

## IMPACT OF NATURAL SPACES ON MENTAL HEALTH AND SATISFACTION IN WORK ENVIRONMENTS

Referenced to The Service Providers in Selected Health Care Institutions of Sri Lanka

BANDARA. D.U.<sup>1</sup> & HETTIARACHCHI A.A.<sup>2</sup>

<sup>1,2</sup>University of Moratuwa, Moratuwa, Sri Lanka

<sup>1</sup>duminduudara@gmail.com, <sup>2</sup>anishka\_h@yahoo.com

### Abstract

Productivity of a facility is defined by the efficiency of the workforce and outcome of the facility. The natural spaces and the Landscape establishment maintenance has not been prioritized in Health care institutions and the importance of those factors have not yet been identified. According to reports government constantly supports the development of health care services and technical facilities by providing a considerable amount annually. Even though the overcrowding and delays in the health care institutions cannot mitigate, functional way of increasing the facility productivity is improving the efficiency of the workforce. The hypothesis is that the healing environment based on natural element has effects on the workforce efficiency because of its impact on Mental Stability and Satisfaction.

This study intends to identify workforce response to work experience through the evaluation of mental comfort and satisfaction levels of the service providers in the healing sector. Both Open ended and multiple choices, questionnaires were used as the assessment method. Lanka Hospitals, Nawala is selected as the case study due to the well-designed landscape spaces in the premises. The literature suggests that the nursing staff spend most of the time in the movement due to their duties; therefore, nursing staff was selected for gather data. Findings suggest that there is no significant impact from the natural elements in the interior spaces. Furthermore, the natural outside view from the break room and the floor lobby areas have been selected as the most favoured feature of the workplace.

It is concluded that the outside view from the health care institutions has been impacted more with compared to the other natural elements like interior landscape elements. It is concluded that natural spaces and visual accessibility to the outside view is making a significant positive impact on the Mental health and Satisfaction in health care work environments.

**Keywords:** *Natural spaces, Work environment, Mental health, Service providers, Hospital environment*

### 1. Introduction

When developing health service coverage of the system the outcome depends on the availability, accessibility and capacity of the health workers to deliver quality service for the people centered care. Situating primary health care is the beginning of achieving Universal Health Coverage in the context. According to the World Health Organization (WHO) investing in the health care work force is the most cost-effective way to ensuring of health care will improve.

To achieve the sustainable development of the UHC by the 2030 the health workforce requirement is additional 18 million health workers but the gap between supply and demand of the health workers in the field is low. Because of that the newly adding workload added to the existing low health work force. (World Health Organization. 2019) WHO defined that for deliver the good quality service in this low workforce they must be well funded, managed and delivered. A fundamental shift in delivery is needed such that services are focus and integrated communities and people. This includes reorienting health services to ensure that care is provided in most ensure setting.

### 2. Research Need of Study

In a theory called Attention restoration theory in that theory it concludes that concentration of human mind enhances when interact with nature. Interacting with the nature improve the emotion restoration is efficient and because of that the attention restoration is became efficient. In a stress full environment, we can recognize that nature can be make a major part for restore the efficiency and minimize the mental and physical fatigue. (Kaplan. 1995)

The research question is stated as:

Does healing environments those are based on natural environment have effects on the workforce efficiency because of its impact on Mental Stability and Satisfaction.?

Government and the investors always identified the quality service outcome depend on the technical equipment and facilities of the institution, so the resources are used only on technical facilities. Because of that the Natural Environment & Landscape influence on Efficiency must be studied to identify the impact on that context. Aim of this study is to provide proved evidence to design and develop evidence base healing environment with natural environment to deliver quality services with maximum outcome.

### 2.1. LIMITATIONS OF THE STUDY

When doing this study there are few limitations that occurred in the process. First the number of hospitals that developed through using the natural environment is limited in Sri Lanka. Currently most of the hospitals are developed while only focusing on the facility development. So, for the case study there are only few hospitals have been taken as case study.

Then the participants demographic information like age, gender, shift details and responsible duties however the questioner was concluded focusing on the workforce satisfaction and comfort toward the workplace environment. Because of that the overall study may be not representing the whole health care system in Sri Lanka. For validate this study more data must be collected to confirm the study, but this may be helping to identify the connection between workforce of health sector and the natural environment around them.

## 3. Theoretical background and theoretical framework

Just as Medicine are developed with the time the hospital development also moved to the “Evidence Base Design”. A research project that completed by research team from Texas A&M University and Georgia Tech combined found that hospital design makes an impact on clinical outcome and staff outcome on the hospital. From the research the team have found out that better ventilation, better ergonomic design, supportive workplace and improved layout that can help to reduce errors, reduce stress and improve the outcome. (Ulrich, Quan, Zimring, Joseph, Choudhary. 2004).

Positive distractions are that group of factors that aid for reduce stress effectively. As examples music, pets, HUMOUR and specially nature can be taken. (Ulrich, Simons, Losito, Firitto, Miles, Zelson. 1991). From a study done by showing COLOURS either everyday nature scenes or unlighted city views lacking nature such as greenery to the subjects. In this study findings suggested that natural scenery create an effective positive impact on recovery and reduction of stress. (Ulrich. 1981.)

In a working environment attention is a very critical factor to completing and solving the problems. Direct attention is a key ingredient in human effectiveness. In a stressful environment it creates a fatigue emotion which ultimately leads to the ineffectiveness and human error. (Kaplan, 1995). Fatigue is that extreme tiredness or exhaust of mental or physical body. When specially looking for the mental fatigue prolonged mental effort leads to mental fatigue. There are many progressive illnesses that related to build up with fatigue and 76 – 99% of the populations face for this problem. (Curt. 2000)

Direct attention, which is required effort, concentration keep focus and ignoring thoughts. This can be experienced when working without a break for a long time. This kind of attention leads to direct attention fatigue. There is significant impact on human thought and human mind when a subject face to direct attention fatigue for a longer time. Following areas are the mainly effected by direct attention fatigue. Capacity to problem salving & selection, Inhibition, Fragility, Perception, Thought, Action and Feelings are the main areas that significantly damage by the direct attention fatigue. (Cohen, 1980).

### 3.1. ATTENTION RESTORATION THEORY

Attention Restoration Theory (ART) was developed and studied by American environmental psychologist (Kaplan 1995; 2001). He named that there are two types of attentions. One is direct attention, which is required effort, concentration keep focus and ignoring thoughts. This can be experienced when working without a break for a long time. This kind of attention leads to direct attention fatigue. Second type of the attention is involuntary attention, in this method the tasks are done and focus on with fascination, curiosity and exploration. It is effortless and restore mental functioning of human mind. (Donbavand, Kirshbaum. 2013)

The effective restoration is the recovery from direct attention fatigue. Sleep is one approach to the recovery of fatigue. Kaplan and Kaplan formulated a theory that the exposing to nature can have restorative effect on the brain's ability to focus. Direct attention in long term create mental fatigue as previously mentioned and involuntary attention is effortless. Previous studies suggested that environment with fascination will create an environment with involuntary attention which is effort less and helps to focus easily. (Kaplan, 1995) In those studies they have identified three more additional components that environments make restorative. Those can be identified as,

- i. Being away
- ii. Fascination
- iii. Extent
- iv. Compatibility

### 3.2. STRESS REDUCTION THEORY

Ulrich suggested that landscape with natural elements such as view of water vegetation help to moderate and diminish state of negative thoughts within minutes. Capacity to recover from stressful event is enhanced by the exposure to the green spaces.

Variety of studies have demonstrated that managed green landscape is associated with reduced blood pressure, lower levels of stress hormone cortisol, a decrease in self-reported stress, and increased in positive mood. Using this factor, identifying how importance of the greenery in the workplace to the workforce. It can be used to get the data how the greenery effects on the workforce to reduce workplace stress

## 4. Methodology

This study consisting the workforce mental satisfaction of a well-designed greenery spaces containing hospital. For gather correct data it needs to be done under those circumstances. Data collection and analysing process used to collect correct and proper data using suitable methods. Data collection consist of two fields.

- i. Literature study
- ii. Case study

The questionnaire was developed based on the previously prepared research related to the patient comfort and satisfaction in the built hospital environment (Ulrich, 2008; Heerwagen, 2000; Lee et al., 2008; Paul, 2008; Veitech et al., 1998). Structure of the questionnaire was developed focusing on the health care workforce perception on the designed natural spaces within the work environment. Questions were designed using the main 4 component of the natural attention restoration theory and the stress reduction theory. Questionnaire structure has thirteen which focusing each component from component from the theoretical framework

Table 1, Structure of the Questionnaire (Source: Bandara D U)

Selection	Item	Method
Characteristics	Number of Working Days of Month Shift Duration	Categorical
Built Natural Environment and Comfort	Space planning	Uncomfortable (1) Less uncomfortable (2) Neutral (3) Less Comfortable (4) Comfortable (5)
	Walking experience of the space	
	Extend of natural environment in the hospital	
	Natural fresh air and ventilation	
	Indore landscaping	
	Pleasant Spaces characters	
	Safety and wellbeing	
	Exterior view	
	Interior fascination	
Workforce Satisfaction	Design factors were questioned for get the idea about satisfaction levels.	Uncomfortable (1) Less uncomfortable (2) Neutral (3) Less Comfortable (4) Comfortable (5)
		Que card method

## 5. Method of Case Study Selection

Most ideal case study location was needed to select for get the better data. In this study it focusses on the how workforce is affected by the designed natural environment in the workplace. For this the case study location needed to be well designed with proper natural environment. Second selection criteria are that the selecting of the ideal workforce from the health care institution for achieve best data for the study. Nursing staff uses as the workforce that studied in the hospital because of they spend their 29% of working time on movement. So, they have much more interaction with the hospital environment more than any other service providers in the health care institution.

## 6. Lanka Hospitals, Nawala As The Study Context

Lanka Hospitals, Nawala former branch of Apollo Hospitals. In 2009, it was renamed Lanka Hospitals after it ended a licensing and support services agreement with Apollo Hospitals. This hospital developed and maintain the landscape when considering the other health care institution in Sri Lankan Health care sector.

Comparing to other healthcare institutions Lanka Hospital has developed and maintained the surrounding landscape with care.



Figure 1, Satellite Image of Lanka Hospitals (Source: <https://yandex.com/maps/> Edited by Bandara D U)

### 6.1. CASE STUDY - WORKPLACE NATURAL ENVIRONMENT SATISFACTION

To the question of are there enough natural environment in the workplace? The common respond is that 33.3% of them were somewhat disagree as somewhat disagree. This respond can be identified as the most of the major landscape developments are done for the outside of the hospital. Nursing staff is interacting with the limited time of the day. When they were in the shift theses natural elements are not noticeable due to the responsibilities of the duty. (Refer – Figure 2)

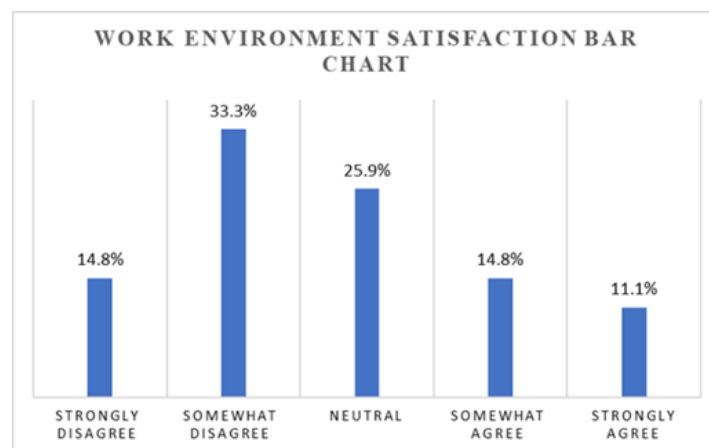


Figure 2, Work Environment Satisfaction Bar chart (Source: Bandara D U)

#### 6.1.1 Interaction Feeling with the Natural Spaces

37.03% of the responded nursing staff got refresh feeling of the natural spaces when moving through the court yards. They commented outside the questioner that they are so busy in the shift and most of the time they were not noticing the surrounding environment. When the natural environment factors such as rain wind where going through the area they notice it specially. Those kinds of factors have more influence on their refreshing feelings. Even though 3.7% strongly disagree with the idea that they have refreshing feeling when moving through them provided environment. In attention restoration theory Fascination component is influence by the soft natural element such as elements. When the natural spaces providing the raining like views direct accessibility to the workforce that environment is providing the capability of effortless attention to the workforce. (Refer – Figure 3)

In this case study break room outside view is relevant because extend of the environment is represented by the outside view. In an urban area like Nawala land extent can't achieved due to land occupation. In this situation using outside view is the practical way of use the Extend of the land. In this healing environment there were break rooms were supplied averagely two rooms for a one floor. Some of these

rooms have the outside view accessibility and some break rooms are not have the outside view accessibility. In this service providing staff 59% were responded that they have outside view from the break rooms and 41% of the staff using the break room without the outside view. (Refer – Figure 4)

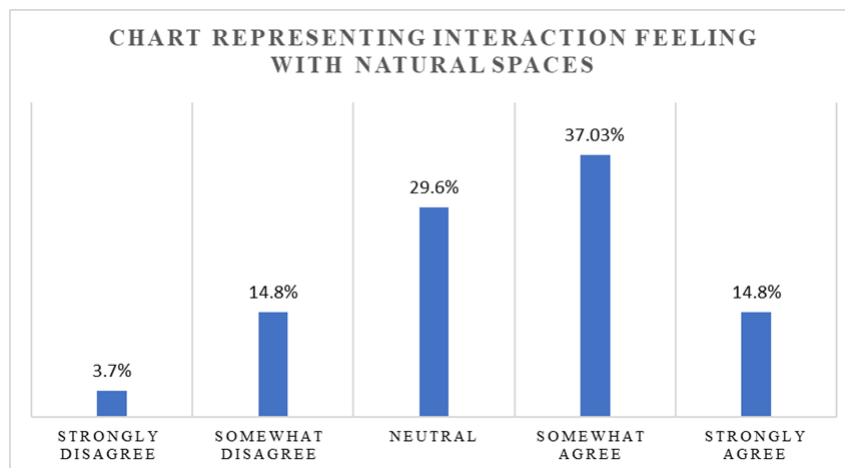


Figure 3, Chart representing Interaction feeling with natural spaces (Source: Bandara D U)

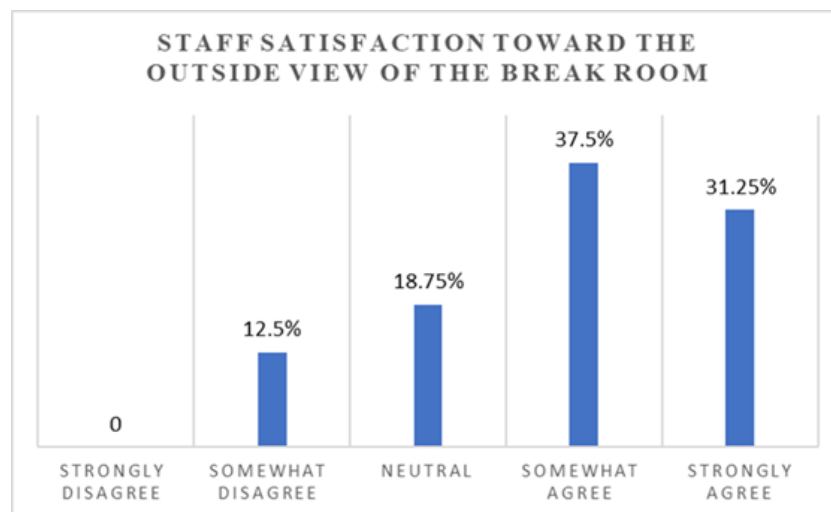


Figure 4, Staff satisfaction toward the outside view of the break room (Source: Bandara D U)

One of the Attention restoration theory component is the extent of the space. In the theory Afterall when they were questioned about how the natural environment have effects on the work force. Extended environment feeling can achieve from the physical extending of the land and the design elements can also manipulate the extend. In a healing environment it was designed with limited accessibility due to maintain the quality of the air and the content the area from the outside. Hence staff is working in a enclosed environment with limited accessibility to the outside, this environment create a work environment with less curiosity, exploration and fascination. Lack of these factors ultimately resulting the direct attention fatigue. Providing of outside view create the extended feeling of the environment and theses accessibility providing the fascination and exploration to the work environment which create environment which have the capability with attention restoration

#### 6.1.2. Natural environment influence on relax busy mind

As a final respond to the natural environment staff respond is that they have an influence on the busy environment from the natural environment. According to the stress reduction theory natural elements have influence to mitigate stressful event within minutes and this respond prove that 81.4% of them think that they have influence from the natural environment. 48.1% of the staff responded that is somewhat agree on the idea that natural view is important in the healing environment. In the given

comments according to them the natural environment is helping to the patient’s recovery. Response to that they have the idea that healing environment must be developed with the natural environment. (Refer – Figure 5)

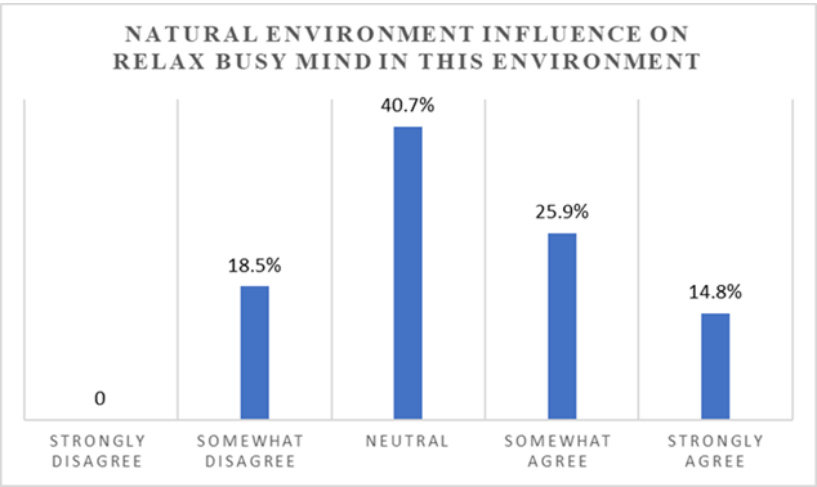


Figure 5, Natural environment influence on relax busy mind in this environment (Source: Bandara D U)

Staff do not have a direct idea that how the provided natural environment have built a stress reduction environment. But that environment is appreciated by them as previous experience of other healing institutions. (Refer – Figure 6)

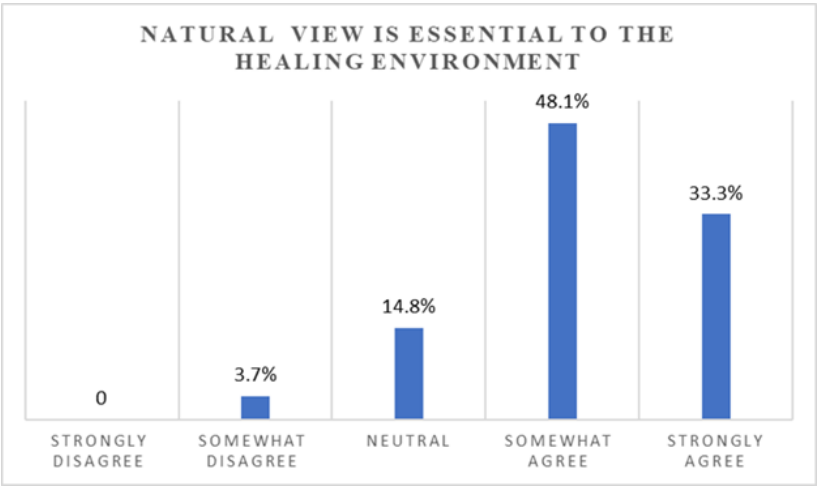


Figure 6, Natural view is essential to the healing environment (Source: Bandara D U)

### 8. Conclusion

Health care sector work responsibilities are deferent from other work responsibilities. In this sector human life is handled and life and death were the limitation in the field. Theses major responsibilities make the service providers in health care institution not noticing the designed spaces directly. Most of them can not identified a direct influence on their mind from the provided natural spaces. Even though as a work environment service provider are FAVOURED for this institution due to the organized and developed environment. Those responds were given considering the previous experience from the other health care institutions. This respond can identify as that they have subconsciously recognized the current working environment have the mental satisfaction more than other institutions. So, developing natural spaces and environment in a healing environment is important in the healing environment for the workforce.

## 8.1 RECOMMENDATIONS

Identification of the study was that service providers are much likely to notice the outside view of the hospital, which giving a vast extending view from the work environment. This view is mentioned in many responses in the data collection. As found in some literature studies, the extending view from a work environment providing relief to the work force. Close environment creates a cluster phobic feeling to the long-term working shift which ultimately create stressful work environment.

As conclusion developing work environment spaces with the extending outside view is ideal for a stressful work environment. This view does not need to be High-rise or large land area, designing of the surrounding natural space of the work environment with the extended feeling by the design elements is possible. This study is applicable to create a work environment with providing mental satisfaction and comfort to the service providers' which is lead to effortless attention restoration in a work environment with higher efficacy containing work force.

## 9. References

- Cohen, 1980. Aftereffects of Stress on Human Performance and Social Behavior: A Review of Research and Theory
- Curt. 2000. The Impact of Fatigue on Patients with Cancer: Overview of FATIGUE 1 and 2
- Donbavand, Kirshbaum. 2013. Making the most out of life: Exploring the contribution of attention restorative theory in developing a non-pharmacological intervention for fatigue
- Kaplan, S. (1995). The Restorative Benefits of Nature: Toward an Integrated Framework
- Ulrich. 1981. Natural Versus Urban Scenes: Some Psychophysiological Effects
- Ulrich, Quan, Zimring, Joseph, Choudhary. (2004). The Role of the Physical Environment in the Hospital of the 21st Century: A Once in a Lifetime Opportunities
- Ulrich, Simons, Losito, Firitto, Miles, Zelson. 1991. Stress Recovery During Exposure to Natural and Urban Environments
- World Health Organization. 2019. [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc))