

CHILDREN'S CANCER HOSPITAL FROM THE STUDENTS PERSPECTIVE. NOVEL APPROACH

Aleksandra BRYZEK ^a, Anna DUDEK- WILASZEK ^a, Izabela JANECZEK ^a,
Angelika MAZURKIEWICZ ^a, Magdalena JAMROZIK- SZATANEK ^b, Elżbieta NIEZABITOWSKA ^c

^a Students; Faculty of Architecture, The Silesian University of Technology, Akademicka, 44-100 Gliwice, Poland

^b Dr.; Faculty of Architecture, The Silesian University of Technology, Akademicka, 44-100 Gliwice, Poland
E-mail address: magdalena.jamrozik-szatanek@gmail.com

^c Prof.; Faculty of Architecture, The Silesian University of Technology, Akademicka, 44-100 Gliwice, Poland
E-mail address: elzbieta.niezabitowska@polsl.pl

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Abstract

In recent years, cancer becomes more, and more the disease of affluence. Although cancer has been diagnosed and treated for a long time we are still learning to fight it effectively. This disease requires a different approach to the patient and his treatment, especially if the child is treated. This raises the need to design the building, which in addition to medical care will provide the appropriate conditions for the intellectual, physical, and spiritual development of the child. Research has been conducted in two Polish facilities: Institute of Oncology in Gliwice and Chorzow Pediatrics and Oncology Center. By observing the patients (the path that they have to pass during the hospital stay) and interviews with the staff it was possible to learn about different user groups and their needs. In addition, we have analyzed the functional systems of foreign hospitals. On the basis of the acquired knowledge we made the overall functional diagram of the child's oncology hospital. It became the starting point for student projects – hospitals in Ruda Śląska Godula and Radziszow. In the proposed hospitals we focused mainly on the needs of the children and their carers.

An important issue was the easy orientation in the building. We introduced the guiding themes that allow to distinguish different parts of the hospital. Colored marks and themes are used to find the way through associations and improve the image of the hospital.

Streszczenie

W ostatnich latach rak zdobywa miano choroby cywilizacyjnej. Pomimo tego, iż diagnozowany i leczony jest od bardzo dawna wciąż uczymy się skutecznie z nim walczyć. Choroba ta wymaga innego podejścia do pacjenta oraz jego leczenia, szczególnie jeśli leczone są w nim dzieci. Rodzi potrzebę zaprojektowania budynku, w którym oprócz opieki medycznej zostaną zaspokojone również odpowiednie warunki rozwoju intelektualnego, fizycznego oraz duchowego dziecka. Przeprowadziłyśmy badania w dwóch śląskich placówkach: Centrum Onkologii w Gliwicach oraz Chorzowskim Centrum Pediatrii i Onkologii. Dzięki obserwacji różnych dróg pacjentów (drogi, którą musi przejść chory podczas pobytu w szpitalu) i rozmowy z pracownikami możliwe było poznanie grup użytkowników i ich potrzeb. Dodatkowo przeanalizowałyśmy układy funkcjonalne szpitali zagranicznych. Na bazie uzyskanych wniosków powstał ogólny schemat funkcjonalny dziecięcego szpitala onkologicznego. Stał się on punktem wyjścia dla projektów studenckich – szpitali w Rudzie Śląskiej Goduli i Radziszowie. W projektowanych szpitalach skupiłyśmy się przede wszystkim na potrzebach dziecka i jego opiekunów. Zwróciłyśmy również uwagę na możliwość łatwej orientacji w budynku. Wprowadzone zostały motywy przewodnie, które pozwalają na odróżnienie poszczególnych części szpitala. Kolorowe oznaczenia i tematy służą do znajdowania odpowiedniego miejsca za pomocą skojarzeń oraz ocieplają wizerunek samego szpitala.

Keywords: Children's cancer hospital; Functional diagram of cancer hospital; Group of patients; Project of children's hospital; Theme of the project; Recreation area.

1. INTRODUCTION

Oncology is the field of medicine dealing with treatment, prevention and detection of cancer. This is classified as a chronic disease, so its treatment lasts much longer in contrast to usual medical facility.

Children's cancer hospital is a special case because the essence of childhood cancer treatment in addition to medical care is to provide the appropriate conditions for the intellectual, physical and spiritual development. Very important aspect is also to provide a place for caregivers. In the facilities in Poland, there are very few solutions meeting these requirements. This is mainly due to a lack of research, analysis and public participation, which helped to understand how to form patient-friendly space. A major problem is the lack of financial resources.

Until now there are only few publications in this field. In Polish literature last publication about children's hospital was done by *W. Podczaska-Wyszyńska* in 1977 "Designing medical facilities for children and young people". Despite the passage of many years from date of issuance of the items contained in it is actual in conjunction with today's regulations. It is taking about important issues necessary for design. Significant knowledge can also be found in book titled "The design of Healthcare facilities" by *J. Juraszyński, A. Nitsch, S. Porębowicz, Z. Radwański* published in 1973, which like the previous book was written in the 70s of the twentieth century, and includes the theme of all healthcare providers. It is also worth mentioning "Health Building Notes 23 Hospital accommodation for children and young people" DHSS and analogous paper from USA "Guidelines For Design and Construction of Health Care Facilities" ASHE. Those papers are important because they focus on social aspects of medical treatment. They describe individual needs of children patient equally with standard medical procedures. Today, knowledge from the relevant literature should be expanded and scientifically proved, in order to create the educational conditions that give the security, quality and patient satisfaction at medical and architecture level.

The first stage of the design process is to carry out relevant research to get familiar with the specific treatment and patient needs. The research includes activities such as:

- Interviews with employees of oncology hospitals,
- Functional analysis,
- Photographic analysis,

- Analysis of the materials available in the literature,
- Analysis of the material available on the Internet.

This type of research has been conducted in two Polish facilities: Institute of oncology in Gliwice and Chorzow Pediatrics and Oncology Center during the course Architectural Design at the faculty of Architecture of the Silesian University of Technology. Such research allowed to familiarize with the subject and pull some proposals. We have defined functional zones and patient paths. The end result was the development of two separate projects of children's cancer hospital (in Ruda Slaska – Godula and Radziszow).

2. FUNCTIONAL AREA RESULTING FROM CONDUCTED HOSPITAL RESEARCH

Oncology Children's Hospital because of its specificity must have the appropriate zones and wards and fulfill specific functions. Based on the analysis of the existing children's hospitals and cancer hospitals for adults (Institute of Oncology in Gliwice and Chorzow Pediatrics and Oncology Center) it was possible to emerge the functions that should be included in children's cancer hospital [Fig. 1] and they are:

- Pediatrics,
- Testing and treatment area (selected features),
- Pathology,
- Research area,
- Administration,
- Visits area,
- Patients private area.

Areas of treatments and research are different in oncology hospital in contrast to general hospital. Emergency unit is no required, because patients have already had diagnosed their disease. In pediatric oncology hospital there are no words such as nuclear diagnostics, gynecology, obstetrics and urology. However, it is important to design a "one day clinics".

Further features that should be included in a pediatric oncology hospital result from the analysis

of the overall function of cancer centers. These are:

- Outpatient clinic,
- The division of radiotherapy and radiodiagnosis,
- The division of medical physics support facility radiodiagnosis,
- Department of Anaesthesiology and Intensive Care,
- Technical zone.

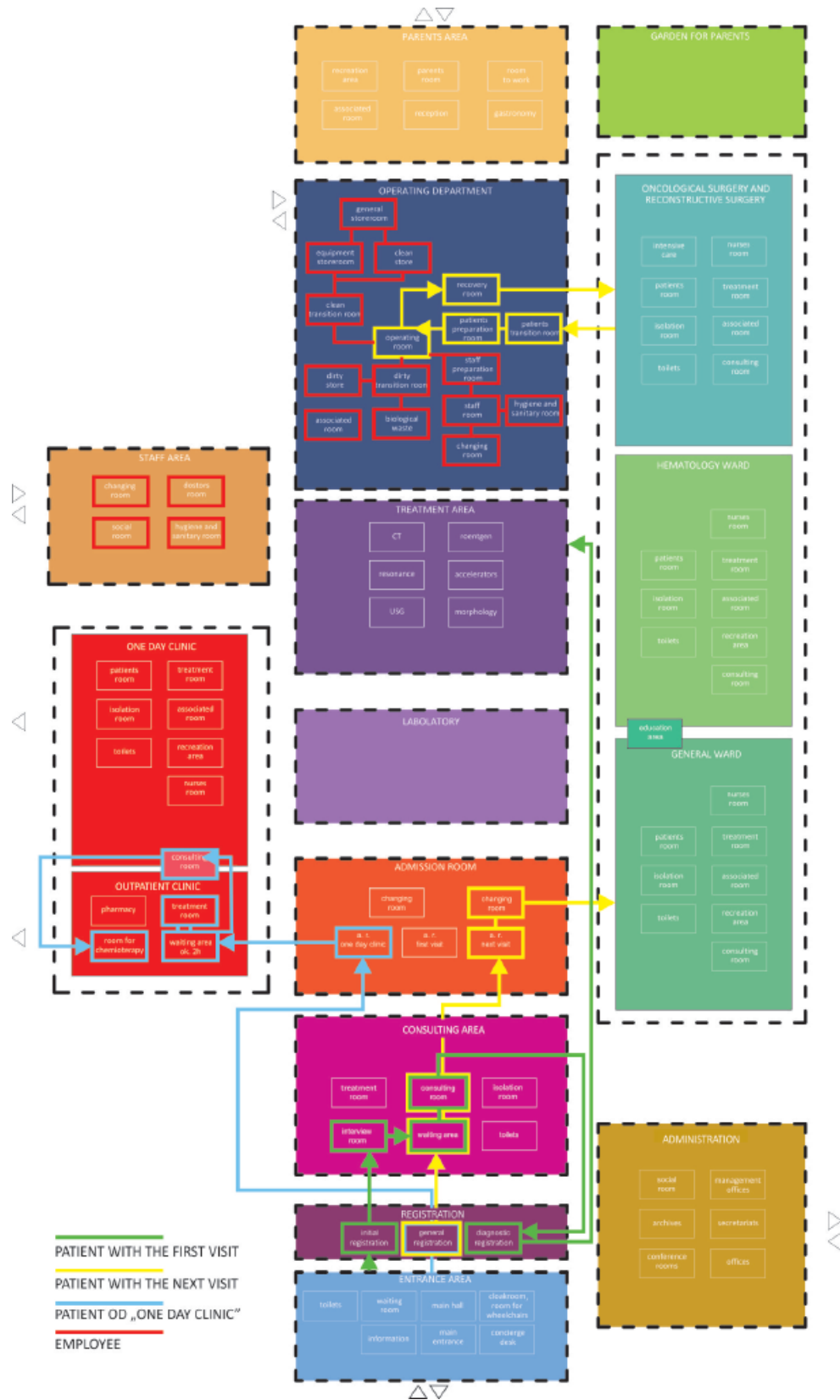


Figure 1. General functional diagram of cancer hospital

Depending on the specialization of the hospital, there are additional areas such as research area, division pathology of cancer, clinics of oncology and reconstructive surgery, radiotherapy and chemotherapy and marrow transplantation.

Unlike general hospital, each cancer hospital must specify the areas of specialization and adapt adequately to the requirements specified for each ward. In case of children’s hospitals an important role is to adapted recreation areas to the age of patients. It should provide a variety of activities to fill the time between examinations and treatments. Also children’s families should have their own area in the hospital for their needs. An example would be a hotel close to the hospital, places for work and rest, etc.

3. GROUP OF PATIENTS

Understanding of user groups was made possible thanks to a visit to the Centre of Oncology in Gliwice and Chorzow Pediatrics and Oncology Center. The study involved the observation of the patient (the path that he or she has to pass during the hospital stay), and an interview with the staff.

In the cancer hospital, there are three groups of patients:

- patient with the first visit,
- patient with the next visit, qualified for treatment,
- patient of “one day clinic”.

3.1. PATIENT WITH THE FIRST VISIT

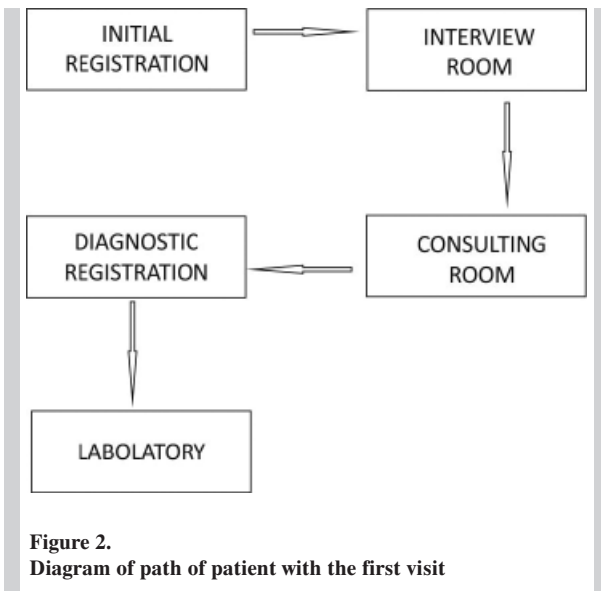


Figure 2. Diagram of path of patient with the first visit

The patient comes to initial registration where he or she is directed to the interview room. Nurse will preliminarily interview and create a patient’s medical history. Then the medical specialist recommends a series of detailed examinations. The diagnostic registration sets exact dates of these treatments. At the appointed time, the patient is sent to the diagnostic area.

3.2. PATIENT WITH THE NEXT VISIT

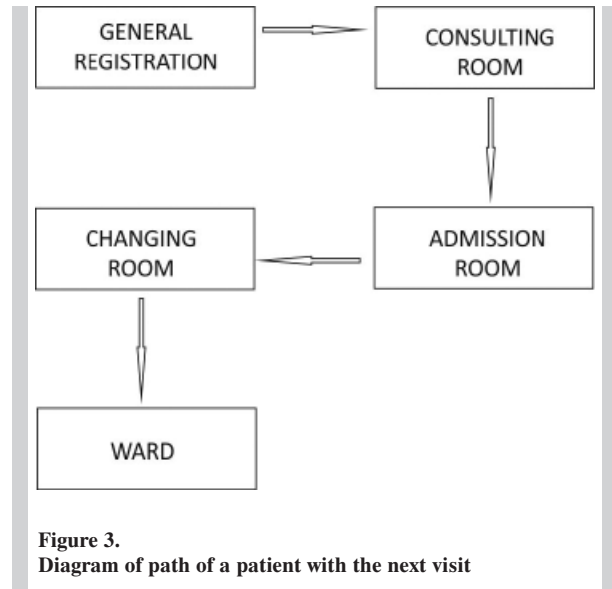


Figure 3. Diagram of path of a patient with the next visit

Patient comes to general registration, where he or she is directed to the doctor for diagnosis. If qualified for hospital treatment he or she is directed to the ward. In the admission room personal data and current insurance are checked. The patient is directed to changing room, where he or she can take a shower, change clothes, store his or her personal stuff and put the deposit those most valuable. The nurse with in the ward escorts the patient path that is not available to unauthorized.

3.3. PATIENT OF ONE DAY CLINIC

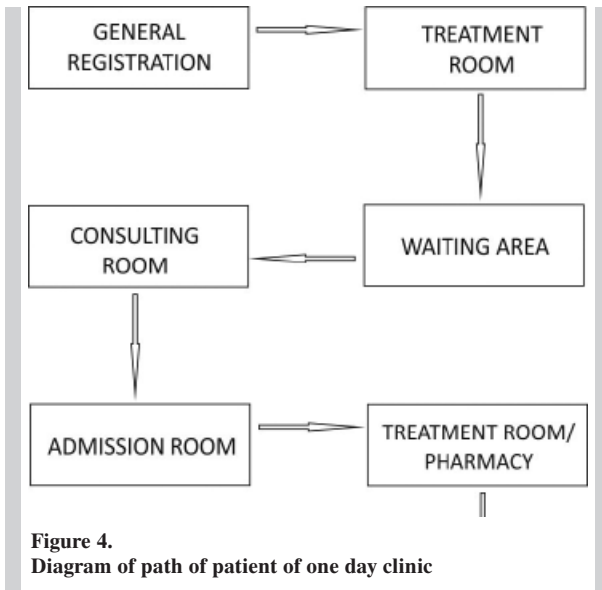


Figure 4.
Diagram of path of patient of one day clinic

Patient comes to general registration, from where he or she is directed to the treatment room for blood sampling and health check up. The waiting time for the results of the morphology is about two hours. Patient delivers the results to the consulting room. If the state of health allows chemotherapy, the patient is reported to the admission room of “one day clinic” where personal date and current insurance are verified. A suitable dose of the drug is prepared at a pharmacy, and then served to a patient in a special room. The patient is monitored by a nurse.

Due to the fact that each of the groups of patients in the hospital spends a significant amount of time waiting for examination or medical consultation is important to draw attention to the needs of the patient. Recreation areas should accompany the patient and his family at every stage of treatment.

4. DESCRIPTION OF PROJECT OF CHILDREN'S HOSPITAL IN RUDA SLASKA-GODULA

Designed Children's Cancer Hospital is located in Ruda Slaska in Godula district, close to the city hospital. The theme of artistic conception are the fruits, which intend to help young children in the interior orientation. It appears inside and outside of the building [Fig. 6].

Land designated for building is relatively large, which allowed to create wide outdoor recreational space for patients. It is consisting of a number of fruit squares. It is divided into zones customized to the age of the children. Space provides opportunity of contact with nature and allows them to perform ordinary activities. This has a positive effect on the healing process.

The interior of the hospital is designed primarily to allow clear communication to all groups of patients [Fig. 5]. Orientation in the building is one of the main problems in the health institutions in Poland. With readable arrangement of zones and fruit motifs patient more easily finds his or her way in the building. Each of the floors has been recognized by a particular group of fruit such as: grapes, berries, orchard and citrus.

The project of hospital included needs of the three groups of patients (patients with the first visit, patient with the next visit qualified for treatment and patient of “one day clinic”). Spaces where these people stay are located in accordance with the length of stay. Outpatient clinic is located on the ground floor and has a side exit which the patient can use after surgery. Rooms of the patients in “one day clinic” are on the first floor and on the next floors of building there rooms of patients who stay in the hospital longer. A distinction between first-time patients and those who appear again was introduced in the registration and dispensary. Kids who are coming for the first time to the hospital will be directed to the interview room, where a patient card will be created for them.

The hospital consists mainly of wards in which patients stay long-term. They are designed not only with regards to treatment requirements but also to the age of the children. Patient rooms are single or double. Single rooms are located in the pediatric hematology ward and younger children who stay in the hospital with their parents or caregivers. Double rooms are mainly in wards for older children. All rooms contain pull-out bed for a child's family. In each of the wards there are small recreational areas with devices in the shape of the fruit. Main play-



Figure 5.
Functional diagram of Children's Hospital in Ruda Slaska-Godula

ground areas, offering diverse attractions are located around the atrium. A variety of devices in the form of fruit also appear there.

These are not only colorful seats, part of which is in the form of spheres which can be accessed, but also toys such as oranges, apples phones making different sounds [Fig. 7]. These toys allow young patients to fill the time that remains between examinations and treatments. An important element located in recreational areas are rooms for sensual therapy using sounds, lights and smells to stimulate the senses of the patient. Such actions affect speed of treatment. These facilities often appear in the cases of foreign hospitals.

An important element of the project is a hotel designed for parents coming with the child to the hos-

pital. They may, first of all rest, but they will also find a place to work or to search for information about the child's illness there. It is connected with the main building of the hospital by means of a winter garden.



Figure 6.
Visualization of the hospital building

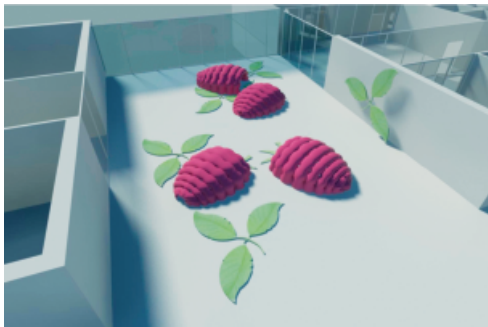
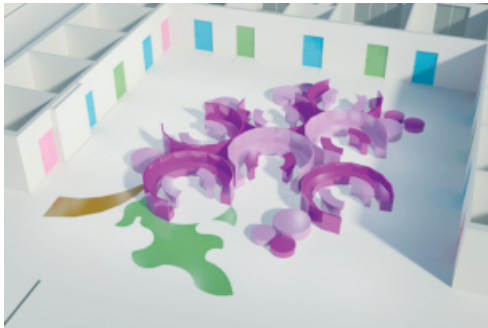


Figure 7.
Visualizations of the interior of the hospital

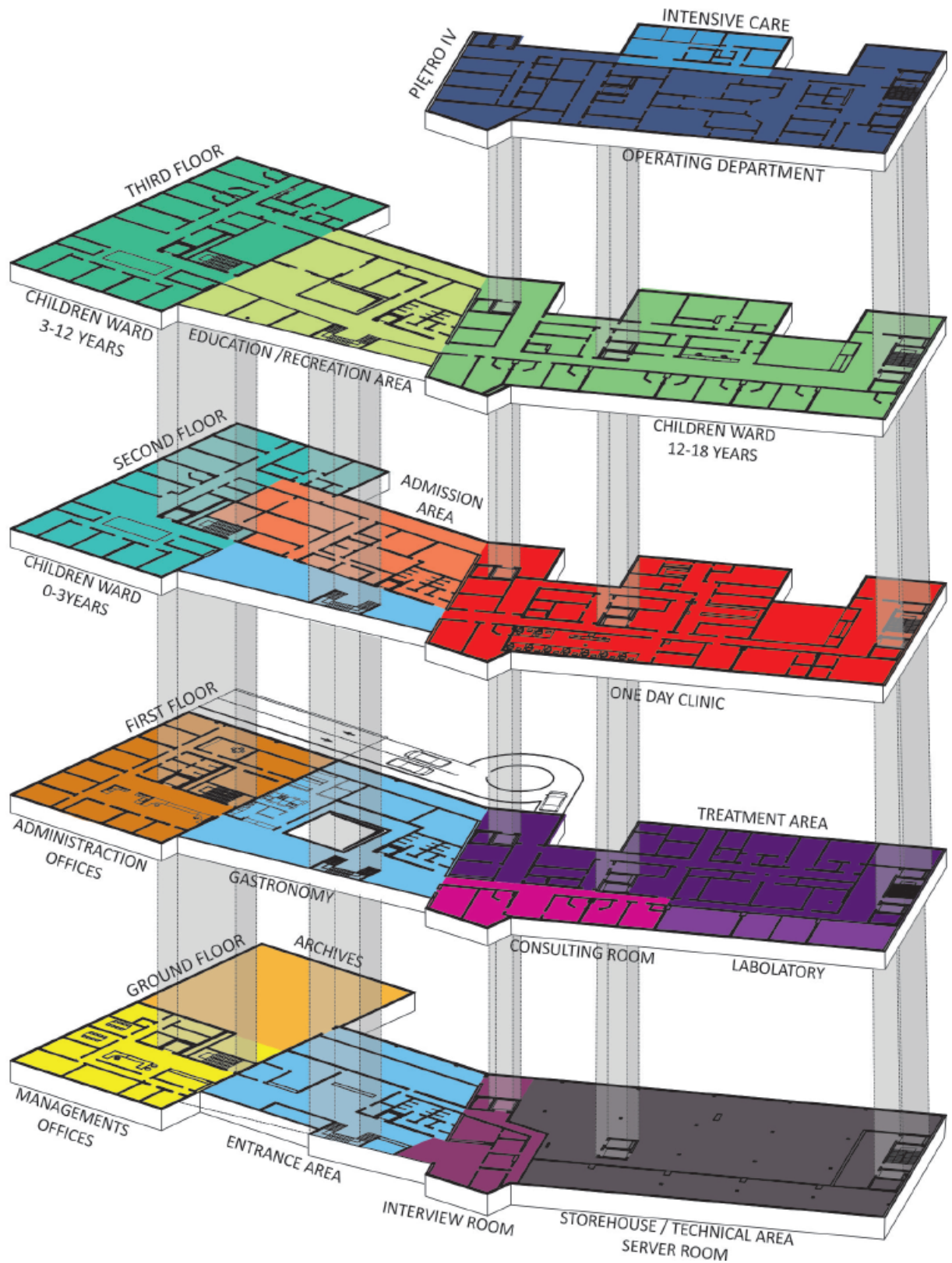


Figure 8. Functional diagram of Children's Hospital in Radziszow

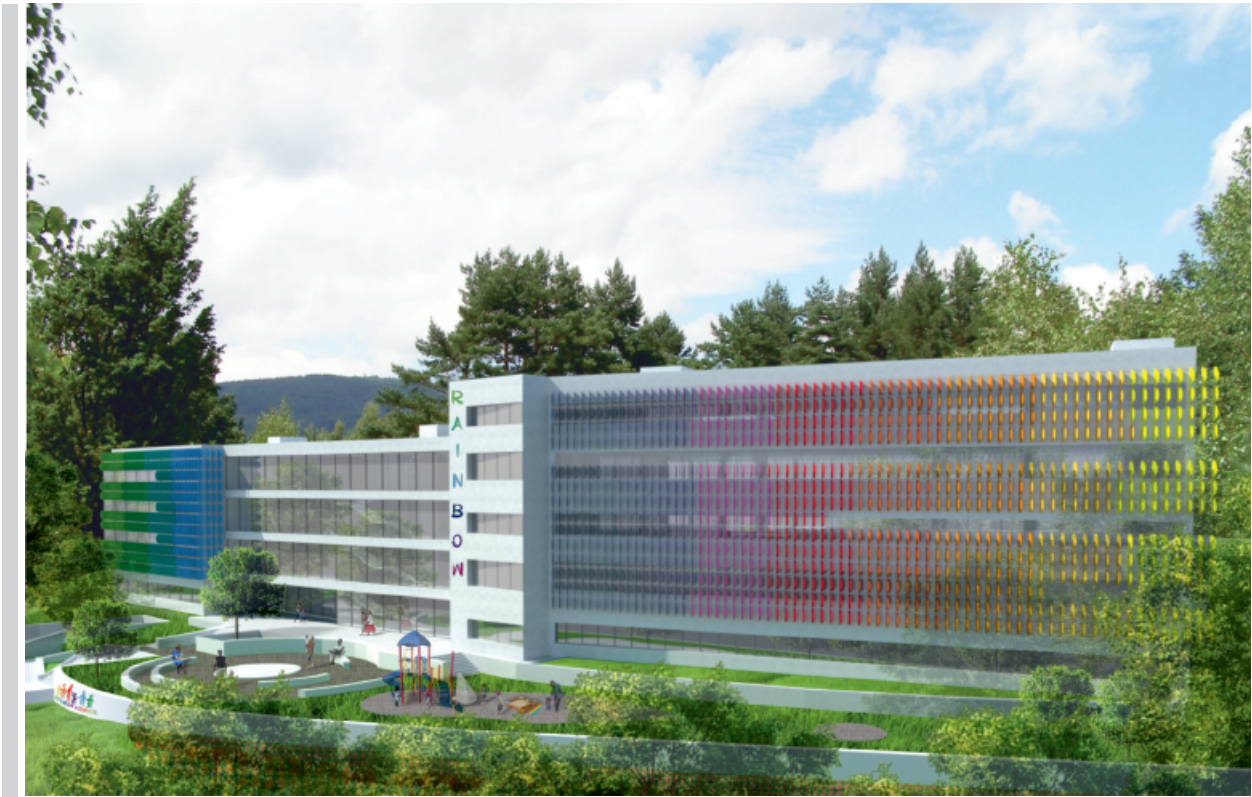


Figure 9.
Visualization of the hospital building

5. DESCRIPTION OF PROJECT OF CHILDREN'S HOSPITAL IN RADZISZOW

The hospital is designed in the Radziszow, in the municipality of Skawina the Malopolska province. Location of the land is unique thanks to the proximity of the countryside.

A significant difference at ground level allows for visibility of the hospital from the main road.

The aim of the project was to create a building friendly to little patients and their families [Fig. 9]. It was important that the block is not overwhelming with its size and the materials used on the facade are interesting and original. The theme of the project is the rainbow, the colors have been used both outside and inside the object.

The main entrance is emphasized by square in front of the entrance with a fountain, small architectural elements and greenery. The project has applied the idea of sustainable development. It means that project included places for physical as well as intellectual and artistic development of the child. In the project, it was important to create places for patients and their parents. Both a place for loud entertainment

and for quiet relaxation were assumed. Around the hospital has a small amphitheater, playgrounds, fireplace and garden plots. All these facilities are promoting the integration of patients, and have a positive effect on the treatments process.

An important element of the idea of the functional zones was arranged in such a way to facilitate users the orientation of the object. The functional zones are designed so as to allow the use of the three groups of patients (patients with the first visit, patient with the next visit, qualified for treatment and patient of "one day clinic"). Each area has assigned different color of the rainbow, which is shown on the floor and points a specific place in the hospital. The facility has an outpatient clinic, an "one day clinic" and a ward of hospital treatment [Fig. 8].

In addition, the administration area and the associated zones are located in the building. On the ground floor there is zone dedicated to information and registration, along with an interview offices. This will allow the patient to quickly find in the building. The floor above, in the vicinity of the consulting room a diagnostic area is located. "One day clinic", along with the admission room are located on the second

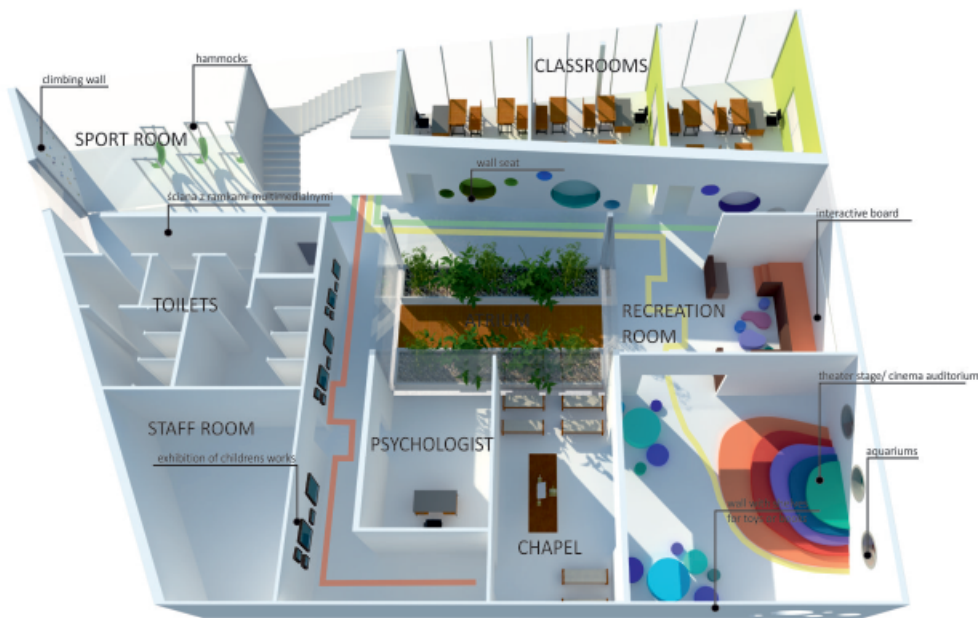


Figure 10.
Axonometry of public recreation area

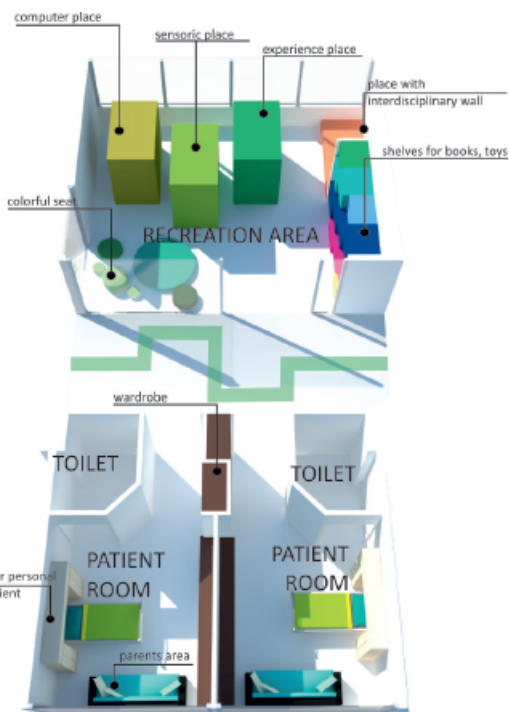


Figure 11.
Axonometry of recreation area on the children ward 12-18 years

floor. While waiting for test results there is a large recreation area with access to the garden available to the patient. The wards are provided for each age group: 0-3, 3-12, 12-18. They are located on the second and third floor. Space for families is also provided [Fig. 12]. They can stay with their child in the hospital ward, work or integrate with other parents. In each ward there are available recreation areas adapted to the needs of patients age [Fig. 10]. The quality of the space in which the child stays not only improves the health, but also psychological development. It is important to create a variety of recreational spaces. Additionally on the third floor there is the main recreation area available for all, including the school, which is essential for long residence of the child in the hospital [Fig. 11]. Caring for the spiritual development of patients and their families a chapel was designed in the hospital. Throughout the stay in hospital patients are under the care of a psychologist who helps them to deal with the disease. At the last of the floors, where access is limited, there are located the operating theatre and intensive care ward.

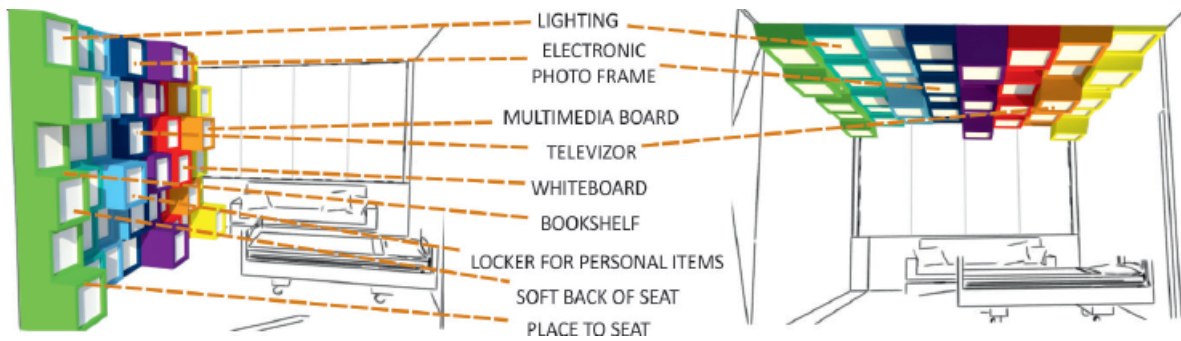


Figure 12.
Proposed arrangement of wall or ceiling in a patient room

6. CONCLUSIONS

In the design of hospitals, especially those intended for children it is not enough to pay attention only to the medical aspects. It is important to refer to the needs of the patient, both those induced to disease as well as those related to the everyday life. As it is clear from the study, there are different groups of patients so it is important to provide various ways of communication for the patient. Particular emphasis should be put on the possibility of easy orientation of the building, so that the patient does not have to wander in it.

In the project of children's hospitals recreation areas are very important aspects. Those places allow to reduce patient stress of staying in hospital. In designing these areas, be sure to create a space suit to the needs of different age groups with different needs. In addition, they must provide both the opportunity to play in larger groups as well as rest.

During designing of this type of hospital, in addition to the main user groups such as children the staff and parents should also be take into account. First of these groups need good working conditions. The second one should be able to stay with a sick child all the time.

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