Shared or private patient rooms?

In which way have private and shared patient rooms in children hospitals influenced the health of the hospitalized child? Based on the three casestudies, the WKZ, the PMC and the UMC.

Mascha Gerrits, 5022177
Marcel Teunissen, 18 april 2024
TU Delft, MSc 2

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1. Abstract

This topic derives from my personal interest in the influence of hospital architecture on the health of patients. During my adolescent years, at the age of 17, I underwent diagnosis and treatment for Ewing Sarcoma at the Wilhelmina Children's Hospital (WKZ) in Utrecht. Throughout this period, my hospital stays were frequently in shared patient rooms within the WKZ. After finishing my treatment at the WKZ, I started going to the Prinses Maxima Centre (PMC) next to the WKZ for check-ups. There were a lot of notable differences between the WKZ and the PMC.

The primary distinction between the PMC and the WKZ was the reduced presence of patients in transit within public areas of the PMC. This might be, because of the segregation between the public and private spaces within the PMC. Furthermore, the absence of shared patient rooms is notable in the PMC. Every patient has his or her own room with a guest room included. It is interesting to investigate the influence of the patient room on the wellbeing of the patient, because a private patient room may have a different effect on children than on adults. Children undergoing illness may experience interruptions in the development of their social skills. While interactions with other sick children could potentially aid in coping with their condition, the provision of private rooms offers advantages in terms of promoting rest, hygiene, and privacy for these young patients.

Subject

Shared and private patient rooms in children hospitals.

Research question

In which way have private and shared patient rooms in children hospitals influenced the health of the hospitalized child? Based on the three casestudies, the WKZ, the PMC and the UMC.

Subquestions

1. How did (children) hospitals develop over the years?
2. How does the social development of a child works?
3. What is the influence of shared patient rooms on the health of children?
4. What is the influence of a private patient rooms on the health of children?
5. What is the difference between patient rooms for children and for adults?

Strategy

The negative and positive aspects of a private and shared patient room are compared on the basis of the floorplan analyses of three casestudies and literature.

2. Introduction

Hospitals
Hospitals are highly structured and technical buildings. They became over the years more and more specialized in certain diseases and age groups. Because of the specialization in hospitals the structure and planning of the hospital had to change, therefore the patient rooms would also change (Mens, N. Wagenaar, C.).

Children Hospitals
Before the 19th century children wouldn't go to a hospital, because their mother would take care of them. This changed in the Netherlands in 1863 when the first children hospital in Rotterdam was build, called the Sofia Hospital. The care for adults and children is different, because children are in the middle of their development and adults already passed that stage (Kinderverpleegkunde, 2024).

Patient room
The patient room plays a crucial role in the hospital stay for children, as it's where they spend most of their time. This focus on children is essential, as their needs differ significantly from those of adults. A private patient room for an adult has a different effect on them than on children, because a child is in the middle of developing their social skills. If they get sick those skills can be put on a hold. In this thesis the differences between a private and shared room for children are investigated by examining the advantages and disadvantages and concluding which rooms suits best for a child. The research question is as follows: "In which way have private and shared patient rooms in children hospitals influenced the health of the hospitalized child?" Based on the three casestudies, the WKZ, the PMC and the UMC. The main question will be supported by five sub questions. The first one is "How did (children) hospitals develop over the years? " The second question is "How does the social development of a child works?" The third question is "What is the influence of shared patient rooms on the health of children?" The fourth question is "What is the influence of private patient rooms on the health of children?" And the last question is "What is the difference between patient rooms for children and for adults?"

Methodology
The first question will be answered with literature on the history of hospitals by Noor Mens and Cor Wagenaar (2020). The second question will be answered by literature of Rita Kohnstamm (2009). The third, fourth and last question will be answered by 3 case studies in the Netherlands and literature of Blumberg and Sloan Devlin (2006). The case studies are structured as follows: The first children hospital that will be analysed is the "Wilhelmina Children hospital" situated in Utrecht. The second children hospital is the "Prinses Maxima Centre" in Utrecht. And lastly the adult hospital UMC situated in Utrecht will be analysed.

There is already much research done on the topic patient rooms and how they are structured. In the research "Designing the Patient Room" of Sylvia Leydecker and in the research "The Patient Room,

planning, design, layout" of Wolfgang Sunder, Julia Moellmann, Oliver Zeise and Lukas Adrian Jurk (2020) the patient room is already investigated.

These two texts delve into the details of patient room design, offering insights through various case studies. While research has explored the impact of shared versus private patient rooms, the focus has been on mainly adult patients, and children were almost always left out of this dilemma. Given the inherent differences between children and adults, particularly in terms of developmental stage, this thesis will focus highly on the child's perspective. A comparison between the children and adult patient rooms in the hospital is done to conclude the differences between those two groups.

With examining the different case studies, the WKZ, the PMC and the UMC , the differences between shared and private patient rooms are being compared.

3. A brief review of the development of hospitals.

In this chapter, the development of health care and the design of the hospital in the Netherlands will be summarized. The causes of starting a hospital and how the layout of the hospital would change throughout the years will be discussed too. For a long time there where no hospitals in the Netherlands. The buildings were sick people stayed were not always related to care. Until the 19th century, hospitals looked a lot different then nowadays (Mens, N. Wagenaar, C.).

Origin of dutch hospitals

Back in the days hospitals were not nearly a place were people got better, but more like a dangerous source of infection. Until the 1860s the role of hospitals was only a small role in the Netherlands. It was not the state of medical science and technology that was to blame for this, but cultural, socio-economic and political circumstances. For example there was no education to became an doctor and a big part of the healthcare was practiced by folk physicians; quackery and superstition (Mens, N. Wagenaar, C.).

It was thanks to the liberals and the poor health conditions of the population caused by the drastic changes in socio-economic that the government became involved in health care. Because of the expansion of the port in Rotterdam the population increased with around 35% between 1840 and 1850. Housing in the city did not expand sufficiently enough, so the population lived densely packed in the city centre under poor hygienic conditions.

The local medical supervision committee did draw up reports to report on the medical condition, but no effective health policy was developed and the healthcare remained mostly to the private individuals. The first half of the 20th century was symbol for the slow and difficult changes which had to been covered mostly by the private individuals (Mens, N. Wagenaar, C.).

Because of the technologies within the hospitals they were not longer for the poor, but people with wealth would go there. The changing position of the hospital forced the state to reconsider its position, but the increasing costs attracted particular attention. The private individuals wanted to keep there hospitals up to date. Later a new initiatives were made, such as the construction of the new urban Coolsingel hospital and the Eye hospital. These initiatives were directly aimed at adults, but children could also benefit from them (Mens, N. Wagenaar, C.).

Origin children hospitals

A long time only the mother of the child would take care of their child. Because of the poor health conditions a lot of different countries came to the realisation that sick children also needed special care. Other countries were earlier with realizing a children hospital than the Netherlands. In 1802 Paris, in 1837 Vienna and in 1852 London opened their first children hospitals. But it was not

Image 1: W.N. Rose, Coolsingelziekenhuis, Rotterdam,1855, paviljoenmodel

until the beginning of the twentieth century that paediatrics became a truly independent discipline. Against this background of increasing awareness of both government and private individuals and the growing willingness to do something about the misconceptions, the initiative of a number of private individuals (medical professionals, but also industrialists) established a children's hospital in Rotterdam in 1863, called the Sophia Hospital (Kinderverpleegkunde, 2024).

Progress in hospital organization

Furthermore, a big step in professionalization of the medical profession in the Netherlands had taken place in 1865 due to the new law of 'Geneeskundige Staatstoezicht' by Thorbecke. This law ensured that from now on only university-trained doctors were recognized. However until the mid 19th century the Netherlands missed out of all of the improvements. The Corridor system for hospitals was still a favourite for the Netherlands, but in England

and France it was already obsolete. An example is the Coolsingel hospital in Rotterdam (1855) designed by W.N. Rose. The technical part of the building was really progressive. The hospital had a sophisticated ventilation system and a complete water purification plant. However, how progressive the technical part was, how bad the corridor system was. As early as 1862, A. Husson pointed out that the Rotterdam hospital was therefore not an example worth imitating: the poor ventilation inherent to the corridor type was a permanent cause of insalubrities (Mens, N. Wagenaar, C.).

Because of the different kind of specialism developed over the years adaptions within the hospitals were needed and caused changes in the architecture. In the last quarter of the nineteenth century, the pavilion type broke through in the Netherlands. As far as the layout of the pavilion hospitals was concerned, not much changed initially compared to the old corridor hospitals. As before, the hospitals consisted of men's and

women's wards and departments for infectious diseases, although now spread over pavilions (Mens, N. Wagenaar, C.).

Specialization in health and design

The meaning of the pavilions would change very quickly, because in the end of the 19th century there was a rapid development in medicine. Different specialisms, such as gynaecology, obstetrics and ophthalmology were housed in separate pavilions. The most important motive was not the hygiene en ventilation in the building but the possibility of offering their own home to the new sub-disciplines that arose due to ever-increasing specialization. The result was greater diversity in the design. Pavilion construction remained the most common type for the time being.
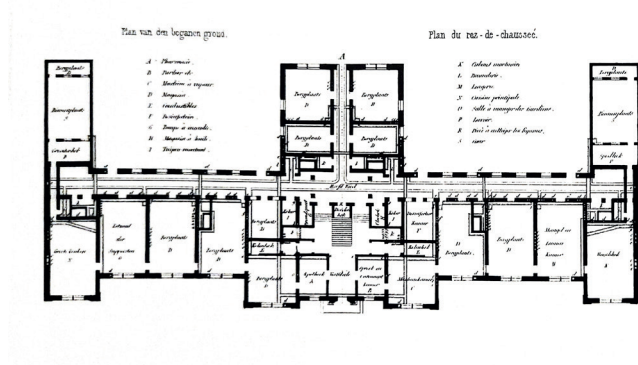

Image 2: W.N. Rose, Coolsingelziekenhuis, Rotterdam,1855, paviljoenmodel

This motive for pavilion construction was also the end of the design, because more and more specialism caused to build new pavilions. The buildings got bigger and bigger and the walking distance became to long. Every specialism required each own lab, research and treatment spaces. In new designs corridor and pavilion constructions were combined. The Netherlands were on a good way to keep up with the development in hospitals, but not until the government shifted attention to the 'Woningwet' of 1901. And when the first world war broke out the hospital development was on a standstill. Until the 1920s the Netherlands would stick to the pavilion construction. But a research from Amerika showed that a lot of time, sometimes 3 hours per day, was wasted walking from one pavilion to the next. A new hospital design would change this, namely the high-rise hospital. And the Hôpital Beaujon in Paris proved that it was also possible in Europe. But until the 1940s the Netherlands would still design according the corridor-pavilion principles (Mens, N. Wagenaar, C.).

Who is in charge of design?

Not only there was a debate about the structure of the hospital, there was also a debate going on about who is most able to make design choices for the new hospitals if the hospital is increasingly becoming a building determined by medical actions: the physician or the architect? Most physicians saw the architect as little more than the aesthetic caretaker of a spatial plan with which it was best not to interfere. Designing a hospital is certainly no easy task, one that could not be avoided with the many restrictions imposed on it by the clients, the hospital board, the doctors and the long list of practical and hygienic conditions that were imposed on the design. Anyone who draws up a construction plan for a hospital and

wants to avoid gross errors should not concentrate solely on the dead plan. He must also be able to visualize the mechanism once the organism has become an organism and the projected hospital has been put into operation. If an architect is commissioned to design a hospital (s)he has to know what the main elements are of a hospital (Mens, N. Wagenaar, C.).

Main elements of a hospital:
1. Nursing wards
These are the nursing wards with it's basic modules of beds, because they would change least. The modules existed out of one-, two-, four-, six-, or even more persons rooms with additional rooms, such as day care centres, isolation rooms, kitchen, bathroom, toilet, washroom and stockroom. These modules were often concentrated in the centre of the building, because this creates short walking distances. One nursing unit had mostly 24 to 36 beds.
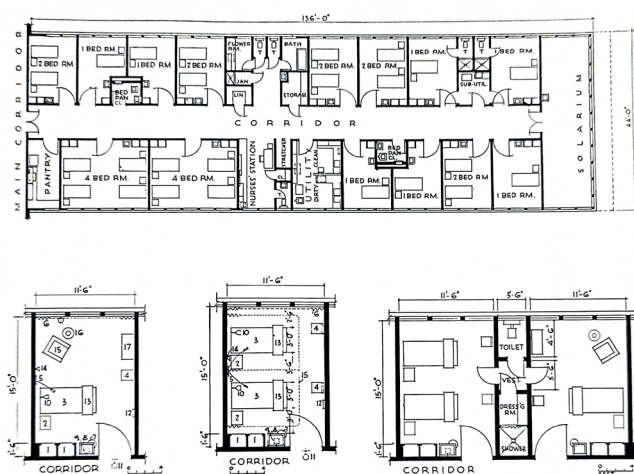

Image 3: U.S.P.H.S. 'elements of the hospital. Verpleegafdeling voor 25 bedden en voorbeelden voor bedkamers

Because of this, big halls with 30 to 40 beds no longer occur. A new way of organising the rooms was realised in the Dijkzigt hospital. The patient rooms were situated on both sides of the corridor to reduce the length of the hall with the patient rooms. This was according the motto 'to save nurses steps'. But because of this new design, the principle of having the rooms on the south facade was not possible anymore. With an average stay of 20 days in the hospital the sun had no predominant influence on the healing process. Nevertheless, with a Dubbel corridor-system was it restricted to situate the rooms on East- Westside, so the rooms would get enough sunlight. According to Van Loghem the main principles of designing a hospital are light, air and sun (Mens, N. Wagenaar, C.).

2. Policlinic
Another change in the hospital was in the policlinic. It soon came to the realization that these developments would lead to the outpatient clinic becoming a more integrated part of the hospital, in terms of administrative, organizational and architectural aspects. A direct spatial relationship with the treatment department was a requirement, because a lot of patient material had to be processed and patients often consulted several specialists (Mens, N. Wagenaar, C.).

3. Operation rooms
Another important part of the hospital are operation rooms. According to the newest insights in the seventies these

rooms didn't need sunlight. This was the end of the big north oriented rooms of hospitals. Most important aspect of these rooms is that they are easy accessible for the surgical department and that they were an enclosed whole (Mens, N. Wagenaar, C.).

Image 4: Snijden in model, Academisch ziekenhuis Leiden. Operatietheater met studenten.

Conclusion

To conclude this chapter "How did (children)hospitals developed over the years" they changed a lot. The first hospitals did not function really well, because they were more like a dangerous source of infection. In this era healthcare was practiced by folk physicians; quackery and superstition. It was thanks to the liberals and the poor health conditions of the population caused by the drastic changes in socio-economic that the government became involved in health care. Firstly adults would get extra care within the hospital, but later a lot of different countries came to the realisation that sick children also needed special care.

A big step in professionalization of the medical profession in the Netherlands had taken place in 1865 due to the new law of 'Geneeskundige Staatstoezicht' by Thorbecke that ensured that from now on only university-trained doctors were recognized.

But still the Netherlands were behind on other countries. The Corridor system for hospitals was a favourite for the Netherlands, but in England and France
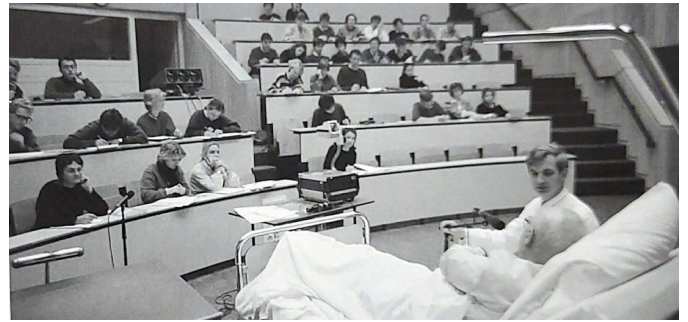
it was already obsolete. Because of the different kind of specialism developed over the years the pavilion type broke through in the Netherlands. This motive for pavilion construction was also the end of the design, because more and more specialism caused to build new pavilions. The buildings got bigger and bigger and the walking distance become to long. A new hospital design would change this, namely the high-rise hospital. But in the Netherlands they would still build according to the corridor-pavilion system.

Furthermore next to the structure of the building, the structure of the rooms is also important. The main modules of a hospital are the nursing wards with it's basic modules of beds, because they would change the least. The modules existed out of one- two- four-, six - or even more persons rooms with additional rooms, such as day care centres, isolation rooms, kitchen, bathroom, toilet, washroom and stockroom. And other main principles of designing a hospital are light, air and sun.

4. The stages of development of children.

In this chapter the development of a child will be elaborated with the question: "How does the overal development of a child works?". Firstly it is important to define what is meant by "child". A child is someone between the age 0 and 18. In this period there are a lot of different stages of being a child linked at a certain age.

Stages of being a child

According to the article "De 11 ontwikkelingsfases van je kind (2011)" their are 11 different development stages. Beginning with four different development stages for a baby (0-1 months, 1-4 monts, 4-8 monts and 8-12 monts), three stages for toddlers (1-2 years, 2-3 years and 3-4 years), one stage for a preschooler (4-6 years), one stage for a schoolkid (6-12 years), one stage for a teenager (10-15 years) and one stage for a adolescent (15-18/23). Often these two last stages are combined and called adolescence (10-18/23).

Image 5: Child Development Stages Images – Browse 13,016 Stock Photos, Vectors, and Video

According to research about the developing of a child the development is from small to large, from not able to do much to an extensive behavioral repertoire, from simple child logic to complex reasoning. The overal development is so clearly visible to everyone that it seems self-evident, something that you do not have to think about any further (Kohnstamm, R. 2009).

According to Rita Kohnstamm (2009) with development is meant changing. If you are talking about the development of children and teenagers this development is taking place in the first 20 years of their lives. The changes that occurs in a child are often described in terms of getting better, stronger and more, moving further and further towards the end goal, the adult, to be achieved.

Theories on child development

There are theories that assume that development is completely pre-programmed and unfolds through the maturation of nerve cells in the brain. This pre-programming is anchored in the genes. According to the maturisten children, depending on their age, have their own skills, ways of thinking and feeling patterns. If you just let that self-regulating process take its course and do not intervene from outside, an optimal final phase will be reached (Kohnstamm, R. 2009).

However, another theory, the theory of the behavioristen, thinks the opposite. According to them, child development is based on experience and learning

processes. What innates that it is like an initially empty hard drive with an enormous recording capacity for an extensive repertoire of experiences and behavior. And that it is 'burned in' by experience. The most important learning processes take place according to the laws of the effect that behavior has. Positive consequences of what a child does act as a reinforcement, negative consequences weaken his behavior (Kohnstamm, R. 2009).

As is often the case when contradictions arise, an attempt is also made to combine the two development principles of aptitude and experience. In current developmental psychological thinking, people often talk about the interaction model, in which aptitude and experience are viewed in a complicated interaction (Kohnstamm, R. 2009).

The question of what keeps a development going once it has been initiated has already been discussed in passing in behaviorism. Within this theory this is the mechanism of reinforcement and extinction, reward and punishment, positive reinforcement or negative reinforcement.

However this is always based on maturation of the neurological system in the brain. As long as this is not ready for certain functions, development through experience is not possible (Kohnstamm, R. 2009).

Sensitive and critical periods.
In a lot of theories the development is divided in different stages. In each of them the different facets of childish behavior and experience have their own characteristics. These characteristics mean that a child learns to take certain 'simple' steps in the relevant development process. Once it has mastered it, the phase is completed and the transition is made to the next, higher phase. Furthermore, it is not possible to skip a phase (Kohnstamm, R. 2009).

When a child is not able to go through a particular stage of development because of a sensitive period, it is possible for them to go later through this stage. However this is not possible in extreme situations, as example for a so-called wolf children who grow up in extreme isolation. They call this a critical period; If a certain experience is missing in a certain phase of maturation, there is irrevocable damage (Kohnstamm, R. 2009).

Social development
Rita Kohnstamm's research shows that in the different kind of developing is almost always connected with social aspects. The social development is not only connected with other developments, but coincides with them too. This is because social development runs through all other developments (Kohnstamm, R. 2009).

Kohnstamm (2009) made a tripartite division in the social development. In the

first place human children are orientated on people. Their interest is in other people. Secondly, human children adopt all kinds of ideas and behaviors from people. And thirdly, they gain skills in dealing with people, learning how to make, maintain and break off contact.

Children learn to realize that in order to participate comfortably in contacts, they must primarily adapt their own behavior to the reactions of others and this requires being able to empathize with the other person's point of view (Kohnstamm, R. 2009).

Conclusion

A child has 11 different development stages. In these 11 stages they learn everything for adulthood. When a sensitive or critical period occur in their life, the development will be on a standstill. It is almost impossible to overcome a critical period, whereby the chilld has a lack in their development. When a sensitive period happens a child can pick their development up again.

5. What is the influence of shared patient rooms on the health of children? Casestudy: WKZ children hospital.

In this chapter the negative and positive aspects of a shared patient room for children will be elaborated based on the research of "The patient room, planning, design, layout" of the researchers Wolfgang Sunder, Julia Moellmann, Oliver Zeise and Lukas Adrian Jurk (2020) with reference to the Wilhelmina Children Hospital.

Layout of a patient room
According to research "the patient room" done by Sunder, Moellmann, Zeise and Adrian Jurk (2020) in a patient's room the bed position and the position of the wet room already have a decisive influence on the further configuration of the floorplan. Many possibilities can be configured for a two-bed rooms. In the research "the patient room" 18 very different two-bed room floor plans are shown. In this research each aspect of the room's design is considered individually in terms of its floor plan.

The 18 different floor plans are briefly introduced and the plans are analysed using a matrix to identify their respective features and corresponding qualitative characteristics. The points in the matrix are generated in diagrams that show a graphical representation of the qualitative evaluation of the respective floor plan layout (Sunder, Moellmann, Zeise and Adrian Jurk). The intention of this study was not to propose model floor plan types for two-bed patient rooms, because, each patient room design is an individual response to the prevailing context and specific needs of the

respective clinic. Instead the floor plans show the relationship between optimised operational and constructional solutions and their potential qualities in use. They reveal the complexity of the design task of two-bed patient rooms (Sunder, Moellmann, Zeise and Adrian Jurk, 2020).

The Wilhelmina Children Hospital
The Wilhelmina Children hospital opened in 1888 is situated in Utrecht. Since 1999 the hospital moved to the Uithof. It is situated in between the UMC hospital and the PMC and is designed by EGM-Architects.

Image 6: The patient room (Sunder, Moelmann, Zeise and Adrian Jurk, 2020) and adjustments (Mascha Gerrits)

Layout patient rooms in the WKZ
In the department of the WKZ floor plan (image 7) the patient rooms have different structures. There are four different layouts for the patient rooms. In image 7 the different layouts are coloured and further explained according the findings of the research by Sunder, Moellmann, Zeise and Adrian Jurk (2020).
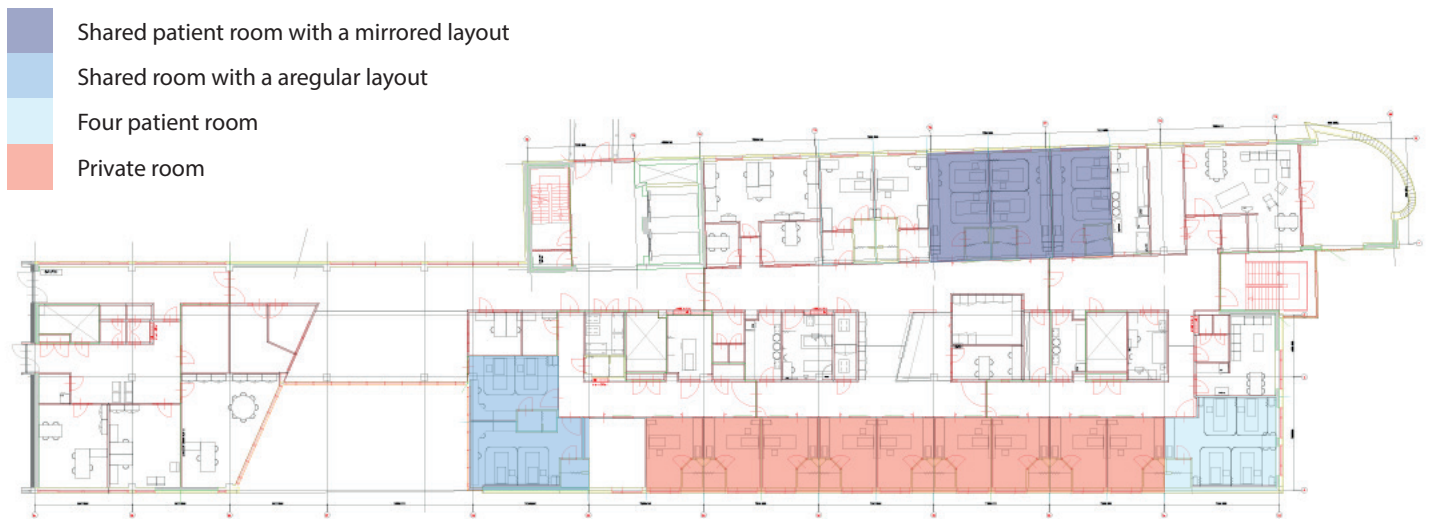
WKZ Nurse ward layout

■ Shared patient room with a mirrored layout
■ Shared room with a aregular layout
■ Four patient room
■ Private room

Image 7: WKZ floorplan

There is the "mirrored floor plan with parallel bed position". According to the book "The Patient Room" this room layout can be referred to as the standard floor plan. Beds side by side, inboard wet cells in a mirrored floor plan constitute a patient room type used very often in hospitals. The layout and it's amount of different aspects are shown in image 8 and diagram 1.

The second layout of the department is a combination of the "low-barrier patient room (image 9) with nested position of the wet cells" and "the mirrored floor plan with parallel bed position" (image 7). For the low-barrier patient room the nested position of the bathrooms, results in a rectangular room layout that is quite flexible. The visual relationship, both between patient and outside and between staff and patient, is neither restricted towards the entrance area nor towards the window. The spacious, barrier-free wet cells allow each patient to have their own washbasin.

However the combination of these two patient rooms suite better in the floor plan of the department, because if you

Mirrored floor plan with parallel bed position

Structural complexity
Infection prevention potential
Workplace quality and safety
Spatial qualities
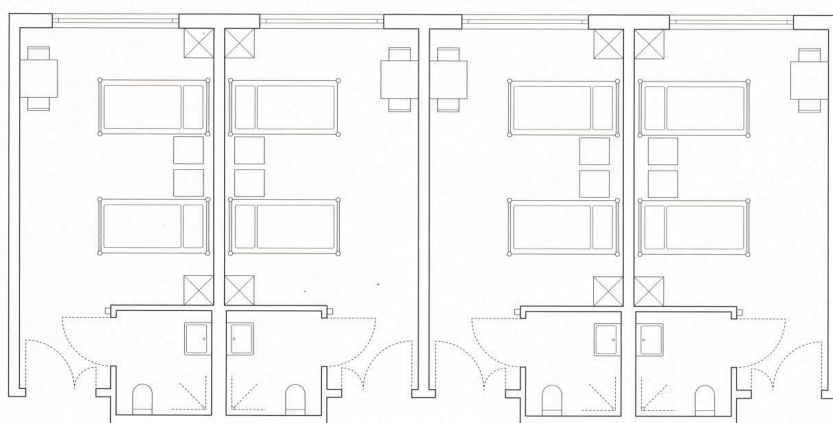Patient safety
Patient satisfaction and privacy

Image 8 and diagram 1: The Patient Room by Sunder, Moellmann, Zeise and Adrian Jurk (2020)

Low-barrier patient room with nested position of the wet cells

Structural complexity
Infection prevention potential
Workplace quality and safety
Spatial qualities
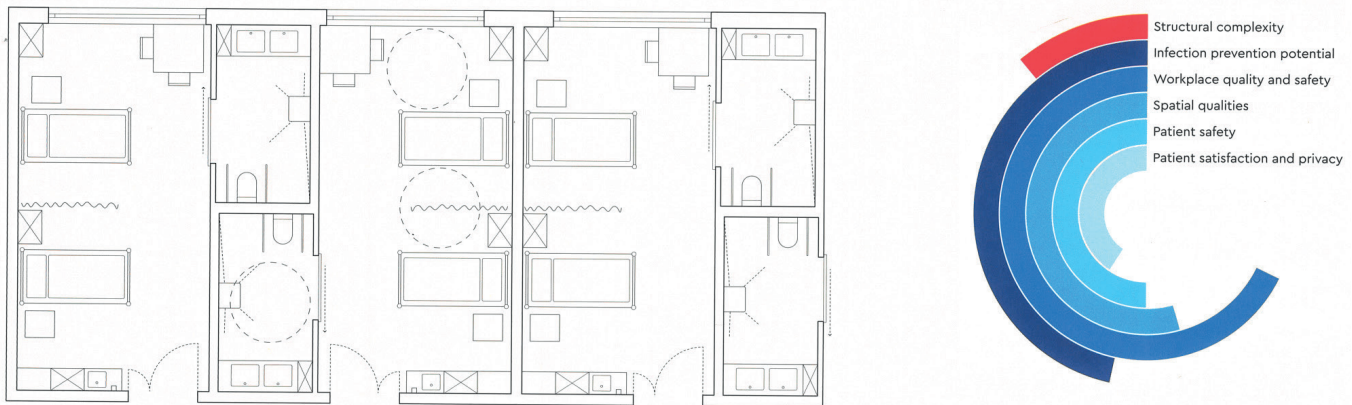Patient safety
Patient satisfaction and privacy

Image 9 and diagram 2: The Patient Room by Sunder, Moellmann, Zeise and Adrian Jurk (2020)

designed the low-barrier patient room here there wouldn't be space to enter the room. The combination provides not only an entrance to the room, but also provides a little bit more space for the patients to sit at a desk.

In the diagram 2 of the low barrier patient room is shown that the structural complexity of the room is the same as in the mirror floor plan with parallel bed positions (diagram 1). All the other aspects of the room, such as the infection prevention, workplace quality and safety, spatial qualities, patient safety and the patient satisfaction and privacy will increase considerably. So in the combination, shared room with aregular layout, the layout of the low-barrier patient room has many more positive aspects then the mirrored floor plan (Sunder, Moellmann, Zeise and Adrian Jurk, 2020).

Negatives in the floorplans
However, this layout comes not only with positive aspects. The beds side by side result in a deep room floor plan which results in that one patient is closer to the

entrance than the other. Therefore the staff always need to pass one patient to help the other patient and one of them is always in their field of vision when looking towards the window (Sunder, Moellmann, Zeise and Adrian Jurk, 2020).

This problem also occurs in the mirrored layout. To find the best layout of the patient room Sunder, Moelmann, Zeise, and Adrian Jurk (2020) analysed 16 distinct layouts of shared patient rooms and they took the best features from each layout to create a brand-new prototype.

Prototype patient room
In the prototype of Sunder, Moellmann, Zeise and Adrian Jurk (image 10) seven innovative solutions are implemented. Firstly the entrance of the rooms widens towards the patient beds, which it makes it simpler for nursing staff to have an unobstructed view of the patient. Secondly the work area for the nursing staff is located close to each bed. It incorporates storage and direct access to medical materials, gloves, etc.
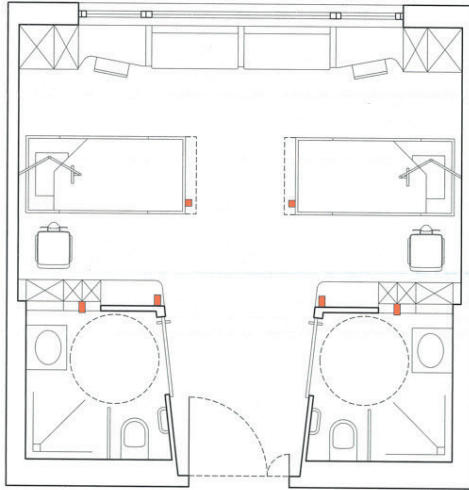
23 Floor plan of the final design, 1:100
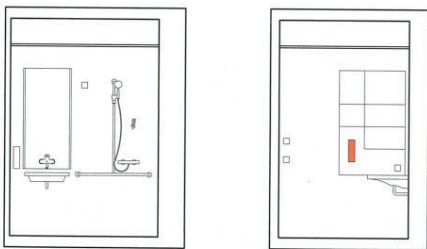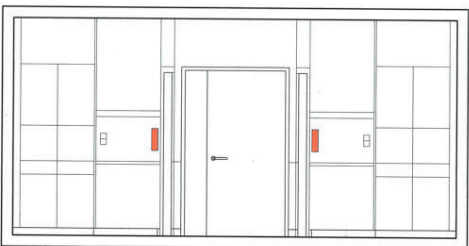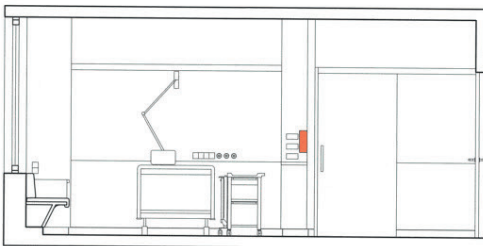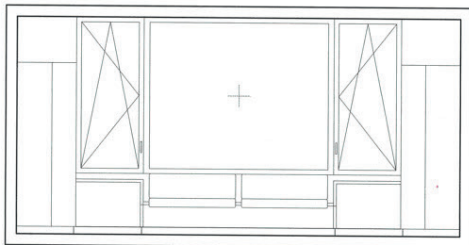
24 Interior elevations of the final design, 1:100

Image 10: The Patient Room by Sunder, Moellmann, Zeise and Adrian Jurk (2020)

Also two wet cells, one for each patient, prevent usage scenarios where cross-contamination can potentially occur through shared contact surfaces.

The fourth innovative solution is the visitor zone. This is a separate area combining the window bench, the patient desk and chair.

Furthermore the prototype facilitates better cleaning due to its seamless construction. It provides more storage space without being larger than a conventional unit, with defined areas for better organisation, and can be used from either side, which makes it flexible.

The sixth solution is to place the disinfectant dispenser along the routes of work and close to the patient bed.

And lastly the bedsite terminal is providing informative content to educate patients on hygiene behaviour so that they may actively contribute to infection prevention (Sunder, Moellmann, Zeise and Adrian Jurk, 2020).

Conclusion prototype
The prototype from the research of Sunder, Moelmann, Zeise and Adrian Jurk (2020) shows that even in a shared room privacy and hygiene is possible. This is because of the way of situating the beds towards each other and because of the private bathroom.

Other patient rooms of the WKZ

Furthermore, in the WKZ other patient rooms are situated, such as four persons rooms and private rooms. The layout of the four patient room is not in the research of "The patient room", but it could be an expansion of the low-barrier rooms in same-handed arrangement with parallel beds. Furthermore, the private rooms have a mirrored floor plan to each other. These rooms will be elaborated further in the next chapter.

Image 11: Patientroom WKZ

Social development for a sick child

It is ofcourse really important to have a hygienic room, so the patients can recover as fast as possible. However, this is not the only factor that is important for the health of a child. Also, as discussed in chapter 4, a child is in the middle of their developing, so social connections are very important.

When a child becomes very ill and has to stay in a hospital for a long time on there own, he or she is removed from society and their development comes to a standstill. It depends on which age the child became sick, in which stage it will become stuck. The situations a child is in, can provide a better outcome for them after their sickbed. If the patient experience a critical period in the hospital it will be very difficult to pick up their development again.

However if the patient experience a sensitive period it is possible to pick up their development after their sickbed. In a shared room the patient can still meet a few new people, therefore their social development is not on a wholy standstill, but partly.

Conclusion

The patient rooms in the WKZ hospital are not ideal for children, because the chance for infection is high, there is not a clear view to the outside and there is no privacy. The only thing that is positive of this room is that social interaction is possible.

However, a shared space can work really well. The protoype from the study of Sunder, Moellmann, Zeise and Adrian Jurk (2020) shows that it could work really well for children, because the chance of infection is really low, there is a clear view to the outside, it is easy to clean, their is more privacy caused by the private bathroom and they have someone to talk to. Therefore, their social development will not be on a standstill.

6. What is the influence of a private patient room on the health of children? Casestudy: PMC children hospital.

In this chapter the negative and positive aspects of a private patient rooms for children will be elaborated. With reference to the case study the Maxima Centre for children with cancer and literature of Sunder, Moellmann, Zeise and Adrian Jurk (2020) this will be investigated.

The Prinses Maxima Centre
The Prinses Maxima Centre is situated in Utrecht next to the Wilhelmina Children Hospital. It is a centre for healthcare and research, situated in one building that focuses on treating children with cancer. The hospital is designed by LIAG architects and it's interior is designed by Mmek. The opening of the hospital was in 2018.
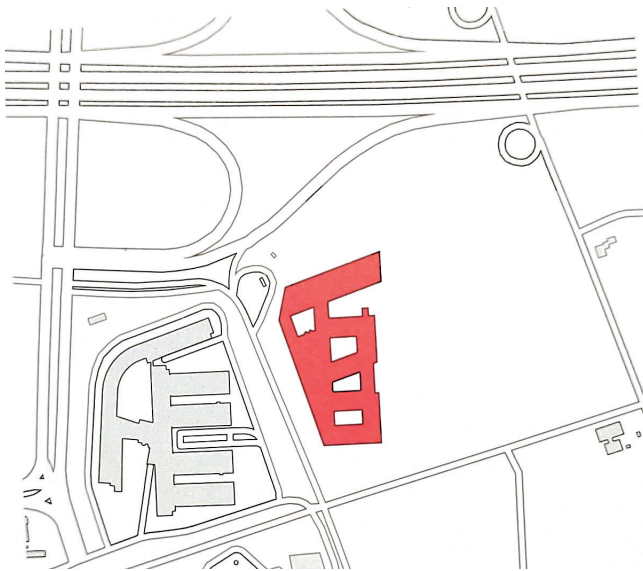

Image 12: The patient room (Sunder, Moelmann, Zeise and Adrian Jurk 2020)

It is the largest paediatric oncology centre in Europe with a size of 45.000 m2. In cooperation with Kopvol, an architecture practice specialising in psychological aspects of architecture, the spatial concept aims to create a place where young patients feel safe and can spend time with their parents and relatives with primary focus on their recovery. The patient room consist of a single room, whereby a guest room is connected for family (Sunder, Moellmann, Zeise and Adrian Jurk, 2020).

Parents
According to the study Blumberg and Sloan Devlin (2006) parents are a critical link in succesful hospital stays of sick children. One of the best ways to keep them involved is to provide sleeping areas for them. However the older children are moving at varying speed through their developmental stages with constantly changing needs, might not want to be as close to their parents anymore. It is important that the patients can choice what they want (Devlin, S. 2006).

The design of the parents room in the Prinses Maxima Centre is independent from the patient room. There is a sliding door that can close the room of. Furthermore the guestroom has it's own bathroom that offers a level of comfort, privacy and hygiene for longer stays. In a private room it is less likely to get infections from others. This really helps with the recovery of the patient (Sunder, Moellmann, Zeise and Adrian Jurk, 2020).

Image 13: Prinses Maxima Hospital

Connection with outside

Furthermore because of a glass door and an additional window ensure optimal visibility of the bed area from the corridor, the patients have a good view of the courtyards and outdoor areas. The playfully designed playgrounds are intended to encourage children to go into the fresh air (Sunder, Moellmann, Zeise and Adrian Jurk, 2020). Being in the outdoors and not only laying on bed, helps the patient to recover more quickly, so they can pick up their lives more easily.

This room provide a healthy environment for the patient on the aspects hygience, privacy, family and nature, but the question is still can this room prevent a standstill in the (social) development of the child? Comparing this patient room with the private room in the WKZ provides more clarity.

Differences between the WKZ and the PMC

The biggest difference between the private floorplan of the PMC and the private floorplan of the WKZ is that in the PMC there is a guestroom connected to the patient room and in the WKZ the

Image 14: Prinses Maxima Hospital

private rooms are isolated.

This makes a big difference for the loneliness and development of the patient that lays in the PMC towards the patient that lays in the WKZ. When a patient need someone familiar to talk to it is possible because of the extra room. Of course, it could happen that the parents can not stay at the hospital, but there is a possibility

Social development for sick kids

Furthermore, it is important for the developing of the social skills to meet new people (Kohnstamm, R. 2009). In a private room it is less possible for the patients to meet new people. Even in a room with an extra space for family, the patient is not going to meet new people. In that case a shared room can help a patient with developing there social skills and are less likely to develop an disadvantage for later.
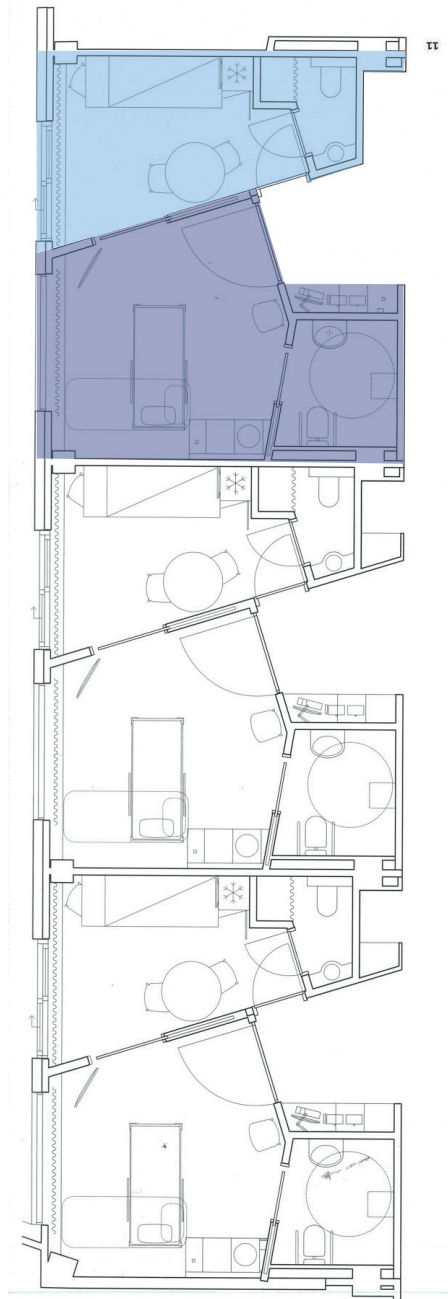
In image 16 the floorplan of the private patient rooms with the guestrooms of the Maxima Centre are shown. In the design of the PMC (image 15) they designed also public spaces. In the floorplan of the hospital you can see that there are different kind of public spaces for the children.

In the design they incorporated a way that patients still are able to meet other people, but then not in their own rooms. If an architect wants to switch from shared to only private rooms in a hospital it is

Maxima hospital layout

🟧	Private room
🟪	Patient room
🟦	Guest room

Image 15: The patient room, PMC.

Images 16: The patient room, PMC

really important to include public spaces for the patients to meet each other, so their social development can still develop further.

Conclusion

To conclude, in a private room it is easier to provide hygienic rooms, because you do not have to share the bathroom. However, in a private room the patients are not able to meet new people. The guestrooms in the PMC will reduce the loneliness while being sick. The private patientrooms of the WKZ doesn't have this extra room and therefore it will be more difficult for young patients to pick up their social development. In a hospital with only private rooms it is very important to have public spaces to meet people.

Furthermore it is also important to keep in mind that children are in different development stages and therefore need different things. This will be elaborated further in chapter 7.

7. What is the difference between patient rooms for children and patient rooms for adults? Casestudy: UMC hospital.

In this chapter the differences between patient rooms for children and adults will be explained. it will be concluded what an adult person and a minor need in a patient room. With reference to the case study the UMC hospital in comparison with the two casestudy the WKZ and the PMC in Utrecht and literature of Blumberg and Sloan Devlin (2006) this will be investigated.

Image 17: UMC hospital (Mascha Gerrits, 2024)

UMC, University Medical Centre
The UMC, stands for the Universiteit Medisch Centrum Utrecht, is the academic hospital and is connected to the University of Utrecht. The UMC is opened in 1872, but was situated in the city. When the hospital increased they moved to the Uithof in Utrecht. Since 1999 it also consist out of the AZU (Academix hospital Utrecht), WKZ (Children hospital), OLGH (Eye doctor), Dentistry and MFU (University Utrecht).

Children and adult hospitals.
According to the study Blumberg and Sloan Devlin (2006) the design of pediatric therapeutic settings differs greatly from those in adult or general care facilities. Children are sensitive to their physical surroundings, and the strange, unfamiliar, and sometimes uncomfortable sensations they encounter when entering the hospital can be terrifying. Sick children are often quite active and need opportunities for play and to continue their schooling.

Preferences of adolescents
According to the study "Design issues in hospitals, the adolescent client" (Blumberg, R., & Devlin, A. S. 2006) adolescents, age 10 to 19, prefer the bright colors associated with childhood but reject the emblems of childhood, such as teddy bears and balloons.

They asked adolescent participants to compare pairs of pictures of hospital settings, whereby one picture was oriented towards adults and the other towards children. In this research a higher percentage chose for the pictures oriented towards children. Their comments indicate that they prefer the bright colours and inventive design communicated by the child oriented hallway (Blumberg and Sloan Devlin, 2006).

The participants were also asked to use their imagination to design an ideal bedroom. The most popular options for an ideal bedroom were comfortable furniture (99%), clock (88%), balcony (87%) and high ceilings (86%). The rationale behind the necessity of a clock may be attributed to its provision of a sense of control (Blumberg and Sloan

Devlin, 2006). However, in a hospital setting this need for control can be threatened.

The first visuable difference between a patient room of the UMC and a patient room of the Maxima Centrum are the colours. In image 18 a patient room of the UMC is shown. The used colours are really blend and there are more different and brighter colours used in the PMC.

Image 18: UMC hospital (Werkbezoek, Jeroen Werkhoven)

Image 19: Patient room, Prinses Maxima Hospital

Privacy
Unfortunately, also the privacy is threatened in a hospital. For adolescents, who are often at a stage in development where the need for autonomy and privacy is high, this threat could be terrible. In the study of Blumberg and Sloan Devlin (2006) adolescents were asked to chose from a list of 12 aspects of hospital design that they felt would be important for maintaining their privacy. 96% of participants identified the need for a private bathroom. The private bathroom preference in the study seems to support findings that developing physical maturity influences adolescents' need for privacy. The second most important design choice (89%) would be a private bedroom and the ability to close the door.

The definition of privacy changes when a child grows up. Around the age of 11 years, children actually use words such as "alone and unbothered" to define privacy. Under this age the need for privacy is not that high (Blumberg, R., & Devlin, A. S. 2006).

Social needs
Furthermore, the social needs of children and especially for adulescents make them vulnerable to the risks of the hospital stay. They have a need for parental support, but also need the support from their age group. According to the study Blumberg and Sloan Devlin (2006) that age-appropriate support is of the most important forces in the lives one of childhood, because hospitalization causes a period of separation.

According a research of Anne Karine Ostbye Roos (2019) about the preference of shared or private rooms for adult patients a shared room has also positive aspects. The research include how patients cherished the importance of

others, but at the same time valued the importance of privacy.

The main results showed that being hospitalized in shared rooms had a positive experience in terms of social interaction. The patients in private rooms reported being more dependent on nurses to maintain social contact and obtain safety. This study shows that the need for privacy can be in contradiction with the need for socializing with other patients (Anne Karine Ostbye Roos, 2019). So it is important to find a balance between the social interaction and the privacy.

Preferences in the floorplans

It is interesting to investigate if all these different needs for the different age groups are implemented in the layout of the hospitals and how they differ from each other. Firstly the casestudy the WKZ will be comparised with the UMC (image 20). Lastly the PMC will be comparised with the UMC.

It is to be expected that there is a different layout for adults and children patient rooms, but the layouts are really similar to each other. In the UMC, there are private and shared rooms which are standarized with shared wet cells. The shared rooms are rooms for two or four patients. The children hospital the WKZ has also standarized patient rooms for one, two or four patients.

There are more differences between the UMC and the PMC. The PMC has only private patient rooms with a connection to a guest room for the parents. The patient room and the guestroom have private wet cells. In the patient rooms in the UMC there is not a guestroom and in the shared rooms they have to share the wet cells.

UMC Hospital Layout

Two patients room

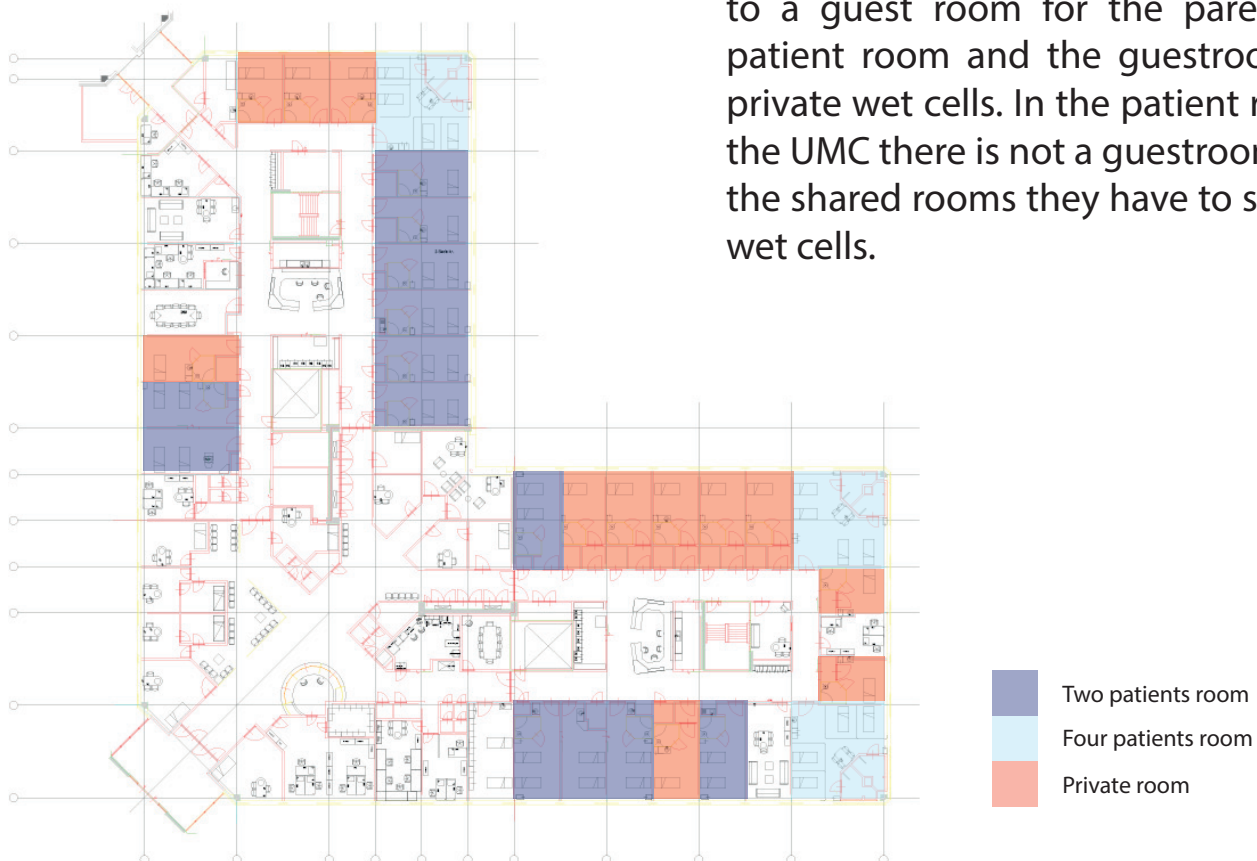Four patients room

Private room

Image 20: Hospital department UMC

8. Summary, conclusion and discussion

To answer the research question: "In which way have private and shared patient rooms in children hospitals influenced the health of the hospitalized children?" first the background of hospitals was elaborated. Through the years hospitals were more and more specialized in disease and in age. Taking care for children and adults is done differently. Children need other things than adults, so it is a logical step to have hospital buildings for children too.

Overal development of children

In the second chapter the development of children is explained. In the first 20 years a child will develop all their skills that they need to become an adult. But if a child becomes ill, this development comes on a standstill. If they become in a critical period it is almost impossible, to recover from this traumatic experience and their development comes to a total standstill. If they become in a sensitive period it is easier for a child to recover from this. They can pick up their development where they left it.

Shared patient room, WKZ

Furthermore, the topic of a shared patient room for children is elaborated. A lot of aspects are important for the health of children, such as privacy, hygiene, but also their social connections for their development. In the research of Sunder, Moellmann, Zeise and Adrian Jurk they investigated different floorplans and made a prototype for the best shared patient room. It is important that in a shared room both patients have their own wet cells, because then the chance of infecting is way lower. The layout of the room provides also their own view outside, a space for visitors and easier cleaning for the staff.

The shared rooms in the WKZ doesn't have all of these advantages. There is no blocked view to the outside for both patients, there is not an extra space for the visitors and there is not an own wet cell for every patient. In the department of the WKZ the layout is a combination of shared and private rooms and is structured on what fits. The combination of the mirrored patient room and the low-barrier patient room shows that the hospital is designed to fit as many patient rooms as possible in the department. However a big advantage of the shared rooms in the WKZ is the possiblity to meet new people, whereby the child is still possible to work a little bit on their social development by connecting with new people.

Private patient room, PMC

In the fourth chapter the influence of a private room on the health of children is elaborated. This is explained by the example of a private room from the PMC. The patient room is connected with a guest room for family, so the patient has someone to rely on. According to the study of Blumberg and Sloan Devlin (2006) parents are a critical link in succesful hospital stays of these sick children. One of the best ways to keep them involved is to provide sleeping areas for them.

the patient has a clear view outside, whereby the patient can go outside. It also has it's own nurses' workplace. The environment of the room is providing for a better recovery of the patient.

However, the patient can not meet new people in the room, which makes the chance for a standstill in their social development higher. Luckely the PMC has some public spaces where the patients can meet each other. In a hospital where they have private rooms, the public spaces are really important for the patient, because they are still able to meet people in the hospital, whereby their social skills can still develop further.

Comparison patient rooms, UMC
In the last chapter the patient rooms of children and adults is compared. The comparison is based on the children hospitals, the WKZ and the PMC, and the adult hospital, the UMC. The layout of the rooms from the UMC and WKZ are similar to eachother. The layout from the PMC and the UMC are really different. The rooms from the UMC and the WKZ are really standarized, whereby as many rooms as possible are fitted in the structure of the building. The rooms in the PMC are designed based on the preferences of the child, so the patient has a better stay in the hospital.

Furthermore the colours are different in children hospitals and in adult hospitals. In the adult room they used more blend colours. For the childrens patient room they use more bright colours. The younger and older children prefer both

the brighter colours.

However, younger and older children do not agree on all the design aspects of a hospital. Literature of Blumberg and Sloan Devlin (2006) shows that young children between the age of 0-10 need less privacy than older children and adults. Nevertheless older children and adults can still have a really good experience from a shared room, because of the possibility of social interection. It is really important for the development of a child to be able to connect with people from their own age-group and interect socially with them. Children really need this for the development of their lives and adults can prefer it for their mental health.

Conclusion
So, a shared patient room can help children with developing their social skills further, which is very important for their development and will cause a lower change on a standstill in their development. However in shared patient rooms the quality of the privacy and hygiene is almost always lower than in a private patient room. It is possible to tackle this issue by providing a private bathroom in a shared bedroom, so the patient has some more privacy and is less likely to infect the other patient.

Furthermore if the hospital design has private patient rooms it is really important to include public spaces where the patients can meet each other.

Recommendation

For designing the patient rooms in a children hospital it is more important to provide a private bathroom then a private bedroom for the patient. Therefore the hospitalized child can still socialize with other patients, but does not has to be afraid for getting an infection or lose his/her privacy.

This could be done by designing a more flexible patientroom with sliding walls, whereby a private room can be turned into a shared room with 2-, 4-, 6- or even more patients and the other way around.

Reflection

In this thesis the methodology, floorplan analyses of the hospitals, is done. However, for further research it could be very useful to also include interviews of the patients, because they experienced the room. They can tell their preferences for a private or shared patient room and elaborate more on the additional advantages and disadvantages of these rooms.

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