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The Impact of Architecture in the Process of Healing & Well-Being

Saloni Singh[1], Mohammed Sabahat[2], Juwairia Qamrudiin[3]
[1, 2, 3]*Architecture, Faculty of Architecture & Planning, AKTU, Lucknow, India*

Abstract: ***As per the definition given by the World Health Population, health alludes to the condition of complete physical, mental and social prosperity and not just the nonappearance of sickness or infirmity. It acts as a crucial parameter in the country's development. It could disrupt due to various strains resulting in Stress—the body's response to anything or a situation that requires any attention or action. Architecture is deeply contextual and responds to its social and environmental context as much as its historical and physical one. If we are designing for the ripple effect consciously, we benefit the individuals and support the community. By creating a healing space, one evokes the feelings of serenity, calm, and relaxation and can contribute to an environment that facilitates the natural healing process—a process of repair, recovery, and return to wholeness in mind, body, and spirit.***

Since there have been strong human responses to nature because these responses appear in study after study and are consistent across social, economic, cultural, and racial boundaries, buildings are the structures that strengthen the local community and connect people. These help the neighborhood economy and how they work. In this way, when we configuration to amplify the positive – social, monetary, and natural variables become the waves of architecture and engineering. To look over the design consideration of such spaces in the institutions, how can the healing Space architecture become an integral part of healing itself? How can architecture have an active role in the healing process? The conventional design approach is missing the inspiration and connection with the built structure from its precincts. Thus, the architectural inputs can affect the building design and affect the healing process. It also creates a comfortable and interactive for both the patients/ visitor and the staff who spend the central part of their day in it and, most importantly, would create a network of community and built form. This study emphasizes the variation in the patient's mood and creates a healing place instead of the machine to treat people with patient-focused experiential perspectives.

The dissertation has a framework with the chapters divided into different sections. The first section introduces the health and the role of psychology concerning the spaces that evoke different moods and emotions within the user. The next chapter discusses and brings the different parameters with the medical shreds of evidence by reviewing and analyzing a few previous research studies in the same field. The third chapter analyzed a few of the live architectural projects based on the parameters mentioned in the chapter before and made a comparative analysis of those projects. Lastly, in the fourth chapter, the inferences are developed with the design recommendations for the thesis's future study and guidelines.

Keywords: Health, healing spaces, architecture, positive distraction, space, psychology

I. INTRODUCTION

A. Health- a crucial factor of productivity

There are few basic parameters set focusing around its population for any country's development, which would help it out in its future progress. These parameters include the infrastructures, and to get out the best result in any of the social, cultural, or economic sectors - the population needs to be productive. The population's productivity is the mirror, reflecting the knowledge, skills, and health status. The word infrastructure refers to the basic facilities and is equally necessary for the country's better run. It includes different sectors like telecommunication, transportation, educational setups & their norms, proper sanitation & drainage, and **health**. The latter might seem a small word but, if not considered, could impact the rest sectors, which would harm the productivity of the country on a larger scale.

Let us consider the meaning of the word 'health,' as per the World Health Population definition. It alludes to the condition of complete physical, mental and social prosperity and not just the nonattendance of infection or sickness. The health infrastructure has a significant three types of sectors, that are, the public sector (owned and run by the government for the welfare of the public within the country), private sector (owned and run by the private groups with the focus to earn a profit along with providing the healthcare services), and the NGOs.

On comparing, the private healthcare sector with the public, it is observed that the services, hygiene, and the former assessment ones. Can architecture play a role in it? This study would help address the role of architecture in the healthcare sector over the health is far better than in the.

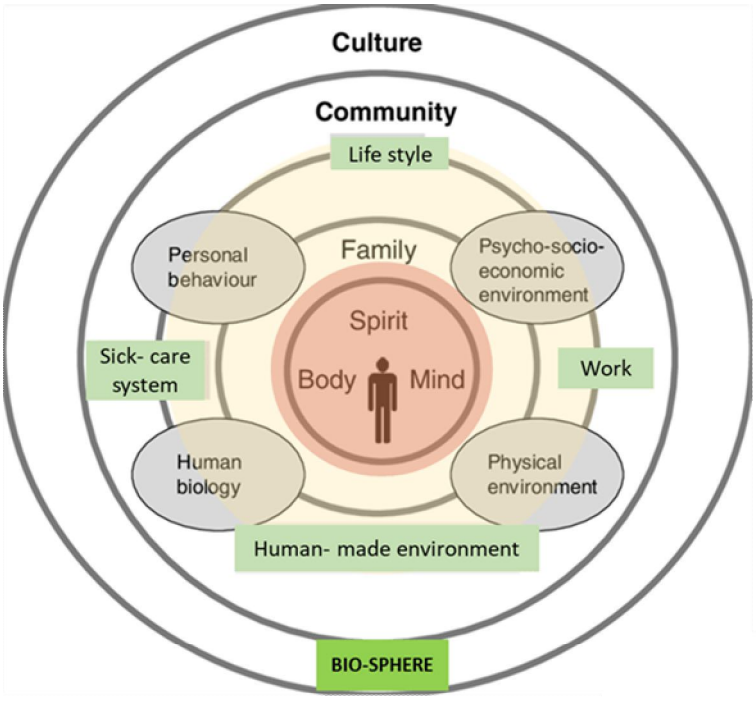

Fig. 1 The concept of health both mentally and physically

B. Cure VS Heal

These words are used to show the recovery from certain diseases but have a different meaning altogether. When one refers to curing, it means *"eliminating all evidence of disease,"* that is, to control or dispose of an infection that disturbs the sound working of a person's body, psyche, or conduct. On the other hand, "healing" is derived from the Anglo- Saxon word "hælan," which means "*becoming whole*." That is not just a physical cure, but repairing and strengthening the mind and soul to improve personal satisfaction even when no physical cure was possible. The belief that "healing," or bringing the body back into balance by providing it with the appropriate stimuli and opportunities for it to become restored to wholeness. Thus, designing healing environments to promote harmony of mind, body, and spirit.

C. Stress and its Impact

Stress refers to a change that could cause psychological, emotional, or physical strain. It is a response which the body makes to anything or a situation that requires any attention or action. Every age group experience such changes tough the way he/she handles it and respond makes a difference to his/her wellbeing. Several factors may lead to Stress -

1) Fear and uncertainty regarding something to happen or someone to respond to a situation if it occurred.
2) Attitude and perception may also result in a change in one's behavior or thinking process.
3) A change in the pre-planned situation. Unrealistic expectations.

D. Environment & its type

The term environment refers to the natural surrounding or the world consisting of all the living and non-living things, particularly the geographical area. Wilbert M. Gesler, the author of Healing Spaces, breaks down healing spaces into a combination of natural, built, symbolic and social environments, all of which are important to the healing capabilities. Our environments, social, natural, symbolic, and build, can shape our emotions, perceptions, and in turn, our health.

1) *Natural Environment:* Nature, the most commonly accepted notion of environment, is one of the most explored aspects of a healing space. Many cultures and societies in the world believe in its healing powers. However, the reason that makes one feel the nature to be such a healing parameter could be its balance of humanity and chaos with peace and unity.
2) *The Built Environment & Symbolism:* It includes the built surroundings, people experience from the effects of their surroundings, their moods and emotions, and often, how they react. Symbolism plays a vital role in healing environments, and often people are affected by either concrete or abstract symbols. People can learn to read an environment for its symbolism, revealing people's inner thoughts and behaviors. Abstract symbols also provide meaning in the healing process. Healing rituals and other symbolic actions affect physiology, experience, interpersonal interaction, and social positioning. In many places, rituals are rich with symbolic meaning and actions. Many studies are questioning the effectiveness and parallels of religious healing, shamanism, and western psychotherapy. This environment reveals the great diversity of healing practices found worldwide as each process has a specific healing group, beliefs, and practices involved within the cultural environment.
3) *The Social Environment:* A social environment is necessary for any healing situation. Whether it be nurses, patients technicians, all of the people involved play an essential role in any healing space's social environment. Healing itself is a social activity, which involves interaction between many people in many different social roles.

E. Space and its typology

People experience a space with their entire body through movement, memory, and imagination. It is about the dialogue between a person and architecture. It refers to the volume of the structure and is the combination of forms and mass. It is a part of the building through which one moves and experiences, creating a flow from one element to another. While defining Space, few considered the Space's function, the time people will spend in it, and the mood space evoke. For the most part, open spaces are more sure and welcoming; then again, shut or restricted spaces contrarily sway.

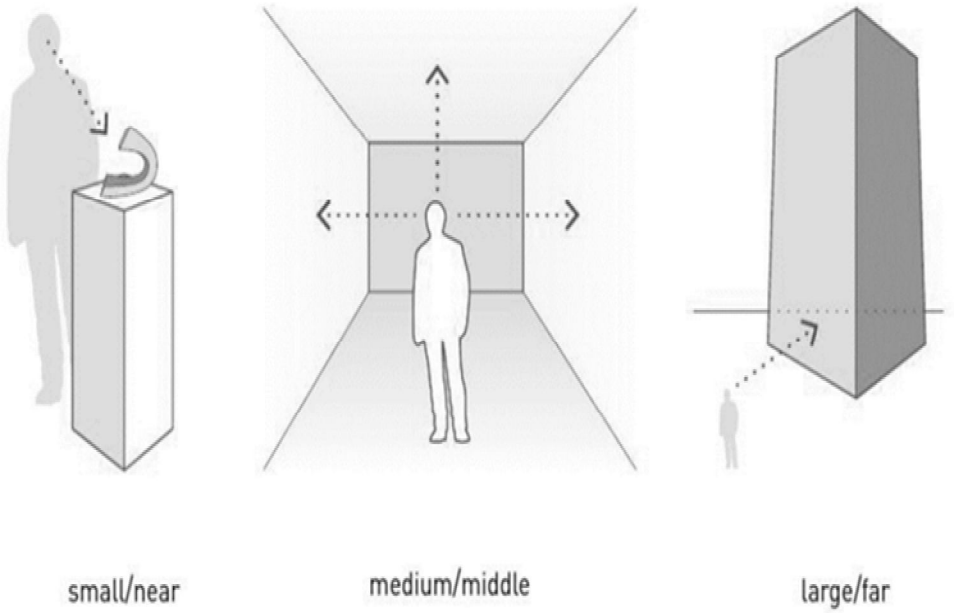

Fig. 2 It impacts our senses, mood, emotions, motivations, judgments, decisions, health, and participation in physical activity and community life

The assembled climate has immediate and backhanded consequences for human brain research. It impacts our senses, mood, emotions, motivations, judgments, decisions, health, and participation in physical activity and community life. Having the right built environment is crucial because it can give better performance, less distraction, and occupants comfort and satisfaction. 'Light,' 'ventilation,' 'air quality,' 'noise,' and 'temperature' classified under 'comfortable physical environment' (visually, acoustically, and thermally). Spaces are good vehicles for influencing feelings in spots where profound feelings run high. Materials, sounds, scents, light, and shading enormously impact how individuals see themselves and adapt to their circumstances.

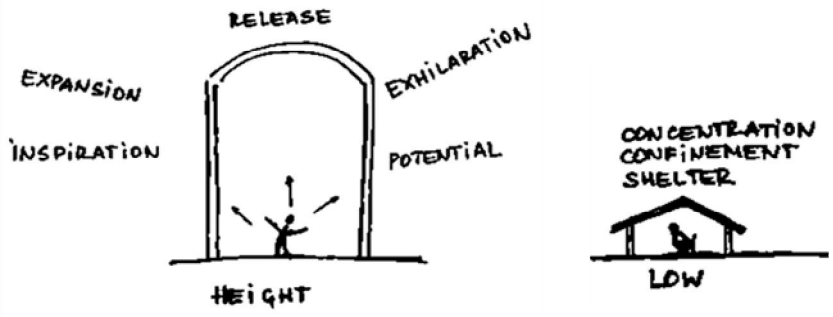

Fig. 3 Space Typology

F. Role of Psychology in Architecture

Psychology refers to the systematic study of behavior and mental process where the output of activity is because of individual input in the observer's behavior—considering the architecture, as the third skin after the actual skin and the cloth wore (which is a second layer or filter). The building as a human-made environment should fulfill the needs and requirements of the inhabitant.

The focus should be on the human environment interface, responding to human needs and motivations, including the perception of the action and the emotional response. The modification in the inhabitants' built environment throughout use or the period leads to a characteristic interaction effect, which may vary depending upon the time, situation, and person.

G. Healing Spaces - the Science of Place & Well Being

Design can handle the way individuals live, how they think, and the way they feel. **Space control individuals' developments,** making a stream from component to component, advising individuals where to look, what to peruse, and what is essential. For the most part, open spaces are more specific and welcoming; then again, shut or restricted spaces have a more negative impact. There are spatial enhancers and detractors to a patients' experience of healing beyond the care they are receiving, and that patients can identify healing spaces with healing enhancers.

1) *Theory of Supportive Design:* Fostering comfort and control reduces Stress, a critical factor in healing spaces, because Stress has various detrimental psychological, physical, and behavioral effects. Dr. Roger S. Ulrich has done extensive research on the importance of eliminating Stress in healing spaces and developed guidelines for improving health environments in his Theory of Supportive Design

a) *Foster Control, Including Privacy:* Providing actual or perceived control over stressors can help alleviate Stress, including giving a patient control over light dimmers and privacy, providing the personal choice of music, control over tv, and easy way-finding signs.

b) *Promote Social Support:* Studies show that social support helps mitigate Stress and improve recovery rates. To encourage the presence of family and friends, hospitals can offer plenty of comfortable seating, access to food, telephones, overnight accommodations, and internet access.

c) *Provide Access to Nature:* Studies have shown that viewing specific types of nature can significantly relieve Stress, within five minutes or less, by lowering blood pressure and reducing heart rates.

H. The Concept of Well-being

The word refers to the meaning of the state of being comfortable, healthy, or happy. Well-being provides a perspective of health that looks at the full spectrum of fitness for life and allows someone to be classified according to their capability to do a given task. In the context of wellbeing, comfort, as heat balance, provides physiological comfort, safety, physical wellbeing. It is a multi-disciplinary word with different aspects from different disciplines that includes:

1) Physical wellbeing
2) Economic wellbeing
3) Social wellbeing
4) Emotional wellbeing
5) Psychological wellbeing

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I. Architecture's Ripple Effect

At the most central, the planned structures give cover, best-case scenario, some advancing encounters, and improved lifeways. However, the effect of architecture on individuals and broader society is far and more extensive than that for structures having expanding influence past their dividers, their prompt site, and the individuals who use them every day.

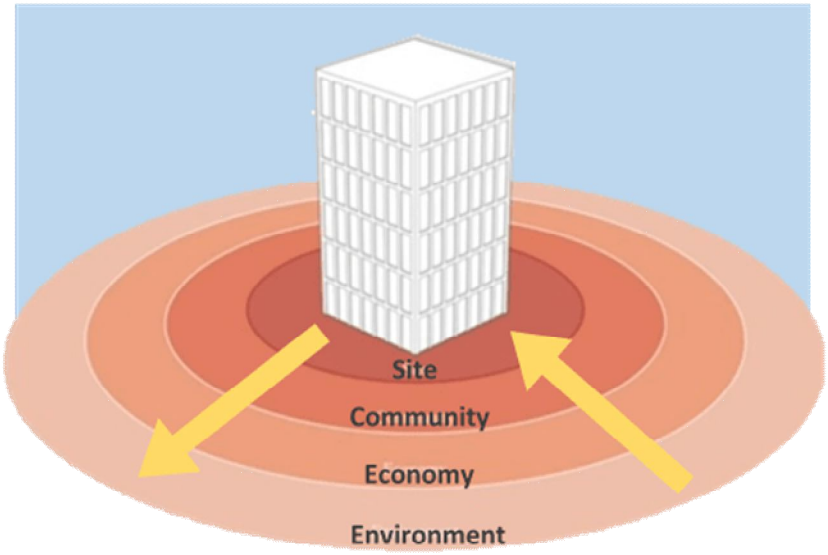


Fig. 4 Ripple effect of architecture over a large scale

Structures require a long time to plan and fabricate and are around for quite a long time, some of the time hundreds of years. So, the buildings' impact on the world around them matters as the effect can go on for a very long time.

Fig. 5 Designing for the ripple effect not only benefits the individuals but will also support the community around them.

II. NEED OF THE STUDY

The center's director of research, Anjali Joseph, says that, as the baby would boom its age, it would require a better hospital environment and services which would be friendly instead of mechanical.

By far, most of our lives are spend inside structures. The walls shape our thoughts, and our surroundings influence the way we perceive things. The conventional design approach misses the inspiration and connection with the built structure from its precincts. Thus, the architectural inputs can affect the building design and affect the healing process. It also creates a comfortable and interactive for both the patients/ visitor and the staff who spend the central part of their day in it and, most notably, would create a network of community and built form. This study emphasizes the variation in the patient's mood and creates a healing place instead of the machine to treat people with patient-focused experiential perspectives.

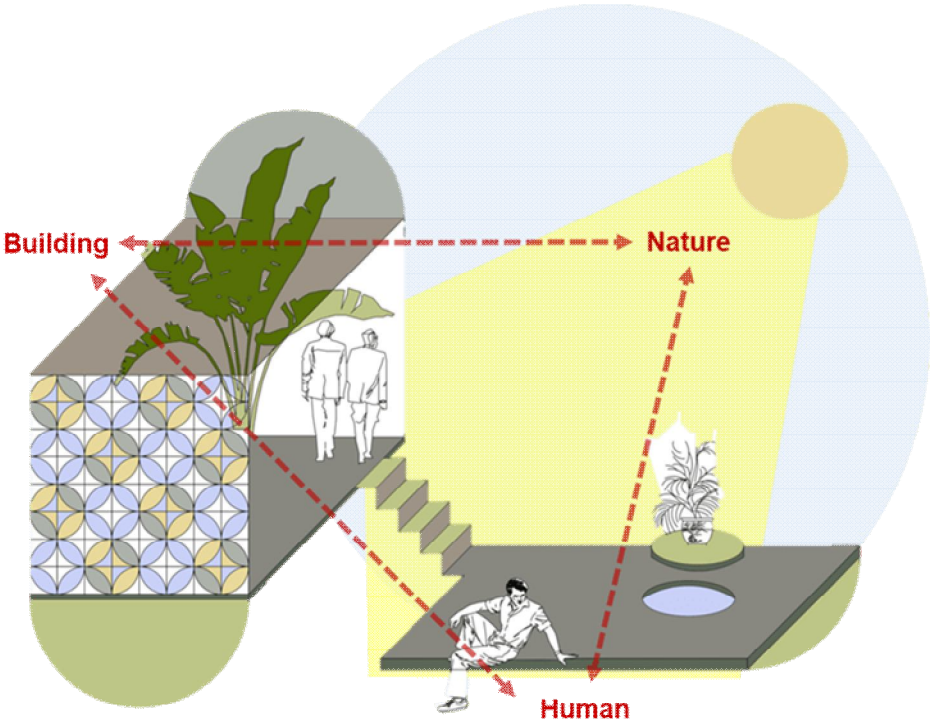


Fig. 6 Interrelation among the three could result in a balanced built environment

III. AIM

To analyze the social spaces' impact on an individual's healing process and explore health and built environment into the wellbeing.

IV. OBJECTIVE

1) To study the psychology of architecture, analyze the perception of spaces. It develops the parameters (positive & negative spaces) for different situations – by analyzing the planning of spaces and linked with the other adjacent Space and how Space could evoke a particular sensation by comparing them on different parameters.
2) To develop the parameters that will enhance the experience by creating a comfortable and relaxing environment that will create a well-functioning healing space – by analyzing the strategies developed from the previous studies.
3) To study the impact of surrounding on the built form – that is, the connection with the landscape surrounding the built form.
4) To suggest recommendations for developing such healthcare centers in the community to create a healthy and healing environment.

V. SCOPE

Architecture is deeply contextual and responds to its social and environmental context as much as its historical and physical one. If we are designing for the ripple effect consciously, we benefit the individuals and support the community. By creating a healing space, one evokes the sensations of tranquility, quiet, and unwinding and can add to a climate that encourages the inborn mending measure—a cycle of fix, recuperation, and re-visitation of completeness as a primary concern, body, and s
oul. Since there have been strong human responses to nature, these responses appear in study after study and are consistent across social, economic, cultural, and racial boundaries. Buildings are the structures that reinforce the nearby local area and associate individuals. Structures that help the neighborhood economy both in how fabricated and how they work. Along these lines, when we configuration to boost the positive – social, financial, and ecological elements become the waves of architecture and engineering.

VI. LIMITATIONS

1) The extent of the study is limited to the hospital buildings with the 100-500 bed capacity
2) The study's focus would be on the social spaces and their impact within the structure and its surrounding, not on the building construction & services.
3) The study is focusing on the waiting areas and the OPDs of such healthcare centers.

VII. HYPOTHESIS

Architecture could be a productive tool for creating such social spaces both in the exterior (for connecting the community) and the interior (as healing grounds) within the built structures.

VIII. RESEARCH QUESTIONS

1) Can the social spaces make a difference in the health of the user and bring in comfort?
2) Can the social spaces develop social, economic, and environmental differences compared with the existing built environment?
3) Can the spaces created have multiple usages?
4) Is this approach of architecture and the research findings integrated, a need for the future?

IX. RESEARCH METHODOLOGY

A. Evidence-based design approach

Evidence-based design (EBD) utilizes analytical instruments to set up connections among plan and patient, family, and hierarchical results. Its standards uphold plan dynamically to improve security, productivity, and clinical results. A study by Roger Ulrich, published in science in 1984, in which patients in a ward found a nature view to have statistically significantly fewer hospital stays and medication use than patients in a ward with a view to a largely featureless brick wall. It is a deliberate attempt to base building decisions on the best available research evidence with the goal of 26 improving outcomes and of continuing to monitor the success or failure for subsequent decision-making and includes:

1) Decision-making process by analyzing the existing best examples from the field
2) It helps find the mode to intersect the knowledge, knowledge, behavioral, organizational, or economic clues.
3) Provides a platform from which to add to an existing base of knowledge or to launch innovation
4) Has an ethical obligation to measure outcomes and share knowledge gained for particular design successes and failures

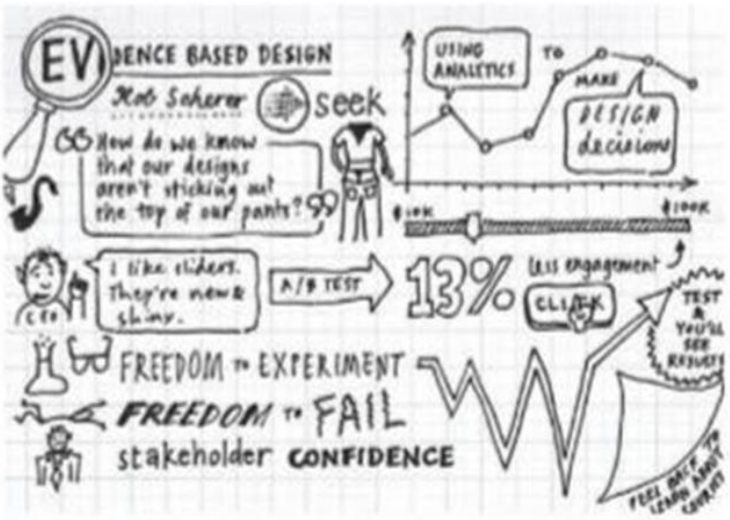


Fig. 7 Evidence-based design approach

It uses an interdisciplinary team model representing clients, stakeholders, and appropriate design disciplines, including researchers in investigating, designing, and analyzing a project. The idea of EBD is to start with an interdisciplinary team during the beginning phase of any design project.

B. Mixed- method approach

A blended strategies research configuration, joining quantitative and subjective techniques, was utilized to understand better the physical environment's impact on patients' experiences. The qualitative measure is applied to understand the patients' experience of healing and their perception of how the physical space and its features (e.g., inpatient room, outfitting, perspectives, and gear) added to their experience. Gather quantitative information during the meetings by requesting patients to rate explicit perspectives from their experience and the actual climate.

C. Qualitative Research

Research refers to the systematic investigation of collecting data, processing it to information, and studying material and sources to establish the facts and reach new conclusions. Qualitative research is a multi-method process that involves;

1) In an interpretive approach to the naturalistic approach and create meaning, the researcher plays a crucial role in their interpretive skills.
2) Study in the natural settings, attempting to make sense of meaning, a context-based inquiry conducted keeping the context to its natural state.
3) Emphasis on how respondents make sense of their circumstances made the holistic portrayal of the setting or the phenomena and interpretation of it to their meaning.
4) The use of multiple tactics, like in-depth interviews, location mapping, photo documentation, location mapping, architectural inventories, place-centered behavioral mapping focused observation, experimental collage. Apart from these primary activities, some of the secondary surveys are also considered quantitative or archival statics.
5) The significance of inductive logic, through observation, can come up with some similar statics.

There is a clear difference between qualitative and historical or scientific research as the former is termed contemporaneous with the data sources obtained through interviews. In contrast, the latter focuses on the environments or contexts created in the past, thus relied on the written documents & physical sources. There are many works for the qualitative approach in the research like In the book *Architecture; the story of Practice*, the writer Dana Cuff understood the profession's dynamic through a different perspective of the participants and put meaning by balancing the observation of the outsider and the insider. Similarly, in her dissertation, Donna Wheatley summed up the spatial qualities that states integrate & corporate values of their design. She experimented few of the projects designed by architects in Australia, China, and Britain, which focus on the interpretive sensibilities and experience of various stakeholders (architect, clients, and users), with research designed in a manner that would elicit each individual's interpretation of the environment in their terms. The set of photographs of different places under Art, interior, sculptures, food, color.

D. Approach of Qualitative Research

This research method was traditionally associated with the social scientists working with non-numeric, descriptive data with unstructured interviews, open-ended surveys, focus groups, or ethnographies. Different approaches are made and designed some of the descriptive interviews based software to help one manage and analyze descriptive data, which may require coding for analysis. Some tools for processing qualitative data are Atlas TI, NVivo, and many more.

Apart from the software, classifying the approaches into different types, like:

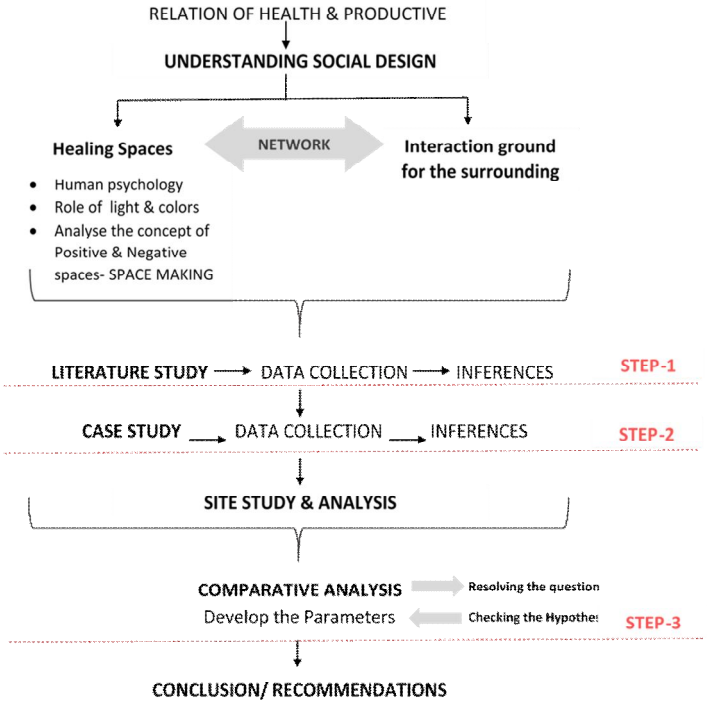
1) *Ethnography:* The word refers to the "natural science of the society," i.e., roots of the natives. It includes anthropology, sociology, human geography, organization studies, educational research, and cultural studies. Works over the meaning and functions of human action. The researcher fits him/her into the study (i.e., as an outsider or an insider); thus, the participant's observation can impact. It affects society, culture, and context into the participant's output as there is a change in the environment over the period to contemporary from the traditional.
2) *Phenomenology:* An experiential factor includes both the outward appearance and the inward consciousness based on memory, image, and meaning. Includes the experience that is the embodiment of the real world in which one has lived. It is the structure of the experience of self-, both in terms of what experienced and how. Memory has a role to play as they set an idea about the spatial quality of the place. In phenomenology, the environment refers to “the place," and the things which occur there "take place." The place is not as simple as the locality. However, it comprises tangible things with physical substance, shape, texture, and color and joins to form the environment's personality or setting. Phenomenology engages the concept of partiality, making the thing and its unique conversations with its place the pertinent topic and not the object itself.
3) *Ground theory:B*An explanatory theory emerged from the analytical process – prevailing qualitative research norms from purely descriptive studies toward explanatory theoretical frameworks. The theory to emerge from the data and the re-examination of all the data throughout the research project's life is a procedure – and not fully explained on the first take We are all stimulated by our surroundings, and yet our responses are very different from one another due to our neurological make-up, psychological preferences, and backgrounds. Drawing on research can shed light on creating universal designs for all users in promoting health and wellbeing. The healing architecture's goal is neither to cure nor to heal but to create the healing environment that will stimulate the process of healing. The healing environment can reduce Stress by providing positive distraction by the beautiful view, Art, access to the landscape. The comfort and feeling of relaxation also quicken the recovery rate. It includes thermal and visual comfort in a healing environment.

When considering the methodology applied for this research would be followed up into few steps such as:

a) *Step-1:* Started with the relation and importance of health with better concentration resulting in good productivity. The screening cycle was finished by looking into the papers' title, dynamic, and distribution year. The survey began by recognizing recently distributed writing audits and identifying the keywords.

b) *Step-2:* Proceeding further with case studies and analyzing them on the grounds and identified new keywords to support a fuller database search.

c) *Step-3:* Identify the parameters and comparing the existing studies on those grounds.



X. LITERATURE STUDY & REVIEW

A. *General*

Psychoneuroimmunology (PNI) is a moderately new study zone that looks at the interactions between the central sensory system. The invulnerable framework and the connections between mental cycles and wellbeing. PNI contemplates discovered numerous relationships between's life occasions and wellbeing impacts.

Several existing studies on health and its HBE (Healing Built Environment) are analyzed. These papers were selected from 1995 onwards and reviewed.

Table 1
The Comparative and Review of the Research Papers

	Research Paper/ Journal Article/ Book/ Conference Paper	Year	Author	Keywords	Design focus area	Study Method applied	Learning outcomes
1.	Healing Architecture	2010	Bryan R. Lawson	evidence-based design, architecture, creativity, design knowledge, design research, design tools	Interior spaces of health care focusing on the qualitative values	Solution focus approach, Episodic knowledge causing phase-wise development and integration	Consider healthcare as a place of healing instead of treatment, must focus on the design outcome, which must provide privacy, control, comfort, and a place that connects with nature.

2.	Book Review: Healing Spaces: The Science of place and wellbeing	2009	Erin Peavey	Psychophysiological, Healing spaces, perceptions, interaction	Interior spaces connect individuals emotionally and physically. Light and Color Space making	Evidence-based study and the role of psychology in architecture	How Space could evoke emotions and take one from the place of anxiety to hope and happiness, Lights and colors play a crucial role in affecting the optical path of the brain and alter moods.
3.	Healing Architecture for Sick Kids	2019	Oliver P. Fricke, Daniel Halswick, Alfred Längler, and David D. Martin	Healing architecture, integrative medicine, anthroposophic medicine	Adolescent healthcare area- the psychiatric hospital Views of nature Noise, light, and color	Using the principle of anthroposophical architecture Patient-centric approach	Focus on the elements of design being used to create an interactive ground, a sense of belonging, area of freedom, access to light and outdoor spaces
4.	Evaluating the Psychosocial Impact of Indoor Public Spaces in Complex Healthcare Settings	2018	Giuseppe Lacanna, Cor Wagenaar, Tom Avermaete, and Viren Swami	evidence-based design, healthcare design, behavioral analysis, spatial analysis, psychosocial, healthcare service design, public space system design, value-based healthcare	Indoor public spaces Impact of the built environment over the human behavior and it is surrounding	A mixed-method approach applied is the quantitative and a qualitative assessment of the indoor spaces, with interviews, experiential mapping, syntactic space mapping, and surveys.	Both the quantitative and qualitative are essential, measuring the impact of indoor public spaces on the user's psychosocial wellbeing, focusing on the way-finding and social interaction of the hospital users.
5.	'Healthy Buildings': Toward understanding user interaction with the indoor environment	2016	Camilla Brunsgaard and Lars Brorson Fich	Healing spaces, indoor spaces, experience	Indoor climate, Spatial configuration and its impact on the human behavior	Quantitative and qualitative analysis with the onsite surveys and interviews	The spatial configuration impacts the stress factor, which leads to a distinct response; curvilinear & large ceiling height spaces are considered more pleasant than the rest.
6.	Healing Gardens	1995	Molly Dannenmaier	Healing, gardens, landscape architecture, exterior, spaces, supportive design	Outdoor spaces and gardens and their impact on the patent, visitor, family, and staff working within	Analyze the evidence-based research done in the past and by comparing a few of the examples.	Healing spaces in any healthcare needs to be in their stages, that is, providing a positive distraction, privacy, and comfortability, These parameters have a direct effect on the stress level of the inhabitant.
7.	Healing Havens	2003	Clare Cooper Marcus	Healing, gardens, landscape architecture, exterior, spaces, healthcare design, behavioral analysis	Children and adolescents healthcare areas	Analyze the evidence-based research done in the past and by comparing a few of the examples.	Creating a connection between nature and the built form and developing spaces to hold the private spaces in the public ground creates a sense of hope and reduces anxiety levels.

8.	Healing with nature	2009	Claire Latané	Healing spaces, indoor spaces, experience, evidence-based design	Outdoor spaces and gardens and their impact on the patent, visitor, family, and staff working within	Analyze the evidence-based research done	Exposure to nature & daylight improves the recovery rates, creates an interactive ground, a sense of belonging, an area of freedom, access to light and outdoor spaces.
9.	A Question of Healing	1998	J. William Thompson	Healing, gardens, landscape architecture, exterior, spaces	Landscape design to the healthcare setting	Analyze the evidence-based research done	The importance of creating a high touched Space over the high tech,
10.	Exploring Inpatients' Experiences of Healing and Healing Spaces: A Mixed Methods Study	2017	Lorissa MacAllister, Dawn Bellanti, and Bonnie R. Sakallaris	patient experience, healing Space, care, inpatient, mixed methods, phenomenology, cardiac	Indoor public spaces Impact of the built environment over the human behavior and it is surrounding	The process evolved from the collection of data, surveys, and analysis- a mixed-method approach.	Interaction of patient with the physical environment: Some parameters enhance and detract the healing experience within the Space.
11.	Healing built-environment effects on health outcomes: environment–occupant–health framework	2019	Yufan Zhang, Patricia Tzortzopoulos & Mike Kagioglou	Buildings, built environment, healing, health, healthcare facilities, occupants, outcomes, wellbeing	Outdoor spaces and gardens and their impact on the patent, visitor, family, and staff working within	Develop integrated Healing Built Environment Analyzing mixed-method approach in a holistic manner	Three-level principles are, comfortable environment, well- functioning healing space, a relaxing atmosphere, and all these are interrelated. There is an impact of the physical environment on the behavioral response.
12.	How do patients experience and use craft in emergency clinics? The meaning of connection: a client arranged contextual trial investigation	2016	Stine L. Nielsen, Lars B. Fich, Kirsten K. Roessler, and Michael F. Mullins	Health care, healing arts, patient satisfaction, mixed methods, Art and interaction	At various levels like the passageways, waiting areas, particularly in the patient wards.	Anthropological methods-user-oriented with experiments in dayrooms.	Art adds to establishing a climate and environment where patients can have a sense of security, associate, associate with the world external the clinic, and backing their personality. Adds to wellbeing results by improving patient fulfillment as an all-inclusive type of medical care.
13.	Adolescents' experiences of emergency admission to children's wards	2007	Louise Clift, Sally Dampier, and Stephen Timmons	Adolescents, facilities, hospitalization, individual needs, participation	It has a Pediatric, orthopedic, or general surgical ward.	The process evolved from the collection of data, surveys and analyzed them.	Adolescents' relationships with health care professionals, Peer support and interaction, Proper Sleep, Anxiety and distress, Participation in care
14.	Architecture and health care: a place for sociology	2015	Daryl Martin, Sarah Nettleton, Christina Buse, Lindsay Prior, and Julia Twigg	architecture, place, healthcare buildings, hospital design	Healthcare design with patient, visitor, family, and staff centric space design	Combine approach, which includes sociology, architecture, technology, and science	sociology of healthcare architecture necessitates an appreciation of both the construction and experience of buildings
15.	Structural plan and the cerebrum: Effects of roof tallness and saw	2014	Oshin Vartanian, Gorka Navarrete,	Architecture, Ceiling height, Enclosure, Beauty, Approach,	Interior spaces with ceiling heights and aesthetics	Evidence-based study and spaces are making.	The impacts of roof tallness and saw nook characterized as seen visual and train porousness on smart decisions and approach-evasion choices in compositional plan.

	nook on excellence decisions and approach-evasion choices		Anjan Chatterjee, Lars Brorson Fich, Jose Luis Gonzalez-Mora, Helmut Leder, Cristian Modro, Marcos Nadal, Nicolai Rostrup, Martin Skov	Avoidance			
16.	Space in the function of psychological stability of a child	2008	Danica Stanković	child, Space, attributes, development needs.	Interior spaces primarily focusing the requirements for the children.	Psychological connotation theory for the attachment to a place	There should be a focus on the child-space relationship, created using the sense of attachment or identity, which could relate to an emotion.
17.	Investigation of the Architectural Aesthetics and Its Impact on the Children in the Psychology of the Child	2017	Hossein Sardari Ghasemabad, Siavash Rashidi Sharifabad	Architectural aesthetics, Child, Child psychology	Sensory and cognitive could act as a factor for beautifying the structure	Descriptive Analytical method (analyzing the Space in terms of both the quantitative as well as qualitative aspect)	Different age group have a different perspective regarding the aesthetics For children, emotion and creativity play a crucial role. Sensory, formal, and symbolic play a crucial role in architectural beauty. Physical, social, scientific, and cultural factors are all equally important, and the tools required for it, including the lights, colors, and textures.
18.	Architecture for Children: Understanding Children Perception towards Built Environment	2012	Ismail Said	Children's architecture, children's functioning, cognitive development	Theory of cognitive development	Transdisciplinary approach	Integrating the concept of childhood development or the cognitive development, architecture, and landscape of how the child perceives the spatial configuration along with the meaning the designer wants to convey through it
19.	Healing Architecture: An approach towards Healing Environment	2018	Shivani Tandon, Ketan Jain	Healing Architecture, Healing Environment, Healthcare center, Physical Environment	Healthcare design with patient, visitor, family, and staff centric space design based on the inferences from the case studies done	Evidence-based study and by carried out taking few of the public hospitals for the survey	Healing environment includes thermal and visual comfort, positive distraction using a beautiful view or art, access to the landscape. Importance of self, surrounding, nature, and sunlight
20.	Evidence-based study and spaces making	2014	Evidence-based study and spaces making	Architecture, spatial experience, sensory architecture, phenomenology	Architecture in respect to the variation in perspective based on the sensory output	Psychological connotation theory for the attachment to a place	Senses play a crucial role in synthesizing the surrounding architecture; vision is mostly the priority among the rest, but they are equally important. Phenomenology in architecture embraces the aim of transforming people from uninvolved spectators to active participants. It is essentially a qualitative examination of the experiences of people.

This table shows the result computed by the survey conducted by Ulrich, which shows the relationship of design factors with health outcomes.

The aspects include the physical aspects, natural light, control, views of nature, visual and physical link with nature, spaces for privacy and dignity, interaction, thermal and visual comfort, and Art integration to create a positive distraction.

B. Sensory processing

The sensory system gets messages from the faculties and transforms them into reactions. The brain organizes, synthesizes, integrates, and uses it to understand experiences and organize appropriate responses. Sensory information has the power to evoke a range of emotional responses. Insight is of prime significance with regards to examining architecture concerning the senses. The senses always mediate one's perception of spaces. 'Traditionally, there are five primary senses—the sense of sight, hearing, touch, taste, and the sense of smell. Other senses added to the list, such as the sense of temperature, pain, and kinaesthetic sense, inform us about the various parts of our bodies' movement and position.

1) *The Role of Eyes*: Architecture is viewed essentially as a visual phenomenon. Eyes ingest the visual characteristics of a space. Vision can do stimulating other senses in our body.
2) *The Auditory Experience:* Vision is directional while the sound is omnidirectional. Thus, sight isolates while sound integrates. Sound can lend characters to Space.
3) *It Depends on the Olfactory Imagery of Spaces*: The memory of a space that lingers in us by smell. Every Space has its characteristic smell. The fragrance can either hang intensely noticeable all around or pass by us in a spout of air.
4) *Acceptance of Oral Sensation:* There is a sensitive transaction among material and taste encounters—tactile and taste experiences.
5) *The Tactile Experience:* The skin can read the texture, weight, density, and temperature of an object. The tactile sense is that the fragrance can either hang intensely noticeable all around or pass by us in a spout of air.
6) *Acceptance of oral sensation:* There is a sensitive transaction among material and taste encounters.

C. Parameters for Healing Spaces

1) *Effect of light:* Light is an electromagnetic radiation/ energy that originated from the sun and the emitted from the objects' surface. Having light as an integral part of the universe of creation, we cannot imagine life on earth without lighting. A human being is Bioclimatic Creatures, has a strong dependence on the light. Lighting is always an inseparable part of the human environment; visual senses perform around 80-85% of the communications with the outside world. Daylight is a renewable natural resource that its contribution does not require any technological transformation. He initially designed hospitals or healthcare by providing large window openings to get in the natural light. There is the placement of solariums, which acted as a commonplace at the end of each ward within the hospital campus—the idea of creating an interactive, relaxing space filled with natural light. Too much exposure to artificial lights can include mental, neuropsychological, and physiological effects, which could cause eye fatigue, headache, visual impairment, and an increase in accidents due to lack of light or glare and sight. Thus, desirable illumination can improve satisfaction, mood, comfort and upgrade the workplace's quality.

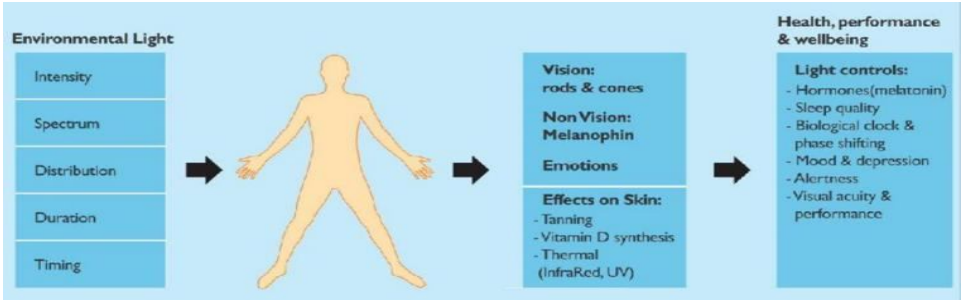


Fig. 8 Light could result in the healing process by uplifting the mood (top)

The light has played many significant roles in human biological and physiological needs both during the abled and the sickness stage (bottom).

a) Medical Pieces of Evidence for the Importance of Light

- In humans' case, the brain is set with nature in natural light, referred to as a body clock. In the presence of daylight, the chemical reaction occurs within by initiating the Vitamin D molecule active in the human skin. Vitamin D allows calcium absorption via bones and vitalization of the immune system to speed the healing process.
- Also, sunlight acts as a natural disinfectant as ultraviolet radiation reduces the infection-causing microbes within the environment.

Table 2
Natural Light Benefits for Human Health (Shishegar & Boubekri, 2016)

Physically		Psychologically	
Improve	Decrease	Improve	Decrease
Vitamin D	Cancer Possibility	Mood	Depression
Visual System	Abnormal Bone Formation	Mental Performance	Stress
Circadian Rhythms		Alertness	Sadness
Sleep Quality		Brain activity	Violent behavior

The presence of light could reduce the stay in the hospital room. There is a connection between mood, stress light. Full-spectrum light provides prophylactic control of viral and staph infections. It produces significant physical working capacity improvements by decreasing heart and pulse rate, lowering systolic blood pressure, and increasing oxygen uptake, thus causing psychological and physiological benefits.

Table 3
Results Of Exposure To Sunlight Conducted By Bm Association On Depression Patients

	Little sun light	Ample sun light
Control of Stress	35 %	48 %
Sleep performance	75%	80%
Overall Performance	49%	56%
Willing to heal	89%	93%
Tolerance of pain	56%	62%
Contentedness	68%	74%

2) Window – Connection to the views Around

a) Daylight, increasing efficiency, reducing harmful accidents, increases mental capacity, increased satisfaction, improve patient's morale, and gives satisfaction. It faster healing due to nature rather than the brick due to the yellow-green wavelength are photoreceptor pigment genes developed first in humans.

b) Physical aspects that affect daylighting designs of wards, including building orientation and which cause physically, psychologically, and mentally affect patient and hospital staff, act as a distraction from the pain and worry & helps in creating a pseudo- drug.

c) Adequate ventilation & airflow result in increasing the immune system's efficiency by optimizing the white blood cell with the clean and constant supply of oxygen- resulting in better function of the heart and lungs.

- *Medical Pieces of Evidence for the Importance of Window:* 1984, Roger Ulrich surveyed the surgical patient stays in the recovery ward in two conditions, with both having the same spatial configuration of the wards and varying based on the window's views. Twenty-three patients stayed in the room with the natural scene's view, and the other 23 matched patients in the room with the brick wall's view.

3) *Aesthetics:* There are different perceptions between different age groups about the perception of the architectural aesthetics of the environment. Furthermore, the priority of the architectural aesthetics variables is different in the two age groups of children and adults. The architectural aesthetic component divides into two main groups; the symbol and identity, which includes:

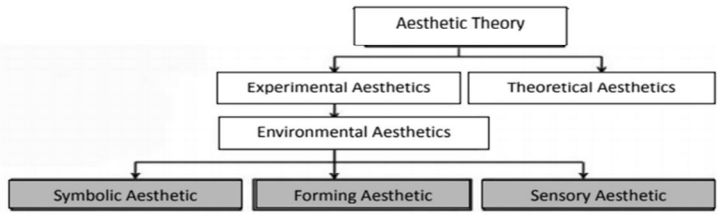


Fig. 9 Aesthetic Theory

Theoretical aesthetics outlines the philosophical discourses related to the nature of beauty. It is not associated with urban-environmental aesthetics, but the experimental aesthetics can generalize to the public and outline the aesthetic experience analysis.

4) *Color:* Color -a tool for creating visual attraction resulting in Space, mood, and emotions. It could have an impact on humans, both physiology as well as psychologically. Warm colors lead to stimulation and energize; on the other hand, cool colors calm humans by inducing meanings, mood, feelings, and emotions to Space. Thus, for healing, chromotherapy also acts as a medium. Different color shade is responsible for generating different changes which may have positive or negative impacts on human. Colors also help in easy way-finding and segregation of the spaces in different shades depending upon their function.

5) *Art:* Art connects the human mind and soul. Art therapy is a method established in that imaginative articulation can encourage recuperating and mental prosperity by developing emotions and self-awareness by coping with Stress, boosting self-esteem, and working on social skills. It acts as a positive distraction as religious images addressed the patient's minds and spirit in the past. Art could create a sense of belonging, a mark in the patient's memory, and add to the physical environment, which has both the clinical & non-clinical populations in terms of blood pressure, stress levels, and mortality. It could also create cultural or/and anthropological perspectives adding to the experience within the Space.

Fig. 10 Use of Art as a mode of Positive distraction

6) *The Healing Power of Gardens:* A healing garden presents a " linkage between nature and the form." It should stimulate the sense of control, improve vitality, and promote healing from physical, spiritual, or mental illness. It could also teach religious iconography, have the play of water through fountains, act as a distraction for the patient and the operational staff creating interest via different forms and patterns like labyrinth pathways.

Fig. 11 Attention Restoration Theory by Dr. Marc Berman

It should encourage healing through interaction, which may be among humans or/and nature, and should at the same time have the provision of subspaces for the seating arrangement for the individual. Thus, we should have both that is the place to be together and be apart by creating opportunities for recreational activities.

7) Spatial Interaction

a) Interaction refers to the interconnection situation, resulting in sharing thoughts and emotions, marking the memory attached to such Space. Any space has a level of interaction depending upon the zoning of public, semi-public, and private areas.

b) Social Support contributes to psychological wellbeing; thus, there should be Space for interaction and visitor stay, resulting in the family members' visual connection.

c) These spaces could act as a recreational space for a social gathering with indoor games, a newspaper corner, or watching TV and family lounge.

d) Interaction refers to the interconnection situation with one another. There could be decks, or open space, rooftops that could act as a solarium and are landscaped areas by maintaining interaction, privacy, and aesthetics

8) Indoor Air Quality

a) 50% of all the illnesses are due to polluted indoor air. In healthcare centers, air quality plays a very prime role and needs precautions during the design phase and later during the maintenance stage.

b) Encompassing air contains an almost steady measure of Nitrogen (78% by volume), oxygen (21%), and Organ (0.9%) with fluctuating measures of carbon dioxide (about 0.3%) and water fume. Gases other than those recorded above are toxins. They seriously affect the tenant's wellbeing.

c) An ineffectively ventilated room or a structure, particularly a jam-packed one, once in a while needs sufficient legitimate new inventory air to keep carbon dioxide focuses at low levels. Occasionally brings about sleepiness or uneasiness. Specialists have recommended that when individuals have a positive outlook on the air they inhale, they are more beneficial and joyful.

d) IAQ characterizes the way toward giving air that is agreeable inside and out and does not cause negative wellbeing impacts, illness, or affliction in people. It is without dust, scents, drafts, and commotion, however much as could reasonably be expected.

e) To erase/eliminate the impurities from the encased Space. Natural air will infuse into the territory through the cooling framework known as ventilation.

Primary methods of controlling air quality are:

- *Elimination:* Removing potential contaminants from the workplace
- *Substitution:* Replacing materials with alternatives that are less harmful
- *Dilution:* The reduction of harmful contaminants by introducing less contaminated or uncontaminated air.

XI. CASE STUDIES

The exploration would be to study the physical aspects and factors that positively impact human health. The need for these spaces would reduce the Stress & fatigue of its occupants and provide an interactive and comfortable ground for all (the patients, visitors, and the staff). Based on the findings and methodology adopted, a set of guidelines for designing such spaces or the framework for the future thesis study would be derived.

A. Paimio Sanatorium, Finland

1) Spatial Interaction: A hospital designed by Alvar Aalto in the year 1929-1933, it is a former tuberculosis sanatorium later converted to a general hospital in the year 1960.

a) Before the invention of vaccinations and antibiotics, tuberculosis's cures included good hygiene, clean air, and light therapy.

b) As bacteria transmit tuberculosis, all the surfaces needed to be easy to clean and quickly air the spaces—no sharp edges, unnecessary ornaments, or shelves that could gather dust. The indoor surface materials were durable against wear and washing; rubber flooring, linoleum, ceramic slates, and shiny painted surfaces.

2) Effect of Light: Design the plan to be functionally zoned and biodynamical aligned to the compass and defined each wing's direction according to its sunshine and view requirements. The dividers are light and the roofs more obscure. It makes the general tone more peaceful from the perspective of a lying-down patient. The room's general lighting point is above the patient's head at the wall and ceiling interface, which implies that it is outside the end of the vision of a resting quiet.

3) Window – Connection to the Views Around: There are horizontally elongated windows, i.e., ribbon windows along the corridors to keep it lit and in contact with the surrounding forest view. With few covering all the wall space as in the library and cafeteria, virtual increases space and gives openness and connection with the surroundings. There is also the use of mezzanine floors, which increases window space letting in the area's natural light.

Fig. 12 Light enters the library through the large window. Aino and Alvar Aalto designed the furniture and light fixtures of the sanatorium. The table was both practical and aesthetic.

4) *Aesthetic - Color & Art Piece:* Believes color to soothe the patients with the thought of evoking emotions. Provided different wings with different shades, and the staircase is in color yellow to depict the vertical movement and keep it lit. There is the use of furniture and light fixtures as different art pieces to merge with Space and aid in healing.
5) *The Healing Power of Gardens:* The site is located on the outskirts to make the site in the lap of nature, and patients feel connected. The views are a prime focus of the design. Each ward is placed in such a manner to view the fores

B. Bendigo Hospital, Australia

1) *Spatial Interaction*: A hospital designed in 2016 by Silver Thomas Hanley, a great example of community and place coming together. A north-south civic axis gives an unmistakable and inviting access to the emergency clinic, coming full circle with a triple-height internal street. As opposed to the structure going about as an obstruction, this pivot makes a significant connection through the site The hospital offers:
2) *Effect of Light*

a) *Window – Connection to the views around:* The atrium with the wooden roof forming a light and shadow pattern over the wall and the floor, adding to the beauty of the place and the louvers present outside of the windows, creates different patterns adding to the building's aesthetics a continually changing pattern.
b) *Aesthetic - Color & Art piece*: The design introduces a street-scale rhythm of vertical framing elements to the podium, taking motivation from Bendigo's heritage buildings' scale and extent. It establishes a more friendly and human scale to the hospital. Expanses of white flooring are offset in the corridors by bursts of color on the walls and views to greenery and sky—the graffiti act as a focal point in the white surface. Vertical blades on the facade pivot at different angles and present a more intimate and welcoming perimeter.
c) *The Healing Power of Gardens:* An evidence-based design approach provides access to nature and positive distractions, a sense of control and social support, and a focus on the importance of physical movement and exercise spaces. A Biophilic Design approach was also adopted, incorporating ferns (fractal leaf structures provide beneficial psychological effects), and utilizing natural and local materials, moving water, and textured planting.

C. Bridgepoint Active Healthcare, Toronto

1) Spatial Interaction: The new 10-story, 464-bed, 680,000-SF Bridgepoint Active Hospital provides a stepping point between acute care and a return to independent living. STANTEC ARCHITECTURE / KPMB ARCHITECTS designs them.

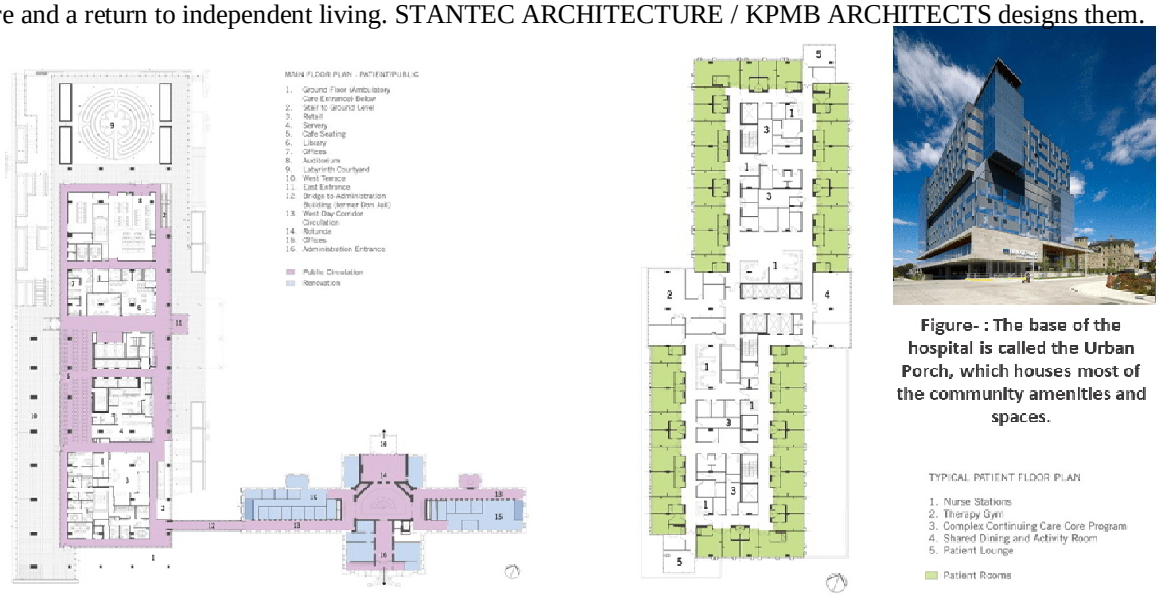


Figure- : The base of the hospital is called the Urban Porch, which houses most of the community amenities and spaces.

Fig. 13 Floor plans of Bridgepoint Active Healthcare, Toronto

a) Visitor-friendly features include glass dividers, food concessions, retail outlets, learning focuses, an assembly room, and an open-air patio with steps to parkland to attract the structure's local area.

b) Patients can peer into the outside world from the patient rooms through narrow floor-to-ceiling "pop-out" windows—a critical exterior design element—interspersed with horizontal windows.

c) Communal patient dining rooms, an internet café, a spiritual room, a rooftop garden, therapy, rehabilitation rooms, outside terraces, and a labyrinth are all designed to get patients out of their rooms, and motivated to manage their illnesses.

2) Effect of Light

a) Window – Connection to the Views Around: The unmistakable structure envelope contains a fenestration example of 492projecting 'pop-up' vertical frames – one for every patient bed. The predominant horizontal fenestration is the counterpoint. It is connecting to the outside world.

3) Aesthetic - Color & Art piece

a) The Healing Power of Gardens: Socialization is an essential part of treatment. The structure offers many get-together spaces for patients, staff, and the Local area, including a vast ground floor patio with a cafeteria. A treatment pool with picture windows onto the recreation center. A far-reaching green rooftop patio and park trail augmentations through the emergency clinic grounds.

D. Nelson Mandela Children's Hospital, South Africa

1) Spatial Interaction

The design is a 200-bed, eight-theatre facility, with advanced diagnostics and plans for expansion to 300 beds. Johannesburg, South Africa, designed it.

The building's design avoids grouping all of the departments together in a single box. Instead, it divides the floorplan into six wings housing various specialties that each offers a sense of connection with the outdoors. The clinical and service functions are split vertically and entered from the north and south, respectively, creating an immediate clarity in the paths from access to care.

- The design has a domestic, human-scale reassuring and familiar to children by breaking down the building's mass into six elements.
- Further moving away from institutional design, each wing has subtle twists of the standard design language to give it a distinct identity. For example, the color of the solar shading walls – formed from horizontal rails – changes for each department, picking up on vibrant, local colors.

2) *Effect of light*

a) *Window – connection to the views around*: The synthesis expanded the length of the edge of the structure and made shallow floorplates. It means more normal light could flood into the structure, putting numerous treatment spaces close to windows, which capitalized on the perspectives out over the encompassing scene just as into the inward yards made in the middle of the hospitals' wings.

3) *Aesthetic - Color & Art piece*

a) *The Healing Power of Gardens:* Nature assumes a fundamental part in this culture of care. The courtyard gardens with adjacent clinical functions. By selecting and placement types of plants, surfaces, and water alongside play and relaxation structures. On the upper levels, far off, however, similarly rich perspectives on nature catch numerous wards and guests' rooms.

- An essential, memory-based wayfinding language made, utilizing colors, icons, and characters. The starting point was color, layered with relating symbols: blue-cloud, green-leaf, orange-mountain, and yellow-sun. It enhances with wallpaper, created utilizing a kids' workshop to make an example that has an applicable African stylish dependent on customary shweshwe textures.
- An optional wayfinding framework is coded with **distinctive tones and symbols to lead** youngsters to kid-centered spots inside the emergency clinic, for example, play territories, nurseries, and family relaxes.

XII. OUTCOME

Thus, the framework incorporates three design principles:

1) *Comfortable Environment:* to ensure that the occupant has the provision of continuous comfort, physiologically and psychologically.
2) *Well-functioning Healing Space:* any healthcare building has its priorities and design features that focus on functionality, supporting diagnosis and treatment processes, and promoting staff efficiency
3) *Relaxing Atmosphere:* healthcare environments can be stressful; hence appropriate sensory stimulation for given situations in spaces can strengthen the

Positive (and weaken the negative) impacts

Well-being assumes a critical part in the nation's turn of events. Better health could result in focused concentration on the work resulting in upliftment in a related field, including economic and social aspects. The motivation behind the examination is to build up the actual viewpoints and the elements which cause a positive effect on human well-being. For this purpose, consider healthcare centers. A healing environment reduces stress and fatigue by improving the services, resulting in better comfort and safety to its occupant (patients, visitors, and staff). It is restricted and only focused on healing through the architectural spaces and environment. Hospitals are considered machines to cure instead of a place to heal due to technical connection resulting in lack of sunlight, smells, or natural elements. Hospital is a premise providing medical facilities of general or specialized nature to treat indoor and outdoor patients. A hospital is a place that delivers health services to the people and where the patients are cared for, nurses, and treated. It is an integral part of social and medical organizations, providing the population complete health care, both curative and preventive. The modern concept goes beyond the conventional idea of a hospital as a place to treat the sick. It visualizes as the hospital is one part of a comprehensive system of preventive and curative medicine and as an institution devoted not only to patients' treatment but also to ambulatory and domiciliary care.

XIII. DESIGN RECOMMENDATIONS

The aspects of the healing environment in the healthcare center reviewed its effects on patients through various literature and case studies. These aspects include:

1) *Welcoming Entrance:* It is the first thing one encounters within the building. It should be easy to supervise and should have a controlled flow of traffic and well landscaped.
2) *Daylight:* The structure direction. Location of windows in various materials.
3) *Respecting Patient's Choice:* Comfort is the essential need of the healing environment as everyone has a different level of comfortable parameters like the temperature, openings, lights. Thus, there should be freedom to adjust.
4) *Proximity of spaces:* Interactive spaces could be placed nearby and centralized so that all could have the excess easily.
5) *Open Spaces:* An open and free environment fastens the recovery rate. A large window and open window give more sense of freedom.
6) *Normalcy:* The patient feels comfortable, encouraged, and supported in the presence of a familiar and recognizable environment. The sensation of being focused on and upheld builds the well-being results.

7) *Access to Nature:* Nature gives a sense of freedom to the patient and a feeling of seclusion. It increases the recovery rate and decreases stress, blood pressure, and maintains average heart rates.
8) *Easy Way Finding:* It should have easy wayfinding using different colors, textures, and materials to ease patients, family, and relatives.
9) *Creating positive Distraction:* Integration of art in architecture through art strategies, wall paintings, painting-exhibition creates the distraction of patients from their illness.

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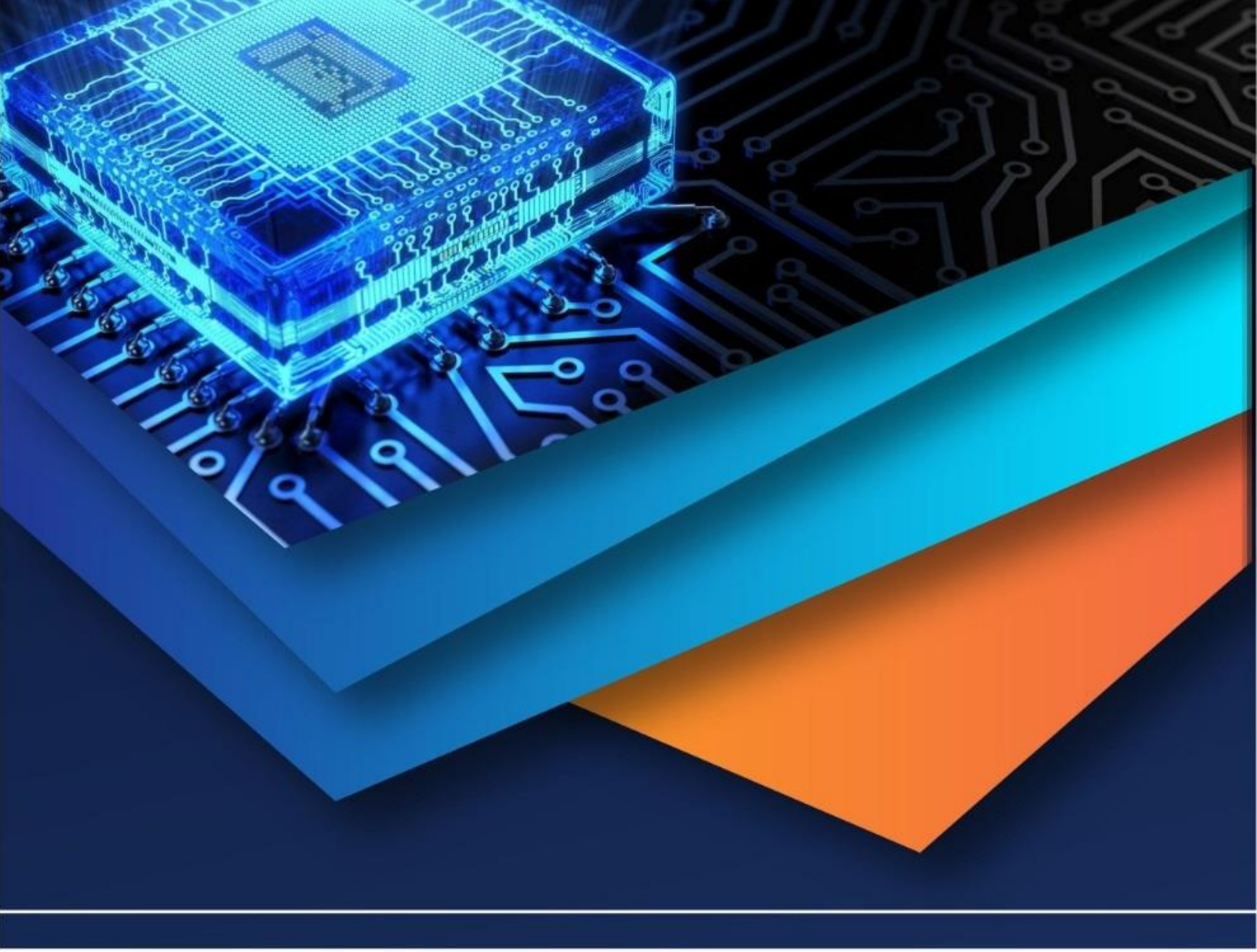

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