

Investigating Architectural Spaces Design Considerations for Post-Traumatic Stress Disorder (PTSD) Patients in Sri Lankan Military Hospitals

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Abstract- *Post-Traumatic Stress Disorder (PTSD) has been identified as one of the most commonly occurring mental illnesses in combatants. This study was conducted to determine the prevalence of Post-Traumatic Stress Disorder among war veterans in the Sri Lankan military hospitals. In accord, the following research presented seeks to increase the awareness of this condition among those war casualties so that appropriate treatment choices could be made to address them hoping to come into conclusion of design considerations in order to create rehabilitation centre for those combatants of war. In the current condition, the form of care-giving for patients suffering from Post-Traumatic Stress Disorder is done in wards at conventional military hospitals. But, there lies a need to pay greater attention to the extant literature regarding the effectiveness or ineffectiveness of various interventions regarding on tackling PTSD. This study reviews a far greater area regarding PTSD, veterans, interventions, treatment, counselling, job training and medication. This assist to Increase the awareness of the existing state of information which could be lead for better targeting of resources and better health outcomes. Particularly, the aim focuses on the possibility of creating a humanizing design framework that may entirely contribute to the healing process for the soldiers suffering from PTSD. Research case studies were conducted on three Military hospitals in Sri Lanka which were chosen and analysed to draw into conclusions. Case studies are analysed in terms of their architecture, planning and environmental engineering. The findings are a phenomenon of some kind, which emerges in a limited context and determined in social, architectural terms.*

Keywords— Post traumatic stress disorder, rehabilitation, military hospitals

I. INTRODUCTION

Hospitals first appeared at the start of the Christian era to shelter sick or weary travellers and persons too poor or ill to be treated at home; yet the dirty, crowded and dark environments were anything but hospitable. The changes occurred from this to the present, hospitals have been metamorphic. In accord, "An institution that provides a broad range of medical services to sick, injured, or pregnant patient; Hospitals employ medical, nursing, and support staff to provide inpatient care to people who require close medical monitoring and outpatient care to people who need treatment but not constant medical attention." (Webster's Dictionary 2007, 7th Edition)

Post traumatic stress disorder (PTSD) is a mental disorder that can develop after a person is exposed to a traumatic event, such as sexual assault, warfare, traffic collisions, or any other threats on a person's life. Its symptoms may include disturbing thoughts, feelings, or dreams related to these particular events, mental or physical distress to trauma-related cues, followed by attempts to avoid trauma-related cues, alterations in how a person thinks and feels, and an increase in the fight-or-flight response. Considering these facts, a person with PTSD is at a higher risk for suicide and intentional self-harm with anecdotal evidences suggesting a higher suicide rate among veterans who suffered from PTSD. Thus recent focus has been shifted towards understanding and mitigating factors contributing to PTSD triggers while considering environmental and contextual factors such as large crowds, gun powder odors, loud noises and unexpected advances have been identified. Most such contributors are recognized would occur in the context of social interaction processes. Hence less attention has been given regarding personal spaces or the ways of affecting architectural/urban design elements around patients' residence on the patient. This may be considered as a conflicting fact since the isolation-seeking symptoms of

PTSD, veterans may spend a considerable amount of time in their own personal spaces (e.g., their residence).

When considering areas in tending design a major part should focus on the healing methods of patients. Unfortunately most of modern hospitals and public service suppliers suffer from a scarcity of vision and resources, leading to buildings which have depressingly unattractive façade and area units matched by their impractical interiors. At present, the general public sector in several countries struggles to reduce prices, and some non-public tending suppliers' units commission prime architects to assist them raise the quality of their facilities and amenities without considering patients' psychological needs. Thus, it's necessary to focus on the healing impacts on the psychological well-being of the patients considering the known fact as "*Health is a state of physiological and psychological well being.*" (WHO 2005 Report on Global health standards)

Going back to its origins, during the World Wars, this particular condition was known under various terms including "shell shock" and "combat neurosis". The term "post traumatic stress disorder" came into use in the 1970s due to the diagnoses of U.S. military veterans of the Vietnam War. It was officially recognized by the American Psychiatric Association in 1980 in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III). Prevention and treatment methods for PTSD varied from psychological interventions to pharmacological medications. In view of findings done so far, the most common paradigm is the use of green spaces (open spaces that include vegetation) to facilitate coping techniques that address anxiety and stress (Thompson et al., 2012). In addition to green spaces, the presence of water is also has been proven to associate with a significant positive impact on mental health (Miller et al., 2012; Nutsford et al., 2016) Other features investigated the impact of room corners (sharp vs. rounded) to find that sharp corners amplify aggressive behaviour, whereas rounded corners that flow well with the rest of the environment are linked with pleasantness (Hess et al., 2013).

This research is done in eager to gain findings which are needed to determine the theoretical framework in designing architectural spaces especially for military veterans suffering from PTSD.

Amongst other things, this research shall seek to achieve the following;

- i. To promote the creation of a healing environment by research and design.

- ii. To enhance the smooth and efficient running of healthcare facilities by the provision of recommendations on creating a comfortable healthcare environment for PTSD military veterans in Sri Lankan military hospital context.
- iii. To provide a source of reference on design efficiency of healthcare facilities in Sri Lanka.
- iv. To make an assessment of the physical form of the healthcare building and assess its response to enhanced patients' expectations.

II. METHODOLOGY

Three recently established Military hospitals in western province were used as case studies namely Army hospital, Navy hospital and Air force hospital for this research. A total of 15 individuals (05 from each hospital) from different age groups were used as participants while the mean age (standard deviation) was 34. All the participants were male and served in different military units and branches in Sri Lankan Army, Navy and Air force. Methodology for the study was Semi-structured interviews conducted with veterans who diagnosed with PTSD to understand the indoor and outdoor architectural design elements contributing to triggers. Primary data were collected using semi structured questionnaire based on the factors and their interaction as mentioned below.

1. Private space / Public spaces (dining, Wash rooms etc.)
2. Colours (interior/ Exterior)
3. Materials (indoor/Outdoor)
4. Natural views and aesthetics (indoor/Outdoor)
5. Privacy
6. Layout

This paper presents our findings from the 15 pilot interviews which the participants were requested to answer questions regarding their own experiences with various architectural design aspects and effects of such elements on their mental well-being and in particular PTSD triggers. The interview took a maximum of 30 minutes and during these interviews, participants were asked about their thoughts regarding the design of buildings, rooms, doors, hallways that could trigger PTSD hyper-arousal symptoms. They were also asked about design considerations for their own personal living spaces that positively or negatively affected their mental health; followed by their ideal living space that would help them deal with their current condition including social spaces. Issue-oriented questions addressed the success of specific design innovations such as the use of single-bed rooms and residential materials. Also controversial issues, such as whether PTSD facilities should be free-standing or integrated into other facilities, were examined.

III. RESULT AND DISCUSSION

The findings from these interviews were organized into two categories: Those are private spaces and public spaces. When considering private living spaces, majority of PTSD patients are not satisfied with their personal spaces. The reason behind is that they don't have mentally sufficient enough space. They want to gather with their peers and this in turn decreases their loneliness.

"I like to see huge spaces. If there are spaces open to sky or open to greenery its good. I like to feel the sky nature wind etc. I think it's comfortable for me"

When we consider about layout of the building they most like to circular layout. They are not familiar with complexity. As I mentioned earlier in review they preferred to circular type layouts. As well the wall colours, they prefer are simple light colours.

"Yes.. I like to spend my free time with nature. I like dogs, fish cats etc. If there is an aquarium its good. When I see the darkness I feel so scared. I feel alone. I feel I am in battlefield. I like to see white colour. If not green. Then I can feel free and safe"

Normal living areas in the ward- need to have at least two exits. As well as a lesser number of windows is useful as these people perceive that more the windows the more the enemies outside. They want to have several exit points. Then they feel safe. They required to keep windows to see in case of emergency. As well there are some requirements that were related to privacy concerns. They are very sensitive about their private spaces being visible to public. Doors and windows need to be shaded to improve the privacy. They prefer to spend their relaxation time in public spaces which separated to patients in hospital. They required to gather with their subordinates when it's required. As well they required to separate private spaces for relaxation, exercise and physical training. Especially they requested a space for physical training. Ex- Gymnasium, Jogging path bicycle path etc. When I am in the ward most of the time I feel so lazy. I feel it's like a small prison. If I can go out and do some excesses its very useful. Especially they have concern about the noise. They request to spend their time in a calm environment. Louder noises dragging them to past memories about war. This in turn makes them depressed.

"I like to stay in a calm environment. When I was in the battle field that situation is very noisy. Very huge bombing sounds which made my eardrums blocked. As well so many human screams. It's very painful to bear"

As well that patients wanted to see each and every access to ward sitting in their own space. If there are doors or windows hiding in a ward they feel unsafe.

"Normally I want to be able to see what's going on. Hiding doors and windows make me some kind of threat. I feel someone taking target on me"

As well patients preferred all of furniture and people in the ward or room visible. When they are entering to a room or ward the door should not be block view and blind spots should be avoided. There are some important design considerations for the design of public spaces in the PTSD units too. Patients are preferred to avoid spaces where cannot see other people movements in public spaces.

"When we gather with more people I can't keep my eyes of everybody. If I can see everybody I can easily manage anything"

So they want to avoid the congestion in aisles and corridors. As well familiarity with the space reduce the overall anxiety level among the patients. They preferred maps and layout diagrams to get familiar with the surrounding.

"I have studied about the maps and diagrams in the battlefield. Then I know how to read maps and I know every possible ways in case of emergency. If something closed or not aware of some space will stress me out"

Patients prefer environment that are stimulating so that is motivates them to venture outside and reduce the social isolation. As well design logic and order was mentioned as mitigating factor. For example patients would prefer a numbering system like alpha, Bravo, Charley, and Delta etc. to identify the room. They do not prefer sharp corners and sharp edges in the room.

"Actually, I don't like the walls, furniture and I can't see. I like round circular shapes corners and edges. If there glass walls it's very helpful to see the surrounding"

The dining areas / mess should be designed for more open spaces and visible exists. Glass doors and glass walls are preferred wherever possible to improve visibility and awareness of surroundings.

IV. CONCLUSION

The paper explores the relationship between design considerations for veterans diagnosed with PTSD and their preferences and experiences regarding private and public spaces. Findings suggest the importance of privacy, awareness of surroundings, and uncluttered private spaces as well as open spaces, situational and surrounding awareness, clear exit paths, and familiarity with space for public spaces. . These preliminary findings based on the pilot initial interviews contribute to this gap and can inform current and future space design efforts for veterans many of whom suffer from PTSD. There are both theoretical reasons and empirical findings to suggest that military veterans with PTSD are at greater risk for more physical health problems, poorer health status, and more medical service usage. Much more research is needed on this matter. Despite the potential adverse impact of war-zone exposure on mental and physical health, there is also evidence that trauma can sometimes have salutary effects on personality and overall function. Thus there has to be more priority given for the development of special military hospitals in Sri Lanka that deal with patients suffering with PSTD in the long run.

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