

Method of Hospital Space Constructed On Children's Hospital Research

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I. Abstract

The medical space bears a very difficult to get close to the feelings and experience. Hospitals the space provide medical diagnosis and inpatient services, human use for the space considerations, this usage scenario gradually changing spatial construction trend shift towards emotional and experiential, interactive and user-friendly. Children's Hospital features mainly adult convenient operation to improve efficiency, the warm feelings of the higher level of perception and experience of children's social, have an absolute obligation to contribute to and improve the design and planning staff. Research to explore space diagnostic elements, and then the calculated independent medical (nursing) experts, construction experts, user interviews and children's on-site environmental behavior The program constructed questionnaire and perform the test and questionnaire. The conclusions provide construction-related fields, the design and implementation of building management, indoor practitioners of business execution reference.

Keyword: *Past-Occupancy Evaluation* · *Behavior Research* · *Children Medical* · *Intuitive POE* · *Waiting Space*

II. Introduction

2.1. Motivation

Construct more lack of existing medical building knowledge of children's medical space, the majority of wards and based Construction of adult users. Children medical focus, however, in addition to drug precautions, inpatient care, should also include clinics and all kinds of types of medical use space for in-depth type of less. The compilation of the majority of medical research in the field of medical management or health care management researchers, the scope to explore management and social-oriented, depending on the status of children's medical clinic waiting space is to provide users with the appropriate context and functional requirements of the research motivation. The children are the future of the country's human resources, the fertility rate decreased year by year because of Taiwan's population structure change, people ... Taiwan each average pediatrician caring for 4,000 children (3,799 people), with the number of people physicians need to care (1,368 people) compared to is 2.8 times the average, the United States eight times, 12 times that of Germany. The domestic consolidated existing large hospital, more adult medical-oriented, on the whole, especially hardware, and more difficult to children as the main body for an overall planning and design.[1]; A good quality hospital planning the perfect fit of the medical personnel, systems, facilities, limited resources to enhance the level of human visual perception, spatial experience, feel psychological service resources to "service family oriented even"(Service Like Your Family=SLYF);Feelings of family space to reduce the patient to the hospital users can feel cordial nature due to space and reduce tension and unfamiliar suited to involuntary and exclusion. Overview of the whole world, the Children's Hospital of better than General Hospital pediatric services, research and teaching performance, and the country in addition to the Lin-kou Chang Gung Children's Hospital in 1997 formally approved Taiwan Pediatric Association and director Lin Tzou-Yien said: registration, subsequent Changhua Christian Hospital, Children's Hospital and Children's Hospital of the China Medical College, due to outdated laws and cannot be registered as Children's Hospital, National Taiwan University Children's Hospital also is limited due to the same reason, the Ministry of Education changed the named Children's Medical Building; What is more, the new system of teaching hospital accreditation, there is no separate evaluation decree of the Children's Hospital. Healthy children to be the

country's bright future, we cannot sit back and watch the children medical continue to sink, so on behalf of all pediatricians to appeal: First, do not apply adult perspective on children's healthcare, government policy should be child-oriented ; laws and regulations should consider the special needs of children, the Children's Hospital Evidently, also require separate accreditation standards; BNHI should be expressly provided for children under the age of three first-line medical pediatric specialist should be responsible for.

2.2.research purposes

Construct more lack of existing medical building knowledge of children's medical space, the majority of wards and based Construction of adult users. Children medical focus, however, in addition to drug precautions, inpatient care, should also including scraping clinic and all kinds of types of medical use space for in-depth type of less. Medical research in the field of medical management or health care management researchers compiled mostly, the scope to explore management and social-oriented children's medical clinic waiting for the current situation in space is to provide users appropriate situations. Functions demand-oriented research purposes.

2.3. Research Process range

This study investigated the spatial patterns of children's medical sample data collection shall be subject to the each hospital ethics committee / human trials Commission "consent to conduct on-site research and inconvenience shooting; considerations schedule solid nurses, expert interviews, parents for experts object and the measure has reached the goal of this study conducted with the questionnaire, and described as follows:

- (1). The waiting space Scoping to wait for the users of outpatient clinics outdoor use of space, the user object containing children stay with the family and accompany the use of space-based.
- (2) .has a number of Children's Hospital, a children's Division Number of hospitals to determine the number of data samples and data at the same time collecting data collection.
- (3) .has a number of Children's Hospital, a children's Division Number of hospitals to determine the number of data samples and data at the same time collecting data collection.
- (4) .the sample sampling the relationship between people and space: an interactive mode of operation, operation, and residence time, the questionnaire items content compiled so on.
- (5). Questionnaire items of custom given to the experts access content and literature review obtained. 2 experts access to 10 years of working experience architect, senior nurses, plus users parents before the digital test questionnaire Measurement from integration.
- (6) The sample the hospitals also known behavior observed and painted measured by the status of questionnaire content supplementary information in accordance with the conditions of real use.

III. Literature

Discussion of the quality of medical care, physicians medicine, enthusiasm attitude of the nursing staff, administrative staff, considerate key to health care workers is sorely lacking contingent at this stage, the patient most of the time exposed to more hardware space, so space set reasonable, functional considerations, the demand for the basic build requirements of comfort and leisure meet. Patient-centered medical concept has become into or how to implement space let in a medical environment, all users have encountered profound experience environment friendly is urgent, especially in the health care environment is more difficult to adapt and accept the children in terms of a more difficult; following areas of expertise of the medical information about the children's medical space, space and waiting discusses finishing below and explore on a case-by-case basis for further study as a research framework:

3.1. Medical professional field of discourse

Children's Hospital of settings:

3.1.1. Taiwan: friendly communication, children, parents, medical services, a win-win-win: to promote the process of child-friendly health care services, how parents reaction. Zhang Jun Bamboo Steering stressed individual children are independent, non-parents appendages, sometimes, parents, health education before surgery, will appear no patience, in particular, has been back to the clinic several very experienced parents. But nurses still earnestly illustrate children treatment understanding more fear and mismatch will be reduced. Although each child's reaction and the length of time needed, but the benefits of friendly communication, land one after another are confirmed.[7]

3.1.2. The hospital organization and management related to maintaining relationships with each other are inseparable in the hospital with consumers, different from the general marketing and organizational structure in many consumer and marketing, hospitals, owned, respectively, on the characteristics of medical services, hospital quality of as follows[4]:

- (1). **The characteristics of medical service intangibility:** Because of the invisible and unknowable, must be based on the people's confidence in the service provided for. Heterogeneity : ... medical services involving "human factors" service quality differences (or instability) may be due to different medical services personnel mutual differences.
- (2). **Hospital indicators:** : Accident rate ◦ With rising consumer awareness, into the domestic major hospitals in order to protect the safety of patients, visitors and staff, reducing the accident occurred.
- (3). **The impact of environmental changes on hospital management :** The hospital's response strategies: to provide excellent medical environment: including the design of the space, the design of the process of moving lines, from the patient's point of view to consider the environmental hazard monitoring system to control the occurrence of the damage.
- (4). **The concept of the hospital system:** (Weinberger. C.W. ◦ U.S. Department of Health Education and Welfare Minister)had warned : Social benefits will cost more than 1/2 of GNP and health care is the largest part. Especially with hospital costs rise up to the inflation rate four times the U.S. government demand for the hospital to explore are as follows: the government needs; consumer demand: consumer and government demand outside ◦ Seeking a more humane, more compassionate, more sympathetic medical services.

3.2. Discusses the field of space on the waiting space

Chen Fengling [3] : Medical services, environmental equipment usage of surgical outpatient space research found more than 80% satisfaction factors: nurses' attitude of kindly get home to take care of the health education single memo, family members waiting area near the public telephone, satisfaction has not been 80% of the project: easy parking, meal time family members waiting area for the sale of lunch, Locker store clothing, toys reduce early childhood fear and the operating room clearly marked. [11]The research found that the quality of medical care, the environment will affect psychiatric patients choice of hospital, medical quality factors including: the hospital accreditation level the doctors medical technology and the reputation of the hospital; hospital equipment, privacy, security and comfort.

Xie Ruiting [11] : To medical space name separated to the demand, an exclusive area of the total partition three attributes, needs space to Desk, registered / referral, grant price / payment, live Discharge Register, the beginning of the pre-clinic, clinic rooms, outpatient waiting area observation room; proprietary bar exam room, group therapy rooms, health classroom, family therapy room, observation room, game room, counseling room, injection room; the total scoring column are based consulting room, observation room, help desk, the outpatient waiting group therapy room, health classroom, family therapy room, game room, counseling room, injection room. Desk rating bar is a medical lead time outpatient waiting visible waiting area should provide an independent space and pay attention to their professional

needs. Public equipment should have a public telephone, health education signage, information rack, and television, and to provide patients and their entourage health education information and human needs.[2] · Most of the hospital has a games room, its equipment and materials to the television.[8] °

Waiting configuration form : Space function of the waiting area, patients to see the doctor during the waiting area, classified by the configuration form, can be divided into the following three types:(1) provided in the public corridors, so anyone may cross the meantime, causing mutual interference between the patient and the passers-by or hinder. Will cause instability in patients who have severe psychological.(2) stability of waiting space is a separate space, less susceptible to the interference of others, patients can feel at ease to queuing and attention Clinic Progress.(3) is divided into inner and outer waiting area, patients can order and fast handling patient stratification between the inner and outer waiting area, similar to the nursing station to control and contact patient visits.[11] ° Space focus is to provide patients with a comfortable clinic environment, health is especially important design considerations. In addition to the medical technology developed at the same time, the design of the space cannot be ignored. Focuses on the architectural design in the sense of space, outpatients is often busy schedule the time to see the doctor, the time had to be spent in the hospital, and therefore are more anxious emotional.[11] °

3.3. Case Study

“A “ hospital is very great importance to children's medical integration, integration of subjects complete medical services for children and research-based(figure 1)(figure2),(Action time and the field residence time on-site behavior defined by user to identify demand action)., contain intensive care departments (nephrology, gastroenterology, allergy and immunology at Division, neonatology, neurology, genetic Division of Endocrinology, pleural Children Medicine, Department of Infectious Diseases, Hematology and Oncology, cardiology), Department of Pediatric Surgery (Ophthalmology, ENT, dermatology, orthopedics, dentistry, anesthesiology, urology, plastic surgery, cardiac surgery, neurosurgery, etc.) child psychologist, a children's rehabilitation department, child nutrition, children Pharmacy children's medical integrated children's Medical services. In this study, the selected range of the waiting area specialist medical space greater differences due to illness needs and professional equipment, waiting space situational, however, all appeared in the specialist medical space, so the selection.

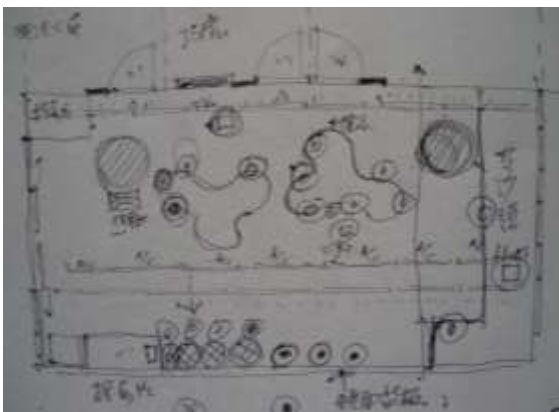


Figure 1. A case hospital site. (Draw by Researcher.)

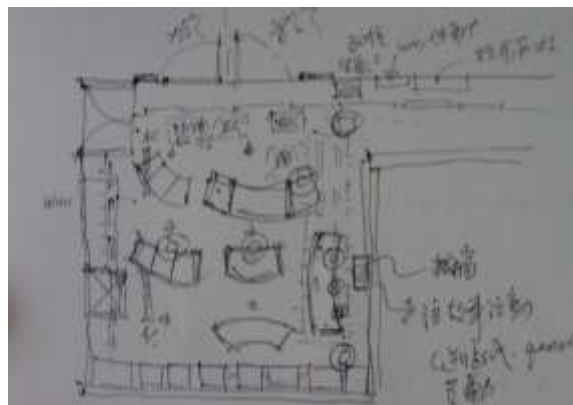


Figure 2. A case hospital another site. (Draw by Researcher.)

IV. Study design and implementation Research Design

Dimensions of items, expert interviews and intuitive the POE, participant observation, and literature to explore the method of finishing the questionnaire items and get the test and questionnaire pre-test and modify.

4.1. Data Collection

(1)."A" hospital area intuitive POE dental and general waiting space A, B two series observed; draw a plane, and users observe, record and analyze the physical environment, the number of devices and the location, spatial scale, and finally finishing factor analysis factor waiting to accompany 83, and then sub-category four dimensions: functional dimensions, scale dimensions, device dimensions, physical feelings.

(2).The expert interviews Fineishing: correlation to the health care system-related hardware, software, operating personnel, an open questionnaire items and initial interviews architecture content compiled based on expert information.

Table 2, experts resume

Expert	Professional	The titles / professional work	Professional years
A	Pan Ji Joint Architects	Project manager / architect	13
B	Pan Ji Joint Architects	Project manager / architect / California architect / U.S. Energy and Environmental Design Professional Certification	12
C	Cardinal Tien Hospital	Deputy head nurse / nursing	12
D	Cardinal Tien Hospital	Nurse / nursing	13
E	Cardinal Tien Hospital	Nurse / home health care	7
F	"A" hospital	Administrative staff	3

(Table4.1)The expert structural factors analysis meter questionnaire Tables

Factor	Functional dimensions 17	Scale dimensions 16	Device dimensions 23	Physical feelings 27
analysis factor	1.Waiting 2.Breast-feeding 3.Parents and children to accompany 4.Parent-child interaction 5.Changing diapers 6.Kids games 7.Chess 8.TV health education 9.TV leisure 10.Music Appreciation 11.Electric pleasure 12.Magic show 13.Primary school tutoring 14.Aptitude test 15.Rest 16.Nursing consultants (Non-health care act) 17.Counseling staff	1.Waiting lists 2.Waiting by Age 3.Accompany the parent-child number 4.Changing diapers 5.Kids games 6.Reading area 7.Bookcase 8.Children's Methodist parish 9.Physical exercise area 10.Sports equipment area 11. Internet zone 12.Desk 13.Seats form 14.Poster Image 15.Bulletin board 16.Heme exhibition area 17.Other	1.Wall material 2.Ground material 3.Insufficient lighting 4.Seat size 5.Seat material 6.Time display collision 8.Sharp objects on the ground 9.Sign is clear. 10.Bookcase too high 11.Drinking fountains burns 12.Air-conditioning cycle 13.The toilet moving line is unclear 14.The toilet is too far away (20m) 15.Lack of liaison area 16.Environment is too noisy 17.The lack of privacy in space 18.Activities of the lack of privacy 19.Poor location of the bulletin board 20.The theme exhibitions 21.District unclear 22.Aisle Health 23.Seat health Infection isolation	a .positive (good) feelings painting □ b. negative (bad) feelings Please draw □ Warm Bright Clean Noble Beautiful Stable Lazy Convenient Indifference Cold Pressure Terrorist Easily Considerate Respected Courtesy Boring Deception Direction at a loss Program clutter unclear Tension Inhuman Vexatious Noisy No privacy Dirty Unsanitary

(3). Complete the test and the current status and non-status of the user questionnaire: Site random sampling of diagnosis and treatment of children waiting for parents to two “A, B,” non clinics but children see parents of clinic experience two “C, D “and the hospital A site executives an “E “members total five. Statistical literature, expert interviews and field test measurement results statistics are tabulated in Table (4.1), the extension can dimensions, scale dimensions, device dimensions, physical experience four dimensions are analyzed as follows:

4.2. Perform data analysis

In this study, the Children's Hospital, Children's Medical department waiting for the parents to visit or accompany staff and general (non-site medical treatment) questionnaire measured the children's medical space questionnaires A Children's Hospital, Children's Hospital B waiting space,-site questionnaire mining the convenience sampling conducted perception and needs of the parents of the hospital, the values obtained with each facet of oriented described as follows:

Implementation: sampling time by 101.05 to 101.08, on-site time Monday to Saturday 10:00 am to 18:00 meter Measurement the site child clinics processes: consulting room the physician diagnostic → body check → back to the exam room off attending → grant price of medicine from the main flow to the space problem some time ago that the clinic room waiting to be explored range. Study observed children outside of the emergency room, treatment rooms average consultation time after about 20 to 30 minutes, the physical examination process often cost about 60 to 90 minutes required to take upper and lower floors and the process of converting the space of a waste of time and moving is not easy overall medical procedure a period of 2 to 3 hours, and indeed for the consumer inconvenience.

Functional aspects:

Children's Medical space waiting room: Wait, changing diapers / dressing, breastfeeding

Is the most important; followed by kids games, parent-child interaction, toilets and so on.

Dimension factor		Dimension factor	
Waiting	76%	Toilet	48%
Changing diapers / dressing	64%	Parents and children to accompany	44%
Breast-feeding	56%	Tea/water	40%
Kids games	56%	Care consultation (health care behavior)	40%
Parent-child interaction	48%	TV health education	36%

Scale dimensions:

Waiting lists	Kids games	Accompany the parent-child number	Reading area	Seats form	Children's Methodist parish	Changing diapers	Waiting by Age	Physical exercise area	Desk
96%	72%	48%	48%	48%	44%	40%	36%	24%	24%

Device dimensions :

Corner collision	Air-conditioning cycle	Drinking fountains burns	Aisle Health	Seat size	Environment is too noisy	Sharp objects on the ground	Sign is clear.	Recreational Facilities	Infection isolation
88%	80%	72%	72%	56%	56%	52%	52%	52%	52%

Physical feelings :

positive :

Warm	Light	Clean	Cordial	Convenient	Lively	Considerate	Rich colors	Relaxed	Relaxed	Taste
72%	72%	64%	48%	36%	36%	28%	28%	24%	24%	

Negative:

Dirty	Noisy	Indifferent	Ice-cold	Un-sanitary	Pressure	Program clutter unclear	inhuman	Tension	Terror	Direction at a loss	No privacy
64%	56%	52%	52%	40%	36%	36%	36%	32%	28%	28%	28%

V. Conclusions and Recommendations

5.1. Conclusion

Functional dimensions: In addition to waiting time, and children directly associated with changing diapers, breastfeeding, kids games, parent-child interaction, parent-child relations needs to accompany the moment of settings required to make up this function may be lacking, Children's Hospital; toilet, tea amenities which must be located in or next to the nearby; nursing skills in health education are also shaped its urgency.

Scale dimensions: spatial scales after attending to the most important, because of physician diagnosis times of approximately 20 patients, each patient is approximately 20 minutes to see the doctor; shared a waiting space and need first to configure each of the 3 treatment rooms from A hospital waiting view, clinic shall be capable of accommodating at least two sets of waiting patients, therefore, the waiting space should accommodate a number of groups for the $3 \times 2 = 6$ group. Accompany personnel such as 1, the total number, $2 \times 6 = 12$ people, the number of seats 12 people. The kids game space, reading area, seat form, the Children's Guardian parish Secondly, hospital A quantity needs six groups number as a reference. Waiting space minimum number: the number of treatment rooms $\times 2$; in to accompany their loved ones for 2 and above accounted for 50% of the field because the to accompany relatives number of dimensions factor.

Device dimensions: corner collision, the air conditioning cycle, drinking fountains of scalding, walkways health waiting staff are most concerned about the facilities, seat size, ambient noise, ground safety, space marked, entertainment design, in addition to the physical nature of the infectious isolation design attention air conditioning and viral infections to health threats need to strengthen the control and design reference.

Body feelings: In this dimension, although not directly impact on the psychological level of comfort perception and indirect health effects and quality, but the feeling of space becomes very important. The Forward option: bright, friendly, convenient, rich colors that can be attributed to space design reference; clean, considerate, fun can be attributed to administrative or process reference; another warm, lively, easy matters for the attention of the layout of the environment atmosphere. **Negative option:** noisy, unsanitary, inhumane, tension direction at a loss, the privacy dimensions factor can be attributed to space design reference; dirty, cold, pressure, program clutter unclear reference for administrative or processes; cold, tension, and terror can be attributed to the layout of the environment atmosphere precautions.

5.2. Follow-up study suggests

The traditional medical form mature system, equipment and professional development, and space medical system is the application of traditional medical type, analogous to the use of space; which is an attempt to object space as a patient, their symptoms and medical needs, diagnosis, treatment and form, execution ability to nurture the healthy demand trends.

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