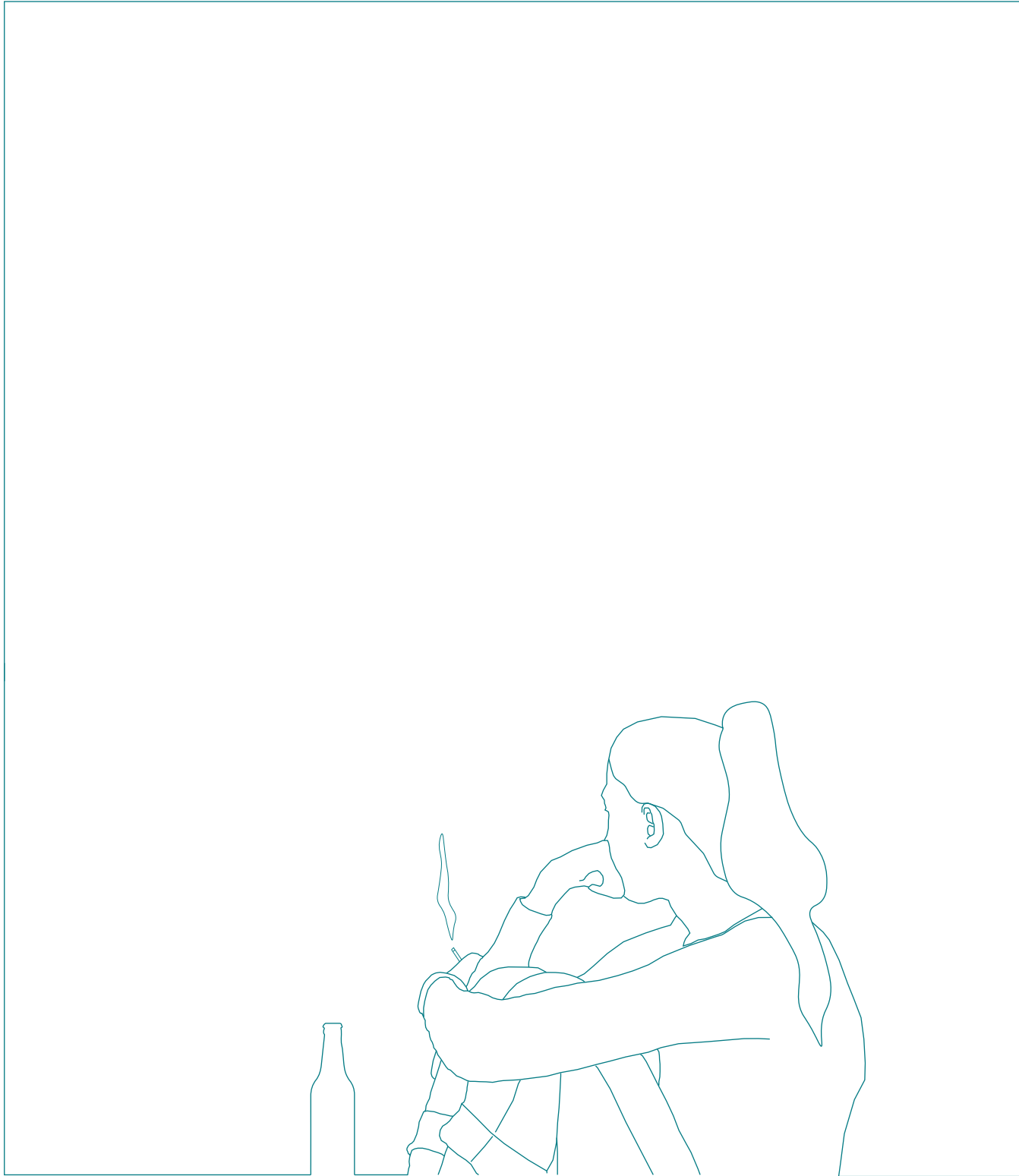


DESIGN FOR ADDICTED ADOLESCENTS



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Abstract

Many people with an addiction do not receive the care they need. Addiction carries a negative stigma, admitting to addiction is seen as a sign of weakness. Especially among adolescents, who would benefit the most from early treatment. If they are treated, they end up in outdated facilities isolated from society. Hence the following research question: *How can building design support adolescents with addiction problems with recovery and re-socialisation in the Netherlands?* This research question will be answered using literature research and architectural research with the aim of formulating architectural guide lines that can be applied to a design for addicted adolescents.

Key words

Addiction, Adolescents, Architecture, Care, Design for Care

Table of contents

Introduction	4
Research plan	5
Problem statement	6
Goals	7
Theoretical framework	8
Research question	10
Sub-questions	10
Methods	11
Definitions	12
Research scheme	13
Workplan	14
Research	15
Design for teenagers	16
Design for addiction	20
Case studies	31
Victas - Utrecht	32
Drugs addict hotel - Amsterdam	36
Dijk en Duin - Castricum	40
Antes - Poortugaal	44
Conclusion	50
Design guidelines	54
Discussion	56
Vision	57
Reflection	58
Figures	60
References	61

Introduction

At the end of the 19th century, with the arrival of addiction clinic Hoog-Hullen, addiction care focused solely on alcoholism was first seen in the Netherlands. However, this addiction care mainly focused on the fate of the addict's family. Addiction care changed because of new ideas on addiction by Elvin Morton Jellinek. Namely, he argued that alcoholism was a treatable disease. This led to the start of the first alcohol clinic called Jellinek, which has become the most well-known addiction institution in the Netherlands. Addiction care started with alcoholism, and in the 1960s drug addiction was added with the introduction of heroin. In the years that followed, several new addictions were added, such as gambling, internet surfing and gaming ("History," 2022). A large number of new addictions have made their appearance in recent years, with the emergence of the internet. However, 59 per cent of long-term care facilities are housed in buildings that are more than 30 years old, pre-1990 (Martini, 2022). So this means that a large proportion of addiction facilities are housed in buildings that were not designed for the needs of addictions. The environment is hugely important to a patient and can contribute to their health and recovery.

It is important to understand the patient's needs. This is because poor design is associated with anxiety, delirium, elevated blood pressure and an increase intake of pain medication (Ulrich, 1991). Adolescents are especially sensitive to their environment. They have, in fact, special problems that are not seen with older patients. Their stay is generally longer and facility administrators report abusive behavior towards their physical surroundings (Potthoff, 1995). But adolescent and their opinions are ignored most of the time because of their relatively small demographic (Hutton, Wilson, & Foureur, 2021).

It is suggested that addiction can be seen as a chronic illness, an illness that is also shaped by a habit and learning process, they learn to become addicted (Inside Rehab, 2013). This process starts at a young age when teenagers start to experiment with drugs and alcohol. And because of this a small portion of these teens develop an addiction.

There is a negative judgment or stigma attached to addiction. People think negatively not only about addiction but also about the people who suffer from it, the addicts. Even though it is a disorder, addiction is seen by many as its own choice, its own responsibility (Rutten, Loth, & Hulshoff, 2009).

This shows in the numbers. The amount of people who actually get treatment compared to the estimated number of people with an addiction is worrying. In the Netherlands the estimated amount of people with an addiction is 1.785.758 and there are only 64.821 people getting treatment (Wisselink, Kuijpers, & Mol, 2015). Young people view "asking for help" and "confessing," while somewhere deep down knowing that drug usage causes issues, as weakness (Sools, 2020).

Problem statement

Sometimes people with addiction problems don't get the treatment that they need because of the negative stigma that is attached to addiction, admitting you have a problem is seen as a sign of weakness (Rutten, Loth, & Hulshoff, 2009). Especially among teenagers, who would benefit the most from early treatment because addiction can be seen as an chronic illness which is developed by usage through time (Inside Rehab, 2013). But if they get treatment they end up isolated from society in outdated facilities which do not meet the needs of the patients (Martini, 2022). The surroundings of a patient can have an impact on it's recovery an can help the healing process (Ulrich, 1991).

Goals

The purpose of this research is to create architectural design guidelines that can be used when designing for addicted youth. Guide lines that help create an approachable design where adolescents are encouraged to seek help for their addiction, where the built environment makes a positive contribution to the patient's recovery, and a design that helps reintroduce the youth to society and normal life.

The research focuses on young people between the ages of 14 and 19 who have an alcohol, drug, or gaming addiction. When speaking of drug addiction, it refers to the two most commonly used substances among young people, namely cannabis and XTC (Castagna, 2022). Addiction is often accompanied by mental disorders and psychological symptoms. This will be taken into account in this study but not examined in detail.

Theoretical framework

The effect in sickness of beautiful objects, of variety of objects, and especially of color is hardly at all appreciated. I have seen in fevers (and felt, when I was a fever patient myself) the most acute suffering produced from the patient not being able to see out of a window and the knots in the wood being the only view. I shall never forget the rapture of fever patients over a bunch of bright colored flowers.

People say the effect is only in the mind. It is no such thing. The effect is on the body, too. Little as we know about the way in which we are affected by form, by color, and by light, we do know this; they have an actual physical effect. Variety of form and brilliancy of color in the objects presented to patients are actual means of recovery. (Palmer and Nash, 1997:148)

Back in 1888, Florence Nightingale described in the above quote how the built environment can have a significant impact on patient recovery. I myself also believe that the built environment can make a valuable contribution to patient recovery. Besides the design of care, there are two more topics of interest in this research, namely addiction and adolescents. Separately, these topics have already been explored quite a bit but for this study, it is most interesting to see where these topics overlap (see Figure 1.). The area where all three topics overlap is also the area where the research question of this study is located. In the areas where two topics overlap are also some of the sub questions and thus also the literature that helps to answer these sub questions. This chapter will discuss the literature located in the overlapping areas between two subjects.

Design for addiction

The literature in this field focuses on the design of addiction and mental health care facilities. Grosenick & Hatmaker (2000) did research back in the early 2000s on six environmental characteristics considered to be of primary importance in health care facilities, namely: comfort and conveniences, safety, attractiveness, size, privacy, and location. Their study shows the perceptions of female clients and staff in an addiction treatment facility. Grosenick & Hatmaker are not the only ones who have researched perceptions of addiction treatment institutions. Novotná, Urbanoski & Rush (2011) also examined this. However, their research focused not on the patients but on the caregivers. They argued therefore that it is important to find a balance between the needs of staff and the patient. Perception by users thus plays a major role in this topic. Badcock & Killackey (2020) in their research using evidence-based architecture in service users' experience of mental health services developed six design principles that promoted the care of mental health service users.

Design for adolescents

Designing for adolescents in healthcare is not the same as designing for adults. Adolescents have different needs than adults. Therefore, it is important to do specific research on this topic. Hutton (2005) did this by asking seven chronically ill adolescents to design their own department to find out what is really important to them. In 2021, Hutton conducted another study with Wilson and Foureur. In this research, several focus groups were interviewed. The young people talk about the design of a mental health ward. They concluded from their research a number of design choices that are important for young people and that it is therefore important to understand how the user uses and experiences the space. Ulrich (2019) agrees with this as well. In his research, he makes design recommendations for juvenile facilities in Sweden. These recommendations are based on extensive research. This research is not so much focused on care, although in a way you could see it that way, but a juvenile facility does in some aspects come to resemble care facilities where young people stay for longer periods of time.

Addicted adolescents

To properly design for addicted adolescents, it is important to understand what substances these adolescents use, how it could be prevented, and how the adolescents are treated for their addiction. Möhle, et al. (2021) wrote a report on behalf of the Trimbos Institute describing what substances are primarily used by adolescents, how use has developed in recent years and how substance use could be prevented. In addition to understanding substance use, it is also important to know how these addicted adolescents are then treated and what works best for them. Both Zoon (2012) and Sools (2020) describe different treatment methods and which in their view provides the most effective results.

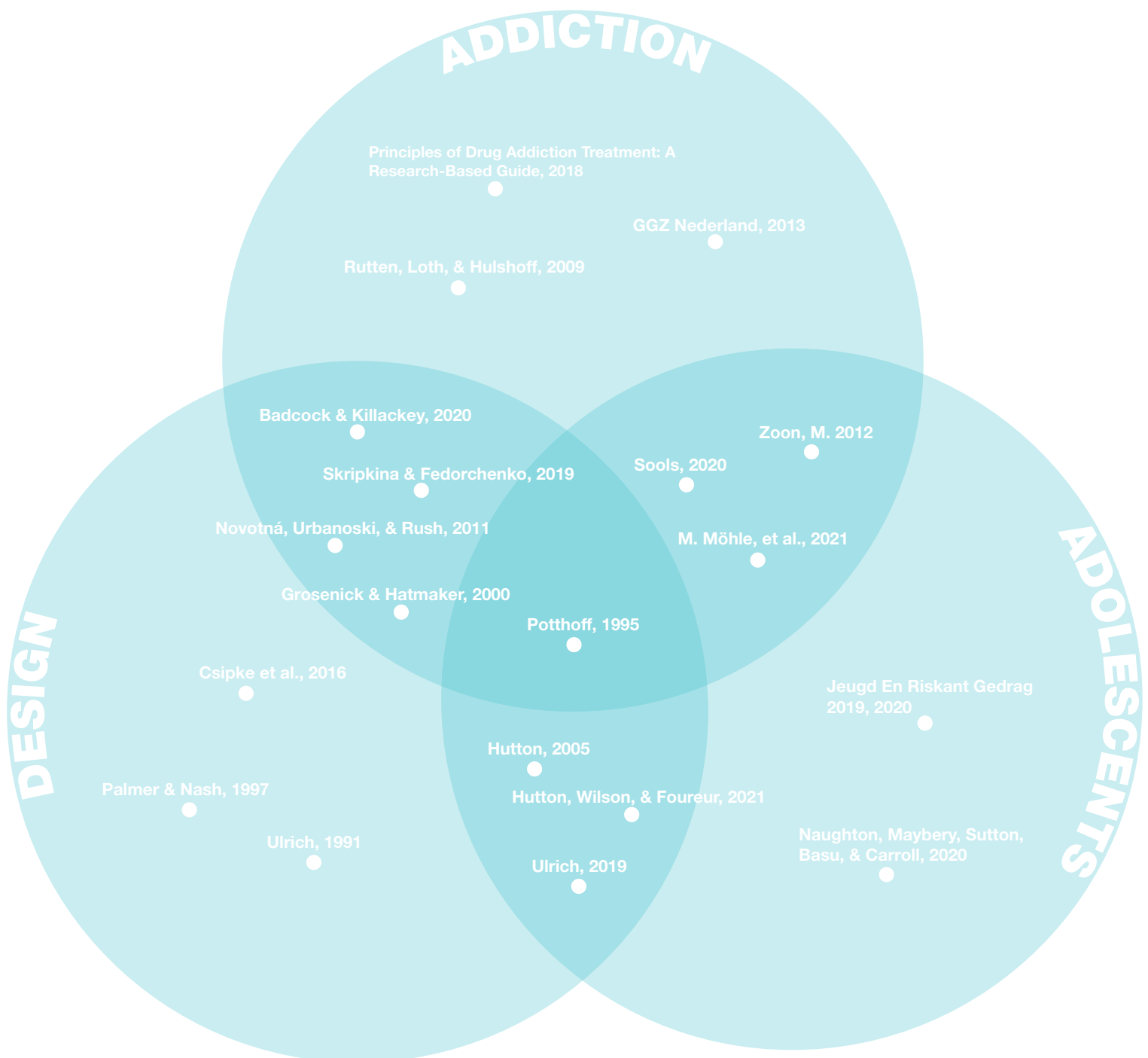


Figure 1. Theoretical framework

Research question

How can a building and the built environment support adolescents with addiction problems with recovery and re-socialisation in the Netherlands?

Sub questions

- What is an approachable environment for adolescents?
- Do building forms have an influence on different treatment programs?
- Are there architectural and urban elements that contribute to the recovery of patients?
- What are the requirements for a good location for addiction treatment?

Methods

This chapter describes the methods that will be used to answer each sub-question and the expected outcome of these methods.

What is an approachable environment for adolescents?

This subquestion will be answered through literature review. The literature that's used look into how to design an environment for adolescents. An approachable environment is also an environment where adolescents want to be and a space that they want to use.

How does a treatment program influence a building form?

This sub-question will be answered by analyzing several clinics in the Netherlands. Analyzing these will give a good idea of how a treatment program shapes the building.

Are there architectural elements that contribute to the recovery of patients?

Using literature research, several architectural elements will emerge that may have a positive influence on the recovery of patients. Outcomes of several sources will be combined in one overview which can be used as guidelines for the design of a addiction clinic

How can an addict be integrated into normal life again?

This sub-question will be answered using anthropological research and literature review. Using different sources from the literature, we will find out what are the important elements to make someone with an addiction part of society again. This will be supplemented and supported by interviews with caregivers so that it becomes clear how the built environment

What are the requirements for a good location for addiction treatment?

Different research methods will be used to answer this sub-question. The literature will be searched for requirements of a location for addiction treatment. The research into building typologies will be used to find out the minimum size of a clinic and the functions needed to provide good care for addicted adolescents.

Definitions

Addiction problems

According to definitions, addiction is a recurrent, chronic disorder marked by obsessive drug seeking and use despite negative effects. (Drug Misuse and Addiction | National Institute on Drug Abuse, 2020)

Adolescents

Ages 10 to 19 are considered adolescent years, the transitional period between childhood and maturity. It is a distinct period in human development and a critical time for creating the basis of health (World Health Organization: WHO, 2019). In this study we will focus on adolescents between the age of 14 and 19 years.

Approachable

In this study an approachable environment means a place that is easily accessible, inviting and open for everybody.

Architectural elements

Architectural elements refer to the distinctive aspects that together make up a building's architectural style, such as railings, projections, window and door openings, and cornices. (Architectural Elements and Details Definition | Law Insider, n.d.)

Built environment

The physical spaces of the environment that have been created or altered by humans and are used for habitation and daily activities are collectively referred to as the built environment. (Bekchanov et al., 2022)

Re-socialisation

Resocialization is the process of letting go of old behavior patterns and accepting new ones as a result of a life transition. (Resocialization, 2023)

Research scheme

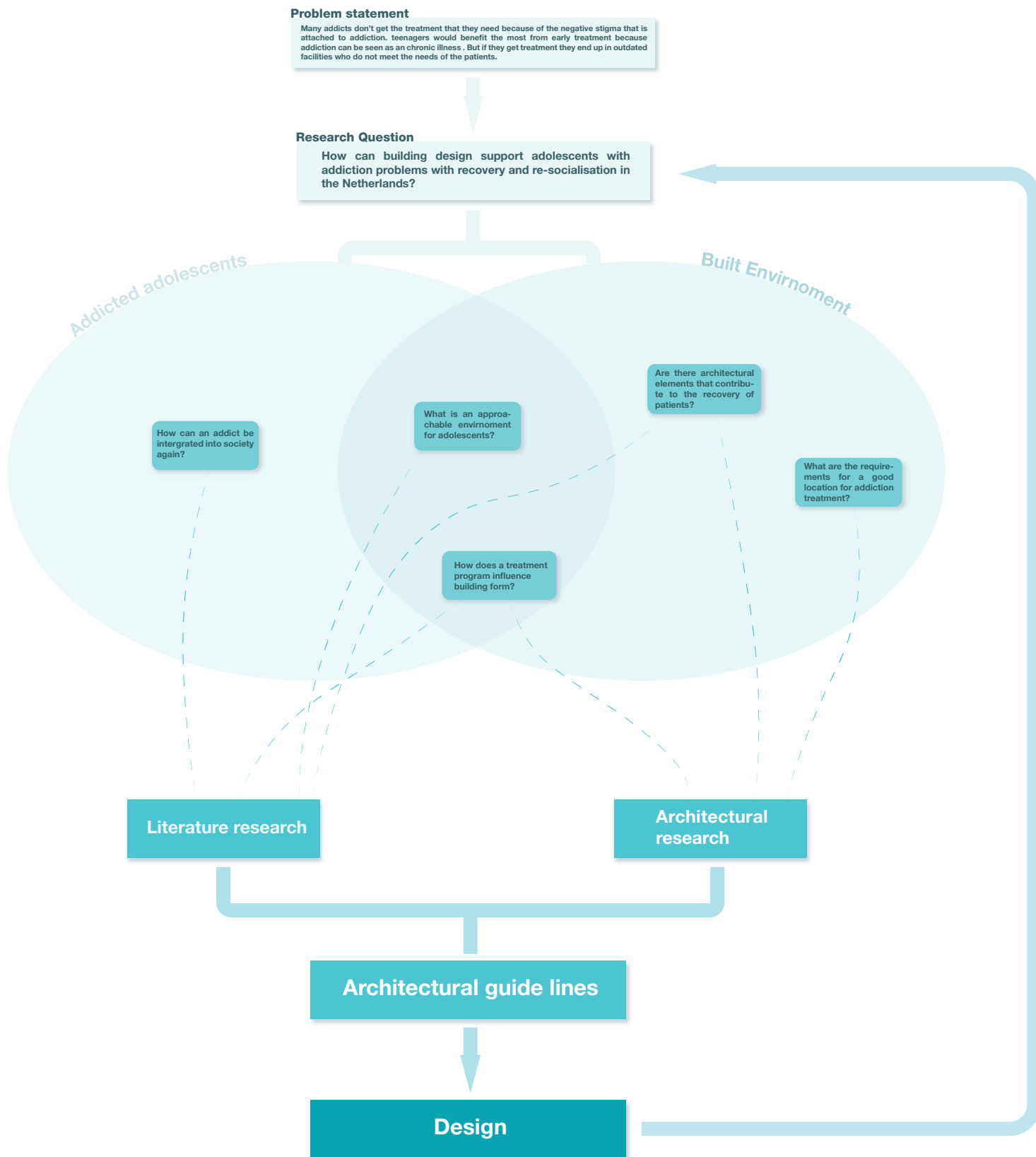


Figure 2. Research scheme

Workplan

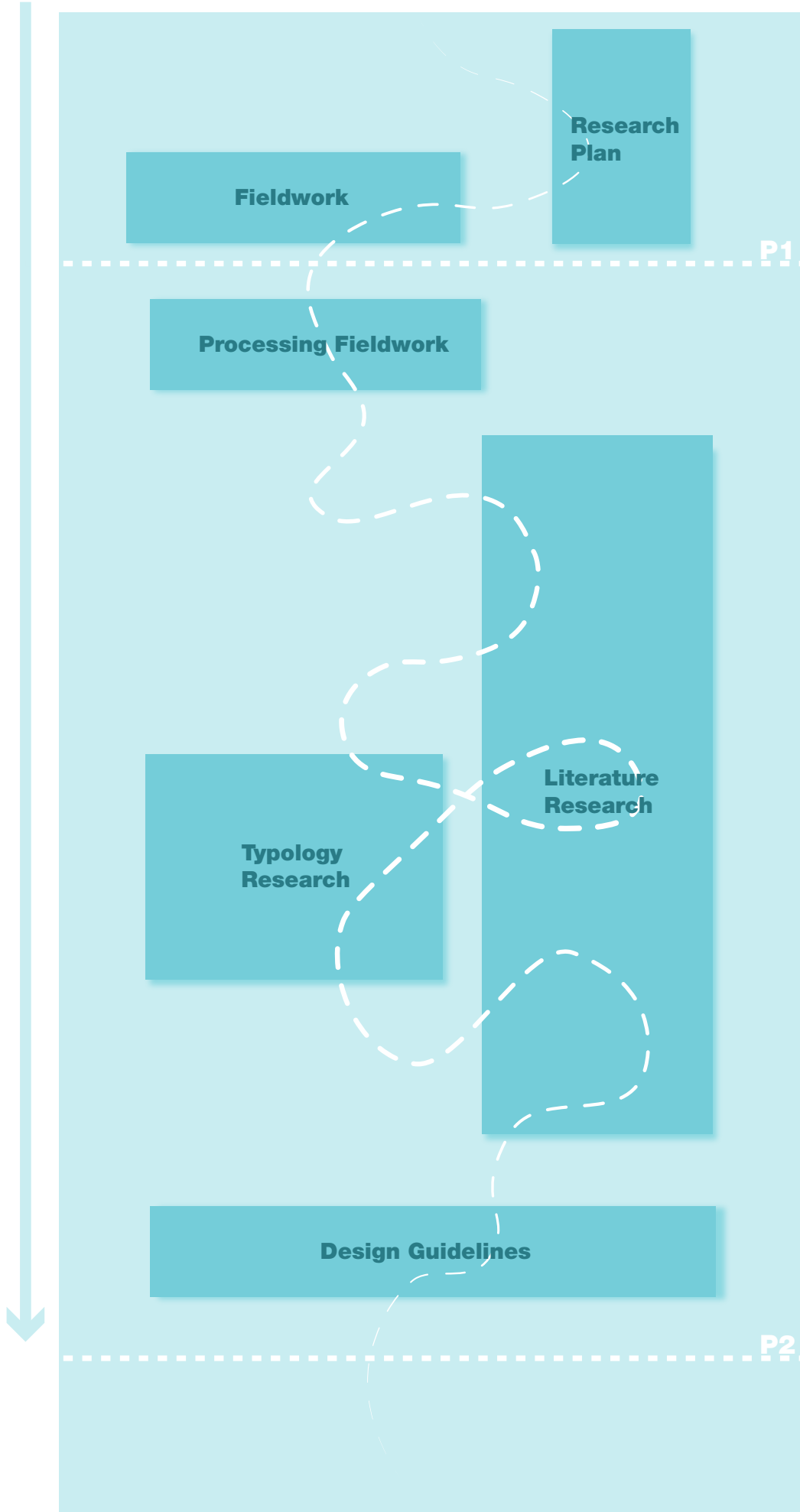


Figure 3. Workplan

Adolescents

Adolescence is a transitional phase in which a child aged between 11 and 19 years forms into adults capable of making independent choices (Salmela-Aro, 2011). This transitional phase consists not only of physical growth and change but also of emotional and mental changes.

According to Barret (1996), adolescents can be divided into three different sub-stages: early adolescence (11-13 years), middle adolescence (13-17) and late adolescence (17-19). Adolescence is also divided into these same categories by Salmela-Aro (2011). Each stage of adolescence focuses on a different interest which is most important to the adolescent at that stage of life.

During early adolescence, belonging matters most. This is the age where the social network is hugely important to adolescents, belonging to the group is most important to them which makes them highly vulnerable to peer pressure (Barrett, 1996, Salmela-Aro, 2011).

In middle adolescence the main concern is uniqueness (Barrett, 1996). This is the stage where adolescents start to develop their own personality. During these years, friends play an important role for adolescents (Salmela-Aro, 2011).

In the last phase, late adolescents, the main concern for adolescents is worthiness. In this phase, adolescents approach adulthood and are more and more able to make independent decisions (Salmela-Aro, 2011).

Design for Teenagers

Developing one's own identity is a central focus during the period of adolescence. This development is shaped by social interactions with peers and gaining experiences that follow increasingly independent decision-making about peers matters in the teenager's daily life (Höglhammer et al., 2018). However, young people are often a forgotten group whose opinions are ignored a majority of the time when it comes to their needs for the built environment (Hutton et al., 2021). This is a huge shame as public space can provide a platform for social interactions which can help a teenager develop as a person (Höglhammer et al., 2018). Public space can be seen as a mysterious, challenging and sometimes frightening place, a place that young people enter independently for the first time, explore together and try to find their own place. In order for these young people to find their own place, it is important to find out what the needs of these young people are and how a place can be designed so that it is attractive and accessible to young people.

Public space gives young people the opportunity to meet, and it is often one of the few places where they can do so without adult supervision. Activities that take place in public spaces have been shown to help develop and strengthen self-identity, build self-esteem and support the transition from adolescent to adult (Höglhammer et al., 2018).

"I go to places where I can certainly do what I want, where nobody disturbs me or controls me. Therefore, I choose my places carefully"

(Höglhammer et al., 2018)

However, the use of public space by young people is often seen by adults as undesirable. A group of children is usually greeted with a smile while with a group of exuberant young people, there is a good chance that they will be turned away. Which causes young people to be banned from certain places and avoid certain areas because they do not feel welcome there (Velásquez, 2015).

"that I can go where I want without somebody getting upset that you go there, or is questioning you all the time what you do there."

(Höglhammer et al., 2018)

Adolescents are looking for a place where they can get together with friends without feeling that they are not welcome at that particular place. A place that is close to school or home. Young people who live near their school are often more socially involved in their neighborhood and have friends who also live nearby. Teens are often unwilling to travel long distances and choose places to meet their friends that are nearby (Höglhammer et al., 2018).

"I choose my spaces also regarding that I don't have to wait long or waste time till I get there."

(Höglhammer et al., 2018)

Högelhammer et al. (2018) found that adolescents often choose private-public spaces. A private-public space is a commercial space that is accessible to everyone. A few examples of a private-public space are a mall, library or a café. These are places where it is legitimate for adolescents to just be and where their behavior is tolerated by adults. Adolescents are often looking for places where they can hang out with their friends. Children have a playground and adults have a coffee shop but where can adolescents meet inside (Lange, 2018)? So to design a space for young people, it is important that they feel welcome and comfortable here, a space where adolescents can just be. A place of their own.

"Teens come in to use the space just because it is a free space. They aren't obligated to do anything,"

Young adult librarian Katrina Ortega (Lange, 2018)

In the public spaces that adolescents are allowed to use, they usually do not have a say in the design (Lange, 2018). An important aspect to creating a space for adolescents is that they have the freedom to express themselves, have an influence on how the space looks and can shape it the way they want. This allows adolescents to mark their territory and influence public space in ways that are unique to them. When adolescents have the opportunity to influence a space it makes adolescents feel welcome and valued (Velásquez, 2015).

"One time one of the kids said to me, 'The library is the only place we are allowed to be, and just be. Not being watched over, not being lectured, not being kicked out because they didn't order anything.'"

Ricci Yuhico, head of teen programming at Mid-Manhattan (Lange, 2018)

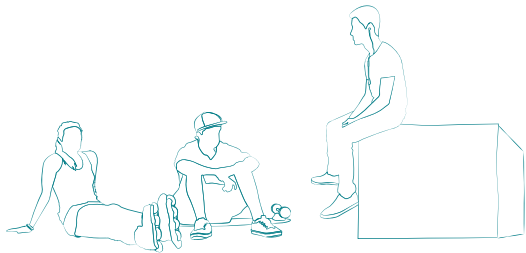
One place that is popular for adolescents to congregate is the library. When a library is located near a high school, it can become a place where adolescents gather after school and study individually or in groups (Lange, 2018).

To design a successful space for teens, it is important to design for experience. The space should allow adolescents to engage in activities that allow them to explore their own interests. A space where teens can socialize, collaborate, share ideas and express themselves creatively through art and digital content (Velásquez, 2015).

Digital content is a part of teens' lives that should not be underestimated. 96.8% of adolescents in the Netherlands between the ages of 12 and 25 use social media ("Nederland in Cijfers," 2020). Social media plays a major role in adolescents' social lives. It allows teens to meet new people and expand their social network. Social media helps adolescents connect with friends and their daily lives (Lenhart et al., 2015). When a place gives young people space to create digital content, it will have a certain appeal for teenagers.

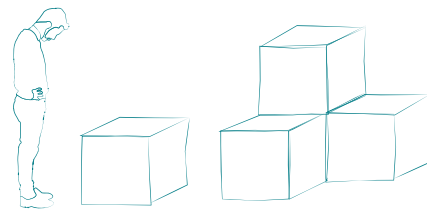
How to design a space that is attractive to adolescents and meets their needs. In general, adolescents are looking for a place where they can just be. A place where they are welcome to socialize with friends and engage in activities. A place they can make their own, where they can influence their immediate environment. A place where they can express themselves creatively. A place they want to share on social media with their friends. All of these points help adolescents develop as human beings.

Design guidelines



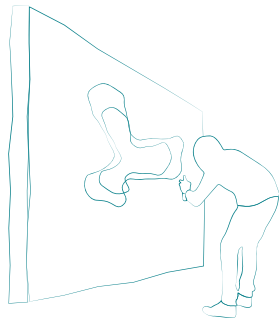
Place to be

Teenagers are looking for places where they can just be and hangout with their friends without restrictions.



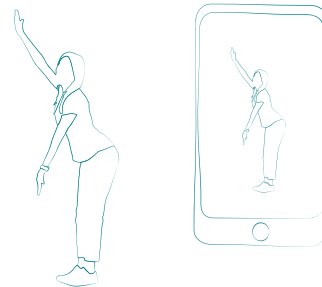
Make it their own

When adolescents are able to have control over their spaces they feel more comfortable there. They feel like that is really their space.



Creative expression

Teenagers should be able to express themselves creatively. This helps them develop their own personality.



Instagrammable

A space for adolescents should be attractive and thus making it worth sharing on social media. This will attract more teenagers and will make the space more approachable

Design for Addiction

Architectural elements

Research has shown that the architecture of healthcare facilities plays an important role in patients' recovery process, care delivery and perception of care (Ulrich et al., 2010, Liddicoat et al., 2020). Sometimes architectural elements directly affect healing however it is more often the case that architecture influences patients' behavior and emotions thereby influencing the healing experience (DuBose et al., 2016). Various literature describes architectural elements that contribute to care in their distinct ways. DuBose et al. (2016) states that these elements can be grouped into four categories that characterize recovery and the healing experience namely psychological, self-efficacy, social and functional. In this chapter, the architectural elements found are categorized into these four categories.

Psychological

This category includes architectural elements that affect the psychological components of healing. These elements affect the thoughts and feelings patients have about themselves, their surroundings and their lives.

Research has shown that exposure to natural light helps the patient in the recovery process (Ulrich et al., 2010). When plenty of natural light enters the care facility, it reduces stress levels in patients. Which contributes to better sleep, faster recovery and therefore a shorter length of stay (DuBose et al., 2016, Ulrich et al., 2010). In fact, natural light creates positive thoughts by providing contact with the outside world, it provides a view of the changing days and seasons (Potthoff, 1995).

Having a view of nature also creates positive thoughts in patients. It has been shown seeing nature or having access to nature, even if only for a few minutes, contributes tremendously to reducing stress among patients and helps with patient satisfaction with care delivery (DuBose et al., 2016, Ulrich, 2019).

Having a private bedroom with toilet and shower is a very important architectural intervention that gives patients more privacy. Having more privacy reduces the amount of stress for patients and, among adolescents, it has been shown to reduce aggressive behavior (Ulrich, 2019). This is also important for staff as they have indicated that they experience less stress and are more satisfied with their job when working in a unit with single-bed rooms (Ulrich et al., 2010).

"The main thing which got to me is the shower and the toilet in the same room... if someone is in the toilet you could never get to use the shower, and if someone was in the shower you could never use the toilet, you'd have to walk to the end of the ward to use the ones there"

(Hutton, 2005)

Having control over privacy is very significant for the patient. Being able to control when they wish to withdraw and when they want to socialize reduces stress and helps them have healthy social interactions with others and is essential to the effectiveness of the treatment program (Liddicoat et al., 2020).

"Peace of mind to me is really important. And so when I'm in here, it means that nobody else can touch me in here, I can lock my door and this is my world and nobody can come in"

(Csipke et al., 2016)

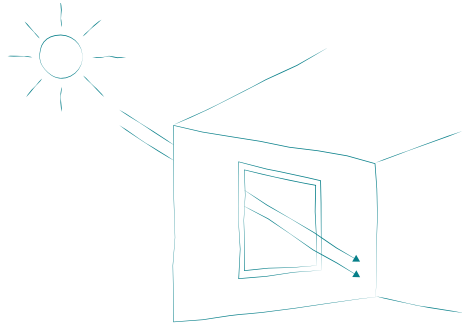
It has also been found that when the patient has their private room, sleep improves as well which in turn promotes recovery and patient satisfaction (Ulrich et al., 2010).

Another element that can improve sleep is limiting noise. Reducing noise is effective not only in bedrooms but also in common areas. When rooms are fitted with acoustically dampening material and the amount of noise is reduced, this leads to less stress, which in turn has positive effects on the patients' state of mind and the recovery process (Ulrich et al., 2010).

To gain a better sense of well-being, patients in the study by Csipke et al. (2016) indicated that they would like to see more art in the care facility so that the surroundings would brighten up a bit. When an environment is created in the care facility with positive distractions such as music, nature, art entertainment and social interactions, it helps increase patient satisfaction with the quality of care provided (Hutton et al., 2021, Liddicoat et al., 2020).

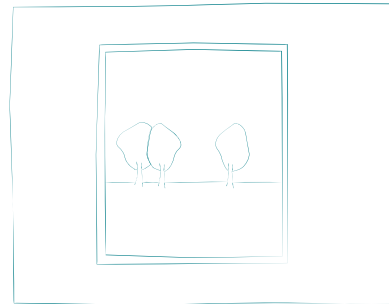
Sometimes patients actually want to distance themselves from all the distractions around them and retreat. Having a quiet space is important for patients who experience chaos in their lives and helps to gain more personal space and reduce stress which is seen as essential to recovery (Grosenick & Hatmaker, 2000, Hutton et al., 2021). Zoning is of great importance within the building for this reason. It allows the patient to choose between meeting, privacy and accidentally bumping into someone inside the building.

Design guidelines



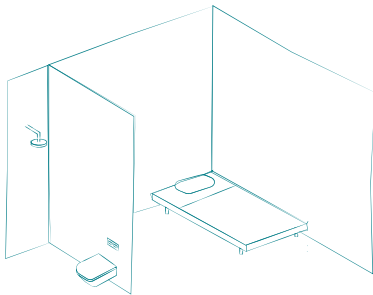
Natural light

Being exposed to sufficient natural light has been proven to help reduce stress.



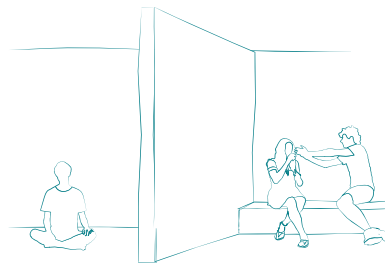
Views on nature

Having a view on nature helps with reducing stress for the patient which helps with the recovery process



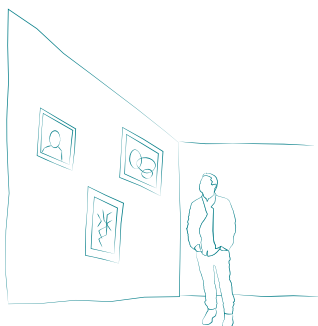
Single bedrooms with private bathrooms

Having a personal room helps decrease aggressive behavior and increase the quality of sleep by reducing stress.



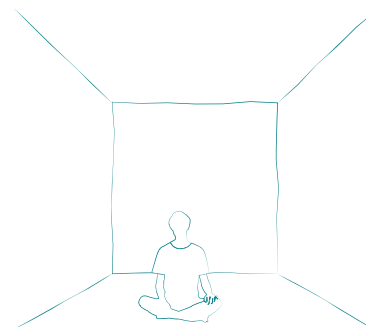
Noise reducing design

Noise of the surroundings or neighbouring spaces being kept to a minimum helps to reduce stress levels of the patients.



Positive distractions

When there are enough positive distractions around the patients it increases the patients perception of the quality of care.



Space for quiet time

There should be spaces where patients can retreat and have some quiet time. This helps with reducing stress and gain more personal space.

Self-efficacy

These architectural elements promoted in the immediate environment a sense of control, cohesion and the ability of the patient to adapt to a new and existing situation.

A problem with many healthcare facilities is that they feel very large and institutional. Patients in larger facilities perceive that they receive less attention, encouragement and help compared to a more residential setting (Grosenick & Hatmaker, 2000).

"Make the downstairs more homey, we spend most of our time in the two rooms downstairs. Hang some pictures up, put a mirror up at least. Get us something that is not hard to sit on. We need a carpet and a room to relax in. The staff have their office, we have nothing."

(Potthoff, 1995)

When a healthcare setting feels more home-like, and less like a hospital, it results in less pain and emotional distress among patients. In fact, a home-like setting causes patients to feel more connected to this environment and therefore more in control of it (DuBose et al., 2016).

Another place where patients can have more control over their environment is in their bedroom. It should be possible for patients to personalize their own bedroom and make it their own (Potthoff, 1995).

"Being able to personalize stuff and bring in paper or draw something, print something off and be able to stick it up. Those nice personal things that you can change and manipulate to make the room your own. There isn't one set room that every teenager's going to relate with."

(Hutton et al., 2021)

When residents can make their room their own, it makes patients feel more confident and it makes them feel good about themselves. It allows them to express their creativity and stand out from the rest. A skill that clients and staff see as helpful for after treatment (Grosenick & Hatmaker, 2000).

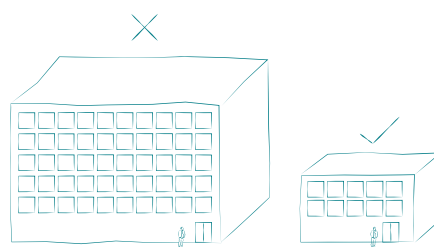
Owning the bedroom additionally also helps in dealing with stress and as a result reduces aggressive behavior among patients (Ulrich, 2019).

Design guidelines



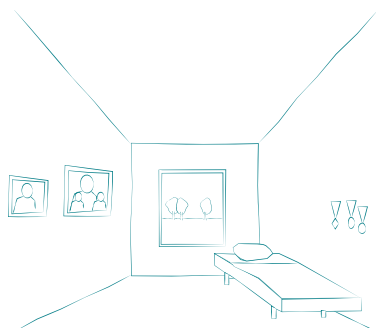
Homelike environment

Homelike environments make the patients feel more connected with their surroundings and have more control over the environment.



Small scale

When a facility is too big it feels very institutional and impersonal.



Personalize residents room

When patients are able to personalize their own room it gives them confidence and feel good about themselves.

Social

The elements in this category help patients develop connections and maintain relationships with others.

One place where patients can make connections with others are communal spaces. When these spaces are designed to promote social interactions, it helps patients adapt better from a social standpoint (Grosenick & Hatmaker, 2000). In healthcare facilities, some patients need more personal space than others. When there is enough space to hold appropriate space and the patients themselves can regulate when to keep more or less distance from others. This promotes positive interactions between individuals and reduces stress and aggression in shared spaces (Ulrich, 2019). One way to support this is to provide a flexible environment where patients can take control and decide when they want to sit 1-on-1 with someone or in groups. Users experience more comfort, equality and autonomy in a flexible environment (Liddicoat et al., 2020, Ulrich et al., 2010). Through a flexible environment, the patient learns to set and respect boundaries and balance time alone and time with others (Grosenick & Hatmaker, 2000).

Family plays a hugely important role in mental health, treatment progress and the outcomes of treatment (Liddicoat et al., 2020). The presence of family contributes to the reduction of stress and pain, shorter length of stay and greater satisfaction with care among patients (Ulrich et al., 2010). For this reason, it is important to provide patients with spaces where they can spend time with their families separately from the common areas (Hutton et al., 2021, Liddicoat et al., 2020).

"Clients feel better about having visitors because the place looks nice. That says to visitors that I'm [the client] doing something successful because I'm in a nice place."

(Grosenick & Hatmaker, 2000)

"For a family member to see this nice posh building, [they might think] it's not bad, you know. Some people come, like you feel they're fearful of the building—of coming inside, seeing all these people. But this is a new building, a totally different setting, and at least bringing your family members to a mental hospital will not be as big [a deal], not an embarrassment."

(Novotná et al., 2011)

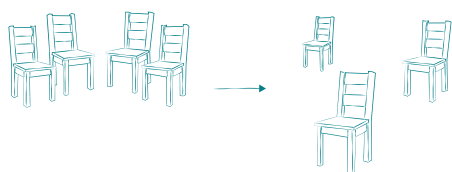
When the healthcare facility where patients stay has an attractive appearance, it helps to reduce stigma and create a more positive image to the outside world, friends and family (Ulrich, 2010).

"I just think it's very therapeutic. At home when I'm upset, I will bake and stuff because it's just distracting. I guess too, if we were here and we all cooked something and then we get to all eat it together, it's like an accomplishment. Like it's wow we all did this and then we all get to eat it together and that's nice."

(Hutton et al., 2021)

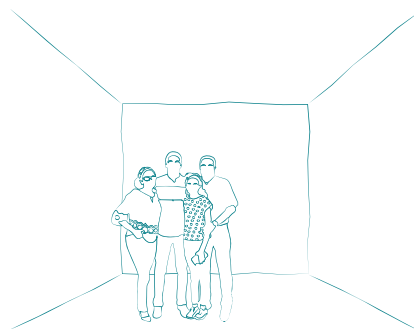
The opportunity to cook meals acts as a distraction for patients and helps patients make social connections with each other. Cooking for and with each other gives a sense of pride and is a skill that comes in handy after treatment to be more in control of their own personal lives (Hutton et al., 2021).

Design guidelines



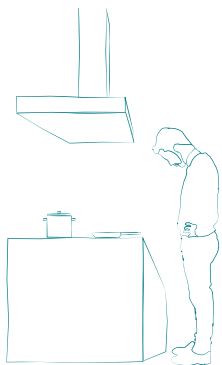
Environmental flexibility

The environment should be flexible so patient can decide them selfs if they want to socialize or not.



Space for family

Family plays a hugely important role in mental health, treatment progress and the outcomes of treatment. The presence of family contributes to the reduction of stress and pain.



Being able to cook

The opportunity to cook meals acts as a distraction for patients and helps patients make social connections with each other.

Functional

This category deals with the architectural elements that supports performing basic activities with minimal support.

It has been proven that having small residential groups has a positive influence on treatment outcomes because, as mentioned earlier in this chapter, it reduces stress and aggressiveness among patients (Ulrich, 2019).

Another important functional issue is orientation in the building. When a healthcare facility is enormously complex it causes frustration among patients and may lead to stress which is not beneficial to the recovery process (Ulrich et al., 2010). If a healthcare facility consists of corridor-dominated floors this leads to more aggressive behavior and rule violations as it is more difficult for staff to keep an overview (Ulrich 2019).

Staff is a hugely important component in a healthcare facility as they are the people who carry out the care. Thus, their needs should be taken into account when designing since the patients are not the only users of the building (Novotná et al., 2011). The work performed by these healthcare professionals is heavy and stressful. Therefore, they need a space where they can retreat to unwind but also to discuss patients without other patients hearing but also where paperwork can be done (Novotná et al., 2011, Potthoff, 1995).

“Staff don’t have a place to meet at all. We’re sort of tucked in. I mean, we’re supposed to be this big happy family unit, interdisciplinary place, but we don’t have a place where we can meet and socialize together and talk. We don’t even have a lunch room”

(Novotná et al., 2011)

It is also important to have enough rooms of different sizes where staff can hold activities that are important for the treatment, such as therapy sessions (Novotná et al., 2011).

“Little booths where you could sit quietly, even if it was with a therapist, you could just sit there and talk, a little table to play games. Some of the therapy sessions do more [harm] [laughs] it’s just everyone together and someone’s going off, and it doesn’t work.”

(Hutton et al., 2021)

“The ward is small with very little space for private 1-1 talks with patients or visitors and patients. There is also no space for a therapy room where groups can be held, so they are held in the dining area or visitors’ room which means there is nowhere for visitors.”

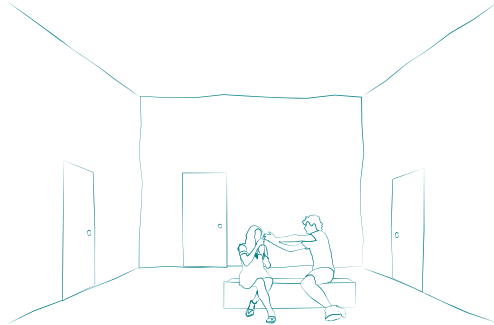
(Csipke et al., 2016)

To create a better setting for both patients and care providers, it is possible to decentralize nursing stations and therefore make them more accessible. When nursing stations are decentralized it is possible to monitor the patients better (Ulrich et al., 2010) but also makes it easier for the patients to approach the caregivers since the boundaries are not that strict (Novotná et al., 2011).

“I also find that the boundaries for the nursing station [are] not that rigid as on the acute setting. The patient won’t feel [as] nervous or restricted in terms of approaching the nursing station and talking [to] the nurses, or even cracking jokes with the nurses sometimes. It’s a lot more relaxed.”

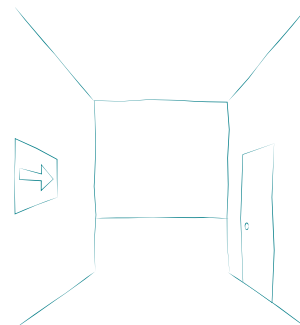
(Novotná et al., 2011)

Design guidelines



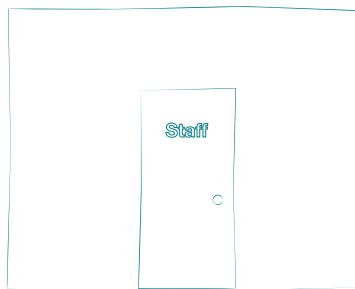
Small resident groups

It has been proven that having small residential groups has a positive influence on treatment outcomes because it reduces stress and aggressiveness among patients.



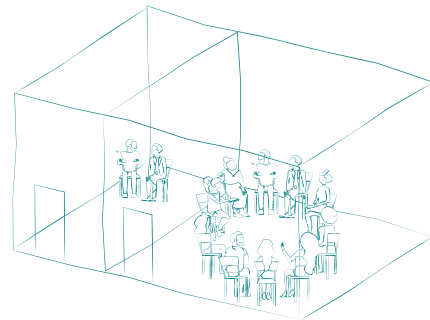
Way finding

When a healthcare facility is enormously complex it causes frustration among patients and may lead to stress which is not beneficial to the recovery process.



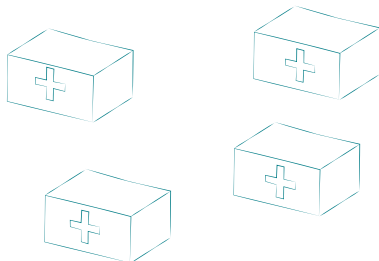
Staff rooms

Staff needs private spaces where they can retreat and privately discuss patients.



Spaces of different sizes for treatment

There should be enough spaces of different sizes for treatment to support different types of activities.



Decentralized nursing stations

When nursing stations are decentralized it is possible to monitor the patients better but also makes it easier for the patients to approach the caregivers since the boundaries are not that strict

This chapter examines four different case studies, namely Victas, Drug Addicts Hotel, GGZ Dijk en Duin and Antes. These case studies were chosen because different forms of treatment are offered within the buildings. From very closed to more accessible to the outside world. The buildings are different in size and context.

The four different clinics were examined in terms of clustering, functions, routing and context. Which eventually leads to design guidelines regarding the design of an addiction clinic and the requirements for a good location.



Figure 4.



Figure 5.



Figure 6.



Figure 7. Location Victas

Victas is one of the few large-scale addiction clinics located right in the center of a city, in this case Utrecht. Victas is a building of approximately 7000 m² in which 80 patients are housed in 5 different residential-care clusters. In addition, space has been created for a care and treatment cluster and a cluster for public and ambulatory functions. The clusters are designed as different loose volumes that fit the fine structure of the old center of Utrecht. Between the different clusters an intimate courtyard is created with several tight passages that is both isolated from the existing world and connected to it. It is a protected place with a direct connection to the surrounding world.

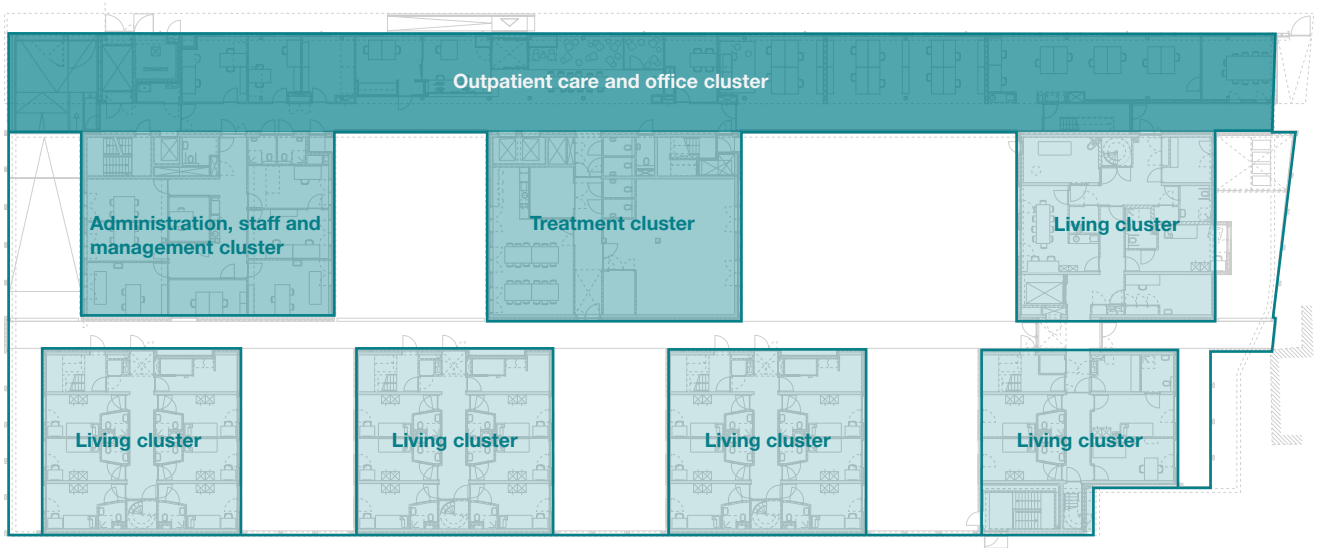


Figure 8. Clusters

The clusters are organized into three different strips. On the southernmost strip are four independent residential clusters. In the middle strip are the clusters for treatment, management and staff functions. Also located in the middle strip is the fifth residential cluster. This fifth cluster is reserved for patients who are less independent and are in a more intensive treatment program and therefore better connected to the care clusters. In the northernmost cluster are mainly located the public, ambulatory and logistics functions and are directly connected to the adjacent street. The independent living cluster is composed of four floors of which the ground, second and third floors consist of independent rooms with private bathrooms of about 16 m². The second floor consists of two shared living rooms with an associated kitchen.

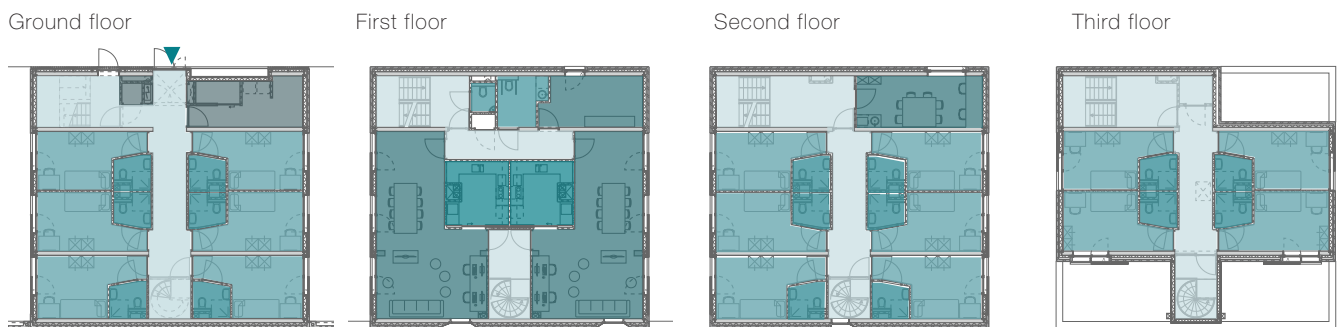


Figure 9. Functions

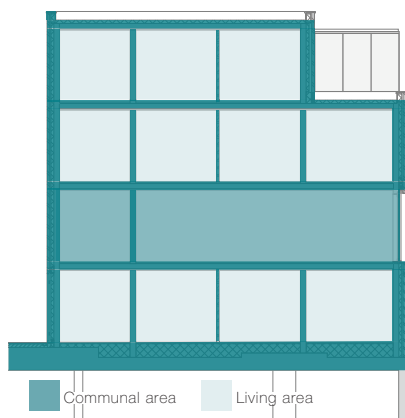


Figure 10. Section residential area

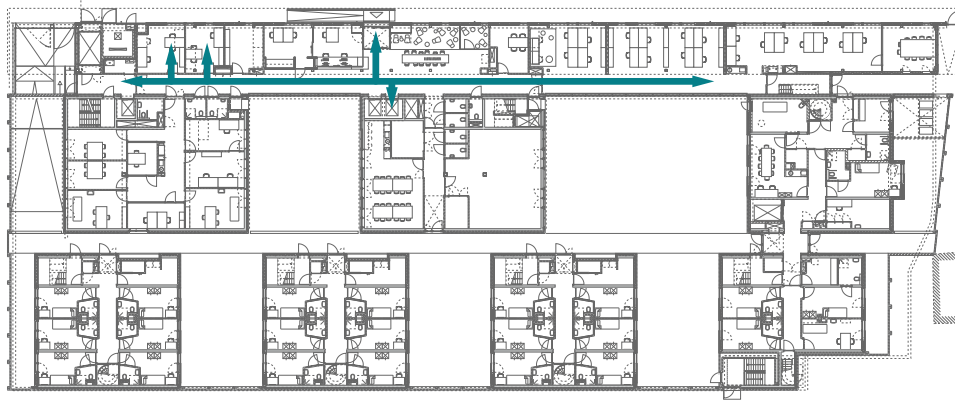


Figure 11. Routing out patient care ground floor



Figure 12. Routing out patient care first floor

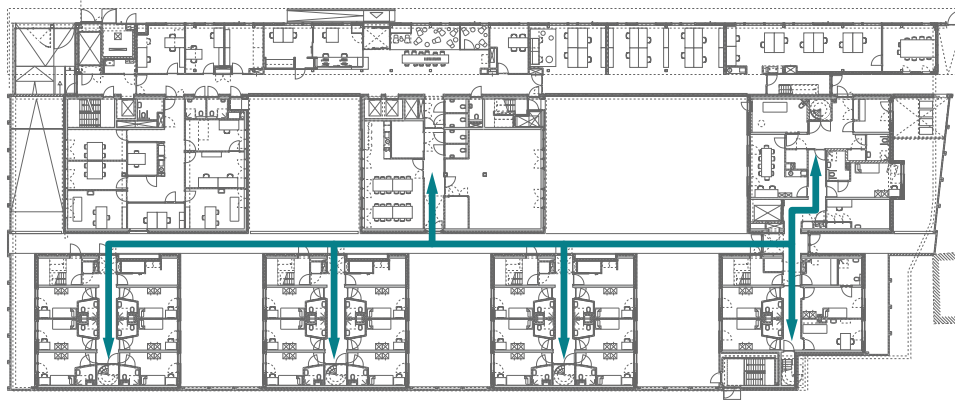


Figure 13. Routing residential patients

The middle strip forms a barrier, as it were, between the public, ambulatory care, and the private, in-house care. This is also reflected in the routing. The patients who are inpatients go from the residential cluster through the courtyard to the treatment clusters and do not enter the northernmost strip. On the contrary, patients receiving outpatient care access the treatment clusters via the northernmost lane and will not reach the residential clusters.

Victas' project shows how an addiction clinic can be incorporated into a densely built urban environment. The design of the building creates a safe environment within which patients have a certain freedom and which demands a certain independence from the patients. The building also shows how public and private can be accommodated within a building by means of an intermediate zone.

Drugs Addicts hotel – Amsterdam

Atelier Kempe Thill



Figure 14.



Figure 15.

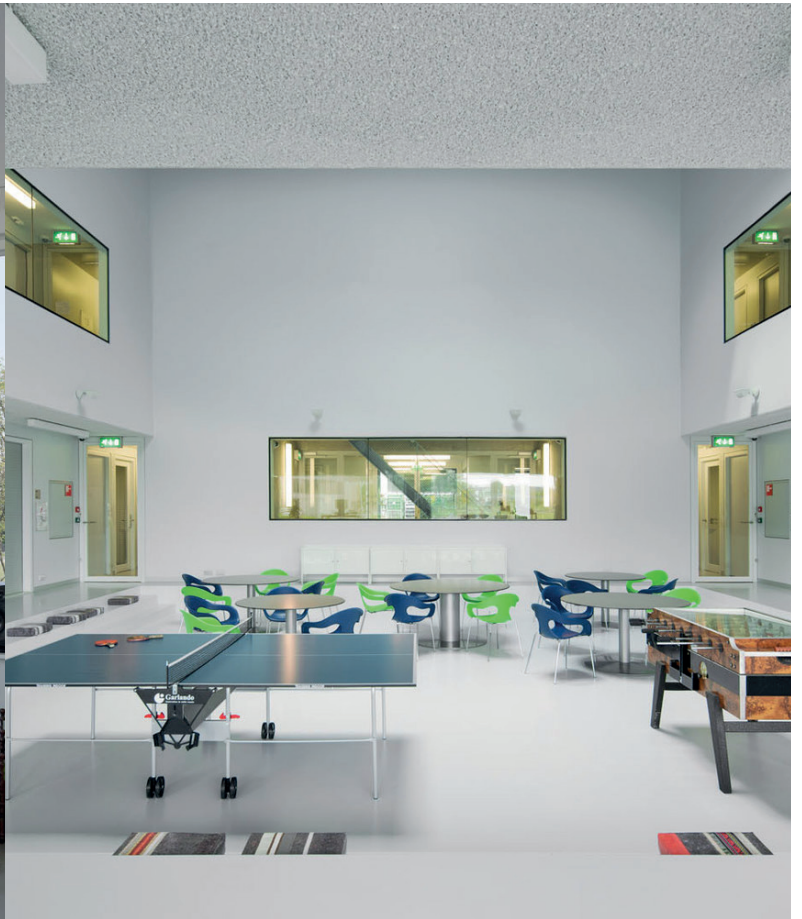


Figure 16.

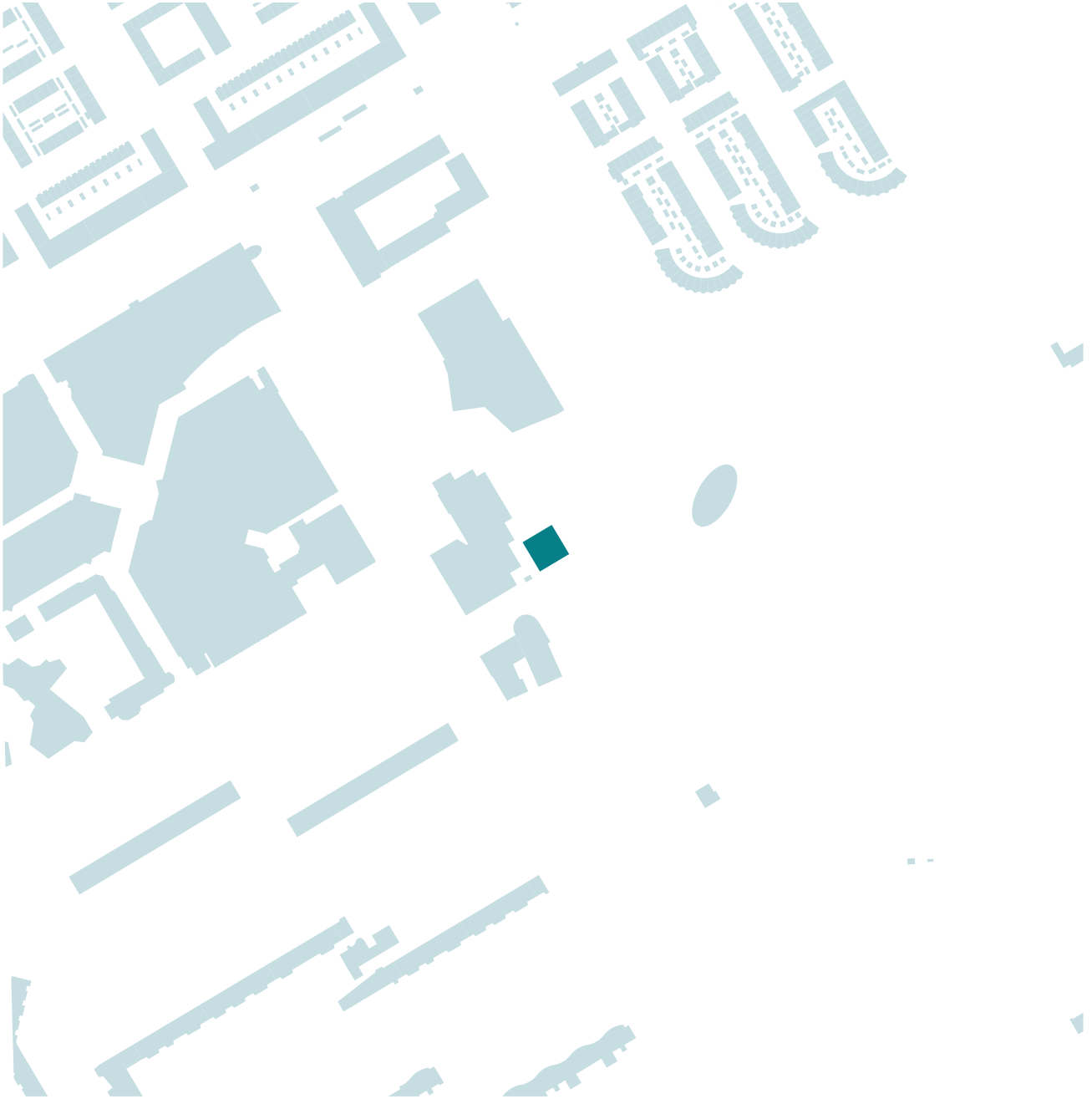
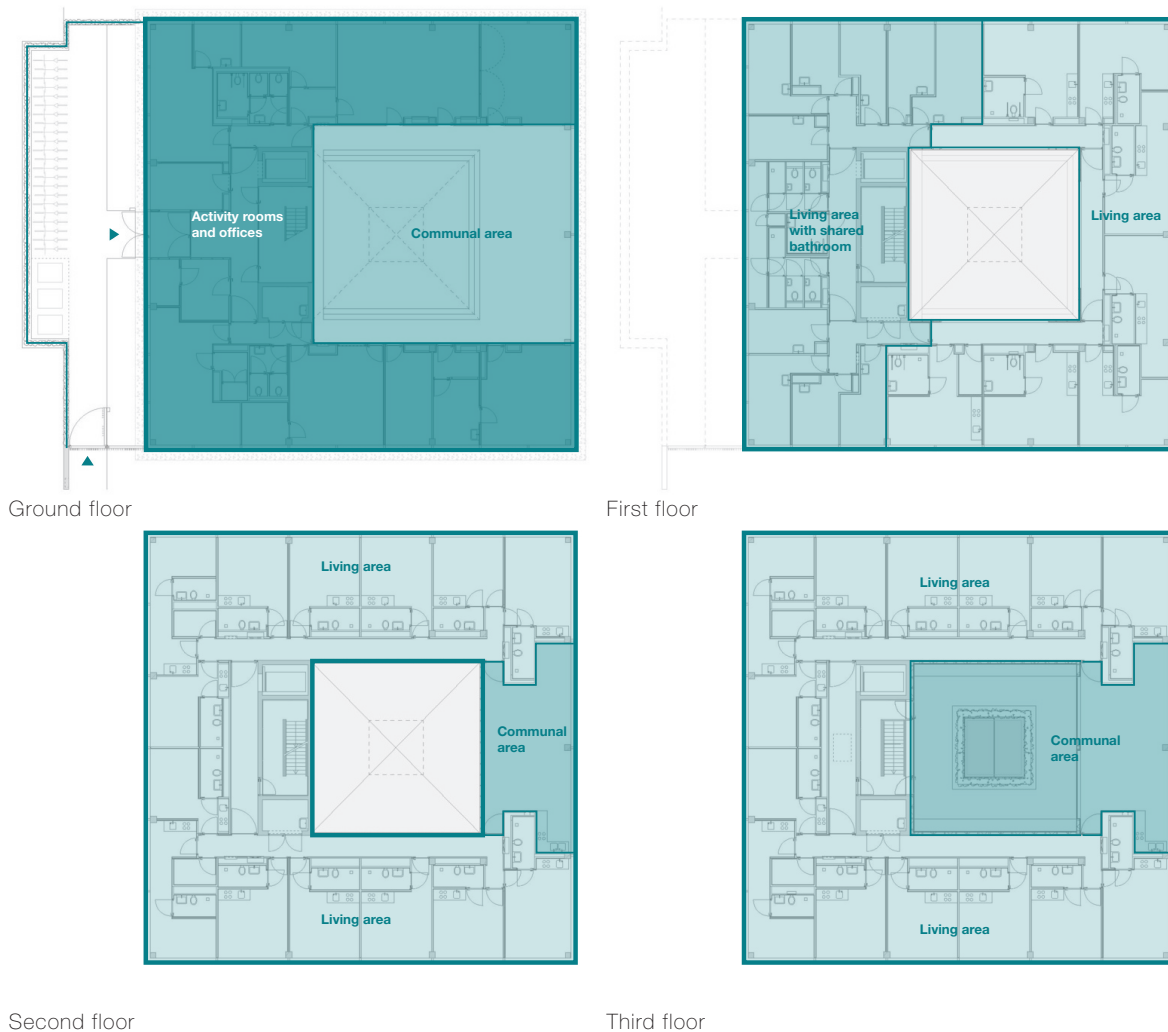


Figure 17. Location Drugs addict hotel

Atelier Kempe Thill's project is located in the Bijlmermeer on the edge of a park, making it part of an urban context but also within reach of nature. In the hotel, people with heroin addiction can stay for short or long periods of time. There are a total of 45 rooms in the building of about 24 m². 35 of the rooms are equipped with private bathroom and kitchen these are the long-stay rooms. The remaining 10 rooms use a shared bathroom and are therefore the rooms for short stays. In addition to addicts being able to stay here, methadone is also administered and there is room for training and activities to help those with addiction find work



Second floor
Figure 18. Clusters

In terms of form, the building is very discreet and reserved. It forms a unit with the adjacent police station. Within the building all functions are organized around a large atrium which is 3 stories high. On the first floor there are activity rooms, offices and a common room in the atrium. On the upper floors, all living spaces are located with access to a common living room. On the third floor there is space for a roof terrace where residents can sit outside out of sight of the inhabited world.

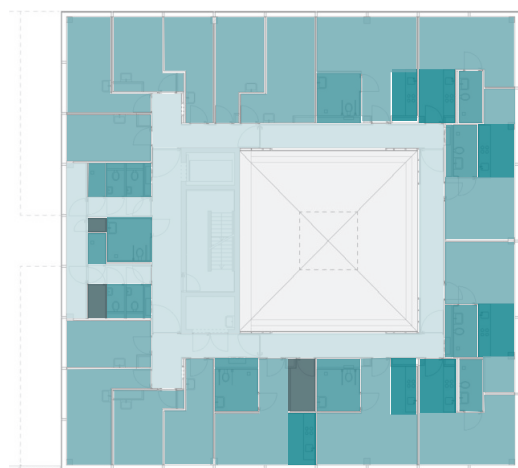


Figure 19. Functions



Figure 20. Section

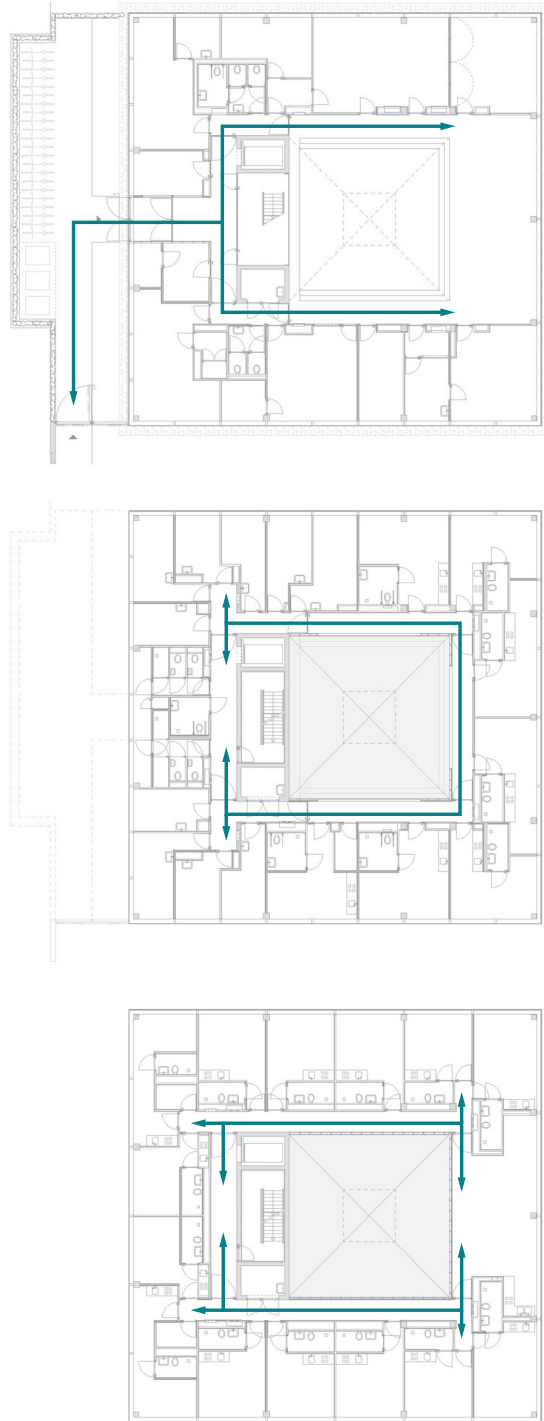


Figure 21. Routing

The entrance to the building is very anonymous and out of sight of the outside world. One must first pass through a gate on the side of the building before entering. Because all functions are organized around the atrium, this is also the case for the routing inside the building.

The Drug Addicts hotel in Amsterdam demonstrates how a residential hotel can be discreetly incorporated on the edge of the urban context. The building provides independent living spaces for addicts of decent size and quality situated around a grand atrium. An atrium that provides space for residents to meet, relax and connect.

Dijk en Duin - Castricum
GGH architecten

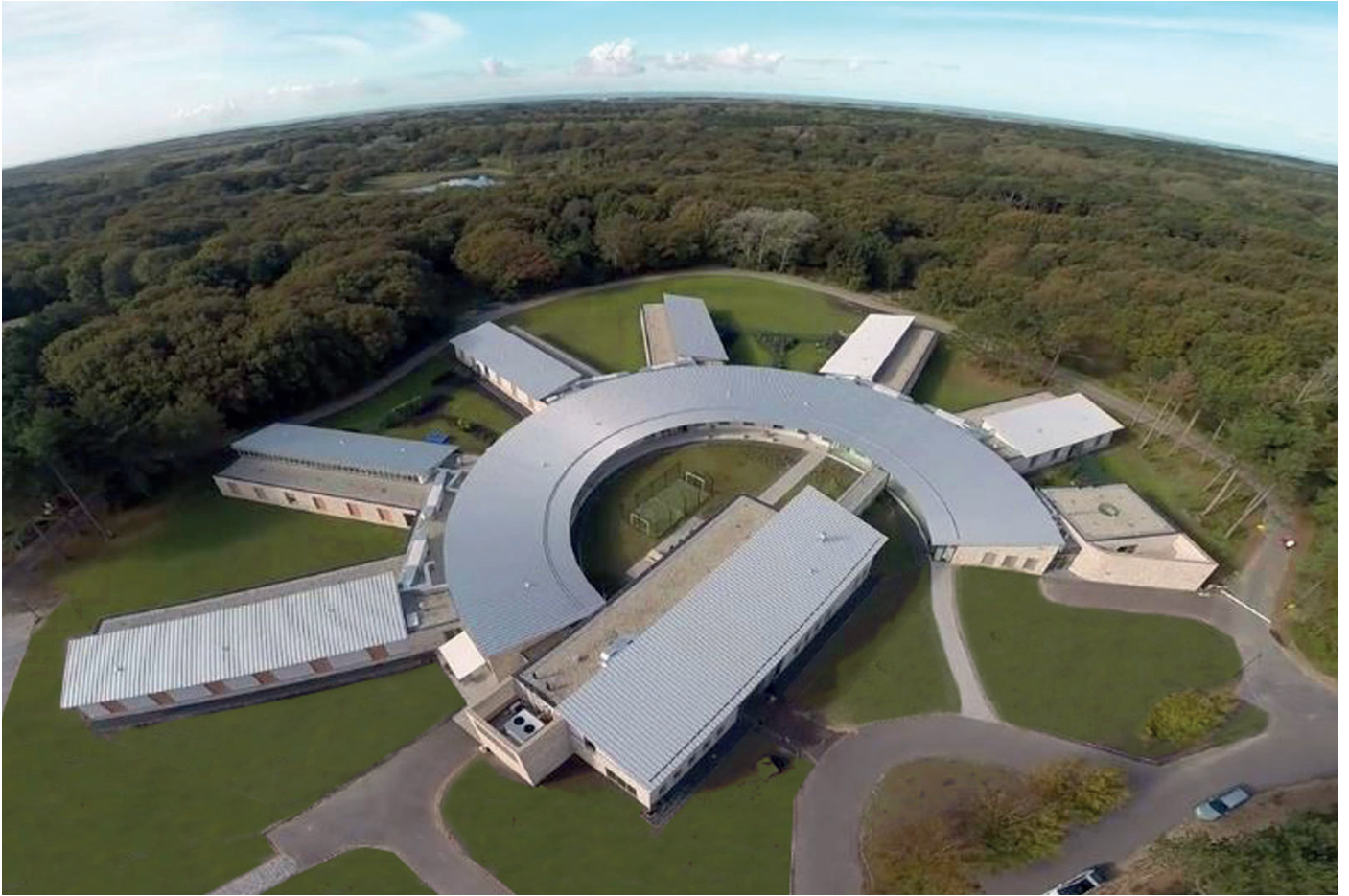


Figure 22.



Figure 23.



Figure 24.

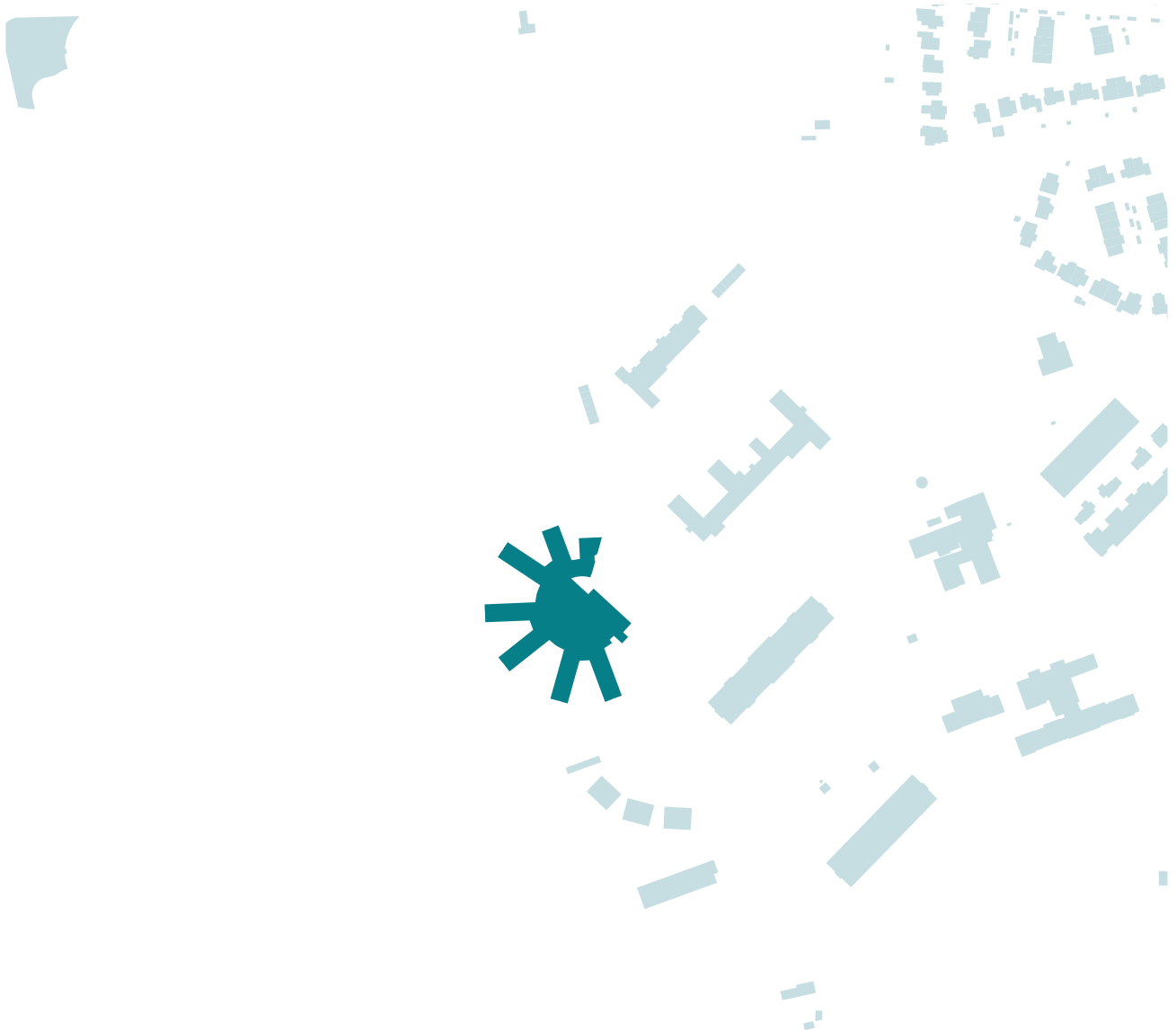


Figure 25. Location Dijk en Duin

GGZ Dijk en Duin is a clinic for adults with psychotic disorders combined with addiction problems. It is a closed facility for people who are very vulnerable. The building is located on the outskirts of Castricum and overlooks the dunes. The building is 4,470 m² and within the building there is space for 68 adults.

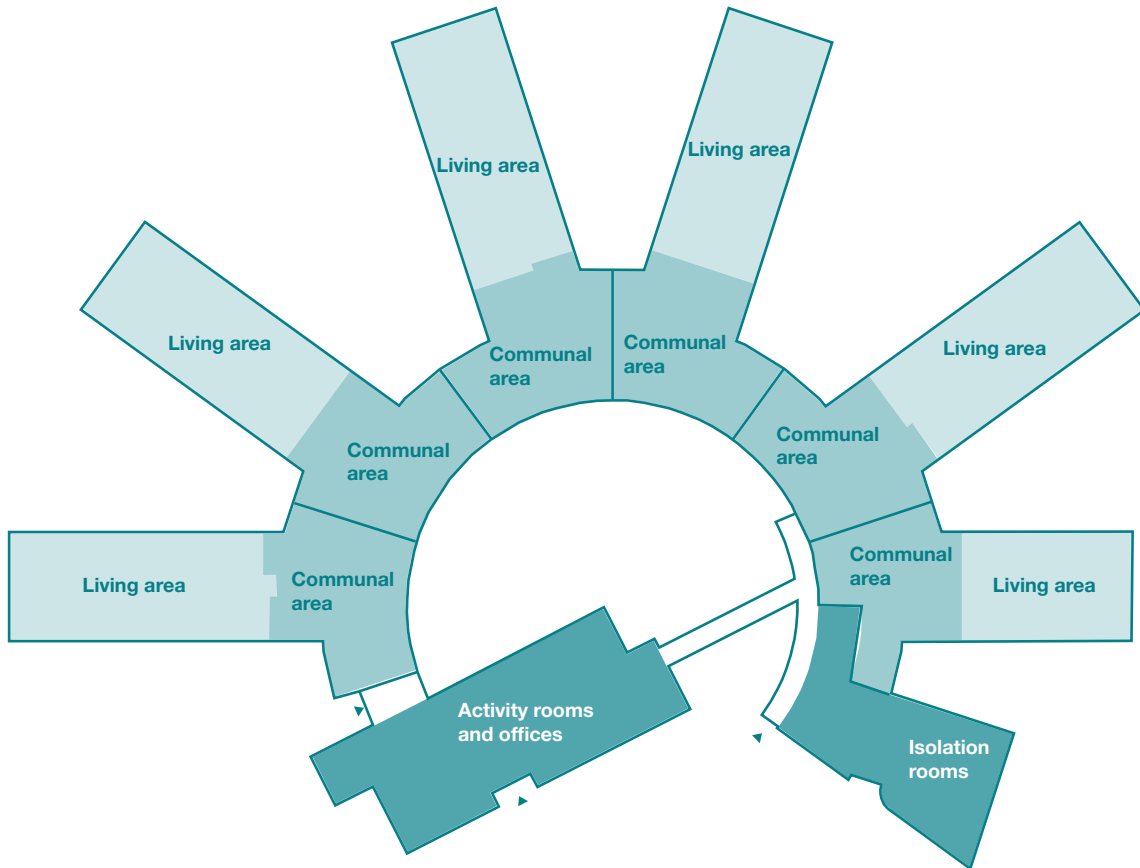


Figure 26. Clusters

The clinic is set up as an arch with six wings connected to it. Each of these wings forms its own cluster. Because of this layout, patients have optimal views of the landscape from common areas and their own rooms. Within the arch are the common areas combined with treatment rooms. Attached to each common area is a residential wing where residents have their own bedroom and bathroom. The arch is connected to the entrance building where there are also activity rooms, offices and family rooms.

The building is quite spread out across the landscape in terms of shape, also because it has only 1 story. This makes each wing feel like its own building which gives it a smaller scale.

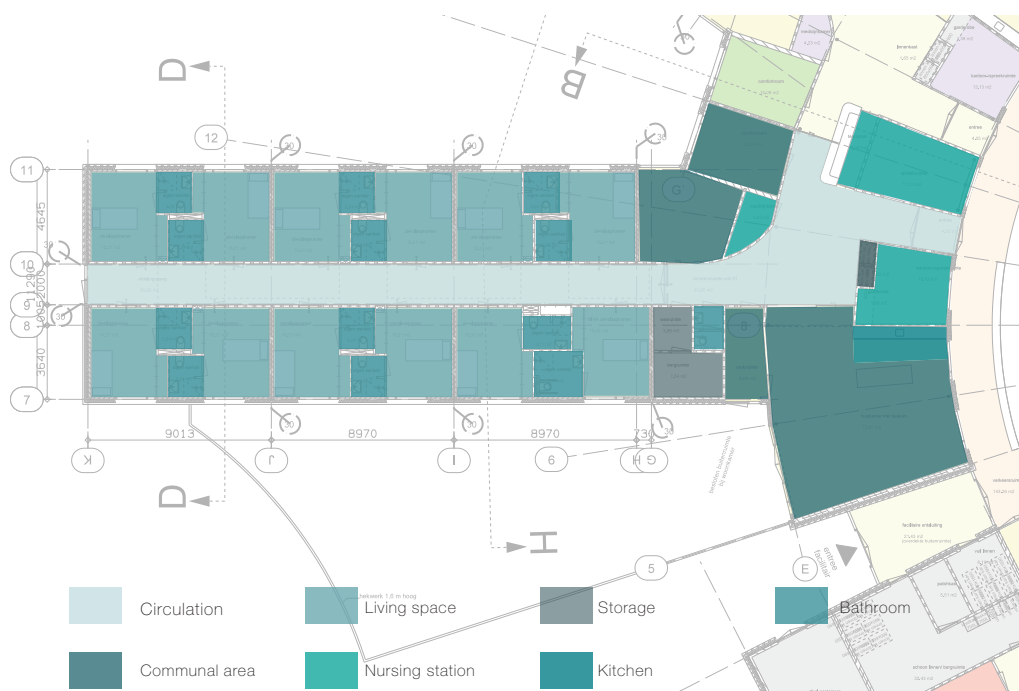


Figure 27. Functions

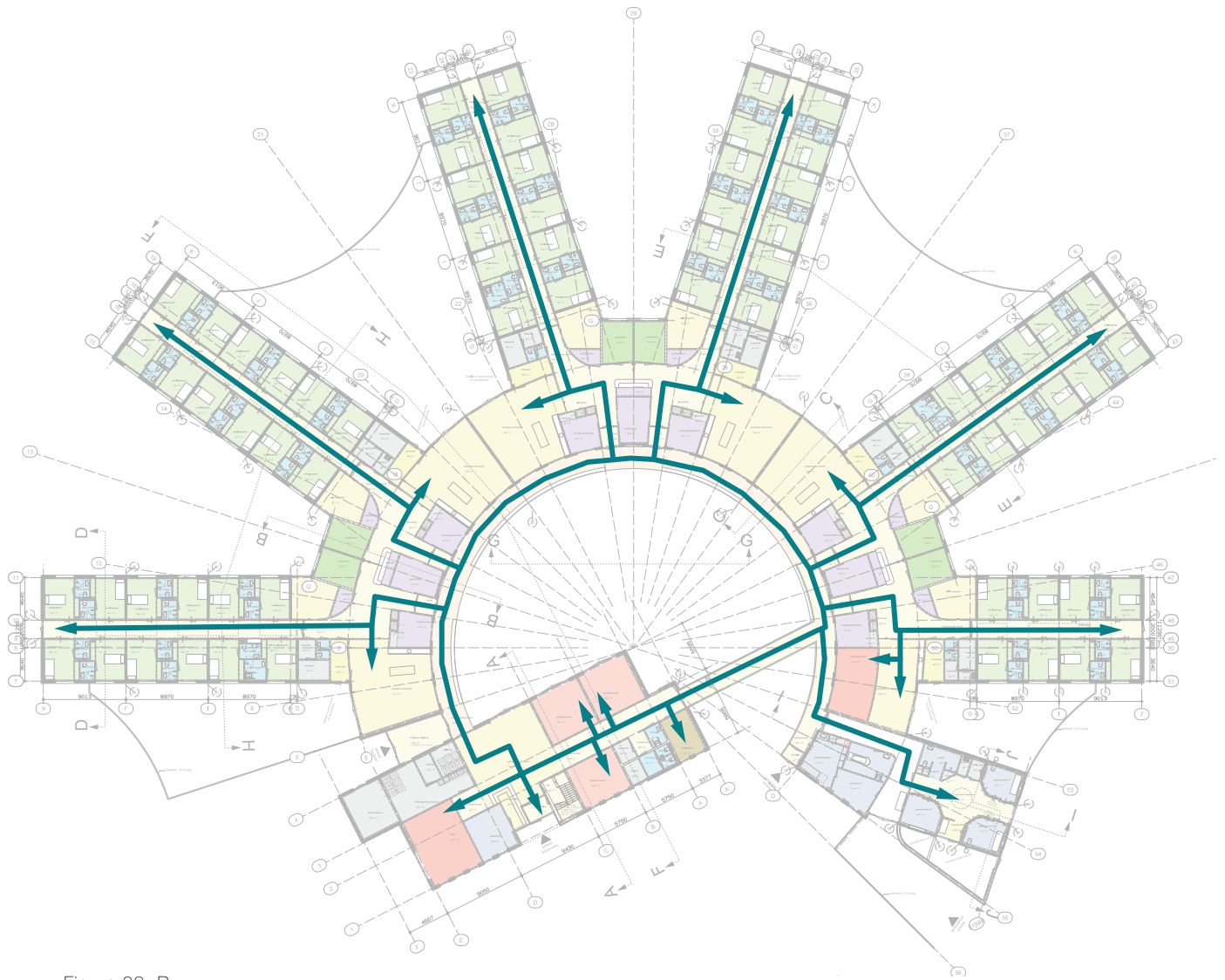


Figure 28. R

Within the building, patients have the ability to move freely up to a certain height. The wings are separated from each other by walls and doors. The clusters can be entered from outside, along the edge of the arc there is a walkway connected to each cluster.

GGZ Dijk en Duin is an example of a more closed institution where very vulnerable people are treated and therefore more closed towards the outside world. There are no public functions connected to the building. The design shows how a large institutional building can be designed to have a small-scale character by means of different clusters.

Antes - Poortugaal
EENTIEN architecten



Figure 29.



Figure 30.



Figure 31.



Figure 32. Location Antes

On the outskirts of the town of Poortugaal, which is just outside Rotterdam, and against the old river Maas, the building of Antes is situated. The building covers 11,000 m² and has space for 144 patients requiring psychiatric care for longer than a year. In addition, space has been made within the building on the first floor for the Albeda College. Here care training is directly connected to the clinic. The goal of Antes is to allow the patients to function independently in society again.

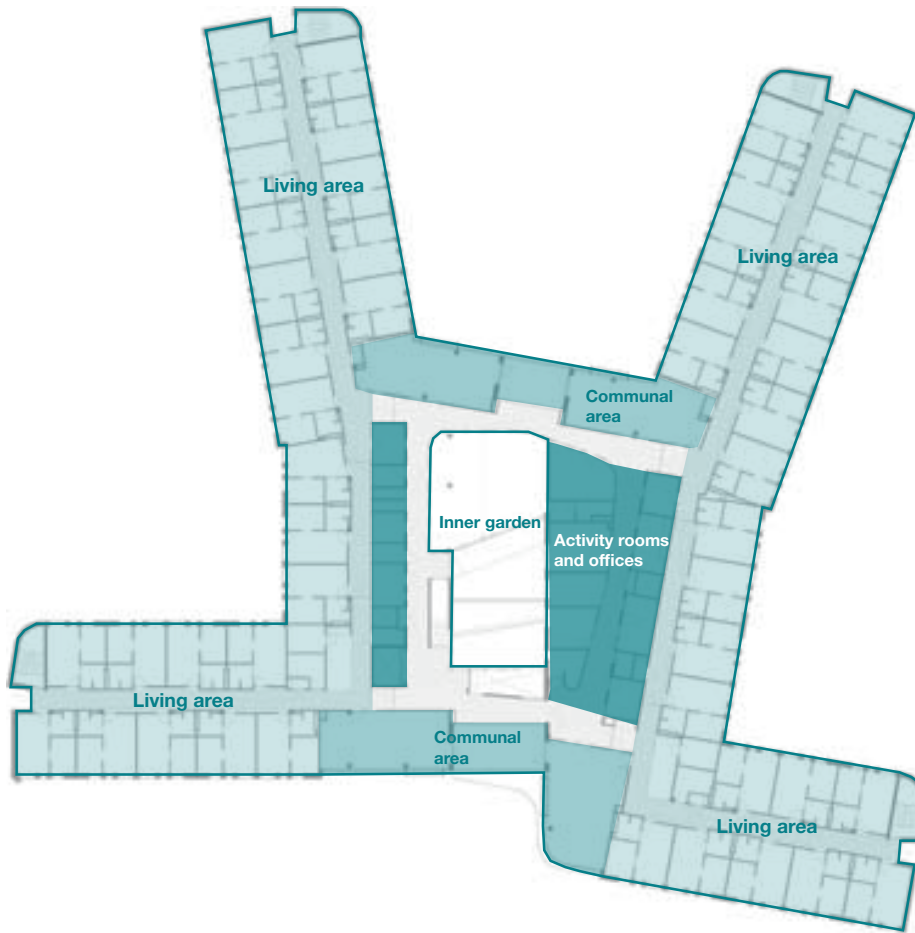


Figure 33. Clusters

In the building, patients live in individual micro apartments equipped with a bedroom, kitchen and bathroom. In these housing units, patients have the ability to cook and eat independently. The living units are located in one of the four wings of the building. The wings are positioned so that each housing unit has a view of the Oude Maas or the surrounding landscape. These wings are directly connected to a central courtyard garden that forms the core of the building. This courtyard garden provides plenty of natural light in the core of the building in combination with various horizontal and vertical sight lines, keeping the building uncluttered. All common areas are located in the core around the courtyard garden

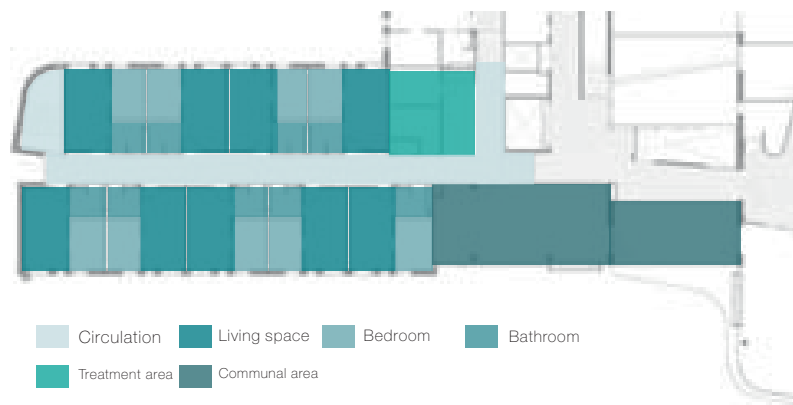


Figure 34. Functions

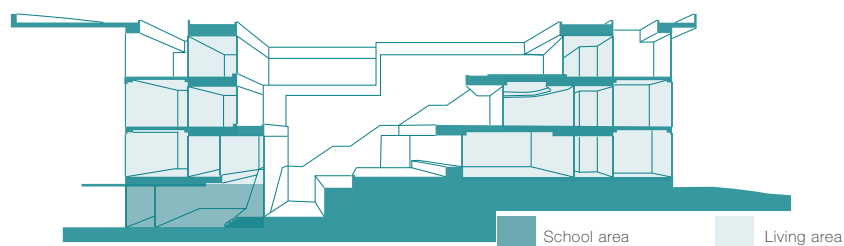


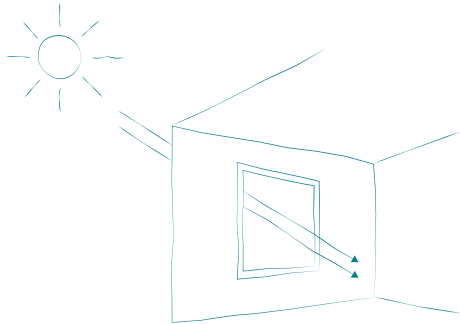
Figure 35. Section

Conclusion

Four different clinics' clustering, functions, and routing were investigated in the case studies. The majority of cases apply various smaller living clusters. Particularly, housing units and communal spaces are separated from one another. The extent of the problems being treated at the clinic determines how freely the patients are able to move through the facility. While some clinics are more open, others are more private. Patients find it considerably more challenging to leave a certain clustering and wander freely throughout the building when the clinic is more closed. A clinic employs distinct zones, from public to private, when it is more accessible to the public. There is then a treatment zone in between the public and private spaces. Ambulatory care and residential care join here in the building.

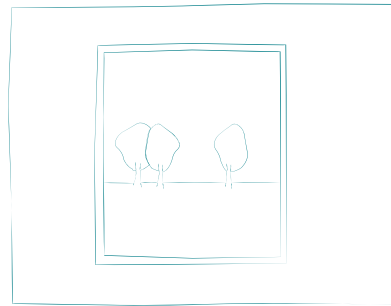
When patients are admitted to the clinic, you can usually see that they each have a private bedroom, bathroom, and occasionally even a kitchen. This will help the resident become more independent. The communal living space and kitchen are typically accessible from the residential units. The rooms and common areas of the buildings are frequently designed and positioned to give the patients the best possible views of the outdoors.

Design guidelines



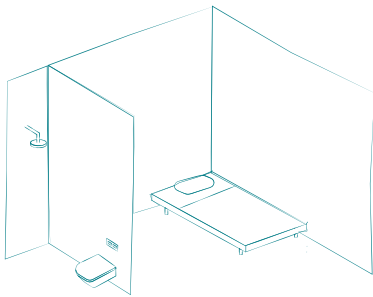
Natural light

Being exposed to sufficient natural light has been proven to help reduce stress.



Views on nature

Having a view on nature helps with reducing stress for the patient which helps with the recovery process



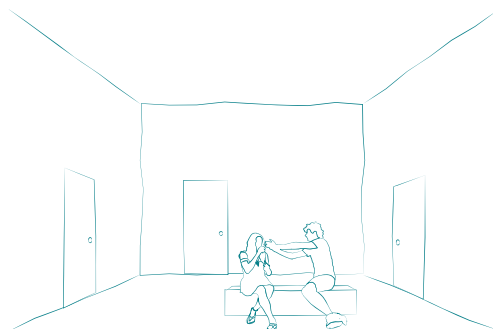
Single bedrooms with private bathrooms

Having a personal room helps decrease aggressive behavior and increase the quality of sleep by reducing stress.



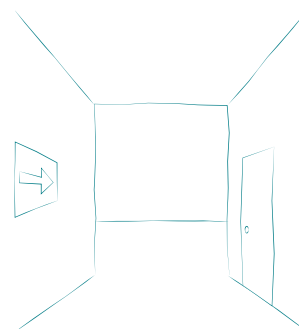
Being able to cook

The opportunity to cook meals acts as a distraction for patients and helps patients make social connections with each other.



Small resident groups

It has been proven that having small residential groups has a positive influence on treatment outcomes because it reduces stress and aggressiveness among patients.



Way finding

When a healthcare facility is enormously complex it causes frustration among patients and may lead to stress which is not beneficial to the recovery process.

The built environment plays an important role during the recovery process of patients with addiction. Several conclusions can be drawn from this research that answer the main question of this study: How can building design support adolescents with addiction problems with recovery and re-socialization in the Netherlands? These conclusions form several design guidelines that can be used when designing for adolescents with addiction problems. This chapter will first answer the sub-questions of this study. Then there will be an overview of all the conclusions and related guidelines that answer the main question. Finally, there will be a discussion where the results of this research will be discussed and my vision on designing for adolescents in addiction treatment will be given.

Sub-questions

What is an approachable environment for adolescents?

A problem in addiction treatment is that many people with addiction do not seek help and therefore do not receive treatment for their problems. Especially among adolescents there is a stigma, admitting to having an addiction is seen as a weakness. To reduce this, it is important to know how to design for adolescents, what is an accessible environment for them and what their needs are in this environment. Literature research has shown that adolescents are looking for a place where they can just be, where they can hang out with their friends. However, these places are scarce as adolescents are often seen as undesirable in public spaces. So it is important to create a place where they can retreat from the authorities they have at school or at home and make this place completely their own. When adolescents can make a place their own and they can express themselves creatively here it really becomes a place of theirs that they will use frequently. An important part of adolescents' lives is social media. When a place is attractive to share through social media, it will be more appealing to adolescents and they will step in here more easily.

How does a treatment program influence building form?

Through conducting several case studies, four different clinics were examined in terms of clustering, functions and routing. Most of the cases use different clusters. In particular, residential units and common areas are clustered separately from each other. The freedom to move around the building depends on the severity of the issues being treated at the clinic. Some clinics are very private while others are more open. With the closed clinic, it is much more difficult for patients to leave a particular clustering and move freely through the building. When a clinic is more public it uses different zones from public to private. Between public and private is then an intermediate zone used for treatments. This is where ambulatory care and residential care come together in the building. When patients are admitted to the clinic you see that they mainly have their own bedroom with bathroom and sometimes even their own kitchen. This is to promote the resident's independence. The residential units are usually connected to a common living area and kitchen. The buildings are often positioned and shaped so that the patients have optimal views of nature from their rooms and common areas.

Are there architectural elements that contribute to the recovery of patients?

Literature research has shown that there are several architectural elements that can contribute to the recovery of the patient. These elements can be divided into several categories namely psychological, self-efficacy, social and functional.

Psychological

This category places the architectural elements that affect the psychological components of healing. These elements affect the thoughts and feelings patients have about themselves, their environment and their lives. The elements placed in this category are: natural lighting, views on nature, single bedrooms with private bathrooms, noise reducing design, positive distractions and space for quiet time. Most of these elements help reduce stress in the patients which is conducive to the recovery process.

Self-efficacy

These architectural elements promoted in the immediate environment the patient's sense of control, cohesion and ability to adapt to new and the existing situation. The elements found in various literature that fit this category are: a homelike environment, not too big and personalize residents room. This category is also about reducing stress through gaining more control over the immediate environment.

Social

The elements in this category help patients develop connections and maintain relationships with others. This category is about giving patients the choice and opportunity to socialize with others or, conversely, to withdraw for a while. Also the ability to host family and friends helps tremendously in the recovery process for the patient but also for the family.

Functional

This category is about the architectural elements that support performing basic activities with minimal support. These are the more practical elements that again help in reducing stress on the patients but also the elements that are supportive for the staff to carry out care in the best way. The elements found are as follows: small resident groups, wayfinding, staff room, spaces for different sizes for treatment and decentralized nursing stations.

What are the requirements for a good location for addiction treatment?

When it comes to the requirements for a good location for addiction treatment, it is important to be clear whether it is a closed institution or whether there is also room for outpatient care within the building. With a closed institution, it is possible to place it more on the outskirts of society but when it is chosen to also offer outpatient care, it is important to be easily accessible within a society. It emerged from the literature review that when the care institution is not too large-scale this is advantageous for treatment, the building then feels less institutional. Finally, it emerged from the case studies and the literature that when it comes to a location, nature is very important for patients.

Design guidelines



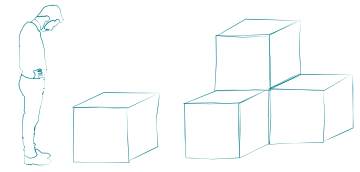
Small resident groups

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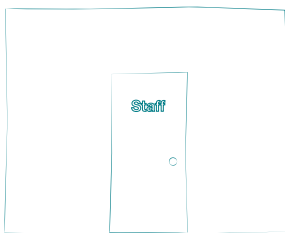
Place to be

Teenagers are looking for places where they can just be and hangout with their friends without restrictions.



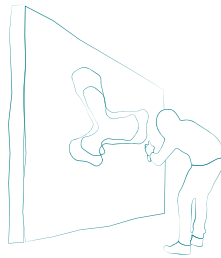
Make it their own

When adolescents are able to have control over their spaces they feel more comfortable there. They feel like that is really their space.



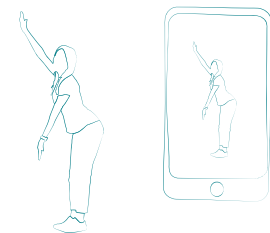
Staff rooms

Staff needs private spaces where they can retreat and privately discuss patients.



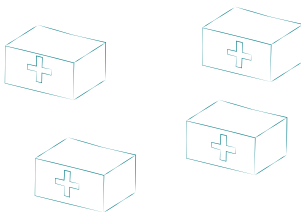
Creative expression

Teenagers should be able to express themselves creatively. This helps them develop their own personality.



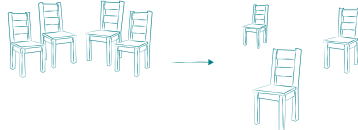
Instagrammable

A space for adolescents should be attractive and thus making it worth sharing on social media. This will attract more teenagers and will make the space more approachable.



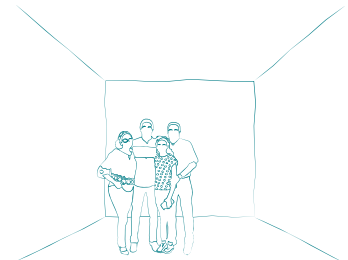
Decentralized nursing stations

When nursing stations are decentralized it is possible to monitor the patients better but also makes it easier for the patients to approach the caregivers since the boundaries are not that strict.



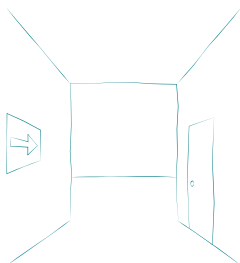
Environmental flexibility

The environment should be flexible so patient can decide them selfs if they want to socialize or not.



Space for family

Family plays a hugely important role in mental health, treatment progress and the outcomes of treatment. The presence of family contributes to the reduction of stress and pain.



Way finding

When a healthcare facility is enormously complex it causes frustration among patients and may lead to stress which is not beneficial to the recovery process.



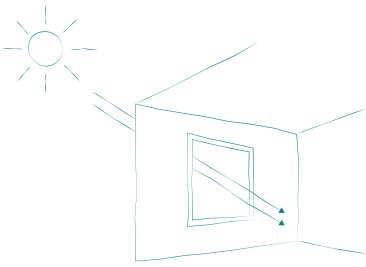
Being able to cook

The opportunity to cook meals acts as a distraction for patients and helps patients make social connections with each other.



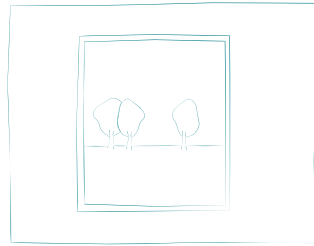
Homelike environment

Homelike environments make the patients feel more connected with their surroundings and have more control over the environment.



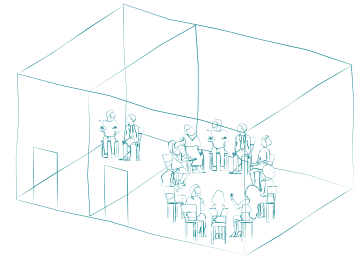
Natural light

Being exposed to sufficient natural light has been proven to help reduce stress.



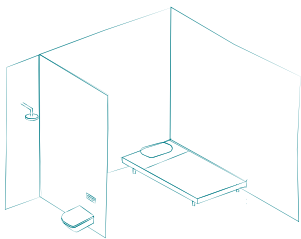
Views on nature

Having a view on nature helps with reducing stress for the patient which helps with the recovery process



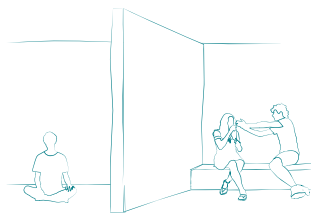
Spaces of different sizes for treatment

There should be enough spaces of different sizes for treatment to support different types of activities.



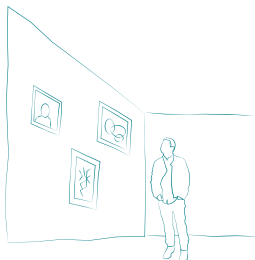
Single bedrooms with private bathrooms

Having a personal room helps decrease aggressive behavior and increase the quality of sleep by reducing stress.



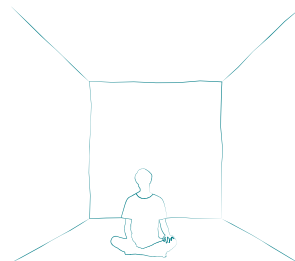
Noise reducing design

Noise of the surroundings or neighbouring spaces being kept to a minimum helps to reduce stress levels of the patients.



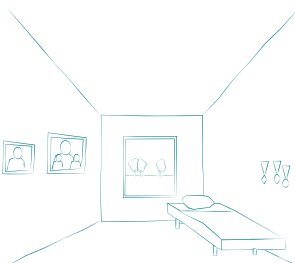
Positive distractions

When there are enough positive distractions around the patients it increases the patients perception of the quality of care.



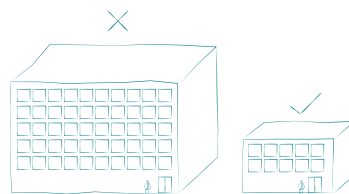
Space for quiet time

There should be spaces where patients can retreat and have some quiet time. This helps with reducing stress and gain more personal space.



Personalize residents room

When patients are able to personalize their own room it gives them confidence and feel good about themselves.

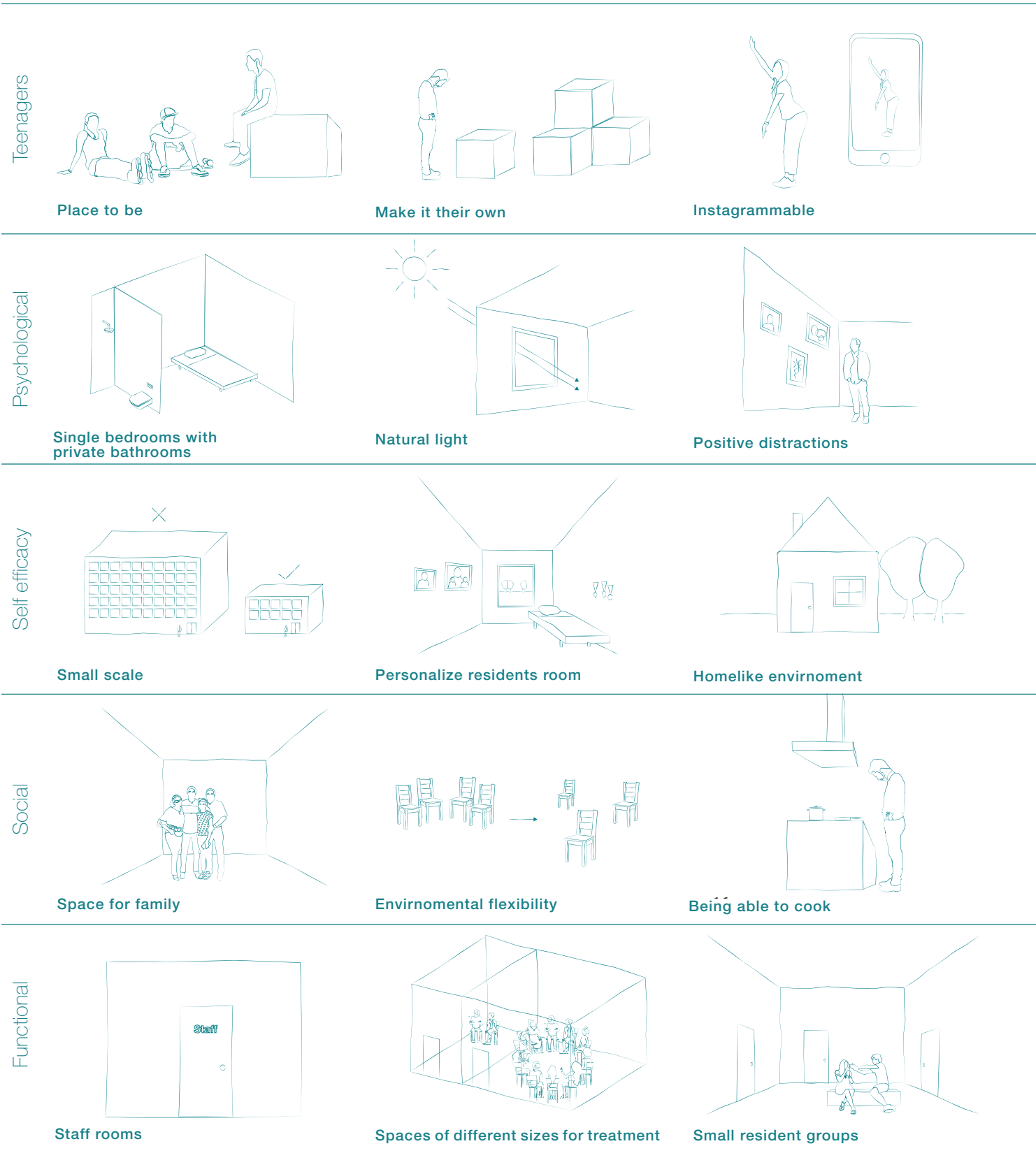


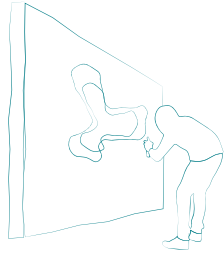
Small scale

When a facility is too big it feels very institutional and impersonal.

Design guidelines - Hierarchy

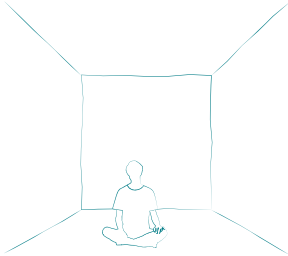
The design guidelines found can be ordered by importance within their own category. The categories are separate and are all equally important. This is done in the diagram below, where the importance is based on how often the guideline in question is mentioned in various sources. In the diagram, the leftmost design guidelines are mentioned most often and the rightmost less often.



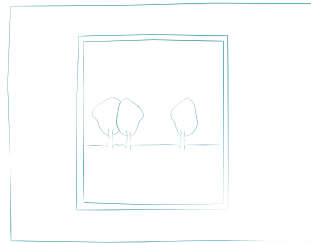


Creative expression

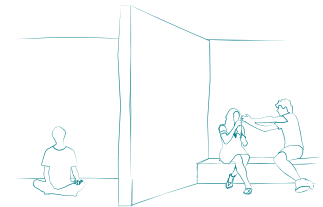
Teenagers



Space for quiet time



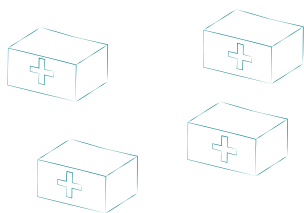
Views on nature



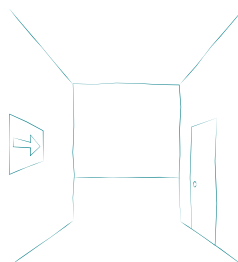
Noise reducing design

Psychological

Self efficacy



Decentralized nursing stations



Way finding

Social

Functional

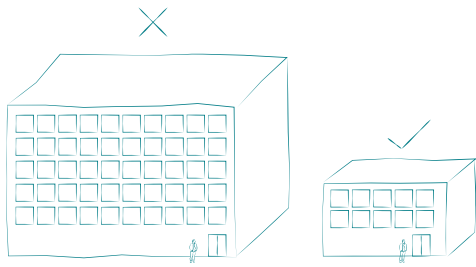
Discussion

In this study, an extensive literature review was conducted on how to design for addiction treatment. However, there was not much literature on this. Because addiction is often accompanied by mental symptoms, sources exploring how to design for psychological care were also used. The architectural elements found here converged with those found for addiction treatment. For a follow-up study, other research methods such as observations or first hand interviews could be used to explore how to design for addiction care to support and complement the elements found.

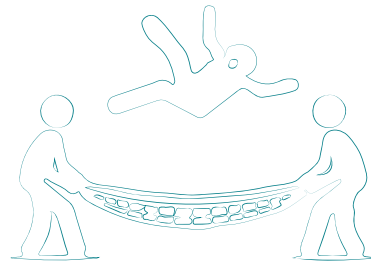
The literature found focuses primarily on how to minimize the amount of stress experienced by the patient in order to make the recovery process as smooth as possible. There is much less emphasis on how the patient can return to making valuable contributions to society after treatment. Patients are often withdrawn from society, which is appropriate for severe psychological symptoms, only to be released back into society. There could be more room in the clinics for developing skills that contribute to independent living and reintegration into society.

Vision

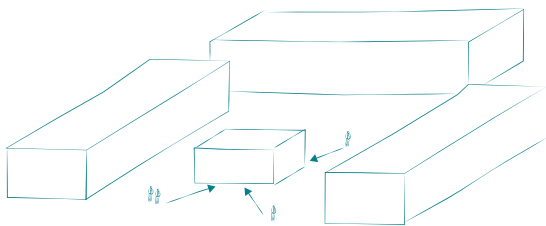
In my view, an addiction clinic can be much more than just a place where one is locked up for a period of time, isolated from society. Why couldn't it be a place that adds something to a community? When addiction treatment is combined with a public function, it becomes valuable to the community and becomes more accessible and helps reduce the stigma surrounding addiction. If it is a place where adolescents feel comfortable and have the space to be and make their own, it can reduce the step toward asking for help. The building can then act as a kind of safety net for adolescents in a community who do not have this at home. Where adolescents can be treated in a domestic, not institutional, setting on a small scale and then gradually return to the community. This can be done by having the patients, when the care pathway allows, contribute to the public function in the building. As a result, they are still involved in the community.



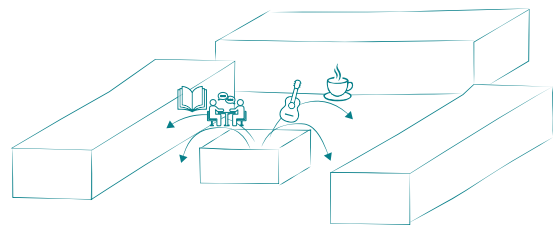
Small scale



Safety net for the community



Place within the community



Giving back to the community

Reflection

For my graduation project, I chose to investigate how to design a building for adolescents in addiction treatment in an urban environment. From this, 21 design guidelines emerged from literature research. A combination of sources were used, which together produced a collection of guidelines. First of all, the study examined what should be taken into account when designing for adolescents; addiction care does not yet feature here. Next, we examined how architectural elements can affect the recovery process within psychological care and addiction care, focusing on studies focused on adolescents in care. Since there was not much to be found about adolescents in addiction care, I chose to include studies that were about adolescents in psychological care in my research because addiction is accompanied by mental health issues in many cases. I think this was a good way to combine two topics that often go hand in hand and are therefore hugely important to consider. From the studies where participants were interviewed regarding the design and facilities of an addiction clinic, mainly very practical design guidelines emerged, such as having a space to spend time with family. Very different design guidelines emerged from the studies on adolescents in psychological care, which had much more to do with reducing stress and creating a pleasant environment. Whereby certain outcomes of studies in addiction care also gained more value it became clearer why some architectural elements emerged in the interviews. For instance, having your own bedroom with bathroom helps reduce irritation, aggression and stress.

The mentors have been very critical throughout the process by almost always questioning why I made certain design choices, which has caused me to become increasingly critical of some of the design choices myself. I think it is good for every design process to take a step back from time to time and ask yourself why you really made certain choices. This can prevent you from falling into tunnel vision and becoming so fixated on trying to solve problems that you actually all cause yourself by decisions you make. This is really something I have learned over the past period.

The research I have conducted has produced several design guidelines that have formed the basis for my design. These principles were used wherever possible to create a well-supported design for adolescents and for addiction services. Because the research was the basis for my design, the design did not have a major influence on the research. In the design, I used the design guidelines that were applicable to that specific situation or location. The biggest aspect of the design that influenced my research is that I researched how to design a place for adolescents, leaving addiction aside. I did this because I wanted to design a building which is located in an urban area allowing care to be provided locally and really make it a building for the neighbourhood. In order to create support in the neighbourhood for this function, addiction and addiction care are associated with a lot of prejudices.

I think the way I worked was good but could definitely be better. In my research, I mainly conducted literature research combined with case studies of example projects. I think I could have made the results even stronger by doing fieldwork in which, through observations and interviews, I could have better understood what it is like to be in that kind of institution and what is actually important. Unfortunately, it is very difficult to get that done because you are dealing with very vulnerable people and it can greatly affect their recovery process if suddenly an unknown person walks through the building. I think it could be enormously valuable for the graduation studio in general if the studio itself provided opportunities to do such fieldwork, as it does now for elderly care.

In my design process, I think I could have made more models. I have now mainly used sketches and 3D programmes. Using maquettes would have allowed me to explore even more how certain design choices work out spatially, which does not show up as well on the laptop screen.

I think the topic I chose is hugely relevant at the moment because of the long waiting times and wrongs in youth care at the moment. In my design, I show how to combine youth care, in my case addiction care, with a social function that can treat adolescents locally, in an urban environment. In addition, I found out during my research that not much research has been done on how to design for adolescents, and even less on the influence of the built environment for adolescents in addiction care and how to design for this. I feel that adolescents are often a forgotten group. Therefore, I think my research and also my design can be a good starting point for follow-up research where, as mentioned earlier, other research methods can be used.

Figures

Figure 1: Own work

Figure 2: Own work

Figure 3: Own work

Figure 4: <https://architectenweb.nl/nieuws/artikel.aspx?id=32172#photoid=199223>

Figure 5: <https://architectenweb.nl/nieuws/artikel.aspx?id=32172#photoid=199226>

Figure 6: <https://architectenweb.nl/nieuws/artikel.aspx?id=32172#photoid=199228>

Figure 7: Own work

Figure 8: Own work

Figure 9: Own work

Figure 10: Own work

Figure 11: Own work

Figure 12: Own work

Figure 13: Own work

Figure 14: https://www.archdaily.com/588178/junky-hotel-amsterdam-atelier-kempe-thill/54b875f4e58ecee5db0000d4-570-359_m-jpg

Figure 15: <https://www.archdaily.com/588178/junky-hotel-amsterdam-atelier-kempe-thill/54b87610e58ece61b9000106-570-468-jpg>

Figure 16: https://www.archdaily.com/588178/junky-hotel-amsterdam-atelier-kempe-thill/54b875e6e58ecee5db0000d3-570-320_m-jpg

Figure 17: Own work

Figure 18: Own work

Figure 19: Own work

Figure 20: Own work

Figure 21: Own work

Figure 22: <https://www.ggharchitecten.nl/wp-content/uploads/2017/11/1a-GGZ-opnamekliniek-Parnassia-Dijk-en-Duin-Castricum-huiskamer-luchtfoto.jpg>

Figure 23: <https://www.ggharchitecten.nl/wp-content/uploads/2017/11/staand-14004-05-GGZ-opnamekliniek-Parnassia-Dijk-en-Duin-Castricum-entree.jpg>

Figure 24: <https://www.ggharchitecten.nl/wp-content/uploads/2017/11/13438-86-GGZ-opnamekliniek-Parnassia-Dijk-en-Duin-Castricum-binnentuin.jpg>

Figure 25: Own work

Figure 26: Own work

Figure 27: Own work

Figure 28: Own work

Figure 29: <http://www.eentien.nl/wp-content/uploads/2018/01/2002-23.jpg>

Figure 30: <http://www.eentien.nl/wp-content/uploads/2018/01/2002-43.jpg>

Figure 31: <http://www.eentien.nl/wp-content/uploads/2018/01/2002-49.jpg>

Figure 32: Own work

Figure 33: Own work

Figure 34: Own work

Figure 35: Own work

Figure 36: Own work

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