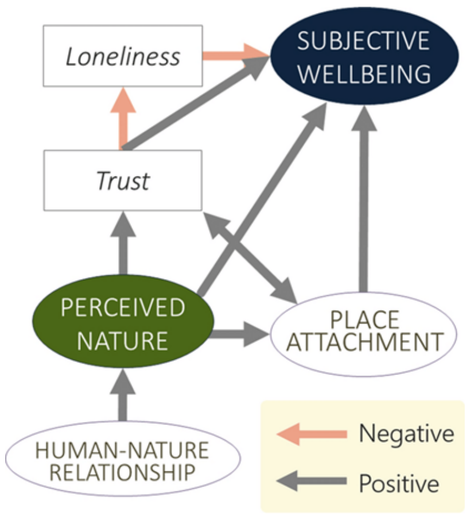
- Green Spaces and Cardiovascular Risk Factors:

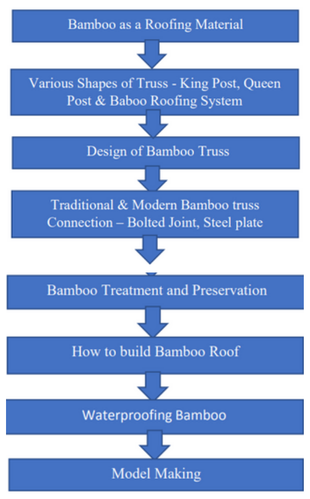
Research in Madrid revealed that women in greener areas had lower cardiovascular risk factors, except obesity, supporting the creation of more green spaces.

- Protected Nature vs. City Environment for Happiness:

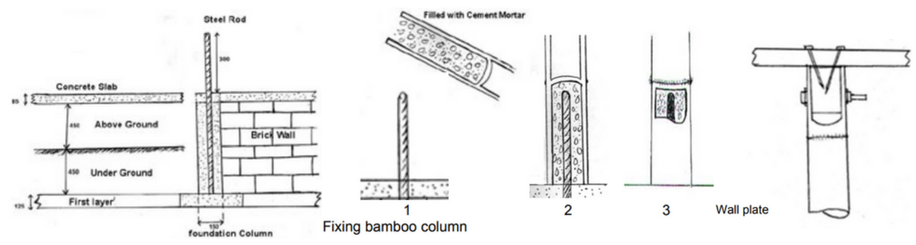
Forest environments offered greater psychological and physiological benefits than urban areas, suggesting personalized forest experiences could enhance urban well-being.

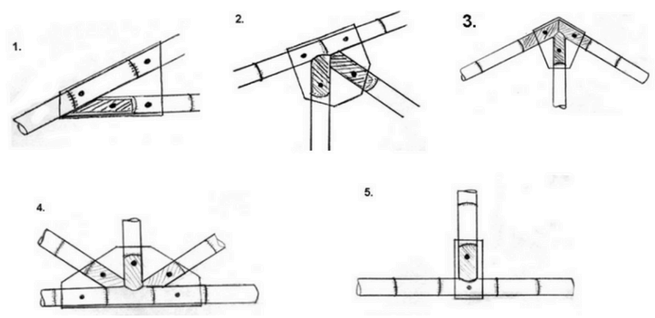



The foundation is crucial for a building's stability, as it supports the entire structure. Foundation work involves layout, clearing, digging, filling, and leveling to ensure strength and durability.



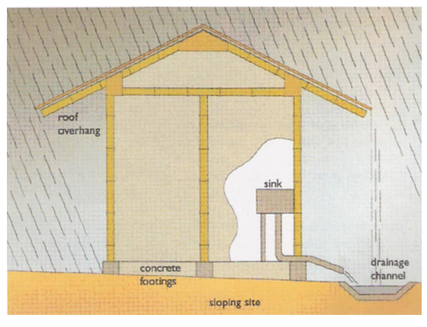

Roof Design:

- For a single-storey building with a 20-meter slope roof span and 1.6-meter overhangs, using bamboo and compressed earth block (CEB) ensures climate responsiveness, structural efficiency, sustainability, and aesthetic harmony.
- Climate Responsiveness: The slope roof improves ventilation and rainwater management, while overhangs reduce heat gain.
- Structural Efficiency: Bamboo efficiently spans large distances and supports overhangs without stressing CEB walls.
- Sustainability: Bamboo and CEB are eco-friendly materials with low energy use.
- Aesthetic Harmony: Natural materials blend with the environment, creating a visually pleasing design.

To protect bamboo structures:

1. Keep bamboo dry.
2. Avoid ground contact.
3. Ensure good air circulation.

Large roof overhangs prevent wetting, while drainage systems discharge water safely. Building on sloped sites and using raised footings can reduce flooding risks.




Durability:

- Bamboo: Pre-treat, coat, and elevate.
- CEB: Plaster, DPC, and seal.

Structural Efficiency:

- Bamboo Roof: Reinforce and use modular trusses.
- CEB Walls: Reinforce with buttresses.

Climate Design:

- Ventilation: Add vents and gaps.
- Insulation: Use natural materials.

Environmental Protection:

- Wind: Anchor, brace, and reinforce.
- Fire: Apply retardants and design fire breaks.

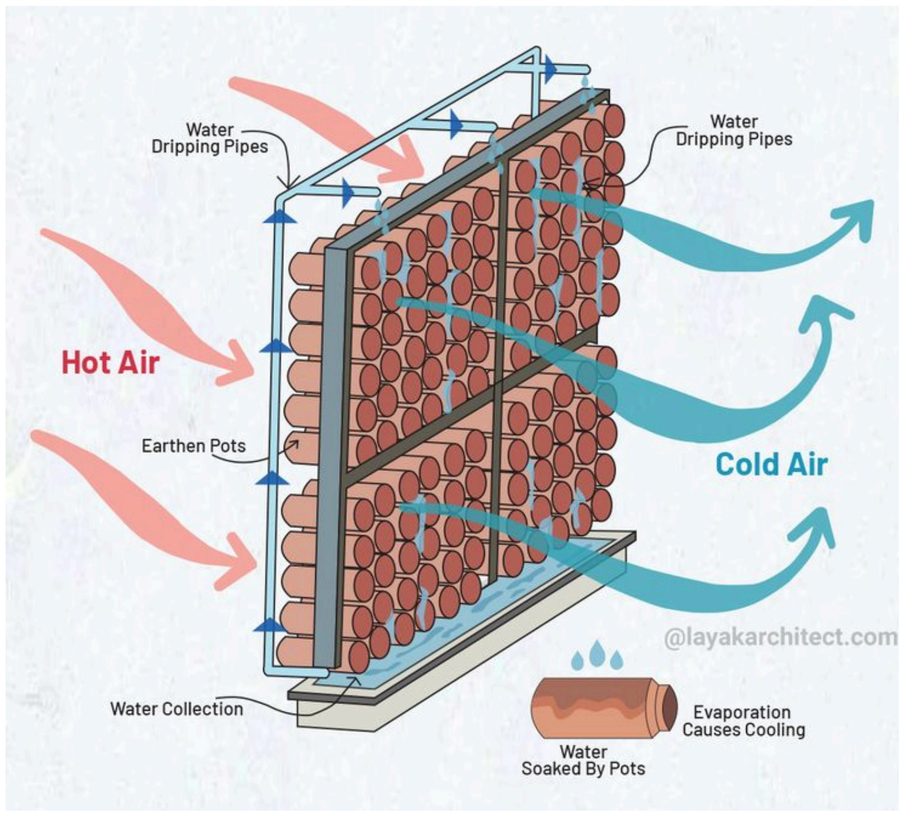
Construction:

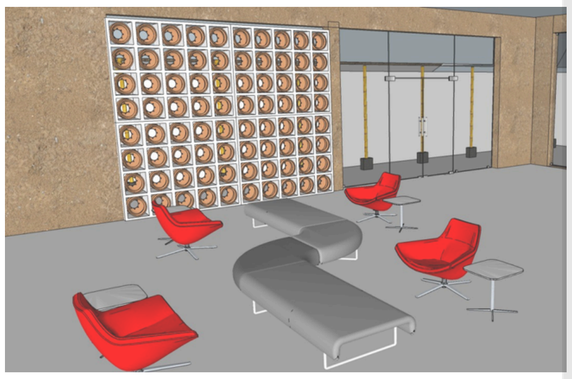
- Phasing: Build in stages.

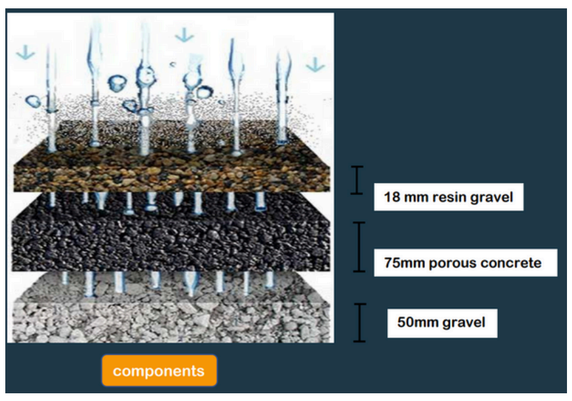
Aesthetics:

- Finishes: Use modern treatments.
- Design: Integrate bamboo, CEB with glass and steel.

# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL



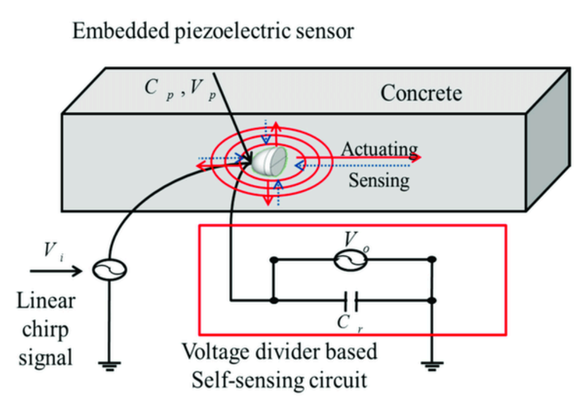


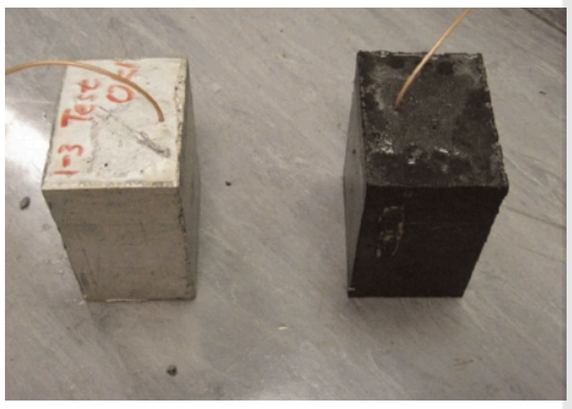

Sustainable approach

- Coolant System: Use earthen pots as a natural cooling machine to lower indoor temperatures. This passive cooling system helps maintain a comfortable environment without relying on electricity.
- Solar Panels: Install solar panels on roofs to power cooling systems and reduce reliance on external energy sources.
- Sustainable Materials:
- CEB Blocks, Steel, and RCC: These materials provide structural strength and thermal mass, reducing the need for artificial cooling.
- Groundwater Recharge:
- Resin-Bound Surfacing: The porous pavement allows rainwater to seep through, aiding in groundwater recharge and reducing runoff.

Piezoelectric Transducer in Concrete (for Staircase in Communal Healing Centre):

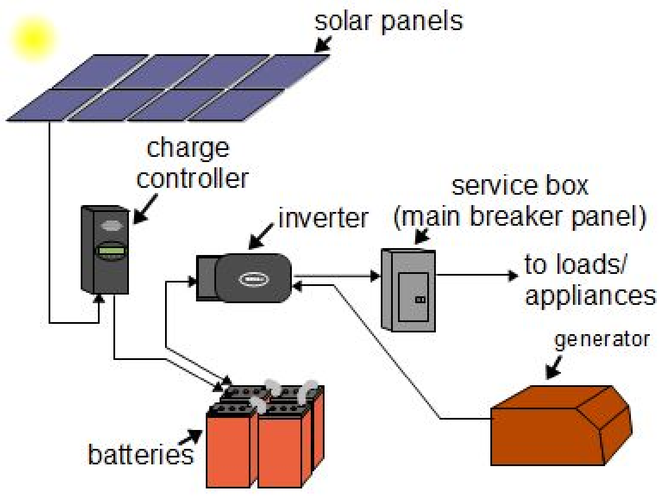
- Energy Harvesting: Converts mechanical energy from footfalls into electrical energy, which can power low-energy devices like lights or sensors.
- Sustainability: Reduces reliance on external energy sources, contributing to the overall sustainability of the building.
- Innovative Design: Adds a modern, tech-driven aspect to the facility



Communal Healing Centre: Energy-Efficient Design

- Solar Panels: Provide renewable energy and are paired with storage systems for reliability.
- Natural Cooling: Use earthen pots and large roof overhangs to reduce cooling needs.
- Sustainable Materials: Employ CEB blocks and bamboo for thermal efficiency and sustainability.
- Water Management: Use resin-bound surfacing for groundwater recharge.
- Innovative Technologies: Integrate piezoelectric transducers in the staircase to harvest energy.
- Climate Responsiveness: Incorporate ventilation and natural insulation to enhance comfort.




# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

## CASE STUDY:


## SUMMARY

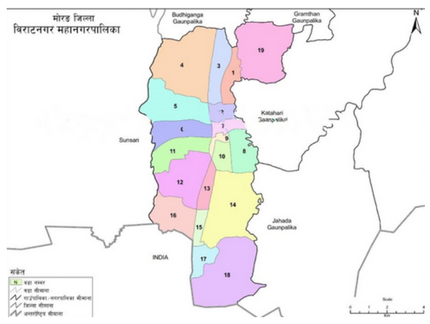
| Institution | Architectural Style | Design Philosophy | Technological Integration |
|---|---|---|---|
| **Lakeshore Mental Health Institution** | Historic Victorian with large green spaces | Healing environment integrating nature and outdoor spaces | Limited by historic buildings, modern facilities where possible |
| **Shepard Pratt Mental Health Clinic** | Modern, therapeutic with natural light and open spaces | Holistic, patient-centered care with a therapeutic environment | High, state-of-the-art medical and therapeutic technologies |
| **NIMHANS** | Modern, functional design for large academic facilities | Functional and efficient use of space for extensive services | High, advanced medical and research technologies |
| **Vejle Psychiatric Centre** | Modern, sustainable using natural materials | Healing architecture emphasizing sustainability and therapeutic gardens | High, modern healthcare technologies with sustainable practices |
| **Lindner Center of Hope** | Contemporary with natural light and open spaces | Comfortable and therapeutic environment for mental health care | High, advanced mental health technologies and facilities |
| **Tampere Psychiatric Clinic** | Functional, patient-centric | Patient-centric approach with modern facilities | High, focus on integrating modern medical technologies |
| **Nobel Medical College, Biratnagar** | Modern, functional for teaching hospital | Balances modern facilities with educational needs | High, state-of-the-art medical technologies |
| **Birat Nursing Home, Biratnagar** | Functional design focused on patient care | Comprehensive healthcare services with patient comfort | Moderate, essential medical technologies |

| Feature | Lakeshore Mental Health Institution | Shepard Pratt Mental Health Clinic | National Institute of Mental Health and Neuro Sciences | Vejle Psychiatric Centre | Lindner Center of Hope | Tampere Psychiatric Clinic | Nobel Medical College, Biratnagar | Birat Nursing Home, Biratnagar |
|---|---|---|---|---|---|---|---|---|
| **Location** | Toronto, Canada | Towson, Maryland, USA | Bengaluru, India | Vejle, Denmark | Mason, Ohio, USA | Tampere, Finland | Biratnagar, Nepal | Biratnaga Nepal |
| **Year Established** | 1888 | 1891 | 1954 | 2017 | 2008 | 1970s | 2004 | 199 |
| **Architectural Style** | Historic Victorian | Modern, therapeutic design | Modern, functional design | Modern, sustainable architecture | Contemporary | Functional, patient-centric | Modern, functional | Functiona |
| **Design Philosophy** | Healing environment with nature integration | Holistic, patient-centered care | Functional, efficient use of space | Healing architecture with sustainability | Emphasis on natural light and open spaces | Patient-centric, functional | Functional and modern | Patient care focused, functional |
| **Notable Features** | Large campus with green spaces, historic buildings | Extensive use of natural light, open spaces, art installations | Large academic and research facilities, green spaces | Sustainable design, therapeutic gardens, natural materials | Natural light, therapeutic design, comfortable patient spaces | Modern facilities, therapeutic environment | Modern facilities, teaching hospital, extensive healthcare services | Comprehensive healthcare services, focus on patient comfort |
| **Capacity** | Large, multiple buildings and wards | Large, comprehensive care facilities | Large, extensive inpatient and outpatient services | Medium, focused on sustainability and comfort | Medium, specialized in mental health care | Medium, comprehensive care | Large, serves wide range of medical and surgical cases | Medium, specialized medical and surgical care |
| **Technological Integration** | Moderate, historic buildings limit some modern integrations | High, state-of-the-art medical and therapeutic technologies | High, advanced medical and research technologies | High, integrates modern healthcare technologies | High, advanced mental health technologies | High, modern medical technologies | High, state-of-the-art medical technologies | Moderate focusing on essential medical technologies |
| **Sustainability Features** | Limited due to historic nature | High, sustainable building practices | Moderate, with green spaces | High, focus on sustainable design and materials | Moderate, includes some sustainable practices | High, emphasis on energy efficiency | Moderate, includes some sustainable practices | Moderate focusing on essential sustainable practices |
| **Community Integration** | Historic site with community engagement | Strong community programs and outreach | Extensive community and academic partnerships | Integrated into community with open gardens and public spaces | Community outreach and education programs | Community health programs and integration | Extensive community services and education programs | Community focused healthcare services |

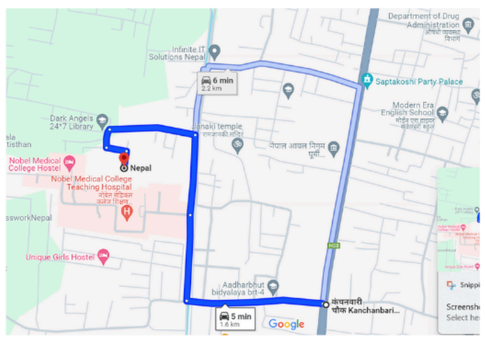
# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

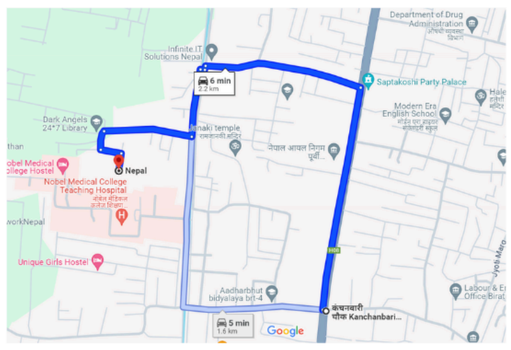
## SITE ANALYSIS:

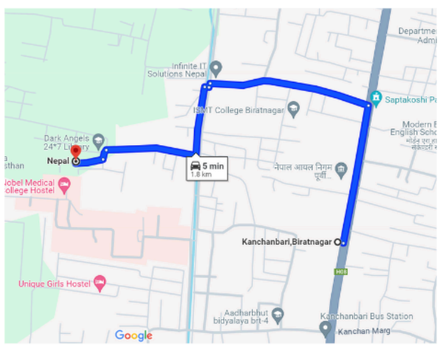
- Location: Kanchanbari, Biratnagar Metropolitan City– 5, Biratnagar 56700
- Coordinates: 26°29'38"N, 87°16'20"E
- Elevation: Approximately 80 meters (262 feet) above sea level
- Area: 36 ropani (18,314.5 $m^2$)








**SITE ACCESS**

**North:**
- Tankisinwari (3.5 km)
- Duhabi (8 km)
- Sonapur (12 km)

**East:**
- Janki Temple (0.5 km)
- Nepal Oil Corporation (0.9 km)
- Dharan Biratnagar Road (1 km)
- Pokhariya (2 km)

**South:**
- Biratnagar Airport (1 km)
- Birat Nursing Home (3 km)
- Koshi Hospital (4 km)

**West:**
- Biratnagar Airport Viewpoint (2 km)
- Ramgunj Belgachiya (4.5 km)
- Oli Tole (5.5 km)
- Chimadi (8 km)

**JUSTIFICATION**

- Increasing Rate of Mental Health Patients:
  - Province 1 has a rising number of mental health patients.
  - Urgent need for accessible and comprehensive mental health facilities.
- Rapid Growth and Development:
  - Biratnagar is growing rapidly, making it ideal for essential services.
  - Development initiatives are creating opportunities to address mental health care needs.
- Initiatives by Nobel Hospital:
  - Nobel Hospital is raising awareness and improving mental health treatment.
  - Their proactive approach aligns with the vision for local development.
- Strategic Location:
  - Located in Biratnagar Metropolitan City with good access to neighboring cities.
  - Anticipated ring road will enhance connectivity and accessibility.
- Supportive Infrastructure and Facilities:
  - Site has infrastructure conducive to mental health services.
  - Focus on accessibility, amenities, and convenience.

Summary:

- Biratnagar's growth, healthcare commitment, and strategic location make it ideal for mental health facilities.
- This decision ensures accessible and inclusive mental health services for the community.

**CLIMATIC DATA**

| Category | Data |
|---|---|
| Country | Nepal |
| City | Biratnagar, Kosi |
| Longitude | 87.271781 |
| Latitude | 26.4524746 |
| Elevation | Sea level (0 ft) |
| Annual High Temperature | 32.22ºC (90.0ºF) |
| Annual Low Temperature | 22.64ºC (72.75ºF) |
| Average Annual Precipitation | 130.9 mm (5.15 in) |
| Warmest Month | May (38.15ºC / 100.67ºF) |
| Coldest Month | January (13.97ºC / 57.15ºF) |
| Wettest Month | July (465.37 mm / 18.32 in) |
| Driest Month | December (3.12 mm / 0.12 in) |
| Number of Rainy Days | 121.61 days (33.32%) |
| Days with No Rain | 243.39 days (66.68%) |
| Average Humidity | 54.05% |
| Windflow Pattern | Northeasterly in winter, southwesterly in summer |
| Max Temperature | 32.39ºC (90.3ºF) |
| Average Temperature | 30.06ºC (86.11ºF) |
| Min Temperature | 27.48ºC (81.46ºF) |
| Max Precipitation | 0.98 mm (0.04 in) |
| Average Precipitation | 0.04 mm (0.0 in) |
| Min Precipitation | 0.0 mm (0 in) |
| Total Precipitation | 1.28 mm (0.05 in) |
| | |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Nov | Oct | Dec | Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Record high °C (°F) | 31.4 (88.52) | 34.35 (93.83) | 43.18 (109.72) | 45.14 (113.25) | 45.14 (113.25) | 43.18 (109.72) | 40.24 (104.43) | 40.24 (104.43) | 39.26 (102.67) | 37.29 (99.12) | 35.33 (95.59) | 31.4 (88.52) | 45.14 (113.25) |
| Average high °C (°F) | 24.26 (75.67) | 27.77 (81.99) | 33.66 (92.59) | 37.79 (100.02) | 38.15 (100.67) | 37.04 (98.67) | 33.65 (92.57) | 34.04 (93.27) | 33.0 (91.4) | 31.76 (89.17) | 29.67 (85.41) | 25.86 (78.55) | 32.22 (90.0) |
| Daily mean °C (°F) | 20.26 (68.47) | 23.62 (74.52) | 29.78 (85.6) | 34.2 (93.56) | 34.78 (94.6) | 34.18 (93.52) | 31.63 (88.93) | 31.89 (89.4) | 30.67 (87.21) | 28.77 (83.79) | 26.24 (79.23) | 22.32 (72.18) | 29.03 (84.25) |
| Average low °C (°F) | 13.97 (57.15) | 16.21 (61.18) | 21.09 (69.96) | 25.38 (77.68) | 26.88 (80.38) | 27.89 (82.2) | 27.24 (81.03) | 27.29 (81.12) | 26.03 (78.85) | 23.2 (73.76) | 19.99 (67.98) | 16.47 (61.65) | 22.64 (72.75) |
| Record low °C (°F) | 5.89 (42.6) | 9.81 (49.66) | 14.72 (58.5) | 20.61 (69.1) | 21.59 (70.86) | 22.57 (72.63) | 21.59 (70.86) | 23.55 (74.39) | 16.68 (62.02) | 17.67 (63.81) | 13.74 (56.73) | 10.8 (51.44) | 5.89 (42.6) |
| Average precipitation mm (inches) | 8.37 (0.33) | 15.73 (0.62) | 11.14 (0.44) | 35.17 (1.38) | 107.34 (4.23) | 212.44 (8.36) | 465.37 (18.32) | 338.48 (13.33) | 299.68 (11.8) | 69.12 (2.72) | 4.8 (0.19) | 3.12 (0.12) | 130.9 (5.15) |
| Average precipitation days (≥ 1.0 mm) | 1.79 | 2.23 | 2.5 | 6.69 | 14.18 | 18.91 | 24.18 | 21.41 | 19.72 | 7.31 | 1.87 | 0.8 | 10.14 |
| Average relative humidity (%) | 52.38 | 46.93 | 31.98 | 33.94 | 48.0 | 59.1 | 70.55 | 69.23 | 70.74 | 64.61 | 52.12 | 48.99 | 54.05 |
| Mean monthly sunshine hours | 8.39 | 8.42 | 10.67 | 12.51 | 13.11 | 12.96 | 12.14 | 12.13 | 10.45 | 10.99 | 9.53 | 8.44 | 10.82 |

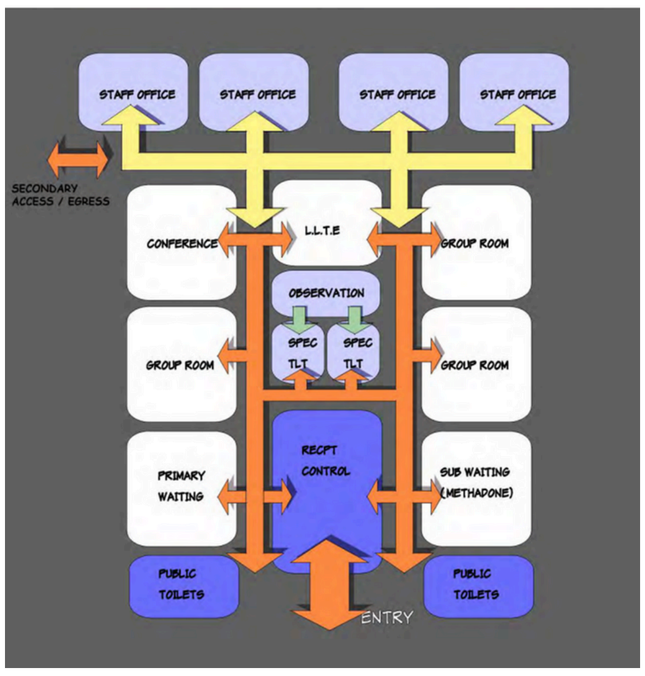
# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

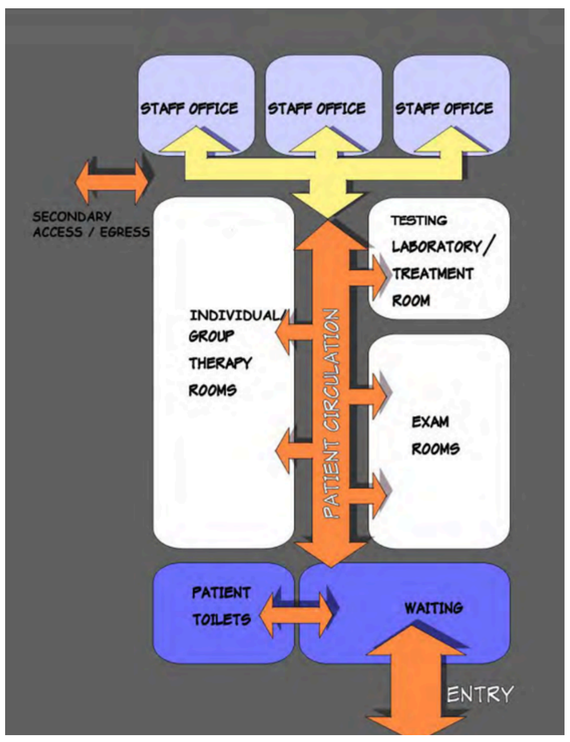
## LITERATURE REVIEW
### PROGRAM FORMULATION

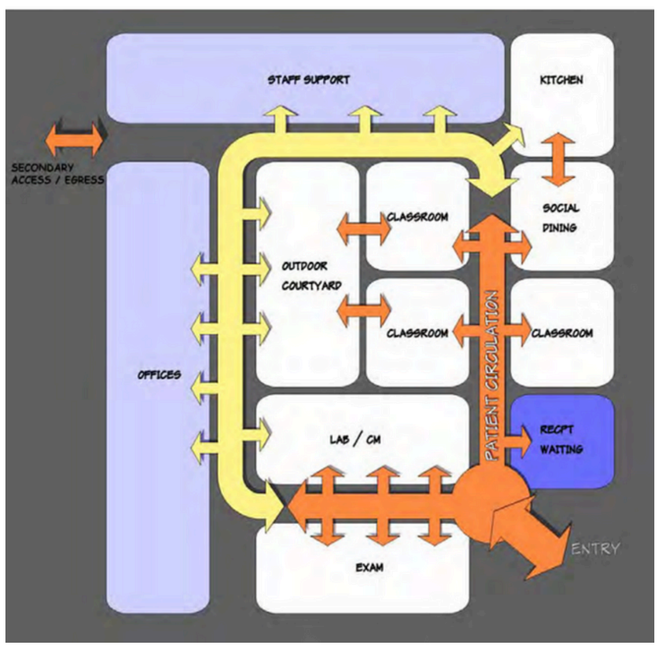
Design Elements and Their Impact

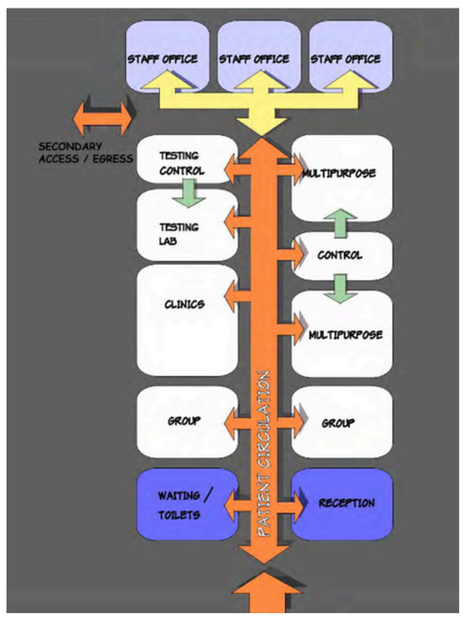
- Safety and Privacy
  - Importance of security in psychiatric settings
  - Enhances patient safety and privacy
  - Contributes to positive mental health outcomes
- Noise and Environmental Stressors
  - Noise as a stressor
  - Design recommendations to reduce noise impact on mental health
- Space and Layout
  - Importance of clear wayfinding
  - Use of color and thoughtful layout to improve healthcare environment
- Nature
  - Access to green spaces improves mental and physical health
  - Reduces anxiety and enhances well-being
- Light and Atmosphere
  - Natural light has therapeutic effects
  - Multisensory environments and salutogenic design principles promote healing
- Community Integration
  - Healthcare facilities as transitional spaces
  - Connects patients with the community while balancing risks
- Milieu Environments
  - The atmosphere's influence on therapeutic outcomes
  - Importance of social interactions in therapeutic settings
- Art in Healthcare Settings
  - Positive impact of visual arts and live music
  - Reduces stress and anxiety, improves overall well-being

Understanding how design impacts mental health is crucial for creating healing healthcare environments.




Guidelines for Mental Health Services

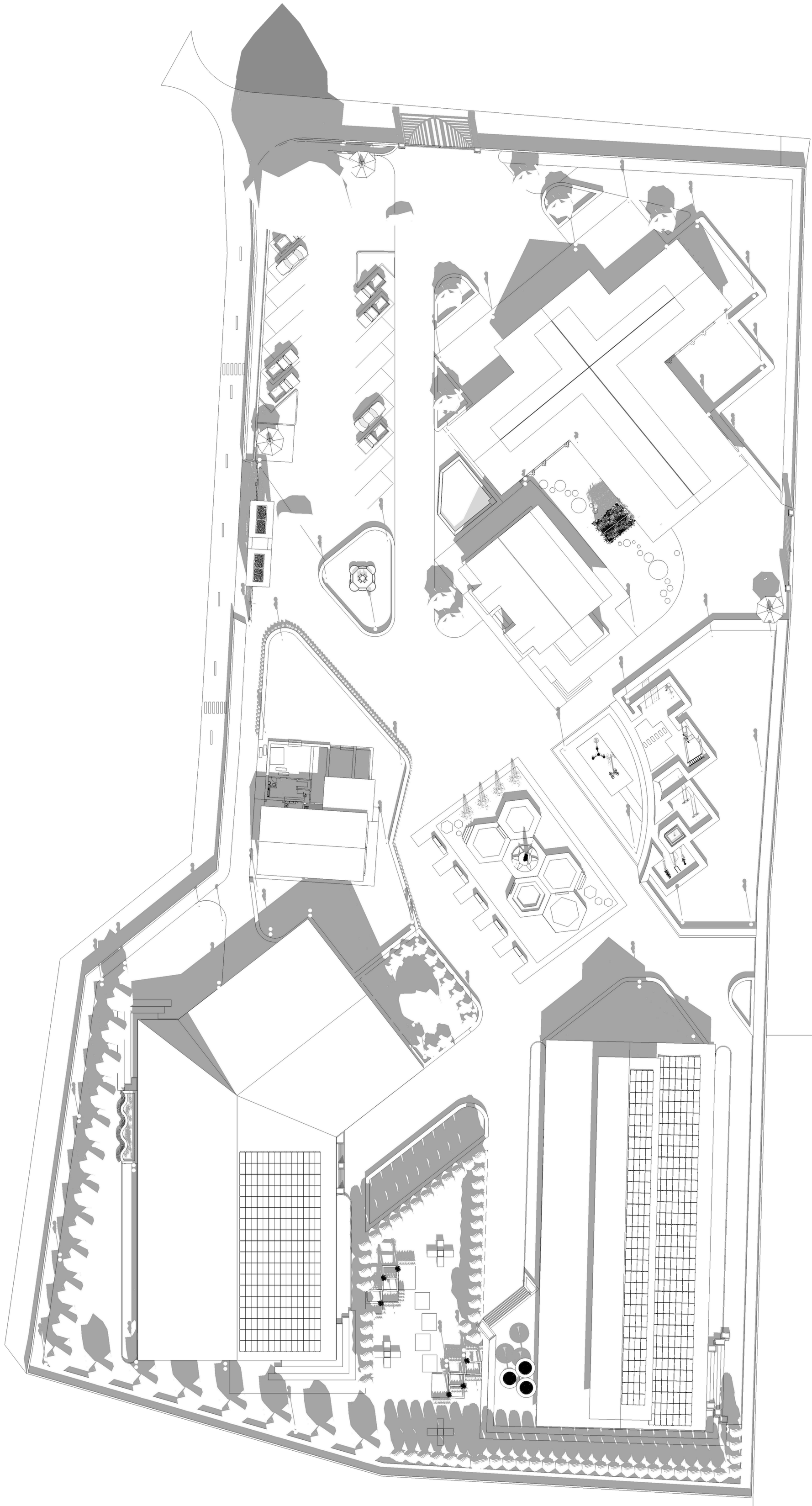
- Recovery-Oriented Approach
  - Focus on patient and family needs
  - Emphasize rehabilitation and evidence-based practices
  - Prioritize community reintegration
- Therapeutically Enriching Environment
  - Create a home-like atmosphere
  - Ensure familiarity for patients
  - Provide access to nature for healing
  - Uphold patient autonomy, respect, and privacy
- Safe and Secure Environment
  - Minimize physical hazards
  - Increase staff visibility and engagement
  - Use abuse-resistant materials and safety technologies
  - Implement personal duress alarms and door head alarms
- Integrated and Coordinated Services
  - Foster collaboration among care providers
  - Treat multiple diagnoses in the same setting when possible
  - Use technology for seamless care continuity
- Respectful and Inclusive Settings
  - Offer appropriate accommodations for specific patient groups
  - Safeguard privacy and dignity of female veterans
  - Provide separate or distinct inpatient units as needed

Outpatient Components in Mental Health Care System

- Mental Health Clinic
  - Provides general and specialized mental health services
  - Services include evaluations, treatment planning, psychotherapy, pharmacotherapy, assessments, patient education, and consultations
- Key Design Concepts
  - Create attractive, therapeutic patient spaces
  - Maintain privacy and dignity for diverse populations
  - Ensure open, easily observed circulation areas
  - Use clear signage with large letters
  - Control acoustics in therapy rooms
  - Include identifiable reception and waiting areas, providing privacy
  - Separate sub-waiting areas for women and families
  - Ensure wheelchair accessibility in all areas
  - Provide ample light in common hallways
  - Provide outdoor space for patients
  - Subdivide reception/waiting area into smaller sections
  - Secure exposed devices with tamper-resistant fasteners
  - Ensure appropriate acoustic and light control in therapy and tele-mental health spaces

| SN | BLOCK | AREA PER PERSON (M^2) | TOTAL AREA (M^2 |
|---|---|---|---|
| 1 | ADMIN | | |
| | A. ENTRY AREA | | |
| | RECEPTION | 1.5/ PERSON | 16 |
| | WAITING | 1.2 / PERSON | 16 |
| | TOILET (ACCESSIBLE) | 2.5 | 5 |
| | TOILET (PUBLIC) | 3 | 12 |
| | | | |
| | B. GENERAL ADMIN | | |
| | OFFICE/ CEO DIRECTOR | 16 | 20 |
| | ENSUIT TOILET | 2.5 | 5 |
| | OFFICE OPERATOR | 16 | 20 |
| | OFFICE WORKSTATION | 8 | 20 |
| | TELEPHONE OPERATOR | | 15 |
| | | | |
| | C. NURSING ADMIN | | |
| | SUPERVISORS | 16 | 20 |
| | | | |
| | D. FINANCE/ ACCOUNTS | | |
| | MANAGERS | 6 | 6 |
| | WORKSTATION | 16 | 16 |
| | | | |
| | E. HUMAN RESOURCE | | |
| | MANAGERS(HR) | 16 | 20 |
| | WORKSTATION | 20 | 20 |
| | INTERVIEW ROOM | 12 | 15 |
| | | | |
| | F. IT COMMUNICATON | | |
| | OFFICE MANAGERS | 16 | 20 |
| | OFFICE 4 PERSON SHARED | 20 | 25 |
| | SERVER ROOM | 10 | 15 |
| | | | |
| | G. MANAGEMENT | | |
| | OFFICE MANAGERS | 16 | 20 |
| | WORKSTATION | 20 | 20 |
| | | | |
| | H. SUPPORT AREAS | | |
| | BAY/ BEVRAGES/ PANTRY | 15 | 20 |
| | CLEANERS ROOM | 18 | 18 |
| | DISPOSAL ROOM | 12 | 15 |
| | STORE(FILES) | 8 | 10 |
| | STORE/ STATIONARY | 8 | 10 |
| | | | |
| | I. STAFF AREA | | |
| | MEETING ROOM | 80 | 100 |
| | COMPUTER ROOM | 48 | 50 |
| | STAFF LOUNGE | 12 | 80 |
| | TOILET | 6 | 24 |
| | | 423 | 653 |

| | | | |
|---|---|---|---|
| 2 | TRIAGE HUB (SCREENING AREA) | | |
| | RECEPTION | 1.2 | 8 |
| | WAITING AREA | 3.3 | 12 |
| | ASSESSMENT | 15.4 | 16 |
| | COUNSELING ROOM | 15.4 | 16 |
| | CRISIS INTREVENTION SPACE | 15.75 | 20 |
| | TELE HEALTH SPACE | 16 | 16 |
| | DOCUMENTATION ROOM | 10 | 10 |
| | COLLABORATIVE SPACE | 20 | 20 |
| | | | |
| 3 | RESIDENTIAL UNIT | | |
| | | | |
| 4 | AWARENESS HUB | 1.2 PER PERSON | 240 |
| | | | |
| 5 | RESEARCH HUB | 50 | 65 |
| | | | |
| 6 | PSYCHOLOGICAL SERVICE CENTRE | | |
| | TREATMENT ROOM | | 20 |
| | SOCIAL ACTIVITIES | | 50 |
| | CLASSROOM | | 60 |
| | OCCUPATIONAL THERAPY | | 60 |
| | TESTING CONTROL | | 20 |
| | CLINICS | | 30 |
| | MULTIPURPOSE | | 60 |
| | GROUP THERAPY | | 60 |
| | TESTING LAB | | 15 |
| | TESTING CONTROL | | 15 |
| | OFFICE | | 15 |
| | TOTAL | | 1481 |



# COMMUNAL HEALING CENTER: FOSTERING MENTAL HEALTH WELLBEING IN NEPAL

Project Background

- Urgent need for improved mental health care in Nepal
- Alarming statistics:
  - 18 suicides daily
  - 8 in 10 individuals face mental health issues
  - 94% unaware of their mental health condition
- Stigmatization prevents seeking help
- Current facilities lack design guidelines

Research and Visioning

- Address the gap in mental health care facilities
- Create healing and friendly environments
- Transform research into effective design strategies

Project Significance

- Combines therapeutic design with functional elements
- Enhances well-being of patients and staff
- Raises standards of mental health care
- Reduces stigma and improves awareness

| CONCEPT | NEED | SOLUTION |
|---|---|---|
| **Social Dynamics** | Recognize the role of social interactions and supportive environments in promoting mental well-being within a home-like setting | Design living spaces that encourage socialization and community engagement through communal areas, shared kitchens, and outdoor spaces to foster connection and belonging among residents. |
| **Analogy to everyday life** | Translate mental health care principles into relatable, everyday scenarios that foster familiarity and comfort for residents. | Integrate everyday elements like domestic furnishings, recreational activities, and routines to create a homelike environment that enhances residents' comfort and well-being. |
| **Edge Connection** | Recognize the importance of peripheral relationships and external resources in providing holistic care and addressing diverse mental health needs. | Partner with community organizations, mental health professionals, and social service agencies to offer counseling, vocational training, and social activities, creating a comprehensive support network for residents. |