NURTURING PATIENT EXPERIENCE THROUGH HOSPITAL DESIGN

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Master of Arts thesis 2019
Aalto University School of Arts, Design and Architecture
Collaborative and Industrial design
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Abstract

Hospitals around the world aim at providing their patients with high-quality care. Patient’s perception of the quality of care, patient experience, has been recognised as a top priority for healthcare. Currently, a large number of hospitals are being built or renewed to better meet future needs driven by demographic and economic changes, rapidly-evolving technologies and consumerism.

However, there seems to be a lack of research studying how the concept of patient experience could be incorporated in the hospital design processes. This thesis investigates the topic from a service design point of view, aiming at raising discussion of how to coordinate hospital design processes to nurture positive patient experience.

Understanding of the topic is gained through a case study of hospital Nova, a new central hospital located in Central Finland. Semi-structured interviews were conducted with participants including an architect, a hospital leader and two head nurses. The selected data analysis method, affinity diagramming, provided
insights that were utilised as a basis for idea generation in a co-design workshop. Eventually, a further developed concept was validated in an evaluation workshop.

The outcomes of the thesis can be divided into research and design outcomes. Main findings and insights of the research shed light on the factors that enable or hinder hospital design processes to success from the perspective of patient experience. Findings and insights connect to the following clusters: project management, design practices, patient-centred operations, designer turnover, fitting together viewpoints, cross-disciplinary working, engagement of professionals, communication and rationale, and patient involvement. The design proposal is an information and participation channel that brings transparency into hospital design processes.

The findings and insights could be utilised to raise thoughts before or during a hospital design project whereas the design proposal could inspire discussion of how to integrate transparency and user involvement into the hospital design process. The thesis concludes by stating that hospital employee experience seems to be closely connected to patient experience and that it seems to be common that hospital design projects are lacking patient involvement, leaving the patient representation for healthcare professionals.

**Keywords** patient experience, hospital design, hospital design process, service design, co-design
Tiivistelmä

Sairaalat ympäri maailmaa pyrkivät tarjoamaan potilailleen korkealaatuista hoitoa. Potilaan käsitys hoidon laadukkuudesta, potilaskokemus, on tunnistettu ensisijaisen tärkeäksi terveydenhuollossa. Monia sairaaloida rakennetaan tai uusitaan parhaillaan vastaamaan paremmien tulevaisuuden tarpeisiin, joita ohjaavat demografiset ja taloudelliset muutokset, nopeasti kehittevät teknologiat ja kuluttajalähtöisyys.

Potilaskokemusta osana sairaaloiden suunnitteluprosesseja ei kuitenkaan näy olevan tutkittu. Tämä lopputöö tutkii aihetta palvelumuotoilun näkökulmasta, pyrkien herättämään keskustelua siitä, kuinka sairaaloiden suunnitteluprosesseja voitaisiin koordinoida myönteisistä potilaskokemusta edistäen.

Aiheen ymmärrystä rakennetaan tapaustutkimuksella, tutkien sairaala Novaa, uutta Keski-Suomessa sijaitsevaa keskussairaalaan. Tutkimuksessa toteutettiin puolistukkuroituja haastatteluja, joihin osallistui arkkitehti, sairaalajohtaja ja kaksi osastonhoitajaa. Data-analyysin valittu menetelmä,
samankaltaisuuskaavio, kiteytti lääkäriä, joita käytettiin ideoinnin pohjana yhteissuunnittelutyöpajassa.

Lopputyön tulokset voidaan jakaa tutkimuksen ja suunnittelun tuloksiin. Tutkimuksen päälöytykset ja kiteytykset valottavat tekijöitä, jotka mahdollistavat tai vaikeuttavat sairaaloiden suunnitteluprosessien onnistumista potilaskokemuksen näkökulmasta. Päälöytykset ja kiteytykset kytkeytyvät seuraaviin teemoihin: projektin johtaminen, suunnittelun käytännöt, potilaslähtöiset toiminnat, suunnittelijoiden vaihtuminen, näkökulmien yhteensovittaminen, moniammatillinen työskentely, ammattilaisten sitouttaminen, kommunikointi ja perusteleminen sekä potilaiden osallistaminen. Suunnitettu konsepti on tiedotus- ja osallistamiskanava, joka tuo läpinäkyvyyttä sairaaloiden suunnitteluprosesseihin.

Lääkärija ja näkemyksiä voidaan käyttää ajattusten nostattamiseen ennen sairaalasuunnitteluprojektia tai sen aikana, kun taas suunniteltu konsepti voi inspiroida keskustelemaan läpinäkyvyyden ja käyttäjän osallistamisen integroimisesta sairaalan suunnitteluprosessiin. Lopuksi lopputyössä todetaan, että sairaalan työntekijäkokemus näyttää olevan läheisesti yhteydessä potilaskokemukseen, ja että sairaalasuunnitteluprojektit näyttävät yleisesti kaipaavan potilaiden osallistamista, potilaiden edustamisen jäädessä terveysenhuollon ammattilaisten vastuulle.

**Avainsanat** potilaskokemus, sairaalasuunnittelu, sairaalan suunnitteluprosessi, palvelumuotoilu, yhteissuunnittelu
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**TERMINOLOGY**

**designer** – a person working in a hospital design team, often a manager, a professional or an architect

**experience expert** – a person who has knowledge gained through an experience of being sick or a loved one being sick

**hospital design** — an activity consisting of many decisions to be made along the design process by several stakeholders about both hospital functions and spaces

**participant** — a person involved in hospital design

**patient** — “a unique descriptor for an individual engaging in the healthcare system at any point across the continuum” (Wolf et al, 2014)

**patient experience** - “the sum of all interactions, shaped by an organization’s culture, that influence patient perceptions, across the continuum of care (www.berylinstitute.org)”

**professional** - a person working in healthcare
The first chapter introduces the topic and the context of this work. The need for healthcare to change to better encounter challenges the future will bring is addressed. The importance of patient experience is argued and the thesis is positioned by stating that there seems to be a lack of research studying how patient experience is nurtured through hospital design. The chapter opens up the research questions and objectives to guide the work. Finally, the structure of the thesis is explained.
1.1 A NEED FOR DESIGNING FUTURE HOSPITALS WITH HIGH QUALITY OF CARE, PERCEIVED BY PATIENTS

Hospitals no longer succeed by only focusing on treatment and diagnostics. As for any other service, it is critical for hospitals to understand its customers as well as the ecosystem it is operating in. Healthcare is under pressure for a change driven by demographic and economic changes, rapidly-evolving technologies and consumerism. Global health care spending is expected to reach USD $10.059 (= €9.016) trillion by 2022 while in 2017 it was USD $7.724 (= €6.923) trillion, resulting in an annual increase of 5.4 per cent (World Industry Outlook, 2018). Hospitals’ role in spending accounts for nearly 40% (OECD, 2017). Hospitals, as critical components of healthcare systems, receive their share of the many attempts to forecast the future of healthcare. A forecast by Deloitte [2017] proposed that hospitals of future will take shape through redefining care delivery, optimising processes, engaging staff, designing healing environments and emphasising patient experience.

A number of hospitals are being built or renewed to transform outdated or insufficient infrastructure to better meet the future challenges. For instance, one-third of the Danish hospital capacity is being modernised by 16 new hospital projects that have been invested in €5.6 billion [Healthcare DENMARK, n.d.]. When designing new hospitals, hospital leaders and decision-makers have opportunities worth of hundreds of millions to define what the future hospitals will be like. Hospital projects around the world list patient-centeredness as one of their top design drivers (e.g. Kurkela et al, 2011). However, patient-centeredness is rather vague as a term. In a recent study, Fix et al [2017] discovered that patient-centeredness is understood in many levels by healthcare employees, ranging from some conceptualising it as specific, discrete tasks to others, mainly leadership, conceptualising it very broadly.

While pursuing patient-centeredness, hospitals aim at providing their patients with high-quality care. Quality of care, perceived by patients, is also referred to as patient experience. Patient experience originated from patient satisfaction in the late 1990s
when the feasibility of patient satisfaction as a measurement for quality of care from patient’s perspective was questioned (Sixma, 1998). Since World Health Organization (WHO) published the World Health Report 2000, patient experience has been seen as an inseparable part of the health systems’ performance (Delnoj, 2009). The importance of patient experience is commonly acknowledged, with studies stating that it even contributes to health outcomes (Lee 2017). Many nations drive to develop and measure patient experience. England and USA have the longest traditions in measuring patient experience, with well-established surveys from CAHPS (Consumer Assessment of Healthcare Providers and Systems) and Picker Institute Europe for the English NHS, respectively (The Knowledge Centre for the Health Services, 2008).

Attributes contributing to patient experience has received considerable attention although due to the context-specific nature of patient experience, there are no solutions that fit for every hospital. A large body of data exists ranging from patients’ interaction with staff (Lee, 2017) to the importance of the built health facility environment (Vesely, 2016). However, there seems to be a lack of research exploring how patient experience can be designed during the hospital design process. Considering that decisions made during the hospital design process create the overall scene for experiences that occur later, it seems that the first opportunities for creating smooth patient experiences might have been overlooked.

1.2 OBJECTIVES AND RESEARCH QUESTIONS

The aim of this thesis is to shed light on the rather little investigated topic of nurturing patient experience through hospital design. The thesis seeks to understand the topic through one current case study: hospital Nova project in Jyväskylä, Central Finland Finland. It is examined how the design process has enabled the design of patient experience. The thesis aims at providing both insights about what has hindered or enhanced patient experience in the design process of hospital Nova as well as ideas for how other hospital project teams could approach patient experience when coordinating their design processes.
The topic is approached from the perspective of service design. Service design offers a human-centred mindset to examine services of different kind and complexity. Service design is increasingly seen as valuable in-house expertise in healthcare institutions and it entails great potential in catalysing organisational change or cultural shift in the healthcare sector (Service Design Network, 2017). The thesis aims at contributing to the design industry by exploring how patient experience, as a particular type of user experience, can be intertwined in the design process of hospitals.

The thesis has also several personal objectives. I have been interested in applying service design in healthcare since I first started studying service design. As a service designer, I often tend to look at services from the perspective of how their users experience them. When talking about user experiences, what could be a more critical context than health services? Health and wellbeing are integral parts of our lives that affect how we experience life in general. I believe we can design better patient experiences to enhance overall life experiences too. I hope this work could spark some thoughts and discussion about how we should coordinate hospital design processes to better nurture positive patient experiences.

The main research question is:

1. How to coordinate hospital design processes to nurture positive patient experience?

Followed by two supportive research questions:

2. What factors enhance or hinder a design team’s ability to design the patient experience desired?
3. How to set a common ground to enhance discussions of patient experience as an integral part of hospital design processes?

The main research question is the underlying theme for the literature review, research and design. The second question is mostly discussed through research while the third one is addressed more through design. This thesis discusses hospital
design as an activity consisting of many decisions to be made along the design process by several stakeholders about both hospital functions and spaces. The purpose of this work is not to list features that improve patient experience. This kind of lists, including features like building private patient rooms, utilising acoustic materials or installing nature-based artworks, already exist [e.g. Health Facilities Management, 2016] and although they might be useful, they do not help with realising the full potential of patient experience. Also, this thesis does not focus on architecture or spatial design. Decisions made through hospital design processes concern not only spaces but functions and organisation as well. This will only be emphasised in the future when a hospital will stand for much more than the mere brick-and-mortar building [Deloitte, 2017].

1.3 THESIS STRUCTURE

The thesis is structured into six chapters. Introduction has described the context and the scope of the study as well as presented the research questions and objectives. In second chapter, current discussions of patient experience are introduced, covering the viewpoints of why patient experience has attracted interest, what is the concept of patient experience and how it could be influenced on. Some of the practises of modern hospital design are briefly introduced and the role of patients in the process is addressed. Service design and co-design are discussed in the given context. The third chapter presents the methodology of the thesis, starting with opening up the research process and the conducted case study. Research and design methodology is described, from semi-structured interviews to data analysis, a co-design workshop and an evaluation workshop. The fourth chapter presents the findings and insights of the research, proposing a set of insights to be considered if looking for understanding the best practises and challenges of one recent hospital project. The fifth chapter presents a design proposal and opens up how it evolved from co-designed ideas into an evaluated concept. Finally, discussion, limitations and further research are discussed.
This chapter starts with introducing the recent discussions of patient experience: why we should care about it, what we should know about it and how we could enhance it. The discussion of patient experience is followed by introduction of some of the current practices of hospital design. The role, often a missing one, patients have in the design processes is addressed and questioned. The strengths and weaknesses of service design and co-design in the given context are discussed and the chapter is concluded by proposing that the potential service design and co-design has for healthcare is yet being underutilised.
2.1 WHY PATIENT EXPERIENCE MATTERS

Patient experience is acknowledged as a top priority of healthcare leaders and it is emerging in the research and practice of healthcare [Wolf, 2014]. The growing interest relates to changes healthcare is undergoing, demanding it to shift from volume to value and from provider-centred to patient-centred. High-quality care is every hospital’s goal and thus is fluent patient experience too. As a recent report states [The Economist Intelligent Unit, 2018], quality of care and patient experience are inseparable. Patient experience is widely recognised as a dimension of quality, alongside with clinical effectiveness and patient safety [Doyle et al, 2013].

Doyle et al [2013] state that arguments about the significance of patient experience are often based on its intrinsic value or utilitarian value. Justifications grounded on intrinsic value argue that compassionate care is valuable in its own, while others grounded on utilitarian value state that patient experience correlates to other factors like care outcomes and financial performance [Doyle, 2013]. Connections between patient experience and financial performance as well as care outcomes have been studied with results proposing the connections to be positive [Deloitte, 2016; The Economist Intelligence Unit, 2018; Doyle et al, 2013; Stein et al 2015].

Stein et al [2015] studied the correlation between patient experience as a subjective perception of quality of care and objective quality of care through a study of 4605 hospitals. The results of their study suggest a positive correlation between patient experience and objective quality of care. Strongest correlation found was that hospitals with high patient experience have low complication rates. Objective quality of care, to put it another way, is a combination of clinical effectiveness and patient safety [see figure 1.]. Doyle et al [2013] studied associations patient experience has with clinical effectiveness and patient safety and found the associations to be positive. They found that the evidence was particularly strong regarding patient’s adherence to recommended care. Their results support the recognition of patient experience as one dimension of quality,
alongside with clinical effectiveness and patient safety. They state that these three dimensions should be seen contributing to quality together.

Lee [2017] proposes that healthcare services should be designed based on patient experience as it generates value co-creation through interactions of patients and staff and hence leads to better care outcomes. Lee’s proposal is well aligned with the findings of Stein et al and Doyle et al. The evidence of patient experience contributing to adherence is easy to see contributing all the way to better care outcomes too when patients follow the care they have been recommended. Focusing on patient experience seems beneficial also from a mere business point of view, as one study found that hospitals that have better patient experience ratings also perform better financially, measured by margins and ROA (Deloitte, 2016). In the study, comparison of HCAHPS ratings and net margins of hospitals in 2008-2014 reveals that hospitals rated “excellent” had an average net margin of 4.7 percent while hospitals rated “low” had just 1.8 percent.

However, criticism towards patient experience research might note that causalities of the correlations need more investigation before jumping to conclusions. For instance, Deloitte [2016] points that the results of their study could also be seen to indicate that hospitals that perform well financially invest in patient experience more. In a way, this reflects the complexity of hospitals as systems where dimensions are strongly intertwined. While research keeps exploring the correlations and causalities, concrete actions promoting hospitals’ performance and patient experience are already taken.

A global trend affecting health system payment is a shift from pay-for-quantity to pay-for-quality, in other words, a shift from volume to value (Deloitte 2018). The trend means that a proportion of the payment health systems receive is incentivised to their performance. Health systems are implementing new payment models functioning with the principles of pay-for-performance (P4P) or value-based payment (VBP) (Counte et al, 2019). An example of a national program is a Hospital Value-Based Purchasing program, implemented in US hospitals by
the Centers for Medicare and Medicaid Services (CMS) [Studer Group, 2018]. OECD has listed that already by 2010, P4P was widely utilized in hospitals and ambulatory settings in Europe, United States, Australia, New Zealand, Brazil and Korea. (Cashin et al, 2014). Despite the side one stands on in the discussion of the value of patient experience, whether promoting or opposing it, either based on the intrinsic value or utilitarian value, it seems evident that patient experience is something hospital leaders of 21th century should be aware of and interested in.

Figure 1: Studies have found the correlations between patient experience and clinical effectiveness, patient safety, care outcomes and financial performance to be positive.
2.2 WHAT IS PATIENT EXPERIENCE

In order to better understand what patient experience is about, let us investigate the concept slightly. In the 1990s, patient satisfaction was widely used to measure the quality perceived by patients, however, soon the suitability of patient satisfaction measures was questioned and patient experience measures emerged (Sixma, 1998). Delnoij (2009) states that in contrast to patient satisfaction, patient experience aims at not only evaluating the satisfaction but also understanding what actually happens. Since WHO published World Health Report 2000, patient experience has been acknowledged as an integral part of performance (Delnoij, 2009).

Wolf et al (2014) state that there is a need for a standard, consistent definition of patient experience. Through a synthesis of existing literature of 14 years, they present five elements patient experience definitions share. These elements can be used to understand what we mean when talking about patient experience and possibly to create new definitions. First, patient experience is shaped through individual events within the care continuum. Second, patient experience should be seen more holistically than just utilising surveys and measuring satisfaction. Third, patient experience is about recognising patients as individuals engaged in their care as partners. Fourth, patient experience is closely related to patient expectations and how they are met, beyond the clinical outcomes. Fifth, patient experience is integrated into the principles of patient- and family-centred care. This thesis uses a widely acknowledged definition of Beryl Institute [www.theberylinstitute.org], defining patient experience as

"the sum of all interactions, shaped by an organization’s culture, that influence patient perceptions, across the continuum of care”.

Patient is also an interesting term to look at. We all understand what we mean with it but the nuances it carries are worth noticing. Merriam-Webster dictionary (www.merriam-webster.com) defines patient as a noun as “an individual awaiting or
under medical care and treatment” and as an adjective “bearing pains or trials calmly or without complaint”. As Deber et al [2005] note, as a term, patient is rather passive. Unfortunately, the practice does not seem very different compared to the theory, as Mazurenko et al found (2016) that patients are not viewed as customers of hospitals by either physicians or patients themselves. Differently, the same study found that hospital administrators consistently do consider patients as customers. Although the term might not be unambiguous, it is the only one reasonable to use. Hereby, this thesis continues using the term patient but emphasises that it is considered as Wolf et al (2014) sharpened: “a unique descriptor for an individual engaging in the healthcare system at any point across the continuum”. An experience woud also be an interesting concept to take a closer look at. However, due to the vast amount of literature on patient experience, this work does not consider experience literature not directly related to patients.

2.3 HOW PATIENT EXPERIENCE IS ENHANCED

Patient Experience Leadership Survey (HealthLeaders, 2009) indicates that there is a gap between what healthcare leaders say and what they do about patient experience. In the survey, nearly 90% of the leaders announced patient experience is one of their top five priorities and a majority of them reported that the impact on patient experience is considered in every decision made. The biggest obstacles in enhancing patient experience were told to be a lack of funding, an abundance of other priorities and a lack of management consensus. In addition, the survey reveals that a potential pitfall in improving patient experience concerns responsibilities. Most respondents told that the CEO is the one in charge of leading patient experience. Popular and concerning responses were that patient experience is the responsibility of no one or everyone. A report by The Economist Intelligence Unit (2018) summarises the obstacles by stating that organisational challenges commonly hinder the implementation of patient experience interventions.

It is hard to predict what works when aiming at improving patient experience. Eventually, when aiming at improving
patient experience, we aim at improving “the sum of all interactions, shaped by an organization’s culture, that influence patient perceptions, across the continuum of care” ([www.theberrylstitute.org](http://www.theberrylstitute.org)). Complex interventions tend to have consequences that are hard to foresee and solutions that work in one hospital might not work when replicated in others ([The Economist Intelligence Unit, 2018](#)). There are many studies that aim at finding out how to create ideal conditions for achieving exemplary patient experience ([Archer, 2018](#); [Luxford, 2011](#); [Shaller, 2007](#)). Healthcare has so far been disease, system and provider focused ([Fix et al, 2017](#); [Epstein, 2011](#)). To transform healthcare to be patient-centred, [Archer (2018)](#) states that three aspects of patient experience need to be considered: involving patients in care, providing information about care and treatment and showing empathy and respect.

[Luxford et al (2011)](#) found that the major barriers for realising the change towards patient-centeredness are shifting the mindset from provider-centred to patient-centred and understanding that the shift takes time. Organisations that have successfully transformed to be patient-centred have moved beyond mainstream frameworks and adopted strategic organisational approaches ([Luxford, 2011](#)). [Shaller (2007)](#) and [Luxford et al (2011)](#) have presented similar lists of key facilitators that drive patient-centeredness. They state that patient-centeredness is driven by committed leadership, clearly communicated strategic vision, active engagement of patients and families, motivated employees, systematic measurement and feedback, accountability and incentives, culture open to change and learning, quality built environment and supportive information technology.

[Deloitte (2017)](#) proposes that hospitals should concentrate on improving patient experience by focusing on revenue instead of costs and focusing on staff. Their study indicates that investing in patient experience results in an increase in costs but an even bigger increase in revenue. The study also suggests that the strongest link between financial performance and patient experience lies in engaging employees. The report by [The Economist Intelligence Unit (2018)](#) agrees, stating that the most successful interventions to improve patient experience
actually focus on staff. The report also found that recent patient experience initiatives have utilised institutional or facility design to intervene holistically, targeting patients, staff, systems and care. The report proposes that enhancing patient experience through institutional or facility design ensures that it will be sustainable and embedded in the system.

**2.4 DESIGNING FUTURE HOSPITAL SERVICES**

It is worth noticing that as the world changes fast and the hospital projects tend to last many years, hospitals are needed to be designed having the future in mind. The focus of healthcare is shifting from treatment to prevention and to supporting healthy lifestyles (Deloitte, 2018). As a scenario work of Demos Helsinki (2016) proposes, health will be increasingly seen as a capability, not an absence of illness. Although conceptions of health are developing to emphasise prevention, diagnostics and treatment will obviously be needed too. A study by IIESE (2016) states that hospitals will continue to have a major role in health in the future. First, they will provide tertiary care, in other words, treat complex and very ill cases. Second, they will provide acute care for their territories. Third, they will act as leading centres of expertise, by constantly innovating, sharing their knowledge, and contributing to research and education. Deloitte (2018) depicts a trend already visible, as more and more patients can be treated outside hospitals, in homes and ambulatory settings. In addition, the ones treated in hospitals usually do not have long stays. New technologies and digitalisation are also changing hospitals as we know them. Deloitte (2017) predicts that with the help of technological advancements and automation, many processes can be optimised. For instance, some hospitals already have command centres, similar to ones in airports, where the status of each patient is continuously followed. Digitalisation and automation should be seen as an opportunity that enables hospital employees to focus on their primary tasks with patients (Deloitte, 2017).

Tolkki et al (n.d.) argue that hospitals should be built as components of health ecosystems, not buildings. They suggest approaching the hospital design process by asking what is
going to be done in the hospital, how is it going to be done, how to organise it and what kind of organisation and spaces would support it. By following this order, the organisation and the spaces will be built around the functionalities. When a traditional hospital design process is linear and consists of phases like definition of needs, project planning, technical design and building, the modern hospital design process iterates between concept design and functional design (Tolkki et al, n.d.). Figure 2 (adjusted from a figure by Autio et al, 2012) presents a modern hospital process and different parts of it. Background research and concept design include mapping the ecosystem (0.), defining hospital’s role in it (1.) and defining functional entities (2.), like a ’hot hospital’ that includes all acute and critical functions of the hospital. Functional design includes designing the defined entities (3.), like different parts of the hot hospital including an intensive care unit, a duty and an operating theatre.

There are many widely utilised approaches for hospital development, like Lean, Kaizen and Six Sigma that include methods like 3P, 7 flows of medicine and 5S (D’Andreamatteo et al, 2015; Hicks et al, 2015). They have their own specific features but share a common desire to reduce unneccessities, or waste as they often say, and increase value (D’Andreamatteo et al, 2015). Increasing value has received considerable attention besides the traditional emphasis on efficiency since value-based care provides an alternative payment model to volume-based care, often referred as fee-for-service (Deloitte, 2018). In addition to approaches focusing on reducing unneccessities, there are approaches like Evidence Based Design (EBD) that highlight the role of data in hospital design process (Alfonsi et al, 2014). In this thesis, different approaches to hospital design are not studied in detail but their existence is noted. Patient experience is not tied to any of the approaches and can be nurtured despite the approaches, methods and techniques a project team decides to utilise in the hospital design process.

Regardless of the approaches, the role patients have in the hospital design is discussed. A recent work by Herriot (2018) states that there seems to be a lack of patient involvement in hospital design in Denmark. In one of the cases discussed by Herriot, an architect working with hospital design did not
Figure 2: Modern hospital design process, adjusted from the figure made by Autio et al [2012].
name patients as stakeholders even when offered a chance to do so. Herriot states that major hospitals are missing user participation described in the upper levels of the Arnstein’s ladder (Arnstein, 1969). Annemans et al (2017) studied how experiential information gathered from the care context could bring up patient experiences in the design process and influence the hospital design. They found that professionals struggle to approach context familiar for them from the perspective of patients whereas architects had difficulties gathering patient experience from a complex and unfamiliar context. Annemans et al (2017) state that the format of the information of patient experience heavily affects the ways it is used in the hospital design and that different stakeholders have different preferences about the format.

Recognising patients as crucial stakeholders of hospital design and inviting them to actively participate in design processes would ease the struggle of gathering and communicating patient experience data as patients would be present and could speak for themselves. Co-design, as defined by Sanders and Stappers (2008), is a collective creativity among designers and other people working together in a design process. Kronqvist et al (2013) describe a co-design method called Cardboard hospital they have developed to better engage patients in hospital design processes. Cardboard hospital was developed for a case hospital to prototype hospital services, spaces and experiences together with patients and other stakeholders. Kronqvist et al (2013) propose utilising Cardboard hospital along the design process to enable iteration and combination with other methods.

As Hyvärinen et al (2014) found in a study examining challenges of cross-organisational service development, service design and cross-organisational collaboration is often sadly considered to be an event-like experiment rather than a practice to be adopted to daily use. Barriers and enablers of co-design have also been studied by Pirinen (2016) who introduces twenty pairs of barriers and enablers, divided under five themes: finding a common ground for collaboration, creating commitment to collaborate in an organisational level, integrating co-design in processes, enabling implementation and hereby impact, and integrating co-design methods into practise.
A report by Service Design Network (2017) states that service design has a central role to play in developing the future healthcare. Service design is excellent at bringing people into the centre, engaging people in the change, providing an approach for innovating creative solutions, and connecting technology and humans (Service Design Network, 2017). Isn’t this what healthcare is screaming for?

I believe service design has potential in helping to design hospitals with exemplary patient experience. It is easy to see service design supporting change from provider-centred organisations to patient-centred ones: seeing it to place patients in an active role in their own care as well as in the service development. It could help the healthcare leaders to bridge the gap of what they say and do by providing actionable methods and tools to support the organisational change. It would consider and seek for balance between the needs of all relevant stakeholders, without forgetting the importance of employees. When it comes to the design process, it would join the celebration of designing the spaces based on the functions: the ‘why’ before the ‘what’.
This chapter gives an introduction to the research and design methodology utilised in the thesis. Semi-structured interviews are conducted as a part of the case study. Data is analysed with affinity diagramming, resulting in findings and insights that function as a basis for the ideation. A co-design workshop is arranged, followed by an evaluation workshop. The sample had an influence on the work and required some flexibility.
3.1 SERVICE DESIGN

The topic of the thesis is approached from a perspective of service design. Primarily, service design approach was selected due to my interest and professional specialisation in it. Secondly, as described previously, service design provides an adequate approach for working with the complex issues and wicked problems of healthcare. Service design, evolved in the last two decades, has grown a strong design approach providing value in strategic and transformational levels (Service Design Network, 2017). In the healthcare sector, service design has recognised to be impactful in driving cultural and organisational change (Service Design Network, 2017). Of the many definitions service design has been articulated to, this thesis uses the following one:

“Service design helps organizations see their services from a customer perspective. It is an approach to designing services that balances the needs of the customer with the needs of the business, aiming to create seamless and quality service experiences. Service design is rooted in design thinking, and brings a creative, human-centered process to service improvement and designing new services. Through collaborative methods that engage both customers and service delivery teams, service design helps organizations gain true, end-to-end understanding of their services, enabling holistic and meaningful improvements.” (Miller, 2015)

3.2 RESEARCH PROCESS

As common to service design research, this research is qualitative. Qualitative research methods were utilised and participants were selected with non-probability sampling techniques, meaning that rich data was pursued through in-depth research among a particular group of people (e.g. Stickdorn, 2019). A case study was considered as a potentially interesting framework to utilise from the beginning. However, the aim was to work agile and iterative, as speaking of a service design process, and the first interviews were successfully
conducted while still being heavily immersed in the literature review, defining the research questions and mapping options for the case study. The first participant was hinted to me and the next one was recommended by the first participant, in accordance with the snowball sampling technique (e.g. Stickdorn, 2019). Another sampling technique, emergent sampling (e.g. Stickdorn, 2019), was utilised when an interesting lead emerged from both interviews and I decided to follow it. One hospital was referred to constantly and as options for a case study were mapped simultaneously, this lead was investigated with great interest. The hospital in question was eventually selected to be the case study of the thesis. The selection was supported by three main reasons. First, the hospital project is yet unique in its scale and kind in Finland. Second, patient-centeredness has set to drive the hospital design. Third, a nine-year project is about to end, allowing reviewing it entirely.

The decision to conduct a case study with a collaborative hospital influenced the research process heavily. Organising the case study proved to be rather time-consuming due to the research permit process that included continuous liaison with the health care district and preparing and revising materials including research plan and data protection form. The collaboration was planned to include interviews, a co-design workshop and an evaluation workshop. The collaboration was actualised mostly as planned, however, the sample was smaller and the timeframe shorter than desired. These compromises were carefully considered and eventually accepted because conducting the compromised case study was seen serving the thesis better than delaying it by pursuing the original research plan.

3.3 CASE STUDY OF HOSPITAL NOVA

A case study is a research framework that allows exploration of a complex phenomenon within its context by using a variety of data (Baxter and Jack, 2008). In this thesis, the explored phenomenon is nurturing patient experience through hospital design and the context is the selected hospital, the new central hospital of Central Finland, also known as hospital Nova.
Yin (2003) argues that a case study could be used if: (a) the study aims at answering to “how” and “why” questions, (b) the behaviour of the participants cannot be manipulated by the researcher, (c) contextual conditions are believed to be relevant to the phenomenon; or (d) the phenomenon and the context do not have clear boundaries. Hereby, using a case study in this research can be justified based on the research question (How to coordinate hospital design processes to nurture positive patient experience?), the past tense of behaviour being studied and researcher’s belief that understanding the hospital Nova design process could benefit the nurture of patient experience through hospital design.

To avoid getting overboard with the case study, certain boundaries were set. As Baxter and Jack (2008) note, binding the case ensures that the case study stays in scope. The two most important boundaries, that were needed to be reminded through the case, were the level patient experience was discussed and the level the ideation happened. Regarding patient experience, the thesis studies how it can be nurtured, not what it is or what it should be. For the ideation and evaluation phase, the purpose was to ideate ways to help nurturing patient experience that could benefit anyone involved in hospital design, not hospital Nova specifically. The type of the case study could be described instrumental, as the role of the case is to support understanding of something else than the case itself (Stake, 1995). The phenomenon of the case study, nurturing patient experience through hospital design, has been studied in detail in Chapter 2.

The context of the case study, hospital Nova, will be a new hospital replacing the old Central Finland Central Hospital. As Kurkela et al (2011) explain, the old hospital building, opened in 1954, was needed to be replaced because its many labyrinthine extensions together with its indoor air problems made modernising the building unreasonable. The new central hospital will be estimated to provide its services for 400 000

\[2\] In Finland, most of the hospitals are public. Central hospitals and university hospitals provide the most demanding medical care. The country is divided into twenty hospital districts. Each district has a central hospital and belongs to a catchment area of one of the five university hospitals. (www.stm.fi)
people per year, becoming a central hospital with full services of a central hospital and some special tasks of a university hospital² (Kurkela et al, 2011). According to Kurkela et al (2011), the operations of hospital Nova are designed by integrating existing several specialised units and creating new functional unities based on patient needs. New functional models cut the need for space as well as staff and are estimated to be 15-25% more efficient (Kurkela et al, 2011). Hospital Nova will open in 2020 in Kukkumäki, Jyväskylä [see image 1] [www.ksshp.fi]. When I visited the site in July 2019, the hospital already looked rather finalised from the outside [see image 2].

3.4 PARTICIPANTS

As described above, participants were recruited through snowball sampling, emergent sampling and the case study collaboration. The size of the sample remained small as the total number of participants being four. However, the sample of four was rather culturally diverse. Two of the participants were head nurses, one was an architect and one was a leader. Their involvement in the 9-year design process of hospital Nova ranged from 3 to 9 years. Different roles and backgrounds of the participants provided different perspectives on the same story. Their experiences reinforced each other and recurring patterns emerged. If more participants were involved, they could have been used to validate the patterns to reach a theoretical saturation (Bowen, 2008).
From the main stakeholders of the design process, patient and doctor representatives were missing. Especially the absence of patient representatives affected the research by leaving a knowledge gap in how patient representatives have experienced the design process. This was taken into account by paying attention to not making any assumptions of patient preferences. It is also worth noticing that the four participants were all involved in the research whereas the design phase only included the head nurses. All the participants have been remarkably active regarding hospital design. The architect and the leader have been involved in many hospital design processes and felt close to the topic. The head nurses have been actively involved in several working committees during the hospital Nova design process. Thus the sample of these active participants reacting to change positively cannot be seen to cover professions they represent entirely.

### 3.5 SEMI-STRUCTURED INTERVIEWS

Semi-structured interviews (e.g. Muratovski, 2016) were conducted. Participants were interviewed one-to-one in locations convenient for them. Two of the interviews took place in Helsinki and two in the project spaces of hospital Nova, in Jyväskylä. The latter two interviews had more structured and detailed questions [see appendix 1] as the research questions had evolved in between of the first and the second set of interviews. Objectives of the interviews were also slightly different, as the first set of interviewees were asked about their experiences of nurturing patient experience through the many hospital design processes they had been involved whereas the second set of interviewees were asked about their experiences of hospital Nova design process specifically. All the interviews lasted for an hour and were audio recorded with the consent of interviewees.

### 3.6 DATA ANALYSIS

After transcribing the interviews, the data from the interviews was analysed together with the data from archival records. As Baxter and Jack (2008) note, data derived from different sources
**Image 3.** Pieces of data written on sticky notes of different color depending on the tone of the issue.


**Nurturing patient experience through hospital design**
should be converged to be analysed instead of treating data sources individually. The selected data analysis technique was affinity diagramming, a technique suitable for organising and making sense of a large amount of qualitative data (Lucero, 2015). The affinity diagramming was started with highlighting all the interesting pieces of data from the transcribed interview records. Each issue was written on a sticky note. Depending on the tone of the issues, whether it was positive, negative or neutral, it was written to a sticky note coloured pink, orange or blue, respectively (see image 3). Sticky notes were coded with numbers to allow checking the source they originate from.

Once all the issues were written on sticky notes, they were attached to a wall. The sticky notes were clustered based on similarities and differences between the pieces of data, eventually resulting in nine clusters (see image 4). Clusters were named and findings were formulated. Each cluster lead to 2-6 findings, producing 34 findings in total. Based on the formulated findings, insights were created. Each of the nine clusters ended up having an insight. The affinity diagramming was later presented to the participants and the clusters, findings and insights were discussed. The two participants involved at this stage of the study agreed that the results of the affinity diagramming correspond their experiences and thus can be utilised as a base for the ideation. Next, a co-design workshop is discussed as a selected method for ideation.

3.7 CO-DESIGN WORKSHOP

A co-design workshop was organised to ideate based on the conducted research. The participants of the co-design workshop were two head nurses. Ideally, in addition to the head nurses, there would have been a wide range of participants, from hospital managers to doctors, architects and experience experts. However, as it was two head nurses, the workshop was adjusted to ensure validity. For instance, insights and parts of ideas that included input of other stakeholders than the ones being present were not worked with. The head nurses participated actively in the workshop and collaborated fluently together as they had been working together a lot.
The workshop lasted for two hours and was located in Jyväskylä. The workshop was audio recorded and started by providing consent forms (see appendix 2). Next, the analysis of research was shortly presented and discussed. The participants were asked to choose two insights that they felt they as head nurses could influence the most. The two insights were then utilised as a base for the entire idea generation. Ideation was structured to have three parts. First, participants identified aspects that either nurture or hinder the selected themes. They were asked to mark the ones they feel they could influence and the ones they feel could be remarkable from the perspective of patient experience. Keeping mind their influence areas and possibilities for patient experience, they selected two most interesting aspects to continue with. Second, depending on whether the selected aspects were nurturing or hindering ones, they were asked to ideate ways to strengthen or weaken the impact. Inspiration cards were introduced to help with the ideation. Cards included pictures of possible channels, touchpoints and roles. Third, participants were asked to

Image 5. Workshop materials: A3 canvases and inspiration cards.
concretise ideas. This was implemented by asking them to first see if there are any ideas they want to merge and then select the most interested one. Then they were asked to ideate how the idea would work, who would be the key persons related to it and how it would nurture patient experience.

The materials utilised in the workshop were a presentation to support the structure of the workshop, inspiration cards and A3 canvases. Canvases and cards were hand-drawn to set a mindset that would encourage creativity (see image 5). The outcomes of the workshop, the ideas, were written to the canvases. After summarising the discussions we had in the workshop and drafting the ideas into one concept, an evaluation workshop was conducted.

3.8 EVALUATION WORKSHOP

The purpose of the evaluation workshop was to go through the ideas created together and to discuss how the concept I had developed further was in line with the ideas and the insights. The workshop lasted for two hours and the participants were the two head nurses who had participated in the co-design workshop too. The materials utilised in the evaluation workshop were a presentation to support the discussion and layout images to prototype the functionality of the concept. The workshop started with going through the co-designed ideas and features. Then the prototypes were reviewed and the match of the concept with the ideas and features were discussed. After the workshop I revised the concept based on the feedback from the workshop. Next, before taking a look at the design outcomes of the thesis, the outcomes of the research, findings and insights, are presented.
In this chapter, findings and insights of the case study are being discussed, cluster by cluster. The findings shed light on coordinating hospital design processes to nurture patient experience. Insights are interpreted from findings and aim at crystallising the essence of findings in a format that allows to further work with them. The findings and the insights are supported by quotes from the interviews, translated from Finnish to English. The interviewees are being referred to as letters from A to D. Findings are bolded and numbered with roman numbers i-xxxiv whereas insights are presented on a purple background and numbered from 1 to 9.
4.1 PROJECT MANAGEMENT

The main findings regarding project management were that (i) many were first timers in hospital design, (ii) more systematic and organised touch would have been needed, especially in the beginning, and (iii) it is important that the project management is devoted to patient-centeredness. Hereby, the first insight highlights the importance of well-functioning and visionary management:

1. Insight

Managers, who are many first timers in hospital design, are required to act systematically and dedicate themselves to patient-centeredness.

The interviewees described the design process often by stating that everyone was learning as they were doing and some parts of the process were more successful than the others. It became evident that organised, patient-centred management was one of the key factors contributing to the success of nurturing patient experience through hospital design:

“All the people in the project team were first timers. Seldom people are involved in many big hospital projects - it is a kind of a once in a lifetime project. This results in having rather unexperienced people in the project management too. Their own insecurity was perhaps shown as they were fixated on staying on budget and finding new things to eliminate.” - A

“The most important task of the project leader is to show the road to the people. To show the people the vision being reached and keep on going towards it with a good tempo.” - B
4.2 DESIGN PRACTICES

The findings related to hospital design practices highlight the importance of daily practises in accordance to motivation. (iv) **There were plenty of meetings to guarantee that everyone was informed.** Although this might have been good for transparency, it did not have only positive consequences as (v) **when the issues discussed in the meetings did not progress, the number of participants decreased.** Interviewees felt that (vi) **the concreteness was missing in development work** and (vii) **the meetings could have been more valuable if they could have been prepared for in advance.** The second insight states that meetings should be prepared so that people feel they are worth participating in:

2. Insight

It is important to define what is the agenda of the meeting and who is needed to participate in order to keep participating reasonable and make progress.

Interviewees described the practices of hospital design meetings inefficient and frustrating which resulted in a loss of participants which in turn complicated decision-making:

“Six months could have elapsed with meetings organised by someone and they haven’t led to anything. This results in people stopping to attend the meetings which results in situations where things can’t be decided because required people aren’t present. I would say this is the most frustrating thing which has frustrated many.” - D

“Questions were asked (in the meetings) that were expected to be answered immediately -- what was missing was having certain tasks to do before meetings -- the meetings got smaller as people stopped showing up and stated that they have better things to do like patient care which is totally understandable.” - C
4.3 PATIENT-CENTRED OPERATIONS

The main findings related to patient-centeredness emphasise the importance of embedding it in every operation of the new hospital instead of treating it separately. Interviewees state that it should be so that *(viii) understanding of the operations is derived from patient segments.* In hospital Nova design process the *(ix) departments were designed based on patient segments.* This means that there will not be traditional speciality departments but the hospital operations will be located so that the patient does not need to move a lot. Interviewees agreed that *(x) innovative ideas were successfully brought to patient care by being bold enough with decisions.*

The relationship between patient-centeredness and patient experience was reflected a lot. Interviewee A gave an example of a situation where creating exemplary patient experience would result in a remarkable increase in costs. This rise in costs would eventually be paid by patients. The interviewee wondered whether it can actually be more patient-centered in some situations to select the lower cost over investing in patient experience. B emphasised that when discussing about patient experiences, it is important to remember that it is not about meeting the desires of patients - it is about meeting the needs of patients:

"Customer experience in the context of the hospital does not mean the patient gets what the patient wants, but the patient gets the needed treatment. The need must be assessed and then that service essential for that human must be produced as well as possible." - B

Interviewees agreed that *(xi) patient-centeredness requires balance between patient experience and other factors.* The interviewees felt natural discussing patient-centeredness and elaborating what they mean with it. It was evident that patient-centeredness has been a driver for the hospital design of hospital Nova:
“Patient first, patient first, patient first... that has been tattooed to the back of the skull of each and every one of us, but what it means in practise... people have very different views on that.” - C

The third insight is about embedding patient-centeredness in the hospital operations so that the hospital will be genuinely built around the needs of the patients instead of the needs of the existing processes or organisations:

3. Insight
Patient-centeredness is embedded in operations that are designed based on patient segments instead of processes or organisational structures.

One of the examples all interviewees explained was the decision to build only single patient rooms. The current understanding is that single rooms are better for patients in numerous ways compared to shared rooms [Detsky & Etchells, 2008]. Interviewees were aware of this and agreed that the decision to build only single rooms is patient-centred and hereby probably the right decision to do, although it produces new challenges, regarding monitoring and loneliness for instance, to be solved. The example of patient rooms also raises questions between patient-centeredness and patient experience as B told that cancer patients commonly experience the other cancer patients they share the room with as vital assets.

Where patient-centeredness was seen as something embedded in the entire hospital design, the same cannot be said about patient experience. Interviewees were able to reflect on patient experience profoundly, however, it was mostly based on their own observations in their everyday work among patients.
4.4 DESIGNER TURNOVER

During an almost ten-year-long hospital design process, many of the designers have changed. Some of the turnover is natural and inevitable as people go through different stages of life. The turnover can be a result of people changing jobs, moving to another city or retiring. However, as found out, (xii) the turnover of the management, architects and professionals have been challenging. The management, architects and professionals all together are the designers of hospital projects. As interviewees stated, (xiii) the turnover of designers has caused plenty of unnecessary work. Hereby the fourth insight is:

4. Insight
The turnover of designers causes challenges, produces unnecessary work and decelerates the project.

All of the interviewees described the challenges cause by the designer turnover. A lot of knowledge is lost together with people leaving the project and collecting it again is not only inefficient but also makes the people staying worried:

“The lead of the hospital design changed many times and designers changed many times... so there were many times things that had already been done were needed to be done again. You needed to look after certain things you had already discussed with the team but because the team changed, the same information was needed to collect again.” - C

“With a time frame that long, it is difficult to keep people, but for the project it would be advisable to give people responsibilities (to encourage commitment).” - A
4.5 FITTING TOGETHER VIEWPOINTS

Designing a hospital requires plenty of collaboration between different stakeholders. The importance of a solid collaboration shows in the large amount of findings related to it: (xiv) fitting together the viewpoints of professionals and architects is essential but labourious, (xv) designers conceptualise patient-centeredness in different ways, (xvi) professionals and architects have different views on patient needs, (xvii) at best, the collaboration has been convenient and professionals have felt they have been heard, (xviii) difficult situations have occurred when architects have designed something that is in conflict with the needs professionals have described and (xix) the collaboration has been intense and the different locations of architects and professionals have caused challenges. The fifth insight states that different views on patient needs has complicated the collaboration:

5. Insight

Fitting together the viewpoints of professionals and architects is important but laborious, especially differing views on patient needs cause disagreements.

All the interviewees described some confrontation between the professionals and the architects, however, the overall experience of the collaboration was still reported to be rather positive:

“Professionals and architects had different views on patient needs, in some way, we were at loggerheads in the meetings.” – C

“(This has been) a very positive experience about the collaboration between professionals and architects, the collaboration has been delightful and the special needs of the professionals have been taken into account well.” – D
4.6 CROSS-DISCIPLINARY WORKING

Fitting together viewpoints in a large scale would be impossible if everyone would just promote their own opinions. Interviewees described that being able to agree on things within your own team or work group is important in order to successfully promote opinions. Interviewees noted that (xx) an active, cross-disciplinary team that has a consensus is strong in negotiations, (xxi) a determinant team takes responsibility of their own area and is persistent in promoting its needs and (xxii) earlier experiences of succesful changes are valuable assets. Hereby, the sixth insight is:

6. Insight
Cross-disciplinary and unanimous team that is active and determined in promoting its needs is in a strong position in the negotiations.

D was mostly happy with the outcomes of the discussions D had been involved in, and described the reasons for the success as follows:

“(Our team was succesful because) we were persistent and we promoted our needs constantly. We had a multi-disciplinary team that participated actively and had similar opinions. We were at a good position to negotiate.” –D

4.7 ENGAGEMENT OF PROFESSIONALS

Interviewees stated that it is important that professionals see the opportunities of hospital design and understand the value of participating in it. On the other hand, when they would like to participate, the participation should be enabled. The main findings were: (xxiii) when hospital design is work supposed to be done besides one’s own daily work, it is challenging to get professionals to engage, (xxiv) key persons need to be engaged in the development by offering incentives and (xxv) nursing has
been emphasised in work groups since the representation of doctors has remained minor. The reasons for the absence of doctors were not further discussed since there were no doctors participating in the case study. The seventh insight notes that all key stakeholder groups are needed to truly work cross-disciplinary and that the participation of professionals should be encouraged by the organisation:

7. Insight
Cross-disciplinary design requires engagement from different professions, sufficient resources to enable engagement and incentives when needed.

Based on the interviews, it seems that there are two main reasons for professionals not to participate. First, they do not see why they should participate, and second, they do not have sufficient resources to participate:

“It is challenging to get personnel who has days full of patient care to participate.” - C

“We should give people more responsibilities in the hospital design, so that you will lead this in the future too, so you’d better to design the best entity for yourself. That way people could be engaged and interested when they notice that they really need to design it for themselves.” - A

4.8 COMMUNICATION AND RATIONALE

The main findings related to communication were: (xxvi) mutual understanding will be reached as long as things are rationalised well, (xxvii) decisions are hard to understand if their links to the big picture are not visible, (xxviii) information transfer has sometimes been uncertain and (xxix) ‘patient-first’ principle has instilled to every designer. The eighth insight emphasises that although there are differing opinions and viewpoints, mutual understanding is possible to reach if the
communication works well and things are discussed openly:

8. Insight
To reach common understanding, things need to be always well rationalized and communication needs to be smooth.

Interviewees stated that communication is ultimately about trying to understand others and making yourself understandable:

“Sometimes if you don’t see the big picture and how it should be, it is difficult to understand all decisions.” - C

“Usually, people will understand eventually, if you just explain and discuss enough.” - B

4.9 PATIENT INVOLVEMENT

The main findings related to involving patients in the hospital design were: [xxxii] since involving patients take time, professionals have represented them, [xxxii] it would be valuable to get constructive feedback from the patients to be considered when designing the hospital, [xxxiii] experience experts have been involved in designing the quideposts and [xxxiv] patient have been represented also by the associations of the visually and hearing impaired. It is worth mentioning that most likely it has not been a conscious decision to leave patient representation for the professionals but rather a gradually occured transition. The ninth insight describes different forms of patient representation that have occured:

9. Insight
Due to the time patient involvement takes, patients are usually represented by professionals, sometimes also by associations and experience experts.
All interviewees recalled that experience experts had been involved at some parts of the design process to bring the aspect of patient experience to the hospital design. However, they speculated that the involvement has remained light probably because it is always faster to do things yourself than involve someone else. As one interviewee noted, patients were mostly represented by professionals:

“It [patient experience] hasn’t been that visible, so that patient representatives would have been involved in work groups for instance. I must say the hospital design is pretty much done by professionals. We should have used experience experts even more.” - D

It is interesting that patient-centeredness has been driving the design but the patients have been mostly represented by professionals. This puts pressure on professionals who need to represent both themselves as employees and their patients. Although professionals clearly know a lot about their patients, this double role might not always be the easiest as the best for the patients and the best for the employees are not always the same. Professionals were aware of this conflict but stated that they always try to put the patient first. Anyhow, the representation of patients seem to have relied a lot on individuals’ abilities to represent another user group than themselves.

B argued that when balancing between the different needs of various stakeholders, the needs of patients often lose to others:

“Patient first’ is the number one thing in every hospital project in Finland but seldom it eventually shows in the outcome -- Professionals are so strong and bring their own needs as well as the organisation brings strongly its needs -- that sometimes it is so damn difficult to remember that some solution is not the best for the patient although it might be in some way simpler or easier for others,” - B
4.10 INSIGHTS GATHERED TOGETHER

In this chapter, the analysis of the case study has been presented through a thorough discussion of findings and insights. In the next chapter, selected insights are utilised in the ideation. To summarise the chapter 4, all insights being discussed are presented together:

1. Managers, who are many first timers in hospital design, are required to act systematically and dedicate themselves to patient-centeredness.

2. It is important to define what is the agenda of the meeting and who is needed to participate in order to keep participating reasonable and make progress.

3. Patient-centeredness is embedded in operations that are designed based on patient segments instead of processes or organisational structures.

4. The turnover of designers causes challenges, produces unnecessary work and decelerates the project.

5. Fitting together the viewpoints of professionals and architects is important but laborious, especially differing views on patient needs cause disagreements.

6. Cross-disciplinary and unanimous team that is active and determined in promoting its needs is in a strong position in the negotiations.

7. Cross-disciplinary design requires engagement from different professions, sufficient resources to enable engagement and incentives when needed.

8. To reach common understanding, things need to be always well rationalized and communication needs to be smooth.

9. Due to the time patient involvement takes, patients are usually represented by professionals, sometimes also by associations and experience experts.
In this chapter, the design outcomes of the thesis are presented. First, the ideas generated in the co-design workshop are described. Second, the concept the author has further developed from the ideas is presented, followed by the final concept revised based on the comments from the evaluation workshop. The previous chapter reported how the participants of the case study have experienced the nurture of patient experience through the hospital design of hospital Nova. In this chapter, although the participants draw from their experiences of hospital Nova, they design solutions that could be utilised in any hospital project in the future.
5.1 Co-designed Ideas

As described in Chapter 3, the co-design workshop started with a selection of two insights to continue the ideation with. The first insight the participants selected was: ‘Cross-disciplinary design requires engagement from different professions and sufficient resources to enable engagement and incentives when needed’ (see 4.7 Engagement of professionals). Hereby, answers were first sought to a questions ‘What nurtures/hinders your engagement in the hospital design as a head nurse?’ The key aspects to the Engagement of professionals were:

- The process is clearly defined and communicated.
- The timetable is clear and it is adhered to.
- The timetable is being communicated well in advance.
- The right people are present and decisions are capable to be done.
- When getting assigned for a task, responsibility follows.
- The decisions are documented and adhered to.
- The decisions and memos can be found afterwards.
- Informing is transparent.

The participants selected ‘Informing is transparent’ as the main aspect to continue the ideation with. The idea they eventually created was a transparent information channel,

1. where both professionals and patients (or citizens) are being informed about upcoming plans and already made decisions
2. that collects feedback to current issues from both professionals and patients (or citizens) to be addressed in the meetings,
3. that gathers all plans and decisions accessible for all professionals.

In addition to these three key features of the idea, the information channel

- would be easy to find
- would include up-to-date information and updating
would be part of the daily work of the person being responsible for it
would provide professionals with contact persons for every issue
would keep up the interest during a long lasting project

The second insight the participants selected to continue the ideation with was: ‘Due to the time patient involvement takes, patients are usually represented by professionals, sometimes also by associations and experience experts’ [see 4.9 Patient involvement]. Hereby, they reflected on a question ‘What nurtures/hinders the involvement of patients in the hospital design?’ The key aspects to the ‘Patient involvement’ were:

• To have experience experts aboard through the entire process
• To use electronic channels to enable patients to ideate at home or at hospital
• Decisions made by professionals should be validated with the citizens, for instance by using surveys
• Depending on the situation, feedback should be asked from right patients at the right moments
• Customer feedback should be utilised.

The participants selected ‘Customer feedback should be utilised’ as the main aspect to continue the ideation with. The idea they eventually created was a participation channel,

1. where up-to-date and realtime information can be found,
2. that is visually clear and easy to utilise,
3. that can be accessed at any moment.

In addition to the three key features, the information channel

• would motivate professionals to bring the feedback accessible for all
• would help to bring the perspective of patients to the decision-making.

These were the two ideas, a transparent information channel
and a participation channel, the participants ideated in the co-design workshop. Based on the co-designed ideas, I developed the ideas slightly further by thinking about how they could eventually function. Next, the concept combining the two ideas is presented.

5.2 DEVELOPED CONCEPT

The goal of the design part of the thesis was to create something that could be useful for future hospital design projects. Thus the developed concept comments functionality only. All the functionalities are based on the co-design workshop. Visual design has not applied since details would need to be considered in the actual context of use. The concept presented now is the one that was evaluated in the evaluation workshop and revised later. Next, the main functionalities of the concept are presented (Figure 3):

a. The page would be part of the website of the health care district or equivalent website where a page dedicated for the new hospital project would be convenient to find from, both by professionals and patients.

b. The page would have two tabs: one for citizens and one for professionals. The view for the citizens was not created in this thesis because no citizens were involved in the co-design. This design hypothesises that the same main functions would work for professionals and citizens. However, citizens would have access to less detailed information.

c. There would be a bar on top of the page whenever there is an opportunity to comment on something, for instance a survey.

d. The page would be divided into two sections: 'Planning' and 'Decided'. Planning section presents all the planning events, upcoming and past ones.

e. Following information about the planning event would be provided: a heading, a short description, a workgroup being involved, a date, time and a location. If more information is needed, contact person can be contacted by email.
**Figure 3.** Information and participation channel concept and its main functions.
f. Decided section presents all the decision being made.

g. Following information about the decision would be provided: a heading, a short description, a date when the decision was made and an attachment of the meeting memo. If more information is needed, the planning event the decision was made in can be retrieved (see e.)

h. There would be an icon indicating if a planning event is inviting people, either professionals or citizens or both, to comment on some questions. The icon would tell if you can still answer and if not, how many people had answered.

i. By clicking the icon, an overview of answers would be displayed (see figure 4). The results could be discussed in the planning event to offer some background to be reflected when making decisions.

j. Planning events and decisions would be connected to each other (see figure 5). By clicking a decision, an event related to it would be displayed.

Figure 4. The channel would enable inviting people to comment on issues going to be decided on.
Figure 5. Planning events and decisions would be connected to promote transparency.

5.5 FINAL CONCEPT

The final concept was created based on the feedback from the evaluation workshop. The biggest discussion concerned the logic the planning events were displayed. Participants first discussed that this should not become an event calendar to avoid redundancy with everyone’s own calendars. The purpose of the planning events were reflected for long and participants wondered if the emphasis should be on the decided section. Eventually, participants agreed that having planning events visible somewhere for everyone would be valuable and promote transparency. The participants changed their minds about their initial thoughts about the page functioning as an event calendar as they thought it should actually be one but it should be in a format of a calendar:

k. Therefore, the navigation of the planning events was changed to a calendar format. The next upcoming planning event would be displayed automatically. To develop a calendar that is easy to navigate, further research would
be needed to find out how often planning events usually take place. If there were many events per day, a weekly view could be more clear than a monthly view.

Participants also had some other ideas about how to improve the functionality of the concept:

l. A search function was added to make it easier to find events or decisions already happened or made some time ago
m. To make the search function convenient to use, events and decisions were tagged with keywords.

n. Writing longer descriptions about events or decisions was enabled. Longer texts could be written, however, they would require a click to be expanded to keep the main view clear.

In overall, participants discussed that a page like this would be useful. They felt that having an overview of answers would be valuable as an easy way to see information at a glance. In addition, they thought it would be a good way to see what topics interest people.

The proposed concept could provide future hospital design projects with a platform to promote transparency in hospital design. Transparency of the process could help to engage professionals in a long run, enabling working in a cross-disciplinary way. In addition, the proposal would encourage inviting people, citizens and professionals, to the decision-making moments in a light but continuous way that would at its best support change towards culture and practices fruitful for nurturing patient experience.
**Hospital X Design**
for citizens for personnel

**Header**
Short description about what is it that you are wanted to react to.

**PLANNING**

<table>
<thead>
<tr>
<th>14 October</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header telling what is going to happen</td>
</tr>
<tr>
<td>Short description about what is going to happen. Short description about what is going to happen. Short description about what is going to happen. Short description about what is going to happen. Short description about what is going to happen. Short description about what is going to happen. #keyword1 #keyword2 #keyword3 #keyword4</td>
</tr>
<tr>
<td>XX-XX, location, workgroup, <a href="mailto:name.lastname@hospitalx.com">name.lastname@hospitalx.com</a></td>
</tr>
<tr>
<td>still open</td>
</tr>
</tbody>
</table>

**DECIDED**

<table>
<thead>
<tr>
<th>Header telling what was decided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short description about what is was decided. Short description about what is was decided.</td>
</tr>
</tbody>
</table>

**Figure 6.** Information and participation channel concept revised based on comments from evaluation workshop.
06 DISCUSSION AND CONCLUSION

The last chapter concludes the thesis by discussing some of the key themes addressed through the work. The question of the relationship between the concepts of patient experience and employee experience is raised. Hospital design is discussed in relation to co-design, suggesting that hospital design could be seen as an application of co-design. The research and design are reflected against the research questions. Limitations of the study are presented, followed by identifying opportunities for further research. Finally, personal reflection of the thesis and the process are provided.
6.1 DISCUSSION

This thesis has examined the relationship of patient experience and hospital design through three research questions. The main research question being answered is *How to coordinate hospital design processes to nurture positive patient experience?* Existing literature does not provide any ready-made answers although there are plenty of research about patient experience and hospital design separately. In general, literature on patient experience seems to agree that obstacles for successfully enhancing patient experience often lie in organisational challenges (The Economist Intelligence Unit, 2018; HealthLeaders, 2009). Although there are no solutions that fit for all, research has reported that some of the most successful patient experience interventions actually focus on employees (Deloitte, 2017; The Economist Intelligence Unit, 2018). The role employees have in enhancing patient experience makes me wonder if we should engage the concept of employee experience more in the discussions of patient experience. Based on the conducted case study, the representation of patients seems to be easily left dependent on professionals. Besides, Herriot (2018) had found there to be a lack of patient involvement in the Danish hospital design. Ensuring that a new hospital will host exemplary patient and employee experiences should not be left on the shoulders of the professionals alone. Co-design could bring new collaboration models to hospital design, a good example being the Cardboard hospital by Kronqvist et al (2013).

The second research question *What factors enhance or hinder a design team’s ability to design the patient experience desired?* aimed at supporting the first one by examining the daily practices of hospital design teams, particularly the design team of hospital Nova. Semi-structured interviews were conducted as a part of the case study. Affinity diagramming was utilised to analyse the data. The research resulted in findings and insights categorised under nine clusters: project management, design practices, patient-centred operations, designer turnover, fitting together viewpoints, cross-disciplinary working, engagement of professionals, communication and rationale, and patient involvement. The insights are two-dimensional, as
they could either hinder or nurture the succesfull design for patient experience. I see some similarities with the enablers and barriers of co-design, created by Pirinen (2016). The nine clusters developed in this thesis seem to share some qualities with the five themes presented by Pirinen (2016) as both highlight the importance of collaboration, commitment and integration. Having studied the topic of hospital design for some time now, one day it hit me: hospital design is co-design, fundamentally speaking. Sanders and Stappers (2008) defined co-design as a collective creativity among designers and other people working together in a design process. In this thesis, I describe hospital design as an activity consisting of many decisions to be made along the design process by several stakeholders about both hospital functions and spaces. Crystallising it, I think hospital design is essentially about stakeholders working together in a hospital design process. The idea of having architects, leaders and professionals working together to design a hospital is so natural that it feels self-evident. Designing such a complex entity as a hospital cannot be done by any of the stakeholder groups alone. For me, thinking about hospital design as one appearance of co-design feels reasonable. This raises a question of whether the creativity of the stakeholders of hospital design could be nourished more.

To return to the research questions, the third one How to set a common ground to enhance discussions of patient experience as an integral part of hospital design processes? was addressed through the design part of the thesis. A co-design workshop was conducted and ideas generated in the workshop were developed further into one concept that was eventually validated in an evaluation workshop. The design outcome of the thesis is a concept of an information and participation channel that encourages transparency across the organisation.

6.2 LIMITATIONS

This study has limitations. Theoretical saturation (Bowen, 2008) was not reached with the small and one-sided sample.
A larger amount of participants would have been beneficial. Also, having participants from all relevant stakeholder groups would have been valuable for the research and design. I also recognise some limitations in the depth of the case study as it was mostly based on what I was told by the participants as well as the information available for public. The case study was a single case study about a hospital project in Finland. Although the challenges the healthcare is facing are rather global, the Finnish healthcare system is different compared to many others around the world. As the study has a strong emphasis on semi-structured interviews and workshops, the skills and the objectivity of the author can also be seen as a limitation.

6.3 FURTHER RESEARCH

I recognise several opportunities for further research. First, as discussed earlier, the relationship between patient experience and employee experience within the context of hospital design could be an interesting topic for further research. Second, the relationship between patient experience and patient-centredness in the given context could be clarified. It would be interesting to examine if there are differences in the ways they are nurtured or if they are more commonly treated as the same. Third, the values and the opportunities of nurturing patient experience during the hospital design process should be studied in detail. Fourth, a comparison of hospital projects around the world regarding the nurture of patient experience would provide valuable insight about the global best practices.

6.4 CLOSING WORDS

The thesis provided a plenty of opportunities for personal and professional growth. The small and one-sided sample challenged the thesis process and required flexibility and continuous reflection of what can be done reliably. In addition to the sample, the timeframe offered some professional challenges. The last set of interviews, data analysis, workshop preparations, the co-design workshop, concept development
and the evaluation workshop took place within a relatively short timeframe. I consider that as a valuable learning lesson as it forced me to reflect on the value and the necessity of everything I did. Another learning lesson of its own was the research permit process. I have been personally reflecting the thesis process a lot and analysing the key moments where I could act in another way if I were to go through the same process again. One thing I would do differently would be separating the thesis planning and the actual thesis work. Dealing with the research permit process while working with the thesis was rather inefficient in the end. In addition, I would address keeping the control of the process. When I was waiting for the research permit, I felt I had only little control over the thesis process since it was dependent on the research permit process. If I were to apply for a research permit again, I would set clear deadlines and create actionable alternative plans to be quickly jumped to if needed. However, I am still happy that the process was as it was as it taught me a lot about myself as a design professional. After all, I got to familiarise myself with a very interesting and challenging topic of nurturing patient experience through hospital design and to apply my professional skills to the field of healthcare.
ACKNOWLEDGEMENTS

I want to thank everyone who has been involved in the project. I have spent both very exciting and frustrating moments working with the topic. First of all, the warmest thanks belong to the participants of the thesis. I feel honoured that I had the chance to meet you. I want to also thank my supervisor Tuuli Mattelmäki for supporting my work and challenging my thoughts and my advisor Jaana Hyvärinen for all the inspiration and energy I have got from her during the project. In addition, I want to thank the ones who have offered their time and expertise for discussing the topic and sharing their knowledge. Last, I want to thank my friends and family for always believing in me.
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Nurturing patient experience through hospital design


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Appendix A. An example of the questions for the semi-structured interviews.

Haastattelukysymykset / Osastonhoitajien haastatut

1. Kertoisitko hieman itsestäsi ja työnkuvastasi?
2. Miten sairaala Novan suunnitteluprosessi eteni?
3. Miten potilaslähtöisyys näkyi sairaalasuunnittelun aikana?
4. Mitä potilaslähtöisyys tarkoittaa sinulle?
5. Miten koet toteutuneen sairaalasuunnittelun palvelevan osastosi potilaita?
6. Miten tieto potilaan toiveista on muodostunut?
7. Miten kokemuasianuntijat näkyvät suunnitteluprosessissa?
8. Mitä potilaskokemus tarkoittaa sinulle?
9. Millainen on mielestäsi esimerkillinen potilaskokemus (oman osastosi potilaalle)?
10. Miten potilaan osallistuminen omaan hoitoonsa tarkoittaa sinulle?
11. Miten koet potilaan osallistumisen omaan hoitoonsa toimivan?
12. Miten potilaskokemus näkyi suunnitteluprosessin aikana?
13. Mitä ajatuksia herättävät tilanteet, joissa potilaan paras ja henkilökunnan paras ovat ristiriidassa keskenään? Oletko kohdannut tällaisia?
14. Missä määrin potilaskokemusta pitäisi mielestäsi ottaa huomioon sairaalasuunnittelussa?
15. Mikä onnistui suunnitteluprosessissa?
16. Mitkä tekijät olivat keskeisiä onnistumisessa?
17. Keitä työryhmiin on osallistunut?
18. Miten koet työmääräsi työryhmissä suhteessa muuhun työhösi?
19. Mitkä olivat suurimmat haasteet suunnitteluprosessissa?
20. Mikä olisi voinut ratkoa haasteita?
Appendix B. The consent form that was provided for the participants of the co-design workshop.

Appendix 2: Suostumuslomake äänittämiseen ja valokuvaamiseen työpajan aikana

Äänitys: Äänitystä käytetään työpajan dokumentointiin, jotta työpajan järjestäjä voi keskittyä itse työpajaan muistiinpanojen kirjoittamisen sijaan. Äänitys käsitellään luottamuksellisesti eikä sitä jaeta kolmansille osapuolille. Äänitys tuhotaan lopputyön palauttamisen yhteydessä, viimeistään 23.9.2019

Valokuvat: Valokuvia käytetään työpajan dokumentointiin, jotta työpajan järjestäjä voi keskittyä itse työpajaan muistiinpanojen kirjoittamisen sijaan. Valokuvia voidaan myös käyttää lopullisessa julkisessa opinnäytetyössä siten, että niistä ei tunnisteta työpajan osallistuja.

Allekirjoittamalla tämän suostumuslomakkeen suostun osallistumaan tutkimukseen sekä annan suostumukseni äänittää ja valokuvata työpajaa, johon osallistun. Työpaja on osa lopputyötä Rethinking Hospital Flow.

Paikka ja päivämäärä:
_________________________________________

Työpajaan osallistuvan nimi ja allekirjoitus:
_________________________________________