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Evaluating Staff Perceptions of Supportive Healing Environment in Healthcare Facilities

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ABSTRACT

Evidence-based design strategies can improve stress-free environments in healthcare, by emphasizing strategic opportunities to influence the design of health facilities. Evidence-based design (EBD) as a tool for healthcare planning is a method that began in healthcare having a general purpose of providing evidence based medicine. It involved Gathering information and evidence and using this evidence to mold the environment which supports the programming stage in design problem-solving. The connection between the theories and use of findings in (EBD), have not been adequately revealed enough to be used as a tool in design. As such, several factors, or characteristics, evident in numerous studies about healing environment and (EBD), require categorization into tangible and non-tangible dimensions in order to apply them during the design process successfully. Among others, four distinct variable or factors summarized from the work of two researchers – Dilani (2001) and Ulrich (1991) have been selected to be tested in this research; (1) enhancement of social support, (2) stimulating design features, (3) flexibility and coherence (4) connection to nature, focusing on the hierarchy of the above mentioned attributes according to their relevance in application and outcomes. Two research questions served as a foundation for the investigation of attributes in healing environments: What critical attributes can be identified by healthcare staff related to Dilani and Ulrich's research findings? Is a hierarchy of attributes perceived by healthcare staff? The aim of this research is to closely examine the factors of Psychosocial Supportive Design theory by Alan Dilani (2001) and Supportive design theory (SDT) by Roger Ulrich (1991) on the staff in Eastern Mediterranean university health centre. Questioners and site visit were used for data collection. SPSS was used to obtain percentages from data collected. The result of the study reveals a hierarchy of factors perceived by the staff that can promote supportive healing.

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1. Introduction

1.1. Definition of scientific terms

Supportive Healing environment: a term which defines a physical setting and administrative culture that helps patients and families cope with the stresses caused by illness, physical therapy, the healing process, and sometimes, with the demise of family and friends in healthcare buildings. The implication of this concept is that, the physical healthcare environment can make a difference in recovery time for patients with specific critical and prolonged health conditions (Stichler, 2001).

Supportive design theory (SDT): a theory designed by Roger Ulrich (1991) that explores the various ways to utilize the built environment to minimize stress and stress causative factors, by providing a sense of control, access to social support and access to positive distractions to users in the physical surroundings (Ulrich, 2000).

Psychosocially supportive design (PSD): a theory designed by Alan Dilani (2001) that supports the healing environment from a standpoint of psychological manageability, and general wellbeing (Dilani, 2009).

Salutogenesis: is a term coined by a professor of medical sociology Aaron Antonovsky (1996), to define an approach aiming on factors that support human health and well-being, rather than on factors that cause disease. More specifically, the "salutogenic model" is concerned with the relationship between health, stress, and coping (https://en.wikipedia.org).

Wellness factor: This refers to components of the built physical environment that affects the quality of human life and emotional status. They include, physical, emotional, spiritual, intellectual, occupational, and social wellness.

Evidence-based design (EBD): this is a design approach which involves the collection of facts and evidence based data to achieve design goals. It is prominently applied in healthcare sectors, but has gradually gained recognition in other fields and building typologies.

Evidence-based medicine (EBM): is an approach to medical practice intended to elevate decision-making by stressing the use of evidence from well designed and conducted research. Although all medicine based on science has some degree of empirical support, EBM goes further, classifying evidence by its epistemologic strength and requiring that only the strongest types (coming from meta-analyses, systematic reviews, and randomized controlled trials) can yield strong recommendations, while weaker types (such as from case-control studies) can yield only weak recommendations (https://en.wikipedia.org).

1.2. Background of Study

People visiting healthcare facilities general expect a suitable and supportive healing environment. Hospitals have evolved from an institutional feel to a warm and welcoming environment. The makeup of such environments is, the careful integration of physical, social and psychological factors proven to have positive evidence based effects on health outcomes (Molzahn, 2007). In accordance with Mroczek, et al. (2005), who supports the theory, that there is a need for a continuous empirical analysis, focused on the identification of more definite and advanced factors that improves wellness in patients, family members and visitors in healthcare facilities, as proposed by Ulrich, should be strengthened by the observation of evidence oriented knowledge in existing healthcare buildings, with emphasis on design solutions that improves stress and perceived health outcomes.

1.3. The value of Evidence-based design (EBD) as a tool for healthcare planning

Designers are faced with the increasing task of integrating cultural diversity, psychological and socio-spatial considerations by the application of EBD in both interior and exterior context of buildings. The rigors of accessing valid EBD information for design purpose remain one of the main challenges, thus the development of suitable empirical methods towards achieving scientific results is a prerequisite in dealing with design challenges related to supportive healing environments. More so, recognizing and categorizing key influential factors of perceived care and wellbeing would provide ample guidance to designers in their design solutions (Molzahn, 2007). According to Dilani (2001), a properly designed physical environment improves health of mind and wellness, while a poorly designed environment promotes frustration and other health related problems which cumulate into illness in humans. As such, the need for these factors to be clearly defined in healthcare design is sacrosanct in order to become adoptable design tools for the therapeutic process.

1.3.1. Assumptions

Dilani (2001) and Ulrich (1991) agree that there are substantial and abstract impacts of physical environments measured by different variables in certain environments in their research, which

might pose a challenging to other settings, or situations. However, several assumptions frame this research inquiry.

A. The insufficient understanding of the variables providing little guidance to transfer the findings to enrich the knowledge of architects and healthcare professionals.
B. The need to use the variables suggested by earlier researchers, to validate base of their study, which is the (physical environment's ability to influence people's perceptions, behaviour, and performance).

2. Literature review

2.1. Supportive design theory

One of the main guiding principles of supportive design theory, is the ability of the environment to promote improved health outcomes efficiently by eliminating stress causative factors in the environment, which often have negative impacts on outcomes, for example, loud noise (Ulrich, 2000). The theory further explains the psychological needs of the patient's family members, staff and visitors in healthcare facilities. It also includes features in the environment that studies reveal can calm patients, reduce stress and increase coping process (Ulrich, 1991, 1997 & 1999). A number of supportive design guidelines backing up this theory, including several environmental qualities have indicated a tremendous reduction in stress and coping levels and outcome.

2.1.1. Supportive design guidelines:

The following design guidelines, as indicated in several studies, reveal that healthcare facilities will support, coping with stress and increase patient outcomes;

- Social support
- Sense of control and access to privacy
- Access to nature and other positive distraction.

1. Social support: A large number of research indicates that people who receive maximum social support, experience less stress and have better health than those who are isolated socially (Cohen et al,. 2000; Czajkowski, & Shumaker 1994 and Ulrich 1991). Social support can therefore be regarded as the emotional help and care rendered to a person or that which is received from others. Possible examples of approaches, adopting social support for patients include, the provision of the following for the family and visitors: pleasant and comfortable waiting areas, sitting socially enhancing sitting areas, access to nature and views of nature, effective work environment that enhances staff access to social support from other staff and to patients' as well (Purves, 2002; Chalfont, 2006; Marcus & Barnes 1991).

2. Sense of control and access to privacy: Carver, et al., (2000), defines control as someone's real or perceived ability to know what they do, to control their situation, and determine the impact of other people's actions and perception towards them. Several research has shown that the results in the stress coping abilities of people who feel they have some control over their situation is far greater than that of those who feel a lack of control (Lazarus, & Folkman, 1984; Schwarzer, 2014; Evans & Cohen; Ulrich, 1999). In order to reduce lack of control in healthcare facilities, which results in medical and psychological conditions such as depression, high blood pressure and reduced immune system functioning, the need to implement this key supportive design strategy to create a more controlled environment.

It should be noted that an addition factor indicated by various studies, for the loss of control, is caused by architectural designs that do not enhance or provide access to privacy. For example, design of rooms that deprive a view out of the window, force bedridden patients to stare at a glaring ceiling light, or rooms that are difficult to locate without the guide of proper signage for directions (Shraiky, 2011; Schwartz, & Solove, 2011; Winkel & Holman, 1986). As such, the consideration of incorporating architectural designs that facilitate wayfinding and access to privacy, for patients and staff include; providing bedside dimmers for private control, access to television control by individual patients, easy access to nurses work station from wards through mobile services, providing adjustable workstations for staff and comfortable relaxation areas during their break periods that provides a temporal sense of escape from the stress of hospital work place (Ulrich, 2000; O'Neill, 2010).

3. Access to nature and other positive distraction: Positive distractions are a sub sections of environmental-social phenomena that are well-known by their ability to promote wellness and reduce stress levels adequately and on time. They include distractions such as music, art, comedy, pet animals, and nature views within and outside buildings. Ulrich 1999 study reveals that people suffering from anxiety or stress related illness are positively affected by certain nature scenes and recover faster.

However, a limited number of research in healthcare suggests that stressed patients can experience substantial reductions in stress levels after a few minutes of viewing nature settings with greenery, flowers or aquatic bodies. Nevertheless, studies related to the use of nature as a positive distraction, though small, have shown substantial results enough to validate its propositions with outcomes, one of the most important, being the recovery rate of patient from post operations. This is evident in the study of patients recovering from abdominal surgery, which established that patients had a better postoperative health status if their bedside windows afforded them a view trees or greenery instead of a mere wall (Ulrich, 1984; Ulrich et al,. 1991; Kaplan, & Kaplan, 1989). It is worth noting that a controversial type of positive distraction in healthcare settings is the use of abstract art. Although designers, artists and most healthcare staff react positively to abstract images, or artworks that tend to challenge one mentally, a number of evidences in research affirm the possibility of such artworks to have negative impact on patient outcomes (Ulrich, 1991, 1992, 1999), therefore, healthcare managements should carefully select artworks displayed with the intention of a positive impact, to avoid an opposite negative outcome (Iyendo & Alibaba, 2014; Uwajeh & Iyendo, 2016).

2.2. Psychologically supportive design (PSD)

Clinical practice often lays more emphasis on treating ailments while neglecting the psychological, social and in most cases, environmental concerns of the patients. Psychologically supportive design engages and arouses people both socially and mentally, as well as providing an individual a high sense of coherence.The key function of PSD is to trigger a mental process of a person by attracting attentions capable of reducing anxiety and promotes psychological feelings (Molzahn, 2007 & Dilani, 2008). Furthermore, the application and practice of PSD in healthcare, could be promoted and reinforced by implementing architectural designs that are salutogenic, i.e., a more biological approach from a pathogenic concept of treatment which lays emphasis on factors that increase wellbeing, rather than those that makes us ill (Dilani, 2001, p. 31). According to Atonovsky (1996) who proposed a salutogenic concept which focuses on the health elevation of process in healthcare facilities has become widely applied. His view further consolidates Dilani's claim that there is a rising cognizance of the need to create functionally competent facilities that are also human-centered environments aimed at initiating and enhancing health processes and outcomes.

2.3. Conceptual framework of Healing attributes

As earlier stated, a very important feature of healing attributes is its ability to have a positive influence on patients physically, socially and psychologically. The challenge, therefore, is to measure the perception rates of these attributes by healthcare facility users, specifically from a staff perception, in order to assert their level of importance. This research is centered on four distinct variable or factors summarized from the work of two researchers – Dilani (2001) and Ulrich (1991), enhancement of social support, stimulating design features, flexibility and coherence and connection to nature, focusing on the hierarchy of the above mentioned attributes according to their relevance in the application and outcomes as shown in fig. 1 below.

2.3.1. Enhancement of social support

Social support can be classified into two, in terms of healthcare setting: healing culture and environmental design. Healing culture refers to the relationship among patient's staff and visitors while environmental design either enhances or reduces the healing process in hospitals or healthcare facilities (Rashid, 2010). It is made up of various areas which include the provision of emotional support, evaluation and Confirmation, intimacy, easy access to information, comfort and physical affection (Hale; Hannum, & Espelage, 2005). The interaction between recovery patients, their family members and staff is an important attribute in healthcare settings, which has not been given a lot of attention or consideration in terms of design, as it's been noted in several research, that medical facilities and health centres usually separate patients from families (Schweitzer, Gilpin, & Frampton, 2004). Simply providing patients and family members with adequate furniture arrangement, that encourages interaction and eye contact can elevate social support. Social support functions in healthcare can be summarized as see in figure 2.

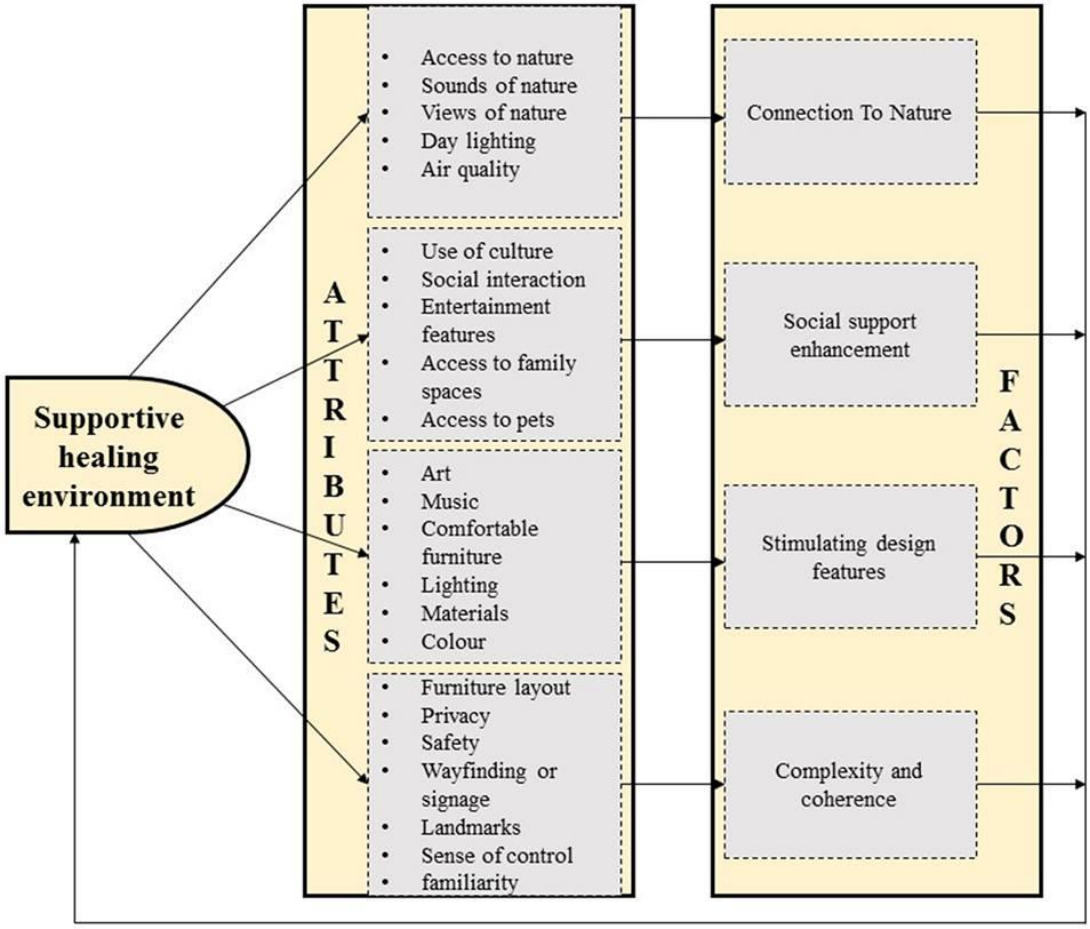

Figure 1. A conceptual model of supportive healing environment with the four attributes from Ulrich's and Dilani's theories.

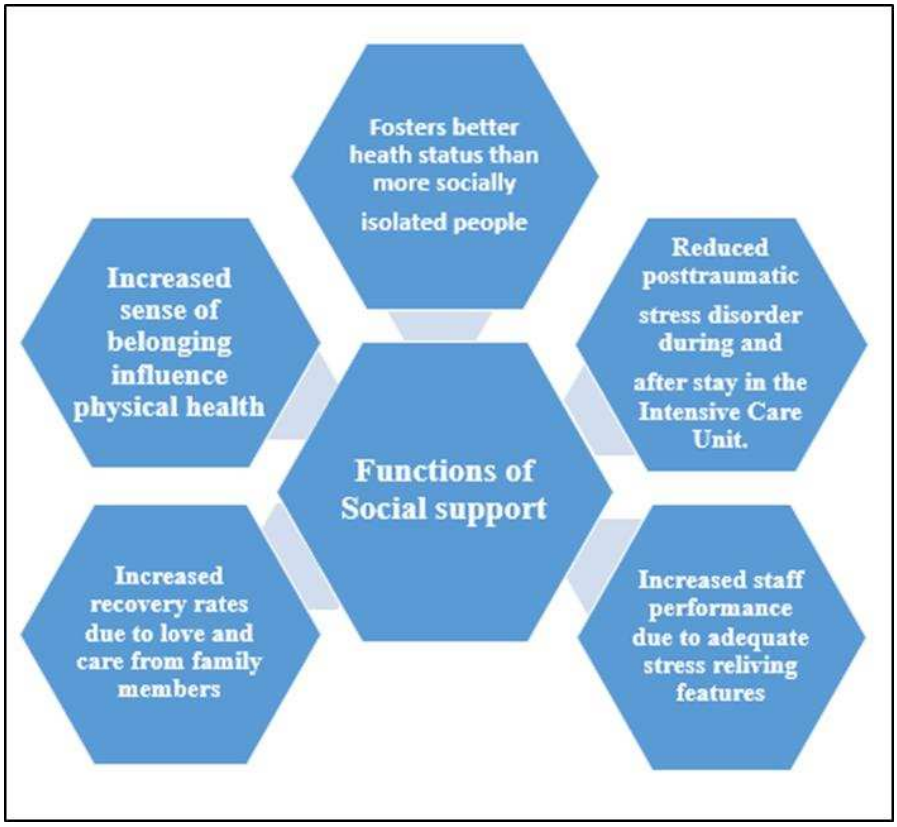

Figure 2. Schematic summary of the advantages of social support.

2.3.2. Stimulating design features

These are features believed to have a strong relationship between the interior environment of buildings and the human wellbeing. According to a research by Dr. Hettler, the executive director of the National Wellness Institute, in 1979, there are six wellness factors used to evaluate the effect of interior design features on human health, namely: physical, emotional, spiritual, intellectual, occupational, and social wellness (Montgomery, 2004). Other design factors considered to cause wellness such as: colour, lighting, acoustics, ventilation, use of space, use of art, and incorporation of nature.

2.3.3. Flexibility and coherence

The geometry and configuration of floor plans in healthcare design has a great impact on the coherence of spaces and way finding (Molzahn, 2007). Way finding is one of the guiding attributes for user's perception about the flexibility and coherence of spaces in healthcare buildings (Hölscher; Brösamle, & Vrachliotis, 2012). The term coherence in healthcare settings, refers to the quality of space integration, proximity and functional relationship between forms and elements within spaces, that affords users identify and locate functions within the space (Evans, & McCoy, 1998). A flexible and coherent space reduces the stress on patients, family members and staff, caused by poorly designed spaces and inadequate way finding signs. Another important aspect of flexibility is the sense of privacy. Healthcare designs should afford patients the opportunity to personalize their space by making them personal (Schweitzer, Gilpin, & Frampton, 2004). It is important to note, is the sense of control and safety attributes designers find difficult to harmoniously integrate properly into a coherent whole (Foque, & Lammineur, 1995).

2.3.4. Connection to nature

Incorporating natural elements or features that gives a semblance of nature within healthcare facilities have been revealed to offer soothing feelings. The consideration of interpersonal differences and preference to nature elements are significant considerations in the incorporation of nature in healthcare (Shepley, 2006). The studies of Ulrich (1991) strongly asserts that nature views enhances wellbeing of patients. Studies by Anderson, et al., (2007) also documented that proper use of nature reduces stress, pain management and elevates a sense of overall well-being in patients and staff. The incorporation of indoor plants or pictures of nature themes, aquariums and fountains into the interior setting, have shown positive health outcomes (Anderson, et al., 2007). A research on children suffering from attention deficit disorder (ADD) found that children functioned better after partaking in activities in natural environments (Shumaker, & Czajkowski, 1994). It also noted that the greener the play area, the less critical their symptoms were. This consolidates the fact that designing gardens adjacent to hospitals that can afford patients adequate view from their rooms, reduce stress while providing a sense of escape.

Case study

The Eastern Mediterranean University Health Centre is the case of study. It is the campus health centre located within the university in Famagusta which services EMU, EMC, EMP, Preschool and Kindergarten students, University academic staff, Administrative Services Staff, Workers and their spouses and children can benefit from the Health Centre. (Appendix A: floor plan).

3. Methodology

A subject method of data collection involving 20 survey questions administered to the staffs of the health centre was adopted for this study.

3.1. Data analysis

The target sample for this case study were staffs of the EMU health centre including doctors, nurses, administrative and managerial staff. The results of the survey conducted, revealed that out of 20 respondents, (n=8) 40% were male and (n=12) 60% were female. The study also deduced that (n=10) 50% of the staff have had less than five years working experience in the health care field, (n=2) 10% have had more than 15 years of work experience, while (n=5) 25%, had 5-10, (n=3) 15% had 10-15, years of experience respectively. Also, a cumulative result of (n=6), 30% and (n=4) 20%, resulting in (n=10) 50% suggests an average staff strength with working experience in previous healthcare facilities. (n=5) 25% of staff have had more than 7 years' work experience in EMU health Centre, (n=2) 10% had no work experience, while (n=5) 25% had 5-6, (n=8) 40% had 1-2, years of experience respectively. This result affirms the fact that, on the average, staff in the EMU health centre has worked in health facilities long enough to know the needs of patients socially, emotionally and psychologically in order to achieve improved health outcomes. A descriptive analysis of the demographic of staff working experience is given below in Table 1

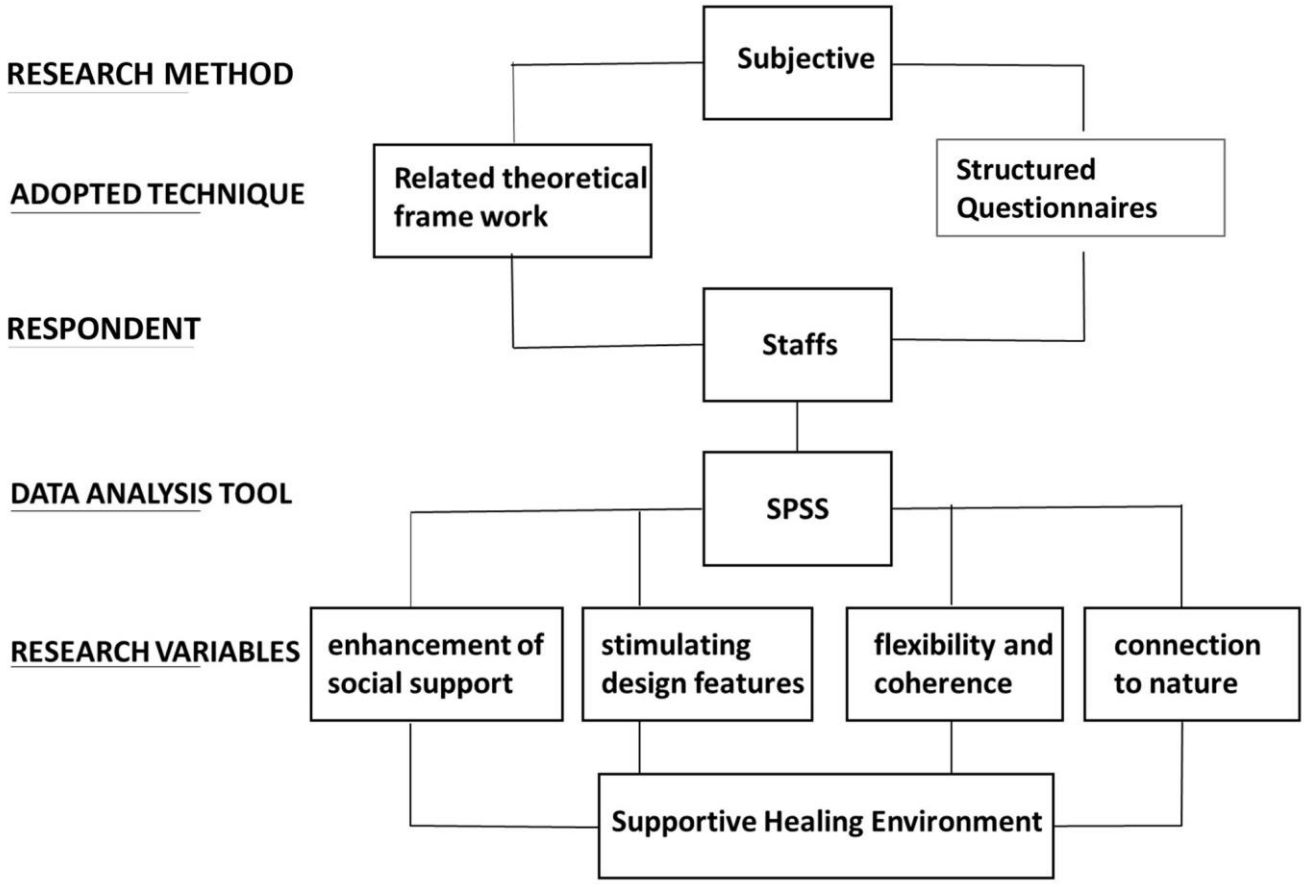

Figure 3. Methodology outline.

Table 1. Demographic information of respondents.

Variables	Scale/category	Number/frequency	Percentage
Gender	Male	8	40
	Female	12	60
Years of experience in health care field	Less than 5	10	50
	5-10	5	25
	10-15	3	15
	More than 15	2	10
Number of previous healthcare facilities worked in	0	9	45
	1-2	6	30
	3-4	4	20
	5-6	1	5
Number of years worked in the EMU health centre	0	2	10
	1-2	8	40
	5-6	5	25
	More than 7	5	25

3.1.1. Physical environment

- **Personal work space**

To understand the needs of staff in the EMU health centre that would facilitate their productivity and patient health outcomes, questions related to the quality and type of work environment in which staff spends more than 50% of their time in the centre, a ranking of the degree at which certain factors, equipment's and spaces affect their performance, the psychological implications of the view from their work station, and the percentage of hours spent at their workstation. The following results were found respectively: (n=1) 5% revealed that they worked in an enclosed office, (n=2) 10% worked in areas with panels for privacy, (n=2) 10% worked at a desk in an open area, (n=11) 55% worked in areas that is not designated specifically to them, (n=4) 20% of staff totally had no designated work place. (n=16) 80% responded the need for adequate work surface, (n=10) 50% depicted the need for technology (computers), (n=8) 40% revealed the need for acoustic privacy and (n=7) 35%, a need for visual privacy. Most of the

staff responded that they would feel more comfortable and work better in spaces that afford them privacy, designated for them and are less crowded. (n=7) 35% stated that their personal work space and surface was efficient, (n=12) 60% revealed neither efficient nor inefficient for patients and guest seating, (n=1) 5% lacked seats for internal and external colleagues. The results and request from staff affirms the need for the three factors of Ulrich (1991), theory of supportive design, 'sense of control with respect to physical surrounding' and 'access to positive distraction in physical surroundings' in the centre to be improved. Figure 4 (n=14) 70% and (n=6) 30% show the staff response to the need for an exterior nature view from office space as a source of positive distraction.

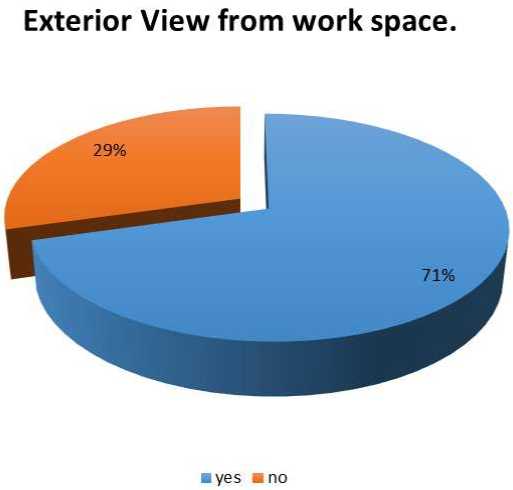

Figure 4. Exterior nature view from office space as a source of positive distraction.

- **Public service space**

Art works have therapeutic values that improve patient's medical state and general outcomes and healthcare staff performance (Barron, 1996; Iyendo & Alibaba, 2014; Uwajeh & Iyendo, 2016). To investigate the supportive design features in as regards public service space in EMU health centre, the findings from staff at the health centre when asked to rank art works of flower themes (n=20) 80%, people being helped (n=15) 75%, abstract paintings (n=1) 5%, rocky mountain landscape (n=2) 10%, and nature scene (n=14) 70%, confirms the elements related to an enhanced state of well-being within healthcare environment proposed by Ulrich and Dilani's theory as shown in Figure 5.

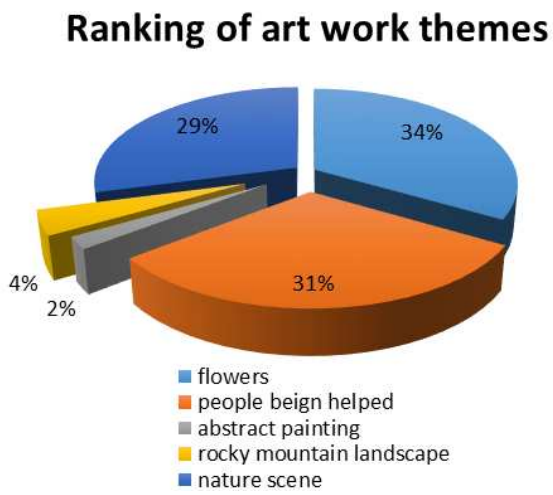

Figure 5. Rank of art work themes.

Responding to an open ended question, "what are the key important characteristics for a waiting area or lounge in a health Centre" two predominant key words were "clean" and "comfortable". Other terms include, homely, quiet, comfortable seat, health magazines, adequate direction signs, better technology for crowd control in terms of doctor/patient visiting turns. (n=11) 55% believed that a comfortable working environment is more important for staff/patient outcome, while (n=9) 45% preferred clean and sterile work environment as more important.

The attributes related to the theories of Ulrich and Dilani in terms of physical and socio-spacial context were also questioned. The opinion of the staff at the health centre showed (n=2) 10% for the use of artwork, (n=8) 40% on furniture layout and ease of way finding, (n=10) 50% for the type of reception people get when they visit the centre. See fig. 6 below.

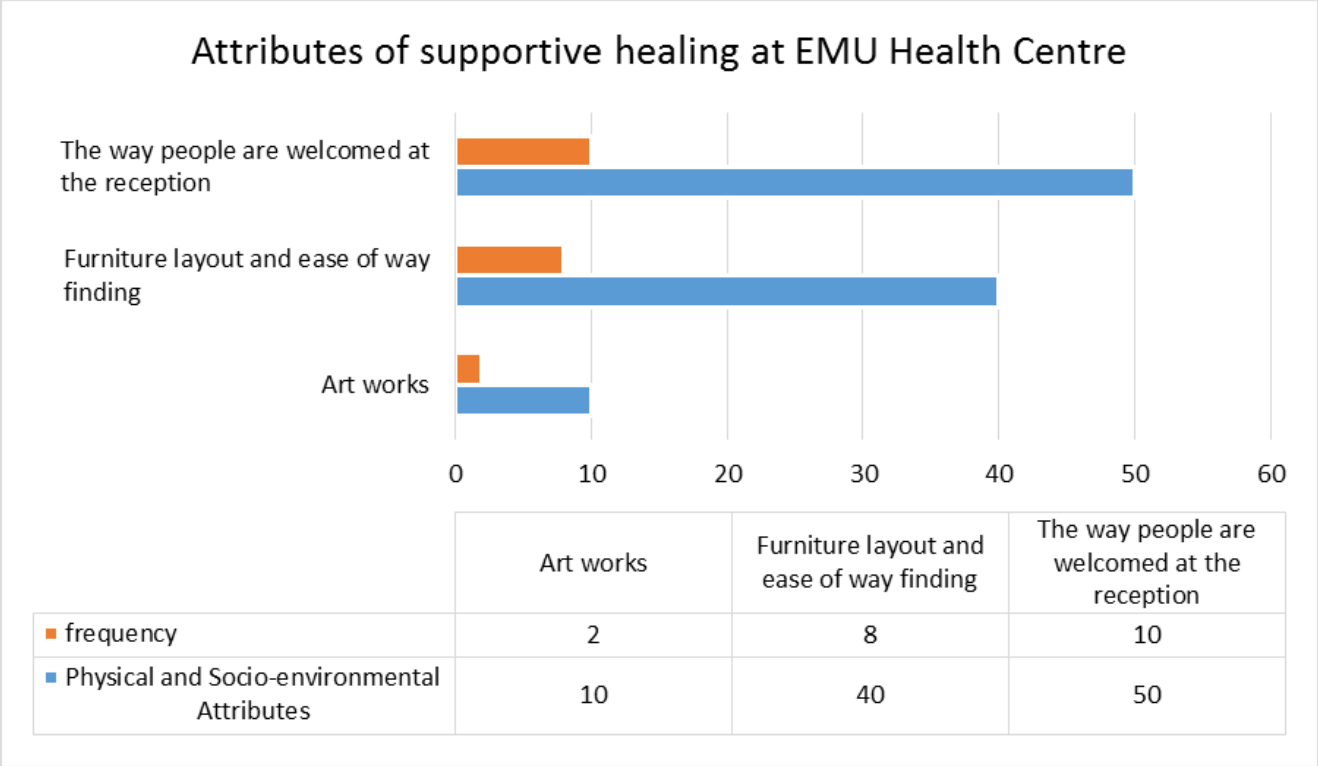

Figure 6. Attributes of supportive healing at EMU Health Centre.

Table 2. Rating of supportive healing features present in EMU health centre

Physical Elements	Percentage	Number of respondents	Classification of response
Adequate interior lighting	70	14	Effective
Acoustic quality of spaces	60	12	Effective
Visual privacy	30	8	Neither effective nor ineffective
Use of colour and Psychological effects (Bright, dull, boring, etc.)	45	9	Neither effective nor ineffective
Comfortable furniture	45	9	Neither effective nor ineffective
Safety measures in the health centre	35	7	Neither effective nor ineffective
View to exterior	35	7	Neither effective nor ineffective
Ease of access and way finding	65	13	Effective
Sense of control	55	11	Effective
Maintenance culture	60	12	Effective

As shown in (Table 2), respondents were asked to rate their perception of the listed physical elements at the health centre as proposed by Ulrich and Dilani. (n=14) 70%, adequate interior lighting proved to be the most effective element, followed by (n=12) 60%, maintenance culture and acoustic quality of spaces respectively, the third rank was (n=13) 65%, ease of access and way finding and the fourth effective ranking was (n=11) 55%, sense of control. Elements ranked as neither effective nor ineffective were, visual privacy (n=8) 30%, safety measures and view to the exterior (n=7)

35%, respectively, comfortable furniture and the use of colours (n=9) 45% respectively.

3.1.2. Work-environment culture

The response of staffs regarding the rate at which certain norms and values were a constant characteristic of the centre, the following results (n=13) 65%, (n=11) 55, (n=13) 65%, respectively refer to (Communication with patients/clients seeking service, Reassuring friends/family regarding the patients/client health conditions and socially interacting with patients/clients). The other features refers to activities that are a norm at the health centre but not always practiced. See Table 3.

4. Discussion and finding

As shown in the conceptual model of supportive healing environment with the four attributes from Ulrich's and Dilani's theories; Enhancement of social support, Stimulating design features, Flexibility and coherence, Connection to nature. The results from the survey of this research was used to understand the hierarchy in the perception of the attributes from a staff perception in the EMU health centre to enable one to have a concrete evidence, backing the theory of supportive design, as to which attribute should be given the most priority in healthcare designs. Findings from the personal workspace survey indicated that the staff's response suggests a strong need in the social support with (n=11) 55% of staff, with the opinion that they will function better if they had a designated office, (n=16) 80%. This indicates a need for adequate work surface, and (n=6) 30% shows the staff response on the need for an exterior nature view from office space as a source of positive distraction.

Table 3. Rating of norm at EMU health centre

Norms	Percentage (%)	Number of respondents	Classification of response
Collaboration and communication among employees within same department	70	14	Almost always a characteristic
Collaboration and communication among employees in other department	60	12	Seldom a characteristic
Communication with patients/clients seeking service	65	13	Always a characteristic
Communication with visitors, family and friends	50	10	Almost always a characteristic
Going out of your way to offer a "helping hand"	50	10	Almost always a characteristic
Directing people to service areas	45	9	Almost always a characteristic
Reassuring friends/family regarding the patients/client health conditions	55	11	Always a characteristic
Socially interacting with patients/clients	65	13	Always a characteristic
Attention to/the presence of reading materials, TV Programs and other social amenities	25	5	Not a characteristic

Supporting the attribute of Stimulating design features, as found in the public space, art works of flower was rated (n=20) 80%, people being helped was rated (n=15) 75%, and nature scene (n=14) 70%. Also, results from the sound, found to support the healing attributes, located within the environmental work culture, were (n=14) 70% adequate interior lighting followed by (n=12) 60% maintenance culture and acoustic quality of spaces respectively. Furthermore, the perception of staff towards supportive healing environmental norms were also found in the area of enhancing social support, with (n=13) 65%, (n=11) 55, (n=13) 65%, representing (Communication with patients/clients seeking service, Reassuring friends/family regarding patients/client health conditions and socially interacting with patients/clients) respectively. The open-ended questions asked in the survey generally reveals the need for comfortable furniture's in the workspace for both staff and patients a clean and sterile environment, a noise free environment and adequate visual privacy.

Two research questions served as a foundation for this investigation of attributes in healing environments: What critical attributes are identified by healthcare staff related to Dilani and Ulrich's research findings? Is a hierarchy of attributes perceived by healthcare staff?

The main attributes identified by health care staff in the EMU health centre that can influence supportive healing in a hierarchical order include:

1. Comfortable furniture in lounge and work space
2. Social interaction with patients
3. Integrating nature elements in the interior
4. Visual privacy
5. Adequate indoor lighting
6. Sense of control acoustic quality
7. Art works
8. Proper signage /way finding.
9. Colour

5. Conclusion

The theory of Supportive healing environment is very broad and inter winds into both social, physical, psychological human context. Based on the literature and findings in this study, it is evident that both patient's staff and visitors in healthcare facilities would have tremendous benefits from the integration of evidence based design solution. From the survey analysis of this study, the staff of EMU also consents to this construct with (n=20) 100% when asked an open ended question "should connection between patients and employees be strengthened in EMU health centre". This response validates the second top ranking attribute of social interaction with patient listed above.

Furthermore, studies should be carried out across a wider target/staff strength to build on this theory.

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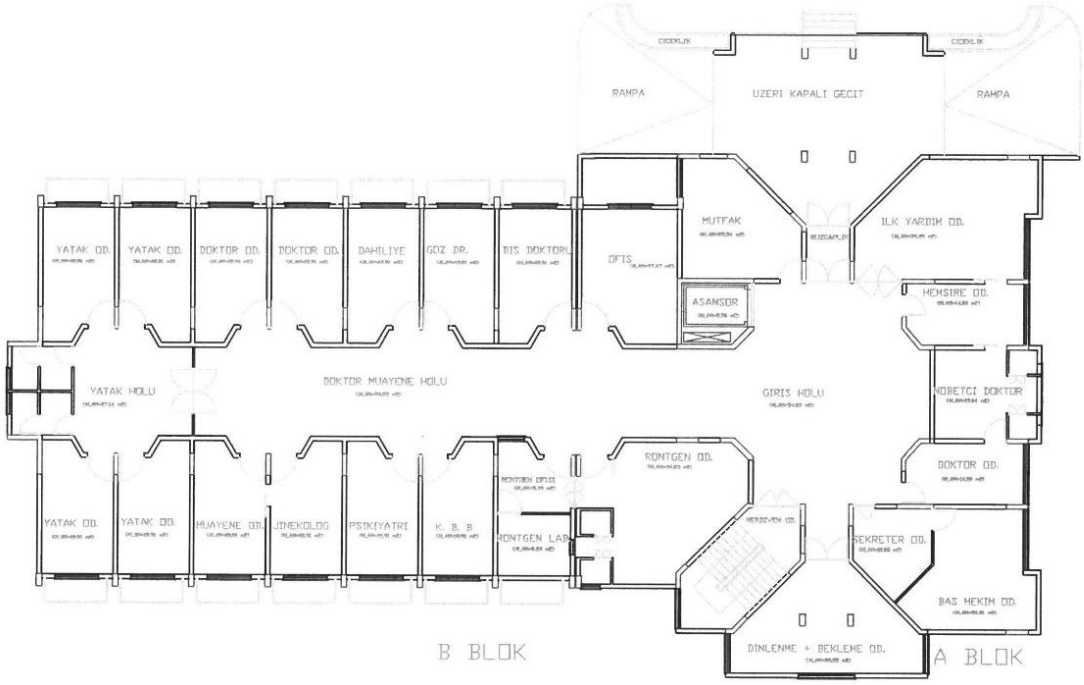

APPENDIX A: EXISTING FLOOR PLAN.