A Study on the Recent Trends of Healing Environment in Korean Healthcare Facilities

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Abstract

The purpose of this study is to define the concept of sustainability, to understand the traditional belief system, to comprehend user-focused healing environment, to understand the current status of Korean hospitals, to analyze the selected case studies, and to point the way toward enhanced architectural solutions for healing environment in hospitals.

The research results indicate that the design of healthcare facilities with healing effects depend on the considerations of 5 senses of patients. In other words, the sustainable design approach to create a healthy healing environment is very important, and architects must be aware of diverse sensory needs of the patients.

In addition, the following factors affecting healthcare facilities must be considered to create healing environment for users:

- "Emphasis on Sustainable Design" for harmony among nature, man, and building.
- Creation of user Focused Healing Environment reflecting the users' senses.
- Search for New Hospital Forms through various design experiments to create the most suitable healing environment.
- "Perception of Paradigm Shift"from a focus on sickness-oriented to wellness-oriented healthcare facility design.
- "Awareness of Creating User-Friendly Environment" covering the entire age group from youth to elderly.

Keyword : sustainability, user-focused healing environment, Taoism

1. Introduction

Human being's long history can be viewed as a fight against diseases. Depending on the locations and weather conditions, human life styles, disease patterns, and treatments have been changed & diversified through out the ages. Reflecting on these changes, hospitals should not be just a place for curing diseases, but a place of healing considering the users' cultural background and satisfaction of 5 senses.

The philosophy-based East Asian Medicine and the science-based Western Medicine used to be the typical classification of medicine. Due to the rapid advancement of science in the west, western medicine and hospitals began to prevail the entire world.

Hospitals are places where all types of diseases from the entire age group are treated, so it should be functionally planned(high-tech) as well as being

attractively designed to create healing environment(high-touch) satisfying the diverse needs of all users. Even after entering the digital age and facing the rapid changes in front of us, efforts to perceive patients as independent entities with unique cultural diversities are very important.

The purpose of this study is to define the concept of sustainability, to understand the traditional belief system, to comprehend user-focused healing environment, to understand the current status of Korean hospitals, to analyze the selected case studies, and to point the way toward enhanced architectural solutions for healing environment in hospitals.

2. Literature Review

This chapter develops a conceptual framework to guide investigation of the design of healing environment in Korean hospitals. It will focus on 6 major areas :

1. Investigation of the concept of sustainability.
2. Review of traditional belief system of Korean as well as Chinese nature.
3. Definition of user-focused healing environment.
4. Current issues of Korean hospitals
5. Analysis of hospital area distribution.

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2.1. Investigation of the Concept of Sustainability

Koreans like other Asians have maintained sustainability toward nature. According to Metapolis Dictionary (2000), "The concept of sustainability is the result of seeing a world with limited resources and limited capacity to absorb waste, where every act involves future consequences." Also, Mahgoub(1997) explains "Sustainable architecture" as an approach to architectural design that minimizes substance or resource consumption so as to prolong the availability of natural resources.

The Rock Mountain Institute defines sustainability as " development that meet the needs of the present without compromising the ability of future generations to meet their own needs." And this definition is now accepted world wide.

Mahgoub(1997) also suggests the aspects of sustainability as shown below :

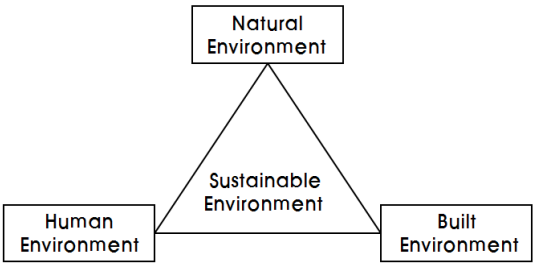


Figure 1. Aspects of Sustainability by Mahgoub(1997)

In sum, it is an effort to improve the quality of life coping with the limits of the eco-system. And this is a very important key to understand Koreans as well as other Asians as users of healthcare facilities.

2.2 Traditional Belief System toward Nature

Traditionally, Chinese, Japanese, and Koreans have been sharing the common belief toward nature such as Taoism and Fengshui Theory.

2.2.1 Concept of Taoism

Hudson Smith(1991) says that Tao is used in three ways :

1. Tao is the transcendent way of ultimate life.
2. Tao is not only transcendent, but is the immanent, observable way of universe.
3. Tao is also the way of human life when it flows in harmony with the way of the universe.

Taoism is an organic philosophy toward the universe and Tao can be understood as a complete system of entry of interdependence. Taoism has also become one of the most fundamental theories in architecture commonly shared among China, Japan, and Korea.

2.2.2 Concept of Feng Shui theory

According to Hobson(1994), Feng Shui, which originated in China about 3,000 years ago, has since spread to most Asian countries including Japan and Korea.

Feng Shui means "wind" and "water" and used to analyze man-made & natural system in order to find the optimum location of sites with a positive circulation of life energy "qi". The concept has derived from Taoism.

The essence of this concept is the balance between "yin" and "yang" which are two properties of "qi". The Feng Shui theory has been influential in shaping architectural forms among Asian countries including Korea and Japan.

The goal of Feng Shui is the harmony between man and environment so as to gain wealth, mental well-being, and health.

Figure 2. Symbol of Feng Shui Theory

2.3 User-focused Healing Environment

Recently, the traditional emphasis on designing healthcare facilities are shifting from a function-centered to a consumer-centered healthcare system. And designing healing environments became the focus of any healthcare facilities design to enhance all users' comfort, who are staffs, family, and patients.

According to Rubin(1997), patients do experience a positive outcome in a designed healing environment with design elements such as natural light, elements of nature, soothing colors, meaningful & varing stimuli, peaceful sounds, pleasant views, and a sense of beauty.

In other words, Karin(2006) suggested that the emphasis on patient-focused healing environment is based on the belief that "understanding physical environmental stimuli in healthcare facilities will allow us to create environments that positively affect the healing process and well-being of patients."

According to Sprague(1999), the hospital environment

must be cheerful rather than clinical. Also, he emphasized that healthcare facilities from their facades to their rooms, must be an inviting and accommodating environment.

Because users of hospitals are composed of patients, family and medical staffs, if environments are stressful to them, it will create negative influences to the treatments of patients. Therefore, creating a healing environment is important to patients, family and medical staffs as well. In addition, it is imperative for healthcare designers to consider the traditional belief on holistic healing when they design healthcare facilities.

The new trend in healthcare design should be the creation of healing environment accommodating users' diverse needs.

Malkin(1992) suggests design factors for the design of healing environment such as noise control, air quality, thermal comfort, privacy, light, communication. view of nature, color, texture, and accommodation for families.

2.4 Current Issues of Korean Hospitals

2.4.1 Recenet Changes in Healthcare Field in Korea

Due to the rapid economic growth of Korea, the healthcare field in the 70s also has faced the paradigm shift. The advancement of medicine and increase of medical needs due to the rapid economic growth enabled the development of healthcare facilities.

Especially, the Asan Medical Center(2,000beds) and the Samsung Medical Center(1,100beds) with the state-of-the art technology established by enterprises used the capitalistic hospital management system. They changed the trend of contemporary hospitals in Korea and introduced the concept of patient-focused hospital and total care system.

Since that time on, other hospitals changed their image from medical doctors' authoritative management to patien-focused and patient- friendly management.

Also, from 1990s, hospital designs in Korea have been changed from functional to comfortable , humane spatial organizations.

Korea now faces the new challenges of harmonizing high tech functional space with user friendly healing environment suitable to Koreans.

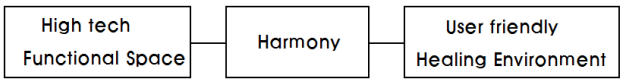


Figure 3. High Tech vs. High Touch

The Followings are the key issues present in Korean healthcare fields :

- Specialized Group Practice
- Establishment of Eastern /Western Medicine Joint Practice
- Activation of MOB(Medical Office Building)
- Increase of Long-term Care
- Increase of Facilities for the Elderly
- Remodelling of Old Hospitals
- Hospital Design responding to the changes of Digital Era.
- Separation of Medicine & Pharmacy
- Changes of System of Medical Fee

2.4.2 Area Distribution

In order to understand the levels of area distribution, each ㎡/bed was derived from examining 6 general hospitals, 8 university hospitals and 2 enterprise hospitals in Korea.

The analysis indicates that ㎡/bed varies according to the types of hospital and the number of ㎡/bed tends to be gradually increasing.

1) Wards : The set area of wards 8.9 ㎡/bed for general hospitals, 13.3㎡/bed for university hospital, and 21.2~32.3㎡/bed for enterprise hospitals. This indicates that enterprise hospitals tend to invest more money in the patient focused ward design, the decrease of nursing unit, and the sophistication of inpatient unit.

2) D/T Dept : Enterprise hospital's D/T net area is 15㎡/㎡, which is about 2.5~4 times that of 3.6 net ㎡/bed of university hospitals. This is due to the big enterprises' intense investment on the high tech equipments and pursuit of specialized hospitals.

3) Outpatient & Emergency area : The Enterprise hospital's net area here of average 8.2 net ㎡/bed shows about 1.5~3 times differences compared to the 2.7 ㎡/bed of general hospital & 4.4 ㎡/bed of university hospital.

4) Supply area : The Enterprise hospital's supply area is 1.5~2 times bigger than those of the general hospital & university hospital.

5) Maintenance & administration area : Due to the introduction of computerized system, the 3 types of hospitals don't show much differences.

It shows the efficient management policy of enterprise hospitals.

6) Net/gross area : The net/gross ratio of the enterprise hospital is about 1.5, which is much higher than 1.3 of other types of hospital.

The use of double corridor system, wide public area, and atrium space were used for the provision of environmental quality.

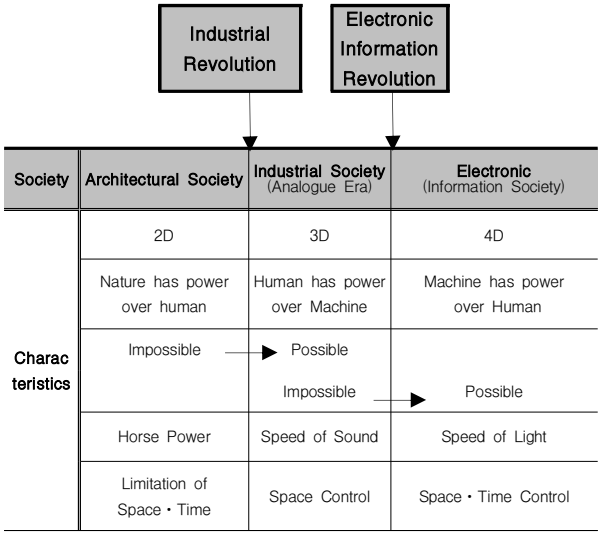
Table 1. Area comparison of hospitals(㎡/bed)

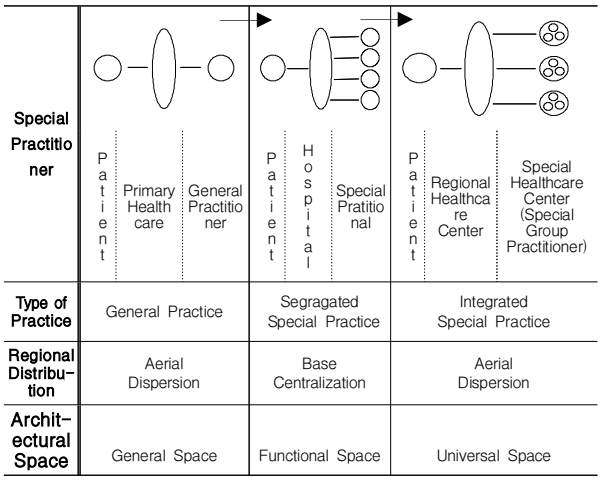
	Ward (net)	D/T (net)	Out patient (net)	supply (net)	mainten ance & Admin (net)	Total Net	GROSS AREA
AMC	21.1	15.2	5.8	12.2	4.6	58.9	89.4
SMC	32.3	14.5	10.5	14.9	4.6	76.8	114.5
Mean Score	26.7	14.9	8.2	13.6	4.6	67.9	102.0
General Hospital A	8.9	3.6	2.5	6.2	1.8	23.1	27.7
B	9.2	4.3	2.8	6.3	2.5	25.3	29.8
C	8.0	3.0	3.0	4.7	1.7	20.5	22.8
D	7.5	2.8	1.8	3.4	1.2	17.0	20.4
E	10.4	4.5	3.2	8.8	5.7	32.9	38.5
F	9.2	3.3	3.1	4.7	1.6	22.0	26.8
Mean Score	8.9	3.6	2.7	5.7	2.4	23.5	27.7
Univ. Hospital G	14.4	4.8	3.7	7.6	3.6	34.3	39.1
H	14.1	8.3	6.2	15.4	3.2	47.5	60.3
I	14.1	5.9	5.6	7.6	3.2	36.6	44.3
J	13.0	6.8	5.8	10.1	4.8	40.6	45.9
K	15.0	7.3	4.3	9.0	2.6	38.3	44.1
L	10.1	4.0	3.5	7.6	3.2	28.5	32.2
M	14.4	5.7	3.2	6.2	2.9	32.6	39.1
N	11.2	7.1	2.9	3.3	1.5	26.5	31.3
Mean Score	13.3	6.2	4.4	8.4	3.1	35.6	42.1

2.4.3 Forecast of Healthcare Facilities

Table show the changing pattern of hospital from past to present.

Table 2. Changes of Medical Facilities





3. Case Studies

This chapter will provide case studies of selected significant healthcare facilities representing sustainable healing environment.

CASE #1. ANSAN CITY SANGNOK-GU HEALTHCARE CENTER

- Site area : 500 ㎡
- Building area : 2,506 ㎡
- Total Floor area : 5,789 ㎡

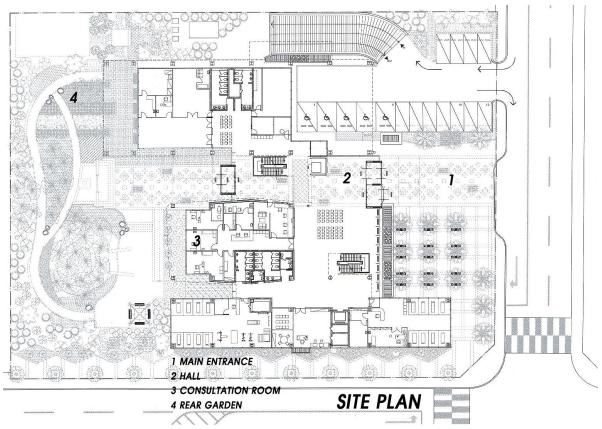


Figure 4. Ansan City Sangnok-gu Healthcare Center

Figure 5. Ansan City Sangnok-gu Healthcare Center

The major concept of the healthcare center is to create human space. It is based on the oriental thoughts of using nature as a source of healing.

Key words are as follow ;

a) Cure in Nature

b) Easy Way Finding

c) Space Flexibility

2) Building concepts were derived from the following aspects :

a) The "Evergreen Healing Spaces" is an atrium space located in the center of the building, separating the administration area from D&T area so that the clarity of circulation is maximized.

b) Parking spaces are located in the north side of the site adjacent to the neighboring public administration building.

c) The rear garden is to be used for healing. It will be used as an extension garden by locating the related functions nearby, and it will be used as a shell space for the future expansion.

Figure 6. Ansan City Sangnok-gu Healthcare Center - Rear Garden

d) The center of the building is a transparent atrium space by applying the concept of "Evergreen"to the interior space. Consequently, the visual & spatial connection can be provided between the interior and the exterior space.

e) The "Double skin" concept is applied to administration and treatment areas for energy saving and free elevation. This concept enables the building to create a sophisticated high-tech image.

f) In order to cope with the context, the concept of "openness" and "closeness" are applied to each part of the entire elevation.

Figure 7. Ansan City Sangnokgoo Healthcare Center

CASE #2. THE ARMED FORCES GWANGJU HOSPITAL

- Site area : 181,145㎡
- Building area : 16,805㎡
- Total Floor Area : 45,099 ㎡

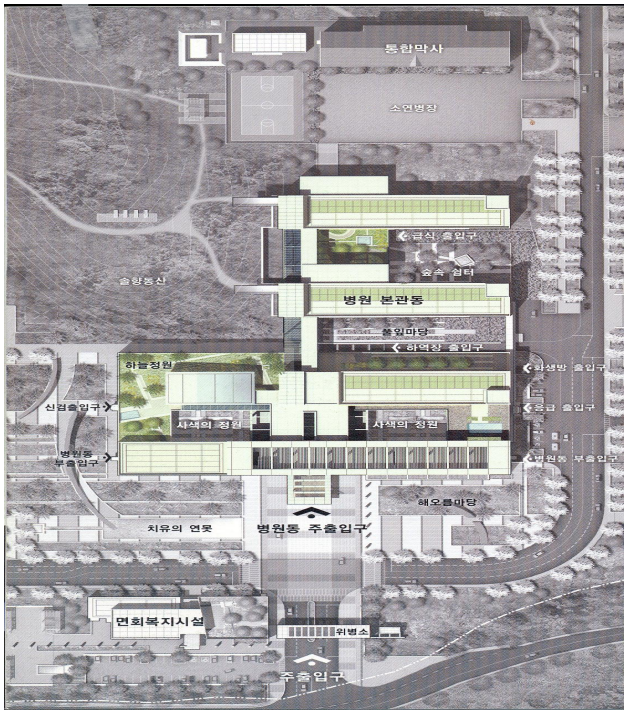


Figure 8. Gwangju Military Hospital - Site Plan

Figure 9. Gwangju Military Hospital

This hospital`s main concepts are composed of the following four key factors:

a) “Environment Friendly Hospital” introducing the natural environment into the interior as a source of healing power.

b) “Efficient Hospital” with considerations of rational space planning.

c) “Patient Focused Hospital” having optimum healing environment.

The Building concepts were derived from the following aspects ;

a) “Horizontal Finger Type Wards” to cope with nature

b) “Enhancement of Healing Effect” by introduction of nature into interior space.

c) “Ease of Way Finding” through the provision of hospital spine.

d) “Improvement of Amenity” through the provision of services such as dining, health center, and roof garden, etc..

e) “Horizontal Image” which is compatible with the nature.

f) “Main Gate” which is intended to emphasize the fa ade and the symbolic representation.

g) “Patterns of Elevation Module” gives sense of rhythm.

h) “Central Corridor with Glass” for positive inflow of nature and openness.

Figure 10. Gwangju Military Hospital

CASE #3. NEW YONSEI SEVERANCE HOSPITAL, SEOUL

- Bed size ; 1,000bed
- Total Floors ; 21(6F) / 3(BF)
- Total Floor area ; 160,000㎡

Figure 11. New Yonsei Severance Hospital - 4th Floor Plan

Figure 12. New Yonsei Severance Hospital - Grand Stairway and Unique Shape of the Bed Tower

The mass of this new hospital is divided into the bed tower and the podium. The podium again is divided into the outpatient block, the D&T block, and an atrium space between the two blocks.

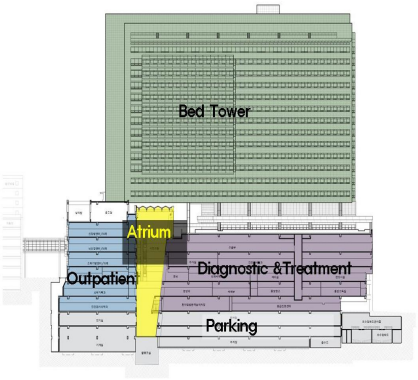


Figure 13. Stacking of Main Medical Functions

a) Unlike in other existing hospitals, the bed tower sits on top of both the outpatient block and the D&T block. It is because

this hospital is composed of "center-based" outpatient clinics.
b) So, many diagnostic and procedure functions are included in the outpatient block. As inpatients use those functions as well, their access was also considered.
c) One of the most distinctive features of the podium is the atrium. It provides natural lights even to the lowest floors. It also clearly divides the outpatient block and the D&T block, providing an easy way-finding. The atrium is 8-story high and 100 meter long.
d) Approaching the front side of the building from outside, the most eye-catching feature is the Grand Stairway and the sky that is visible in between the bed tower and the podium.

Figure 14. New Yonsei Severance Hospital - Grand Stairway

e) While the podium is made of similar material and shape, as a respect to the surrounding buildings, the bed tower lies in contrast to the context, with the state-of-the-art metallic surface and curve-linear shape.
f) The bed tower has a unique shape that looks like the combination of two triangles, and has 4 day rooms on each floor.

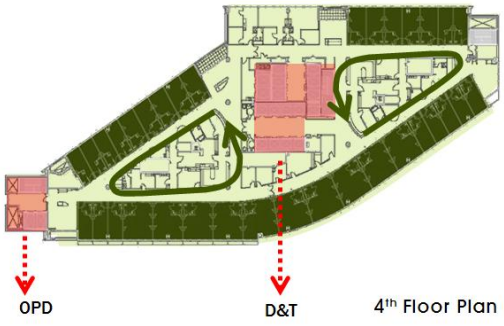


Figure 15. New Yonsei Severance Hospital - Ward Floor Plan

This building is the first hospital in Korea that has visitor convenience facilities such as retail shops and restaurants on the lobby floor. This hospital is establishing itself as the most advanced hospital in Korea, not only with its architectural excellence but also with the comfort and convenience that it provides for patients.

CASE #4. SEOUL BUKBU GERIATRIC HOSPITAL

- Site area ; 11,7713㎡
- Building area ; 3,561㎡
- Total Floor area ; 16,117㎡

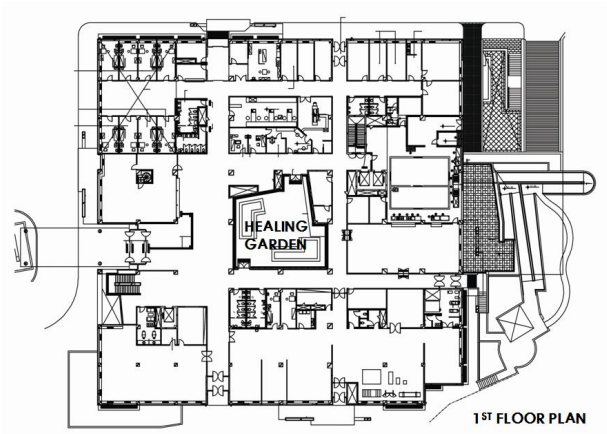


Figure 16. Seoul Bukbu Geriatric Hospital

Figure 17. Seoul Bukbu Geriatric Hospital

The main concept was derived from the grid system. The Healing garden was located at the center of mass and the circulation is placed along the perimeter of the atrium and other functional areas surround the atrium. This type of block concept enables the interior space composition more efficient and visible.
a) Allocation of center atrium at the rectangular plan
b) Individual zones are distributed along the atrium, which provides warm natural light to enhance the quality of healing environment.
C) Increase of convenience & efficiency of management due to the horizontal & zoning of functions.

Figure 18. Seoul Bukbu Geriatric Hospital - Healing Garden

4. Conclusion

As we analysed in the previous chapters, the research results indicate that the design of healthcare facilities with healing effects depend on the considerations of 5 senses of patients. In other words, the sustainable design approach to create a healthy healing environment is very important, and architects must be aware of diverse sensory needs of the patients.

The modern urban hospitals have undergone a rapid shift from function-oriented to patient-focused healing environment, due to the changes of disease patterns and healthcare concept model.

Finally, the following factors affecting healthcare facilities must be considered to create healing environment for users:

- "Emphasis on Sustainable Design" for harmony among nature, man, and building.
- Creation of user Focused Healing Environment reflecting the users' senses.
- Search for New Hospital Forms through various design experiments to create the most suitable healing environment.
- "Perception of Paradigm Shift"from a focus on sickness-oriented to wellness-oriented healthcare facility design.
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