

Therapeutic Effect of Outdoor Landscape on Patients' Healing in the Tertiary Hospitals in Yola, Nigeria

Manga, P. M., Yamte, V. J. and Kwada, H.

Department of Architecture Modibbo Adama University, Yola

Paper History

Received: 14th June, 2023

Accepted: 20th July, 2023

Published: August, 2023

Abstract:

Hospitals are designed for the sick to be given medical treatment, it is necessary to design it in such a way that a pleasant surrounding is integrated for the purpose of making healing easier and faster, making landscape elements very important for therapeutic effect to enhanced drug efficacy. This paper is now suggesting that landscape when utilised in isolation possesses the capacity to facilitate healing but that the alteration of landscape components potentially creates healing environment. The aim of this research is to investigate how exposure to natural outdoor environment can contribute to the well-being and recovery of patients. This research explores the necessity and eventual effects of outdoor landscape in hospital environments as well as the existing usage of outdoor landscape for therapeutic effect on patients in the tertiary hospitals in Yola, Nigeria. The novelty of this research is the expected awareness of the use of environmental features natural or manmade to boost environmental psychology of patients in hospital environment through landscape therapy. Therefore, the purpose of this research is to assess and document ways outdoor landscape is incorporated in hospital environments and whether they have been provided for therapeutic effect or not through physical survey aided by the use of checklist and questionnaire. The research methodology employed is a quantitative approach through visual survey. The variables; in this case therapeutic effect of landscape that was pivotal to the survey were soft and hard landscaping elements. However, the tertiary hospitals in Yola, Adamawa state Nigeria is the case study of this research, where the Adamawa State Specialist hospital and the Modibbo Adama teaching hospital were considered for data collection. The findings of this research aim to provide insight and recommendations for incorporating therapeutic outdoor spaces in hospital design to enhance patient well-being and healing experience in Yola, Nigeria.

Corresponding author

Manga, P. M.

mangapauljr@yahoo.com

Keywords: Outdoor landscape, Patients healing, Therapeutic effect

1. Introduction

Hospital buildings are designed to house people who are sick or injured in order to be given medical treatment and cure. The ideal however, is for the building to conveniently support every medical process sustainably. Hence, the hospital must therefore be designed in such a way that a pleasant surrounding is the integral part of it. The modern concept of a hospital is not only for the treatment of the curative medicines that devoted to ambulatory and domiciliary causes [1]; but also, the efficacy of soft landscape for the therapy of patients. The hospital building should of necessity blend with its environment synergising the designed environment to climatic and other natural factors. William and Cooper [2] opined that Patients and physicians are receptive to healing processes in a properly landscaped health and healthcare facility making both solutogenic perspective and theory of supportive design have an important role in creating healing environment. Therefore, healing environment goes beyond merely administering medical care to patients and also encompasses

addressing their physical, psychological social and spiritual needs for the purpose of ensuring their holistic well-being. The World Health Organisation (WHO) in 2018 reported that in the last couple of decades, modern hospital design has considered medical staff's needs, health technology requirements and new movements in medical care providing a patient with medical care in best possible ways [3].

According to Okoko, Adeduntan and Adekunle [4] the environment is an interactive, indispensable medium where man's life performance is carried out per time, this can be either indoor or outdoor and is determined by the specific functional requirements it serves in supporting human activities. Research indicates that certain elements present in the outdoor environment such as the landscape can impact the well-being of patients and their families in a hospital setting. The existence or non-existence of various elements in the physical environment can have an impact, either positively or negatively on a person's psychological well-being including their mood and stress level. As such this influence can be observed through their actions or

behaviours. Dijkstra [5] has rightly stated that for most patients, a hospital visit is a stress-provoking experience, hospital encounters are generally characterized by fear, anxiety, stress, and uncertainty. Consequently, this experience can have a negative effect on patients healing process and time of recovery. Hence, Camiel, Dion and Dijkstra [6] opined that in an attempt to reduce stress and anxiety and to promote health and well-being, design for health care environments currently includes aesthetic enhancements.

1.1 Maslow's Theory of Human Needs

Psychology theorists have maintained a longstanding interest in exploring the potential to elucidate the motivations behind specific human behaviours and the process of making choices. There are two psychology theorists who

have attempted to give this topic attention; they are Abraham Maslow and Clayton Alderfer. According to Abraham Maslow detailed the hierarchy of specific needs that has often been depicted as a pyramid as represented in Figure 1. Over 50 years ago, Maslow identified seven basic needs common to all people; where the hierarchy is an arrangement that ranks people or concepts from lowest to highest [7]. Maslow posited that individuals must fulfil their needs at the lower levels of the pyramid in order to effectively generate motivation for addressing the subsequent levels. The foundational four levels of Maslow's hierarchy of needs are vital for an individual's overall well-being and must be fulfilled prior to the person being motivated to pursue experiences associated with the higher levels. As a result, the initial four levels of needs are referred to as deficiency needs; once a deficiency need is fulfilled an individual's motivation to satisfy it diminishes.

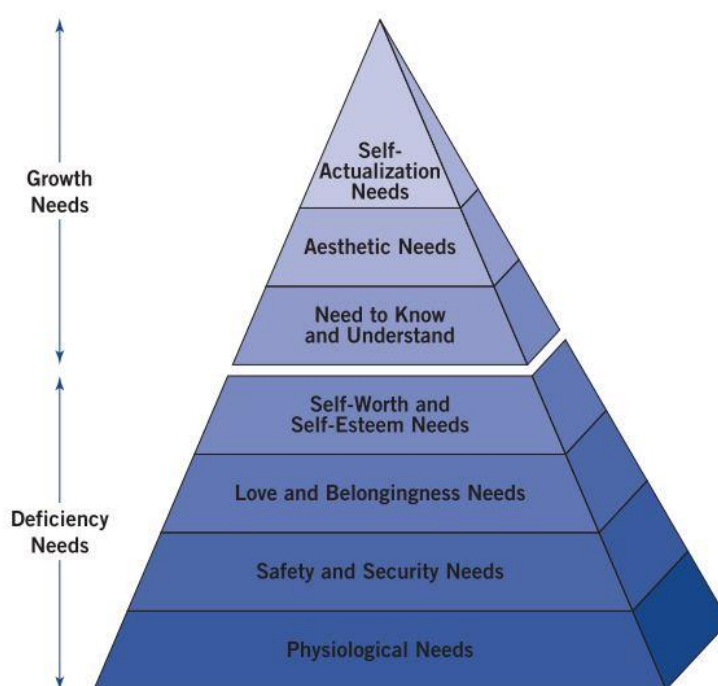


Figure 1: Maslow's hierarchy of needs [7]

Maslow postulated that humans are motivated to satisfy lower-level needs like physiological and safety needs before higher level needs such as belongingness, esteem and self-actualization [7]. However, by identifying the priority of needs that must be fulfilled, one can gain insight into human behaviour related to healing and response to treatment. The concept that the physiological needs are fundamental and must be fulfilled first can provide an explanation for the observed behaviour. Hence, the design approach to hospital external landscape is of paramount importance because patients are impacted physiologically by it [7].

The past years have witnessed a significant transformation in zoo design driven by a growing focus on

the psychological and social well-being of animals. This shift has led to the replacement of cages with natural habitats and the adoption of geographical clustering to enhance the living conditions of the animals. Similarly, when designing a building space, it is important to prioritise the promotion of individuals' psychological and social well-being, aiming to influence their senses, emotions and cognitive state. According to Süheyla and Aydin [8] architectural space should be formed to fulfil all physiological, psychological and social requirements of its users. Moreover, the psychological requirements and desires of the human being in space expose a two-way interaction process between human and space by forming feedback [9] as presented in Figure 2

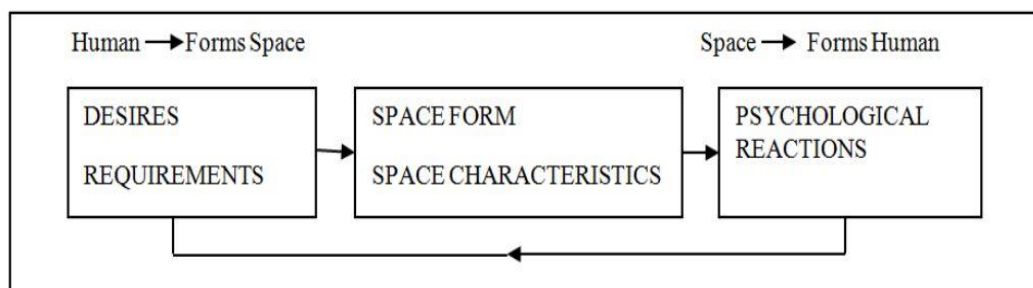


Figure 2: Interactions between space and psychological reactions [9].

Therefore, meeting both 'survival needs' and 'well-being needs' is crucial in designing a therapeutic environment. Maslow postulated that survival needs encompass factors like clean air, water, absence of pathogens and opportunities for rest and sleep, directly affecting human health. On the other hand, well-being needs are associated with fulfillment, quality of life and psychological health. According to this perspective, the failure to meet survival needs can result to death while the failure to meet well-being needs can lead to psychosocial maladjustment and stress-related illnesses [7].

1.2 The Therapeutic Potentials of Outdoor Landscape

Landscapes are a reflection of both their natural origins and cultural influence on human presence often developed over many centuries and they embody a symbiotic relationship between people and the surroundings which is crucial for local and national identity. The period of waiting allows individuals go contemplate and anticipate future events often leading to thoughts about worst-scenarios. Numerous studies highlight the significance of aesthetics in creating landscapes that are not only functional but also elicit positive human responses in terms of economic, social and psychological well-being. Therefore, it is essential to consider and incorporate efficient and well-designed landscapes that take into account their functional importance and the human experience of spatial qualities which can contribute to healing and overall well-being. People are naturally drawn to environments that are visually pleasing and being in a natural environment often evokes feeling of love for nature and promotes relaxation. In hospital settings, patients are particularly attracted to natural environment as they provide a conducive backdrop for their treatment. The presence of nature helps patients to appreciate their surroundings and mitigates the sensation of being confined to a single space for a long time resulting to nervous relaxation.

Hospital designed with therapeutic functions should inherently possess therapeutic properties as vital components. According to Mona and Kaleed [10] these therapeutic properties have influenced a new architectural approach that is commonly known as evidence-based design. Hamilton and Watkins [11] suggest that evidence-based design is the process of the accurate, astute and careful use of present best evidence from practice and research in making vital decisions about the design of a building. Furthermore, evidence-based design has become

prominent in health care design because most hospitals aim to construct 'healing setting' for their patients [11].

Consequently, Hamilton and Watkins [11] stated that when designing health care facilities such designs should be done base on the knowledge of therapeutic impact of certain physical attributes of designed spaces on patients, practitioners and visitors as a guide. Therapeutic architecture is based on the belief that the environment in which people reside, particularly its design has a profound impact on their emotional well-being. In hospital design, the structural aspects of the building such as its attractiveness comfort and functionality play a crucial role in achieving the desired therapeutic effects. It is important to note that human treatment in Nigeria is majorly drug administration oriented with less consideration to environmental therapeutic impact.

Morgenthaler [12] argues that health facility designs were only partially influenced by the ideals of enlightenment age until the beginning of twentieth century. This suggests that each century has been associated with its own unique design principles. Research indicates the existence of two distinct schools of thoughts on therapeutics, further emphasising that hospitals modern architecture has prioritised natural settings and good ventilation as crucial factors. It is worth noting that until recently the physical properties of hospitals in Nigeria were often neglected. Evidence-based design has successfully revitalised some of the lost qualities in hospital layout such as 'nature feel' [12]. According to Hamilton and Watkins [11] evidence-based designs that focus on nature-related elements are comparative in nature. Research indicates that having sufficient evidence of natural physical elements such as trees located outside of a facility can have a beneficial impact on an individual's health and wellbeing. Particularly viewing the environment through the window or from a screen can decrease stress levels and pain [9]. Placing plants within a rehabilitation facility as the potential to elevate individuals' mood and alleviate physical discomfort. Moreover, though there are less well-established evidence that proves the health advantages of direct connection with nature according to Chandra [13] the minute contribution of a therapeutic environment should not be neglected.

1.3 Human Affinity to Nature

According to the basophilic theory, it is proposed that humans possess an inherent preference to connect with the natural world. Hence, in combination with experiments undertaken by Ulrich, et al. [14] and various other scientists,

this suggest that the integration of our natural surroundings into our living areas can induce healing and positive emotional changes, which have an indirect impact on stress levels, physical and emotional well-being [15]. Grinde and Patil [16] stated nature's inherent beauty has the ability to promote stress relief, improve moods and even induce mental restoration. Ulrich et. al [14] as cited by Basson [15] revealed the 'power of the window' through a science experiment that confirmed that patients in hospital recovered faster when their rooms had a view of the surrounding natural environment which is more desirable instead of facing plain wall without natural features. A window is more than just a practical element that allows light and fresh air to enter, it is also perceived as a gateway capable of transporting a patient from a harsh reality to a realm of reflection, offering a temporary escape. Furthermore, by strategically framing views to include specific elements such as water feature or a tree in the surrounding landscape, patients are offered moment of self-awareness that serves as distraction from their pain and suffering. This intentional approach aims to engage patients and provide temporary relief. Hence, this concept also generates comfort and relaxation, which allows a patient to heal faster by creating the perception of an environment, where patients view the external world instead of viewing each other [15].

2. Methodology

Research methodology according to Kathori [17] is the process adopted in obtaining information, collection of data from various sources, procession and analysis of the data and final arrival on conclusions drawn based on this data. This research adopted a non-experimental design; survey research in particular as it provides a qualitative or description of trends, attitudes or opinion of a population by studying a sample of that population [18]. The research methodology utilised involves a combination of quantitative research and multiple case studies employing a visual survey and questionnaire as a means of data collection. Purpose of this research is to document the various ways landscape is incorporated in the design of hospitals and whether they have been provided for or not through physical

survey aided by the use of checklist and questionnaire. The variables; in this case therapeutic effect of landscape that was pivotal to the survey were soft and hard landscaping elements. There are basically two major tertiary hospitals in Yola; the Specialist hospital owned by the Adamawa state government and the Modibbo Adama University teaching hospital owned by the federal government of Nigeria. The primary data sources are the two hospitals through the use of checklist and questionnaire from the facilities and key informants respectively while the secondary data sources are from the review of past literature. Maina [19] stated that one of the reasons for undertaking a literature review, apart from establishing the gap in knowledge, is to retrieve and assess suitable methodologies relevant to the study at hand.

Descriptive statistics was the method used in analysing the quantitative data that was collected through questionnaire survey and physical observation aided by checklist. Hence, descriptive statistical tools were used in analysing the collected data. The result from descriptive statistical analysis of the research findings was presented, interpreted and discussed through the used tables, charts and graphs etc.

3. Result and Discussion

The result of the data collected analysed and presents is a combined reflection of data obtained from the questionnaire based on the four research questions formulated to guide the study from the two tertiary hospitals in Yola, Adamawa State. This research attempted to answer four research questions in order to establish the therapeutic effect of outdoor landscape on patients healing process.

3.1 Research question 1: How important is landscape on patients healing process in hospital ward?

This seeks to establish from the medics' point of view whether external landscaping has the potentials to improves the mental health of patients, faster recovery from illness, the healing effects of drugs even the expected therapeutic effects on patients and whether it creates a pleasing effect to patients or not. Table 1 below shows the response of the respondents in an attempt to answer the research question.

Table 1: Responses of the respondents on the importance of landscape on patients healing process

S/N	Items	N=100	SA	A	D	SD	\bar{x}	STD	Decision
1	Improves the mental health of patients		40	35	20	5	3.1	0.92	Agreed
2	To improves faster recovery from illness		41	24	21	14	2.92	0.74	Agreed
3	Improve the healing effects of drugs		19	42	24	15	2.95	0.88	Agreed
4	Improves the therapeutic effects on patients		20	46	26	14	3.22	0.80	Agreed
5	It creates a pleasing effect to patients		20	35	40	5	3.30	0.74	Agreed
Average Mean & S. Deviation							3.09	0.75	

From the result in Table 1, the importance of landscape on patients healing process has an average of 3.09. Therefore, the above descriptive statistical results show the importance of landscape on patients healing

process by the respondents in the two tertiary hospitals where the majority believed that it improves patients healing process as presented in Figure 3 below.

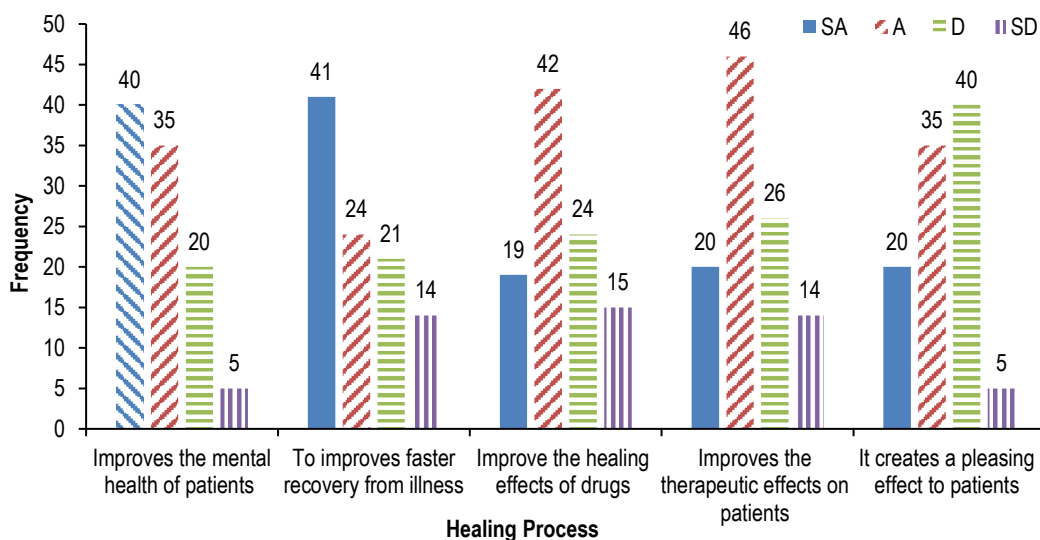


Figure 3: The importance of landscape in the healing process of patients

3.2 Research question 2: How does landscape affect patients healing process?

Here the direct impact of landscape in terms of anger and anxiety reduction, whether the presence of a good outdoor landscape induces relaxation and reduces pain and at the same time reduces blood pressure and muscles

tension as such table 2 below shows the response of the respondents in the two tertiary hospitals in Yola, Adamawa State.

The result in Table 2: shows how landscape affect patients' healing process and it have the average mean of 2.87 and standard deviation of 0.76 as is presented in the Figure 4

Table 2: Responses of the respondent on how landscape affects patients healing process

S/N	Items	N=100	SA	A	D	SD	\bar{x}	STD	Decision
1	It helps to reduce anger		20	41	24	15	2.66	0.68	Agreed
2	It helps to reduce anxiety		21	40	26	13	3.21	0.78	Agreed
3	It helps to reduces pain		41	23	22	14	2.98	0.92	Agreed
4	It induces relaxation		20	24	42	14	3.04	0.94	Agreed
5	It reduces the blood pressure and muscles tension.		43	20	22	15	3.03	0.97	Agreed
Average Mean & S. Deviation							2.87	0.76	

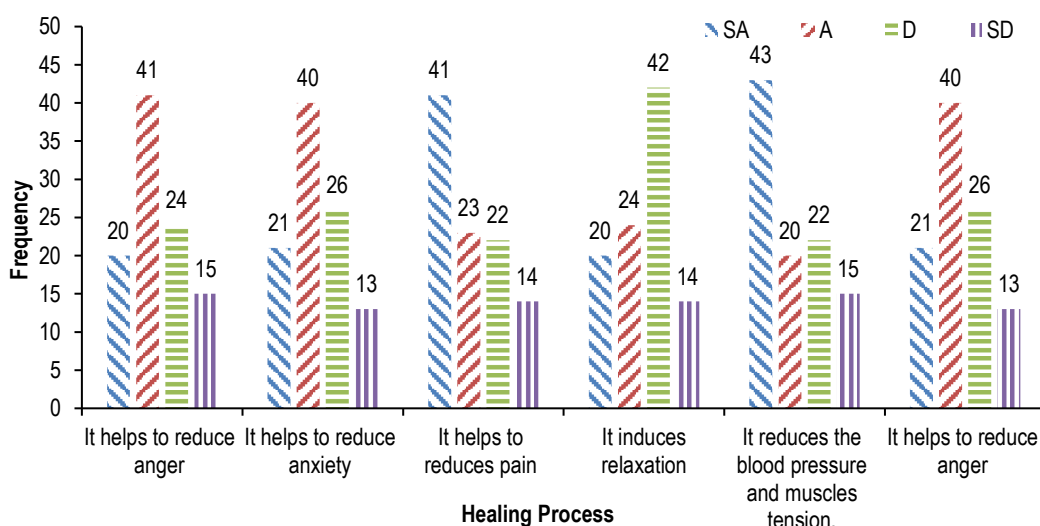


Figure 4: Showing how landscape affect patients healing process

3.3 Research question 3: To what extent is landscape used in specialist hospital Yola?

This attempts to identify the intent to the use of landscape in the hospital environment where they were

presented with options that include aesthetics, mental healing, relaxation, psychological effect or space definition. Table 3 shows their responses

Table 3: Responses of the respondents on the extent at which landscape is used in specialist hospital Yola

S/N	Items	N=100	SA	A	D	SD	\bar{x}	STD	Decision
1	aesthetics		45	21	20	14	3.37	0.78	Agreed
2	Mental healing		21	43	24	13	2.91	0.88	Agreed
3	Relaxation		19	20	46	15	3.31	0.69	Agreed
4	Psychological effect		21	44	22	14	2.63	0.97	Agreed
5	Space definition.		22	43	23	13	2.68	0.97	Agreed
	Average Mean & S. Deviation						2.98	0.77	

From the result in Table 3, to what extent is landscape used in the two tertiary hospitals has an average mean score

of 2.98 and standard deviation of 0.97. This is presented in the Figure 5.

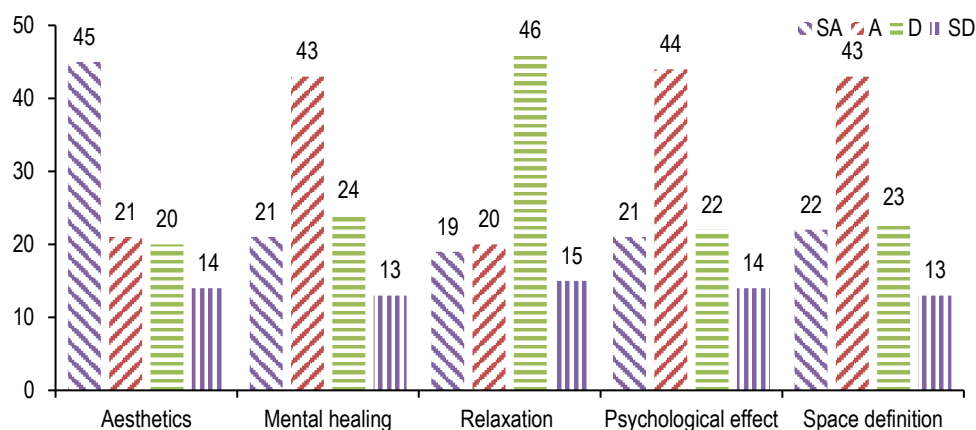


Figure 5: Extent of the use of landscape in the tertiary hospitals, Yola

3.4 Research question 4: What are possible ways of improving the landscape of the hospitals for improving speedy healing of patients?

Responses of the respondents on the possible ways of improving the landscape for improving speedy healing of patients in the hospitals are shown in Table 4

Table 4: Responses of the respondents on the possible ways of improving the landscape for speedy healing of patients

S/N	Items	N=100	SA	A	D	SD	\bar{x}	STD	Decision
1	Re-imagine hard scape and bed lines.		45	21	20	14	3.37	0.78	Agreed
2	Repeat key elements		21	43	22	14	2.91	0.88	Agreed
3	Interject an element to induce transition		19	20	46	15	3.31	0.69	Agreed
4	Become re-acquainted with colour flow		21	44	22	14	2.63	0.97	Agreed
5	Mix up your materials properly		22	43	23	13	2.68	0.97	Agreed
6	Create different levels		20	41	24	15	2.66	0.68	Agreed
7	Add a gate		21	40	26	13	3.21	0.78	Agreed
	Average Mean & S. Deviation						2.98	0.77	

From the result in Table 4 clearly there are possible ways of improving the landscape of the hospital Yola, through improving speedy healing of patients in the hospital

ward that have an average mean score of 2.98 and standard deviation of 0.97 as presented in the figure below.

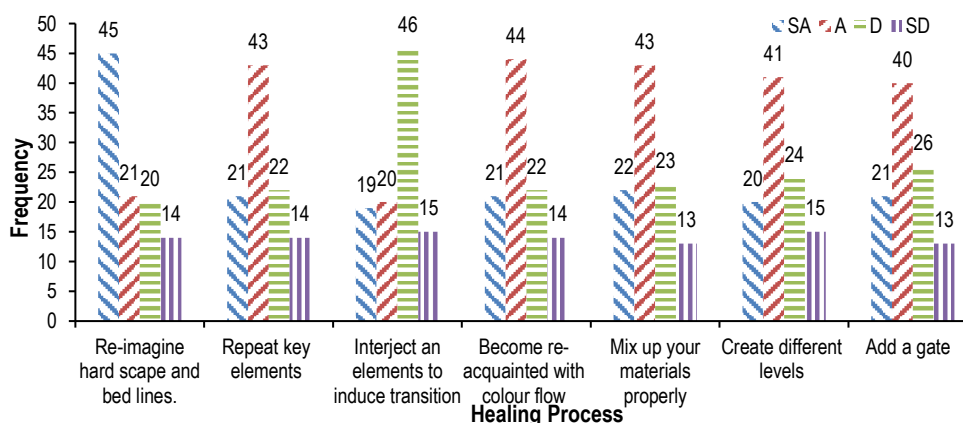


Figure 6: The possible ways of improving the landscape of the hospital for improving speedy healing of patients

The result presented in Figure 6 above shows the possible ways of improving the landscape for a better medical outcome and in terms of therapy and timeline reduction. Hence, this for a more accurate data collection is collected through the use of checklist and the result is as presented.

4. Conclusion

The importance of landscape on patients healing process has an average of **3.09** the descriptive statistical results show the importance of landscape on patients healing process as generally accepted by the respondents. They believed that it improves the mental health of patients, to improves faster recovery from illness, Improve the healing effects of drugs, Improves the therapeutic effects on patients and It creates a pleasing effect to patients. However, the landscape has been acclaimed to affect patients healing process as it has the average mean of **2.87** and standard deviation of **0.76**. Hence, it shows that landscape affect patients healing process because the respondents agreed that it helps to reduce anger, it helps to reduce anxiety, it helps to reduces pain, it induces relaxation, it reduces the blood pressure and muscles tension. Furthermore, for the extent to what landscape is used in the hospitals has an average mean score of 2.98 and standard deviation of 0.97 the possible ways of improving the landscape of the tertiary hospitals in Yola, for improving speedy healing of patients has an average mean score of 2.98 and standard deviation of 0.97. This therefore exposed the level of enlightenment of the medical personnel on the relevance of landscape in the healing process of patience and the actual state the landscape in the hospitals whether hard or soft. The result shows that landscaping is very important within and without the building environment for therapeutic effect of enhancing drug efficacy. Although it is nowhere suggesting that landscape when used independently has the ability to heal but that the manipulation of landscape elements can act as a catalyst in creating a better healing environment.

References

- [1]. Funk I. K., & Wagnalls A. W. (2012) Funk and Wagnall's Student's Standard Dictionary of the English language New Encyclopedia, 2012
- [2]. Williams, D. R., and Cooper, L. A. (2020). COVID-19 and health equity—a new kind of “herd immunity”. *Jama*, 323(24), 2478-2480
- [3]. Tedros G. A. (2018). *Delevering Quality Health Services - A global imperative for universal health coverage*. Geneva: World Health Organisation.
- [4]. Okoko E., Adeduntan s., Adekunle V. A. J. (2005). *Environmental Sustainability and Conservation in Nigeria*. Akure: Jubee-Niyi Publisers.
- [5]. Dijkstra, K. (2009). *Understanding Healing Environments: Effects of physical environmental stimuli on patients health and well-being*. Netherlands: Gildeprint Drukkerijen.
- [6]. Camiel J. B., Dion L., Dijkstra, K. (2012). Stres-reducing Effect of Real and Artificial Nature in a Hospital Waiting Room. *The Journal of Alternative and Complementary Medicine*.
- [7]. Martin, D., & Joomis, K. (2007). *Building Teachers: A Constructivist Approach to Introducing Education*. Wadsworth: (Belmont, CA.
- [8]. Süheyla, B. S. & Aydin, D. (2013). “Social Space” Concept In The Psycho – Social Development Of University Youth And Its Exemplification In Faculty Buildings. *Procedia - Social and Behavioral Sciences*, 140(2014),260-269
- [9]. Özel, Y. (2008). *Sosyo-Kültürel ve Psikolojik Çevre Bileşenlerinin Mekan Kurulumuna Etkileri, Sanatta Yeterlilik Tezi, MSGSÜ, Fen Bilimleri Enstitüsü*, İstanbul.
- [10]. Mona A. and Kaleed D. (2011). Effects of Applying Therapeutic Architecture on the Healing of Drug Addicts: Egypt. *Architecture Engineering*, British University.
- [11]. Hamilton D. K., Watkins D. H. (2009). *Evidence-Based Design for Multiple Building Types*. New York: John Wiley & Sons.
- [12]. Morgenthaler, H. R. (2015). *The Meaning of Modern Architecture: Its Inner Necessity and an Empathetic Reading*. London: Ashgate Publishing, Ltd.
- [13]. Chandra, J. (2001). Biofilm Formation by the Fungal Pathogen *Candida albicans*: Development, Architecture, and Drug Resistance. *Journal of Bacteriology*, 183(18)5385-5394.
- [14]. Ulrich, R. S., Zimring, C. M., Zhu, X., DuBose, J., Seo, H., & Choi, Y. (2008). *A review of the research literature on evidence-based healthcare design* Published: Georgia Institute of Technology.
- [15]. Basson, J. (2014). *Adaptive Healing*. University of Cape Town, Cape Town.
- [16]. Grinde B. and Patil G. G. (2009). Biophilia: Does Visual Contact with Nature Impact on Health and Well-Being? *International Journal of Environmental Research and Public Health*, 6(9)2332-43.
- [17]. Kothari, C. R. (2004). *Research Methodology: Methods and Techniques*. New Delhi: New Age International (P) Ltd Publishers.
- [18]. John, W. C. (2014). *Research Design*. California: SAGE Publication, Inc.
- [19]. Maina, J. J. (2013). *The Socio-Cultural Facets And Spatial Morphology Of Tangale Domestic Spaces: Thesis submitted to the University of Nottingham*. United Kingdom: University of Nottingham.