HEALTH-PROMOTIVE BUILDING DESIGN

Exploring perspectives on building design for health promotion in healthcare settings

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THESIS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

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English Summary

This thesis explores diverse perspectives on health promotion in healthcare settings from a building design perspective, i.e., health-promotive building design (HPBD). The results may contribute to discussions of the role of healthcare building design to support health promotion in healthcare (HPH) and thereby contribute to the development of healthier and more equitable communities.

Currently, healthcare organisations are encouraged to introduce health promotion approaches and develop HPH. The research suggests that the introduction of new healthcare procedures, such as health promotion, can lead to new demands for the built environment. The previous research also shows that the design aspects of healthcare buildings can actively support treatment, protect health, and prevent disease for diverse building users. However, there is limited research with a particular focus on healthcare building design in relation to health promotion or HPH. It is thus crucial that those involved in the design process become familiar with health promotion and HPH and be able to design high-quality healthcare buildings.

Health promotion can be defined as 'the process of enabling people to increase control over and improve their health'. Nevertheless, there are many definitions and interpretations of health promotion that depend on the context in which it is used as well as the disciplines of the people involved. While health promotion has gained attention from healthcare architects, it is unclear how health promotion is actually understood by those involved in the healthcare building design process and how they translate health promotion goals into design objectives. The first two studies in this thesis therefore explored descriptions of health promotion in the context of the healthcare building design literature (study 1) and practice (study 2). Health promotion in healthcare settings generally refers to organisations expanding their traditional focus on the treatment of disease to include a focus on the health development of all building users, the local population and the environment. The development of HPH involves diverse practices such as changes in the built environment. However, a small number of studies have focused particularly on the built environment in relation to HPH. The last two studies in this thesis therefore focused on exploring descriptions of the built environment in the context of HPH.

For this thesis, an explorative research design was adopted based upon a multi-perspective approach including (1) a literature perspective, (2) a design practice perspective, (3) an HPH network perspective and (4) an HPH organisation perspective. The data were collected through literature reviews, documentation, semi-structured interviews and online surveys.

The combined work revealed diverse descriptions of health promotion in relation to healthcare building design in terms of (1) definitions of health promotion, (2) health-promotive perspectives, and (3) different targeted populations. The results also showed multiple descriptions of the built environment as a factor for health promotion including (4) expressions related to the built environment, (5) indications of places where health promotion can happen, (6) design features characterising HPBDs, and (7) design strategies to develop HPBDs.

The findings show that the research on the design of health-promotive built environments is in its early stage of development. The results indicate that the vocabulary for describing building design, health promotion and healthcare settings is diverse and inconsistent and that none of the health-promotive perspectives considers all dimensions of health promotion or HPH. What is more problematic is that the diverse health-promotive descriptions have led to different, even conflicting, demands for building design.

Based on the results, I suggest that project groups should specify and reflect upon their interpretation of the built environment, health promotion, HPH and HPBD. I recommend that HPBD should (1) focus on individuals and (vulnerable) communities; (2) focus on the different factors that improve health, not only those that prevent illness and disease; (3) consider environmental impacts; (4) involve collaboration with others; and (5) utilise the best available research. More research is needed to explore solutions in other countries, in other settings, or with other stakeholders, and it should include analysis of best-practices.

KEYWORDS

Built environment, building design, healthcare organisations, health promotion, salutogenesis, settings

Sammanfattning

Denna avhandling utforskar olika perspektiv på hälsofrämjande och hur det betraktas och hanteras i vårdmiljöer, med ett specifikt fokus på dess relation till byggnadsutformning. Resultaten kan bidra till diskussioner om betydelsen av vårdbyggnaders utformning för att stödja hälsofrämjande inom sjukvård och därmed, i ett längre perspektiv, bidra till utvecklingen av hälsosammare och mer rättvisa samhällen.

Vårdverksamheter uppmuntras idag att introducera hälsofrämjande strategier och att utveckla hälsofrämjande förhållningssätt inom vård och omsorg. Forskning visar att introduktionen av nya förhållningssätt, som hälsofrämjande, också leder till nya krav på den byggda miljön. Tidigare forskning visar även att utformning av vårdbyggnader aktivt kan stödja behandling, bidra till hälsa och förebygga sjukdomar för olika användare. Dock finns det begränsat med forskning avseende utformning av vårdbyggnader i relation till hälsofrämjande sjukvård. Det är avgörande att de som är involverade i designprocessen känner till hälsofrämjande och vad det innebär för att kunna utforma högkvalitativa sjukvårdsbyggnader som kan möta vård-, omsorgs-, och hälsofrämjande perspektiv.

Hälsofrämjande kan definieras som 'processen att möjliggöra för människor att öka sin kontroll över och förbättra sin hälsa'. Likväl finns det många definitioner och tolkningar av hälsofrämjande som beror på den kontext i vilken de används såväl som olika disciplinära förståelser bland de människor som är involverade. Medan hälsofrämjande har fått ökad uppmärksamhet bland arkitekter engagerade i vårdbyggnadsprojekt, är det oklart hur hälsofrämjande faktiskt förstås av människor involverade i vårdbyggnaders utformningsprocesser och hur hälsofrämjande mål översätts i utformningen av den fysiska miljön.

De första två studierna i denna avhandling studerade beskrivningar av hälsofrämjande i litteratur om utformning av vårdbyggnader (studie 1) respektive i praktiken (studie 2). Hälsofrämjande i vårdsmiljöer avser i allmänhet hur vårdverksamheter utökar sina verksamhetsområden till att inte bara omfatta behandling av sjukdom utan till att också omfatta hälsofrågor relaterat till alla användare av de vårdbyggnader man förfogar över, såväl som närsamhället och miljön. Dock har ett litet antal studier fokuserat specifikt på den byggda miljön i relation till hälsofrämjande. De sista två studierna i denna avhandling fokuserade därför på detta område och utforskade beskrivningar av den byggda miljön i kontexten av hälsofrämjande sjukvård.

Forskningen har bedrivits med en explorativ ansats där flera metoder, angreppssätt och perspektiv har använts: ett litteraturperspektiv; ett designpraktikperspektiv; ett perspektiv

från nätverk för hälsofrämjande sjukvård; och ett organisatoriskt perspektiv. Data har samlats in via litteraturstudier, dokumentanalys, semistrukturerade intervjuer och online-enkäter.

Sammantaget visar avhandlingsarbetet på flera olika typer av angreppssätt i beskrivningar av hälsofrämjande relaterat till vårdbyggnaders utformning. Dessa baseras på (1) definitioner av hälsofrämjande, (2) hälsofrämjande perspektiver och (3) uppfattningen om olika målgrupper. Resultaten visar också på flertalet olika beskrivningar av den byggda miljön som en faktor för hälsofrämjande, däribland (4) att utgå från avsikter med utformningen av byggd miljö, (5) att utgå från specifika platser som kan kopplas till hälsofrämjande, (6) aspekter av utformning som kan kopplas till s.k. hälsofrämjande byggnadsutformning och (7) designstrategier för att utveckla hälsofrämjande byggnadsutformning.

I arbetet kunde det konstateras att forskning om utformningen av hälsofrämjande byggda miljöer är i ett tidigt utvecklingsskede. Resultaten visar på att terminologin och begreppen för att diskutera byggnadsutformning, hälsofrämjande samt vård- och omsorgssituationer är bred, varierande och inte konsekvent. Vidare kunde konstateras att inget av de hälsofrämjande perspektiv som identifierades till fullo omfattade alla aspekter av hälsofrämjande. Mer problematiskt är dock att de olika angreppssätten och beskrivningarna av hälsofrämjande i vissa fall visade sig ställa motsägelsefulla krav på byggnadsutformning.

Baserat på resultaten föreslås att aktörer involverade i projekt där hälsofrämjande är centralt måste diskutera och definiera de begrepp och mål som ska styra arbetet. Hur termer som byggd miljö, hälsofrämjande, hälsofrämjande sjukvård och hälsofrämjande byggnadsutformning ska användas och vilken innebörd som läggs i dessa behöver vara tydligt. Rekommendationer avseende hälsofrämjande byggnadsutformning baserade på avhandlingsarbetet är (1) att fokusera på individer och det omgivande samhället (speciellt sårbara grupper), (2) att faktorer som främjar hälsa hanteras på motsvarande sätt som de faktorer som skyddar mot ohälsa, (3) att miljömässiga effekter tas i beaktning, (4) att samverkan och delaktighet är centralt, (5) och att utgå ifrån relevant tillgänglig forskning. Mer forskning är också nödvändigt för att undersöka och utveckla kunskap om hälsofrämjande byggnadsutformning ur olika nationella perspektiv, i andra kontexter och i samverkan med intressenter, samt att i det arbetet analysera olika exempel på praktiker inom området.

NYCKELORD:

Byggd miljö, byggnadsutformning, hälsofrämjande, salutogenes, vårdverksamheter

List of papers and other publications

INCLUDED PAPERS

- [Journal Paper] Miedema, E., Lindahl, G., & Elf, M. (2019). Conceptualizing Health Promotion in Relation to Outpatient Healthcare Building Design: A Scoping Review. HERD: Health Environments Research & Design Journal, 12(1), 69–86. https://doi.org/10.1177/1937586718796651 [published]
- [Conference Paper] Miedema, E.; Lindahl, G.L.; Elf, M. (2017) Health-promotive ambitions related to the built environment – the case of Angered Närsjukhus. ARCH17 Conference, April 26-28, 2017 Copenhagen, Denmark. [published]
- [Journal Paper] Miedema, E., Lindahl, G., & Elf, L. M. (forthcoming). Health promotion and the built environment – a study of the Swedish health-promotive healthcare network [under revision].
- [Conference Paper] Miedema, E., Lindahl, G., & Elf, L. M. (2019). Health promotion and the built environment - views from Swedish care organisations. Paper presented at the ARCH19 - Building for better health, research & innovation in architecture & urban design for care & health., Trondheim, Norway. [published]

OTHER PEER-REVIEWED WORK

- [Licentiate thesis] Miedema, E. (2017). Health Promotion and Healthcare Architecture. (Licentiate), Chalmers University of Technology, Gothenburg. [published]
- [Conference Paper] Roupé, M., Johansson, M., Miedema, E. et al (2019) Exploring different design spaces - VR as a tool during building design - Enabling digital technologies to sustain construction growth and efficiency, 19: 94-102 [published]

- [Journal Paper] Marco Adelfio, Iqbal Hamiduddin & Elke Miedema (2020) London's King's Cross redevelopment: a compact, resource efficient and 'liveable' global city model for an era of climate emergency?, Urban Research & Practice, DOI: 10.1080/17535069.2019.1710860 [published]
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PRESENTATIONS AND POPULAR COMMUNICATION

- [Conference Presentation] Miedema, E.; Lindahl, G.L.; Elf, M. (2017) Health-promotive ambitions related to the built environment – the case of Angered Närsjukhus. ARCH17 Conference, April 26-28, 2017 Copenhagen, Denmark.
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- [Animation] Miedema, E., & Van Wijk, B. C. (Writers) & B. C. Van Wijk (Director). (2019). Health Promotion & The Design of Healthcare Facilities [vimeo]. In Should Architects wear doctors' coats? Göteborg, Sweden: Ben Designer.

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Contribution to included papers

The included papers were developed in collaboration with Marie Elf (ME), Göran Lindahl (GL) and Peter Fröst (PF) (my supervisor at the beginning of my doctoral studies).

Study 1: PF and ME contributed to the discussion on the focus on the literature review. ME also helped choose and explain the scoping method and was the main commenter on the writing of the method section and reviewed the procedures. Both ME and GL contributed to the discussion on the findings and the overall development of the (academic) writing of the paper.

Study 2: Both PF and ME helped me select the case for the study. PF helped me contact the stakeholders of the project, and ME supported me in developing the research questions. Both ME and GL contributed to the discussions on the data analysis and findings. ME provided support for the methodological procedures, and GL helped clarify my thoughts and writing.

Study 3: Both ME and GL contributed to early discussions on the focus of the paper, the type of data to be used, and the research questions. They both supported the development of the survey questions and interview questions. GL also attended one of the interviews with a key stakeholder. ME additionally paid special attention to the methodological section of the paper. Both GL and ME helped with the interpretation of the results. They also commented on and revised the paper's text.

Study 4: Both ME and GL contributed to early discussions on the focus of the paper, the type of data to be used, and the research questions. They both supported the development of the survey questions and interview questions. ME helped with the method section and checked the relationship between the research aim and the proposed method and results. ME also helped with the interpretation of the results. Both ME and GL commented on and revised the paper's text.

PREFACE

I have long been interested in the built environment and its influence on human health. For my bachelor's thesis, in 2007, I explored healing spaces. Since then, I have slowly expanded my knowledge during my internships, job experience and, later, my master's and doctoral education. In my master's thesis, I investigated how the building design of a forensic healthcare facility could contribute to the re-socialisation of its inhabitants into society. At this time, I also became more aware of the vast amount of research on healthcare building design and the importance of the built environment for human wellbeing and health as well as for a sustainable environment. After the completion of my master's degree, I worked on urban redevelopment, primarily in neighbourhoods with complex issues such as low socioeconomic status, a high rate of (youth) unemployment, low education levels and a mix of cultural backgrounds. A large proportion of people in these areas also often experienced loneliness, social isolation, and chronic and preventable diseases. I was curious what I could do as an architect to improve these complex and contextual issues. Therefore, when I began my doctoral studies, I wondered:

> *'If there is a need for a new healthcare building, how can one design it in such a way that it improves the wellbeing of all the users of the building and the local population in a positive way?'*

Moreover, I was inspired by Christopher Alexander who wrote:

> *'A system of healthcare which is actually capable of keeping people healthy, in both the mind and body, must [put its] emphasis on health, not sickness. It must therefore be decentralised so that it is as close as possible to people's everyday activities. And it must be able to encourage people in daily practices that lead to health' (Alexander, 1977).*

This quote motivated me to explore in what way the design of healthcare facilities could encourage people to take more control over their health, including their wellbeing. Marie Elf, my supervisor, who has a nursing background, introduced me to the concepts of 'salutogenics' and 'health promotion', which precisely addressed my interest in building design. These concepts helped me to further study how to design healthcare buildings that contribute to healthier people and more equitable communities. This doctoral thesis therefore questions how health promotion is conceptualised in relation to healthcare building design and how aspects of the built environment are addressed in relation to HPH.

My thesis and projects were carried out at the Chalmers University of Technology, Department of Architecture and Civil Engineering, Division of Building Design. The point of departure for the thesis was the research programme 'Architectural Inventions of Dwelling, Ageing and Healthcaring' (AIDAH). The programme was funded by FORMAS, and it ran from 2013 to 2019. The AIDAH programme focused on cross-disciplinary research and implementation projects for a sustainable built environment in relation to three major challenges: increased demand for a flexible and resilient housing market, ageing society that requires new housing typologies that are both homes as well as working places, and technological developments that require re-thinking of traditional healthcare typologies (Gromark et al., 2015). Through interdisciplinary collaboration, new qualities in housing design, care processes and the creation of healing environments are studied in close connection with industry and community representatives. My project focused on architectural innovations in healthcare settings, particularly in relation to emerging healthcare approaches such as health promotion. The work for the thesis was conducted in close collaboration with the Centre for Healthcare Architecture (CVA) at Chalmers University of Technology. The CVA is a platform that focuses on the creation, translation, exchange and dissemination of knowledge about healthcare architecture in the Swedish context. The CVA combines research with research training and provides basic and advanced training in the field. The research focus of the CVA is on buildings and physical environments as a support and component of the interaction among healthcare, patients and architecture.

As a doctoral student, I have also been involved in teaching including tutoring and lecturing in master's design studios, such as Healthcare Architecture and Senior Housing, and supervising masters' theses on healthcare building design. As part of the educational programme, I was able to test my ideas about health-promotive building design and to see how students understood my ideas and translate them into building design. This experience helped me strengthen my argument for a health-promotive perspective in healthcare building design and contributed to the development of my doctoral work.

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'There is new research [on health promotion in healthcare settings] all the time, and we really need to be looking into that when we are building new buildings' – informant from the Swedish HPH network.

CHAPTER 1

INTRODUCTION

This thesis explores diverse perspectives on the concept of health promotion in healthcare settings from a building design perspective, i.e., health-promotive building design (HPBD) (Figure 1). In the general idea of how healthcare buildings can become health-promotive, nuances are often lacking. Furthermore, although the literature highlights health promotion as an important point for healthcare organisations, the research has too often been theoretical and lacked empirical support that focuses on the built environment. There is a lack of studies on how people who work in healthcare building design view health promotion or perceive its implications for healthcare building design or how people who work in health promotion in healthcare organisations view the built environment and its contribution to health promotion. However, there is a need to design buildings that support health promotion in healthcare settings and that requires knowledge of HPBD.

The thesis adopted an explorative, multi-perspective research approach (see page 35). The explorative approach is fitting as HPBD is a new and underdeveloped area. The approach could help to become familiar with the new subject that lacked a pre-set theoretical framework, understand the problems surrounding the development, map the context, and create new insights (Babbie, 2016). The multi-perspective approach allowed to study complex challenges, such as the introduction of Health Promotion in Healthcare (HPH) and HPBD, without existing solutions (Mitroff & Linstone, 1993; Turpin, Phahlamohlaka, & Marais, 2009). The overall research questions in this doctoral thesis were as follows:

- How is health promotion conceptualised in relation to healthcare building design?
- How is the built environment addressed in relation to health promotion in healthcare?

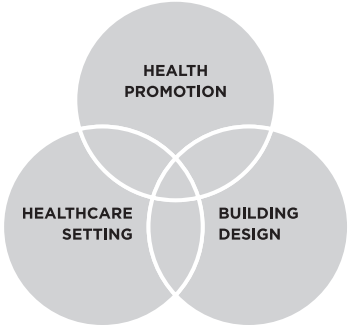

Figure 1. Diagrammatic visualisation of the research focus

Due to their complexity, current health challenges can no longer be addressed within the healthcare sector alone (Marmot et al., 2008; Marmot & Wilkinson, 2006; WHO, 2014). Instead, the development of healthier and more equitable communities requires collaboration between the healthcare sector and other disciplines (Davies et al., 2014; Green, Poland, & Rootman, 1999; Poland, Krupa, & McCall, 2009) including those involved in the design of the built environment (Dietscher, Winter, & Pelikan, 2017).

Those involved in healthcare building design and those working in healthcare organisations have long been interested in the influence of healthcare building design on human health (Dannenberg & Burpee, 2018). With the term 'healthcare building design', I refer to the design of the built environment in the context of healthcare services, e.g., the building structure, layout, interior and finishing of buildings. There has been increased research on healthcare building design and health-related outcomes for different building users such as patients, staff, and visitors (Dijkstra, Pieterse, & Pruyn, 2006; DuBose, MacAllister, Hadi, & Sakallaris, 2018; Huisman, Morales, Hoof, & Kort, 2012; Ulrich et al., 2010; Ulrich et al., 2008). For instance, patient rooms that are designed to include views of nature can reduce patients' intake of pain medication (Beukeboom, Langeveld, & Tanja-Dijkstra, 2012; Davis, 2011; Naderi & Shin, 2008; Ulrich, 1984; Ulrich et al., 2008), shorten treatment time (Beukeboom et al., 2012; Ulrich, 1984; Ulrich et al., 2008), and reduce staff members' stress (Nejati et al., 2016; Pati, Harvey, & Barach, 2008; M. M. Shepley et al., 2012). Based upon this growing knowledge base, healthcare architects have begun to brand healthcare buildings as 'healing architecture'. Additionally, healthcare architects have recently begun to brand their buildings as being 'health-promotive architecture' (Verderber, 2010) and to cite similar concepts such as 'salutogenic design' (Golembiewski , 2017). It has been argued that 'health promotion' simply refers the improvement of physical health (Golembiewski , 2017) and that 'HPBD' refers to 'healing environments' (Dietscher et al., 2017; Golembiewski , 2017). However, there is a lack of research studies on the topic of how those involved in the design of healthcare building projects interpret the concept of health promotion (Golembiewski , 2017).

The research on healthcare building design and health-related outcomes has resulted in several changes in healthcare building design. For example, new hospital wards are increasingly planned with single-patient rooms to reduce the spread of infection (Steinberg et al., 2013), increase dignity (Baillie, 2009) and allow a more flexible visitor schedule (Bosch & Lorusso, 2019; Huynh, Owens, & Davidson, 2020). Healthcare building design is also constantly influenced by ongoing political, societal, technical and medical changes such as new treatment procedures (Hamilton & Watkins, 2009). Healthcare building design can be considered a reflection of societies' interpretations of health, the role of patients, and the relationship between patients and healthcare professionals (Wagenaar, 2006). The previous studies have suggested that the introduction of new healthcare models, such as health promotion, can lead to new demands for healthcare building design (Carthey, Chow, Jung, & Mills, 2011). It is therefore crucial for the designers of healthcare buildings to be familiar with both the research on healthcare building design as well as the ongoing developments

in healthcare and society at large as these developments are likely to result in new demands for the built environment. Currently, one such important development that is likely to result in new demands for healthcare building design is the introduction of health promotion in healthcare organisations.

The World Health Organization (WHO 1986a) defines health promotion as 'the process of enabling people to increase control over and to improve their health'. There are also many other definitions and interpretations of health promotion (Green et al., 1999; Rootman, Goodstadt, Potvin, & Springett, 1997; Whitehead, 2004b). Green et al. (1999) wrote that the diverse definitions merely represent diverse perspectives on health promotion but do not have fundamentally differences in meaning. Moreover, the definitions of health promotion often vary based on the settings and disciplines involved (Johansson, Weinehall, & Emmelin, 2009). It is thus expected that there are also different interpretations of health promotion in relation to healthcare building design. Moreover, to understand what new demands health promotion in healthcare may pose for healthcare building design, it is necessary to understand what is entailed by health promotion within that context. However, there has been a lack of research focusing on how the concept of health promotion is understood and used by those involved in the building design process. This makes it unclear what the possible demands with regard to healthcare building design are. The problem is that buildings are currently planned, designed and built that should facilitate HPH while the people involved in the design project may not be familiar with the diverse dimensions of HPH nor its implications for the building design. This lack of knowledge may result in healthcare buildings that might even hinder future health promotion interventions.

Health promotion is often considered to be a solution for multiple complex and interrelated public health challenges including (1) the shift from communicable to preventable non-communicable diseases, (2) an increase in the number of people in emergency care, (3) increased health inequalities between population and regions, (4) an ageing society, and (5) high demands on healthcare professionals. Healthcare organisations are therefore increasingly encouraged to implement health promotion strategies (Antonovsky, 1987, 1996; Becker, Glascoff, & Felts, 2010; Wilson, Harris, Hollis, & Mohankumar, 2010). HPH organisations generally refers to healthcare organisations that expand their traditional focus on the treatment of disease to include a focus on the health development of their patients, their staff, the local population and the environment (Hancock, 1999; H. Johansson et al., 2009; Johnson, 1999). This focus also includes the creation of the built environment of the HPH (Pelikan, Krajic, & Dietscher, 2001), i.e. HPBDs. However, the implementation of HPH has been challenged by the limited research attention given to the role of the built environment (Dietscher et al., 2017). It is unclear whether and in what way the built environment is considered to be part of HPH, making it difficult to develop health promotion strategies that involve the creation of HPBDs. The problem is that the role of healthcare building design tends to be overlooked as compared to more passive functions of facilitating health-promotive programmes such as the provision of bike parking. Instead,

building design could play a more active role such as by providing an overall layout that supports physical activity for diverse building users throughout the day.

One of the major drivers in the development of health promotion in healthcare settings are national, regional and global networks (WHO Europe, 2007) such as the Swedish HPH network. These networks support healthcare organisations by sharing knowledge, organising conferences and developing standards for HPH (Groene et al., 2005; WHO Europe, 2007). These networks also specify that the development of HPH involves the creation of HPBDs (WHO, 1991a, 2004). In this way, HPH organisations and networks become important stakeholders in the development of HPBDs. However, there have been no studies that focus on the integration of aspects of the built environment in the work of HPH networks.

Today, knowledge of HPBD is particularly important as healthcare buildings in Sweden and elsewhere in the Western world are currently in need of renovation and transformation through rebuilding to be able to adjust to current healthcare needs (Carthey et al., 2011; Melin, 2012). For instance, the ageing population and the increase in chronic diseases have led to the need for more long-term and complex modes of healthcare while healthcare innovations have shortened healthcare procedures, leading to more outpatient units. Such interventions in healthcare buildings require large investments. In Sweden, as well as in other welfare countries, investments in healthcare buildings use public money as such buildings fall under the responsibility of the local governments. Thus, these investments and the design of healthcare buildings are part of public debate, especially in relation to the role of healthcare in the development of healthier communities, the reduction of health inequalities and sustainable development. Consequently, healthcare building projects become part of the exploration of how healthcare and its buildings should be adjusted to local needs and focused on people's health empowerment and contribute to health promotion and public health. This thesis may provide support for these discussions and complement other research on healthcare building design.

1.1 Contribution

This doctoral thesis aims to contribute to discussions on, and the development of, building design with the purpose of supporting HPH. This is done through the exploration and integration of three subjects (health promotion, healthcare setting and building design) (Figure 1) that have not been previously examined together and how these are interpreted by diverse stakeholders. The included studies each provide an insight into diverse and overlapping interpretations of health promotion and the built environment as found in the literature (study 1), building design practice (study 2), HPH organisations (study 3) and HPH networks (study 4). This multi-perspective approach allows a mapping of the complex development of HPBD, indicate knowledge gaps and challenges, provide explanations for these gaps and challenges, and suggest directions for the future. In addition, this approach provides new perspectives and knowledge that can facilitate discussions, in both practice and academia, on healthcare building design that supports health promotion. The primary intended audience of

the thesis are stakeholders involved in the design process of healthcare buildings including the healthcare and building design disciplines in practice and academia.

The thesis may additionally make an important contribution to efforts for the overall development of health promotion, health-promotive settings and HPH in the following ways. First, it contributes by highlighting the importance of including built environmental factors in health promotion development. Second, it contributes by suggesting new definitions of health promotion and HPH and indicating criteria for both concepts to use in relation to building design projects as well as health-promotive interventions. Third, it contributes by developing a health-promotive dimension model (Figure 19) that allows people involved in the HPBD process to become familiar with the diverse dimensions of health promotion, particularly in healthcare. The secondary audience of this thesis is therefore stakeholders involved in the development of health promotion and HPH interventions.

Finally, the thesis may also contribute to building design in other health-promotive settings, such as schools, workplaces or homes, and it has contributed to my own understanding of knowledge development in the study of cross-disciplinary subjects such as HPBD.

1.2 Thesis structure

This thesis is based on the findings and discussions of four studies that present four perspectives, which have been reported in four papers (see appendix in printed thesis). The cover text of the thesis can also be viewed as a standalone text as it summarises the research, brings in the literature and connects the different issues encountered in the PhD project. The thesis consists of 4 parts that include 10 chapters and an appendix.

Part 1 introduces why this thesis project was conducted:

1. Preface
2. Introduction
3. Theoretical background
4. Situational context

Part 2 describes how the research was performed:

5. Aim
6. Methodology
7. Method and materials

Part 3 discusses the lessons that can be learned from the studies:

8. Combined findings
9. Discussion
10. Conclusion

Part 4 consists of the appendix and the included papers.

1.3 Acronyms and concepts

Throughout the thesis, several acronyms are used (see Table 1).

TABLE 1. ACRONYMS USED IN THIS THESIS

Acronym	Concept
ANS	Angered's Närsjukhus (used in study 2)
EBD	Evidence-Based Design
HPH	Health promotion in Healthcare
HPBD	Health-Promotive Building Design
RID	Research-Informed Design
SoC	Sense of Coherence
WHO	World Health Organisation
SDG	Sustainable Development Goals
HPCE	Health-Promotive Care Environment (used in study 3)

CHAPTER 2

THEORETICAL FRAMEWORK OF TERMS AND CONCEPTS

2.1 Built environment and settings

This thesis makes use of diverse spatial concepts that require clarification of what they mean and how they relate to one another.

The term 'built environment' refers to 'buildings, spaces, and products that are created or significantly modified by people' (Schulz & Northridge, 2004). The built environment, as a concept, has also been described by others in terms of the constructed environment, designed environment, or human-made environment. The built environment is an aspect of a setting (Figure 2). Figure 2 visualises the distinction between the main spatial concepts: setting, built environment and building design.

Figure 2. Illustration distinguishing the setting, physical environment, built environment and building design

The natural environment includes the ecological aspects of an environment including non-human species and ecosystems such as trees, flowers, insects and animals. The natural environment may have been created or adapted by people, such as in parks and gardens; however, they remain natural. Others have also referred to the natural environment with related terms such as the 'ecological environment' or with terms such as 'nature' or 'green'.

In this thesis, the physical environment is defined as the combination of the built and natural environment (Schulz & Northridge, 2004). Importantly, the term 'physical environment' has also been used interchangeably with dissimilar concepts such as the built environment or setting. To avoid misunderstandings, I avoid using the term 'physical environment' entirely unless it was included in a quotation from the collected data.

A setting refers to the combination of, and the complex and dynamic interaction among, the natural, social and built environments. Settings have physical boundaries (Green et al., 1999), can have various scales, and can be part of or include other settings (Canter, 1977). The setting, as a concept, is also referenced in terms of place, environment, location or circumstances.

Building design, in this thesis, refers to the structure, layout, furniture and finishing of a building. Building design thus refers to a specific type of built environment, which is part of a setting. Note that in some of the included papers, 'building design' is used to refer to the process that results in the creation of building, i.e., the building design process.

In short, building design refers to a type of built environment that is a component of the setting and a result of a building design process. This thesis focuses on the building design of healthcare organisations, i.e. healthcare building design that aims to be health-promotive. To understand the aspects that influence the design of health-promotive healthcare buildings, it is important to study the theoretical background of health promotion and HPH.

2.2 Health promotion

There have been multiple definitions of health promotion developed over the years (Green et al., 1999; Rootman et al., 1997; Whitehead, 2004b). One of the first definitions was described in the Lalonde report (1974):

> *'... informing, influencing and assisting both individuals and organizations so that they will accept more responsibility and be more active in matters affecting mental and physical health.'*

The Lalonde report (1974) also listed multiple health promotion strategies including stimulating the development of 'simple intensive-use facilities for more physical recreation' such as the addition of fitness trails, nature trails, or bicycle paths. Thus, Lalonde recommended the addition of health-promotive program in healthcare buildings. One of the most used definitions of health promotion was developed as a result of the first international health promotion conference in Ottawa. As a result of the conference, the Ottawa Charter for Health Promotion was written, and it defined health promotion as follows:

> *'The process of enabling people to increase control over and to improve their health [in which] health is a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity' (WHO, 1986a).*

The term "health" as it is used in relation to health promotion, has been considered 'a resource for life, rather than the object of living' (WHO, 1986a). Health thus allows people to lead an 'individually, socially and economically productive life' (WHO, 1986a). Health is thus 'a positive concept emphasising social and personal resources as well as physical capabilities' (WHO, 1986a). The WHO also notes that this holistic health perspective takes into account the diverse factors that influence health including the implications of the physical environment for individual and collective health and wellbeing (WHO, 1991b, 2010b). This

is also underscored in the health promotion definition by M. Eriksson and Lindström (2005):

> *'... the process of enabling individuals, groups or societies to increase control over, and to improve their physical, mental, social and spiritual health through creating clearly structured environments and societies'*

Moreover, M. Eriksson and Lindström (2005) asserted that the 'people' involved in health promotion include 'individuals, groups and societies'. Thus, they argued that a definition of health promotion should emphasise not only individuals but also the interaction among individuals, groups and society. Moreover, the authors specified 'control over health' as 'control over the determinants of health'. This emphasises the importance of a holistic view of health that considers diverse health determinants, i.e., the factors that influence people's health. They also noted that this approach includes the creation of 'clearly structured environments and societies'. Their definition thus emphasises the importance of 'constructing' environments for health development. This makes their definition particularly useful for those working with the built environment including healthcare building projects.

However, there have been many definitions of health promotion developed (Rootman et al., 1997) and the interpretation of health promotion can differ between disciplinary domains, regions and practices (Green et al., 1999; H. Johansson et al., 2009). Moreover, it has been argued that it is impossible to find one definition for health promotion upon which to agree (Green et al., 1999). In their book chapter, Green et al. (1999) provided an overview of multiple health promotion definitions developed. Green et al. (1999) additionally reasons that the different definitions merely represent differences in perspective rather than fundamentally conflicting meanings. Nevertheless, the lack of a clear definition of health promotion has led to misunderstandings in implementation in healthcare practice (H. Johansson et al., 2009). For instance, doctors may believe that non-smoking conversations are part of health promotion approaches while such conversations actually relate to disease prevention (Goel & McIsaac, 1999; H. Johansson et al., 2009). Because of the diverse and ambiguous interpretations of health promotion, it seems important to clarify what health promotion means in a certain situation such as the development of HPBD.

2.3 Criteria for health promotion approaches

There are many different and overlapping interpretations of health promotion; however, health promotion should not be confused with disease prevention, public health or population health. The work of Green et al. (1999) can be helpful to distinguish health promotion from other health-related approaches. They listed six health promotion criteria based upon the previous work of Downie, Fyfe, and Tannahill (1990); Goodstadt (1995); WHO (1991b) including

- Encouraging public participation by individuals and communities
- Taking a socio-cultural perspective
- Emphasising equity and social justice

- Fostering intersectional collaboration
- Taking a holistic view of health
- Focusing on enhancing health and not simply preventing problems

The above-mentioned health-promotive criteria may also be relevant for the development of HPBD to distinguish between, and relate to, other health-related building design approaches.

ENCOURAGING PUBLIC PARTICIPATION BY INDIVIDUALS AND COMMUNITIES

Health promotion underscores the importance of public participation in agreement with the principle of empowerment (Green et al., 1999). Public participation allows individuals and communities to define their own (health) needs and priorities, to act upon them, and to drive the change that supports those needs and priorities (Green et al., 1999; P. M. Johansson et al., 2009). The success of health promotion thus relies on the interaction between top-down approaches and bottom-up initiatives by individuals and communities. It is therefore essential to encourage public participation by individuals and communities so they can define their own (health) needs and priorities, act upon them, and drive the change that supports those needs and priorities (Green et al., 1999). Note that public participation requires an overview of who is involved that considers vulnerable groups (Green et al., 1999). Participation is also important in the design of healthcare buildings (Elf, Fröst, Lindahl, & Wijk, 2015; Fröst, 2004; Granath, Lindahl, & Rehal, 1996) (see page 24). An HPBD process may thus be developed to encourage public participation to support health promotion.

TAKING A SOCIO-CULTURAL PERSPECTIVE

An individual's health status can no longer be attributed to the individual alone (Davies et al., 2014). There is instead increasing evidence that our health is influenced by facets of the socio-cultural environment (Bauer, Davies, & Pelikan, 2006; Davies et al., 2014) such as finances, work, education, power and diverse norms and values (Davies et al., 2014). Depending on one's capabilities, it may be possible for an individual to influence their socio-cultural environment; however, these socio-cultural determinants of health are mostly influenced by their unequal distribution in society (Bauer et al., 2006).

As mentioned by Canter (1977), people's responses to certain places depend on their socio-cultural perspective of that place. People are therefore framed by their familiar, socio-cultural perspective concerning how they are supposed to behave in a typical hospital. It can then be asked if a HPH should look the same as a traditional hospital.

EMPHASISING EQUITY AND SOCIAL JUSTICE

The origin of the WHO, and thus the development of health promotion, has its origin in the 'Right to Health' (Office of the UN & High Commissioner for Human Rights, 2007; OHCHR

& WHO, 2008). The Right to Health does not mean that everyone should be healthy, instead the Right to Health refers to:

> *'The right to the enjoyment of the highest attainable standard of physical and mental health (...) for every human being without distinction of race, religion, political belief, economic or social condition' (OHCHR & WHO, 2008).*

The above quote states that individual differences in the population should not have health implications, representing a health equity focus. Importantly, health (in)equity is not the same as health (in)equality (Braveman & Gruskin, 2003; Whitehead, 1991). Inequality refers to health differences between population groups, which are not unfair. For instance, young people are expected to be healthier than the older generation. In comparison, health inequity relates to differences between population groups that are unjust (Braveman & Gruskin, 2003). This includes, for instance, that fact that some population groups have less money for healthcare, lack an understanding of the healthcare system, or live far from healthcare services. It can thus be argued that health equity is actually comparable to social justice or fairness (Braveman & Gruskin, 2003). Health promotion thus focuses on reducing the unjust distribution of health and healthcare and is often focused on vulnerable population groups (Office of the UN & High Commissioner for Human Rights, 2007).

The built environment can also influence health inequalities (Gelormino, Melis, Marietta, & Costa, 2015). For instance, a certain design may prevent certain populations from visiting a healthcare building, either because the building is too far, is not reachable by car or public transport, or does not facilitate wheelchair users or strollers. Experienced designers of hospitals usually consider the diverse abilities of building users (Dannenberg & Burpee, 2018).

FOSTERING INTERSECTIONAL COLLABORATION

Health, healthcare and health promotion can no longer be seen as the sole responsibility of healthcare professionals or healthcare institutions (WHO, 2014). For instance, a socio-cultural perspective requires the involvement of multiple stakeholders including public, private, and local stakeholders, which may have the intended effects (Davies et al., 2014). An equity orientation requires collaboration with political and societal professions. A holistic view of health considers aspects outside the medical profession including the influence of the (built) environment. Health and health promotion should thus be incorporated in all types of professions (WHO, 2014), disciplines and settings (Poland et al., 2009).

Since the built environment influences human health directly and indirectly, it seems essential for health promotion and intersectional collaboration to also include those involved in the design of built environments. The research has already indicated the need for collaboration in healthcare building design projects (Carthey, 2020; Elf et al., 2015; J. Eriksson, Fröst, & Ryd, 2012; Fröst, 2004), and building designers should therefore probably also be involved in the development of health-promotive strategies.

Similar to health promotion, there is a wide range of definitions of health. In a medical context, health has traditionally been defined as merely the absence of disease or illness (Huber et al., 2011). Health promotion approaches do not have this disease focus; they instead take a holistic view on health that includes multiple interrelated dimensions of health such as mental, emotional, and spiritual health (Huber et al., 2011). A holistic view of health also acknowledges the different factors that influence our health, i.e., health determinants. Health determinants can be personal such as age, gender, and genetics (Barton, 2005; WHO, 2010a). Other health determinants relate to an individual's lifestyles, community, local economy, activities, and built and natural environments (Barton, 2005). A holistic view thus recognises the built environment as an important health determinant, and therefore health promotion should also include aspects of the built environment (Perdue, Stone, & Gostin, 2003).

FOCUSING ON ENHANCING HEALTH (SALUTOGENICS) AND NOT SIMPLY PREVENTING PROBLEMS (PATHOGENICS)

The term health promotion has been used interchangeably with disease prevention (Bauer et al., 2006). Some authors argue that health promotion is part of disease prevention or that disease prevention is part of health promotion (Whitehead, 2004b). I support the positions of those authors (Antonovsky, 1996; Bauer, Davies, & Pelikan, 2006; Becker et al., 2010) who argue that health promotion and prevention should be considered parallel processes (see also Figure 3); such authors focus on enhancing health while others focus on preventing problems.

This distinction is highlighted in the work of Antonovsky (1987, 1996), a medical sociologist, who noted that many healthcare approaches are focused on the causes of suffering or disease, i.e., a pathogenic orientation. Instead, Antonovsky reasoned that more attention should also be attributed to the origin of health, i.e., a salutogenic orientation. Antonovsky developed the sense of coherence framework, which focuses particularly on why stress can make certain people sick while other people are more able to cope with stress and remain healthy (Antonovsky, 1996; Lindström, 2008; Simonelli, 2010).

Bauer et al. (2006) described health promotion as a salutogenic orientation (left side of Figure 3) that pays attention to positive health and resources. They aligned prevention with other pathogenic approaches such as healthcare and health protection, relating to ill health and risk factors. The model also indicates the interaction between health status, inidvidual determinants of health and environmental determinants. These environmental determinants, such as the built environmnet, can be a resource as well as a risk factor. Moreover, while these differences between salutogenics and pathogenics might be apparent on a theoretical level, their differences are not as obvious in practice in which they may overlap or be combined (Bauer et al., 2006).

The meaning of the salutogenic orientation may be most apparent in palliative care. Palliative care is care for people in their final stages of life. In the final stages of life, recovery is no longer expected, and palliative care therefore focuses on supporting patients and their

families in maintaining their quality of life, regardless of their current health status (Rosenberg & Hammill, 2015; VanderPloeg, 2001). This support may include, for instance, emotional and spiritual support for the person and his or her close relatives and friends. Palliative care does not focus on reducing unhealthy behaviours such as smoking as there is not much more harm to be done. Palliative care thus adopts a salutogenic approach.

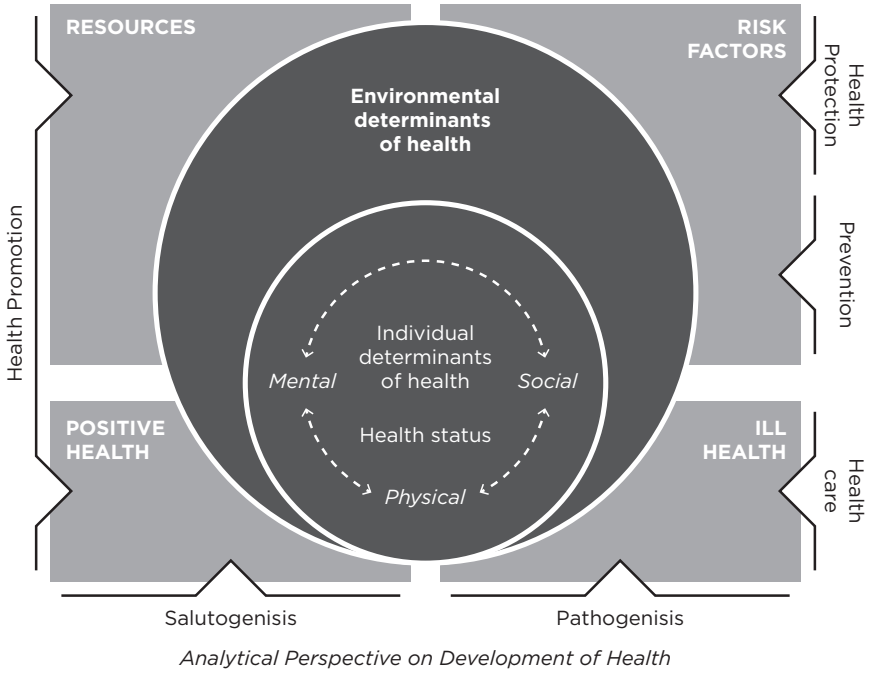

Figure 3. EUHPID Health Development Model: public health intervention approaches (adapted from Bauer et al., 2006)

In summary, health promotion is a multi-dimensional concept with multiple complex criteria. All of the criteria can be related to aspects of the built environment, and they may all result in certain new demands for healthcare building design. However, thus far, no studies have specifically connected all of the health-promotive criteria to healthcare building design. The relationship between health promotion and the built environment may be most apparent in the health-promotive settings approach.

2.4 Health-promotive settings

One of the health promotion strategies seems especially relevant for exploring the relationship between health promotion and the built environment of healthcare organisations: the health-

promotive settings approach. The health-promotive settings approach pays attention to where health promotion occurs (Green et al., 1999; Poland et al., 2009):

> *'The place or social context in which people engage in daily activities in which environmental, organisational and personal factors interact to affect health and wellbeing'(Smith, Tang, & Nutbeam, 2006).*

People actively use and shape their environments and thereby create or solve problems related to health (Smith et al., 2006). Here, the environment consists of multiple inter-linked and dynamic dimensions including social, spiritual, economic, political and physical dimensions (WHO, 1991b). A setting is a certain type of environment with physical boundaries, an organisation structure, or a group of people with specified roles (Green et al., 1999; Smith et al., 2006). The WHO has identified a number of important settings for health promotion including schools, workplaces, homes, communities and settings specifically defined for healthcare purposes (see Figure 4).

The health-promotive settings approach is considered to be one of the most successful health promotion strategies (Poland, Green, & Rootman, 1999; Poland et al., 2009). The setting approach allows for abstract health-promotive ambitions, which are generally difficult to implement in practice, to be adjusted and implemented in different contexts (Green et al., 1999). The health-promotive settings approach can include diverse practices, such as those that effect changes in organisational structures, administration or management, or the built environment, and it often involves a combination of practices (Green et al., 1999). Thus, the health-promotive settings approach can include the design of a health-promotive built environment or HPBD. This also makes the settings approach interesting in exploring the relationship between the built environment and health promotion in general, particularly in healthcare settings.

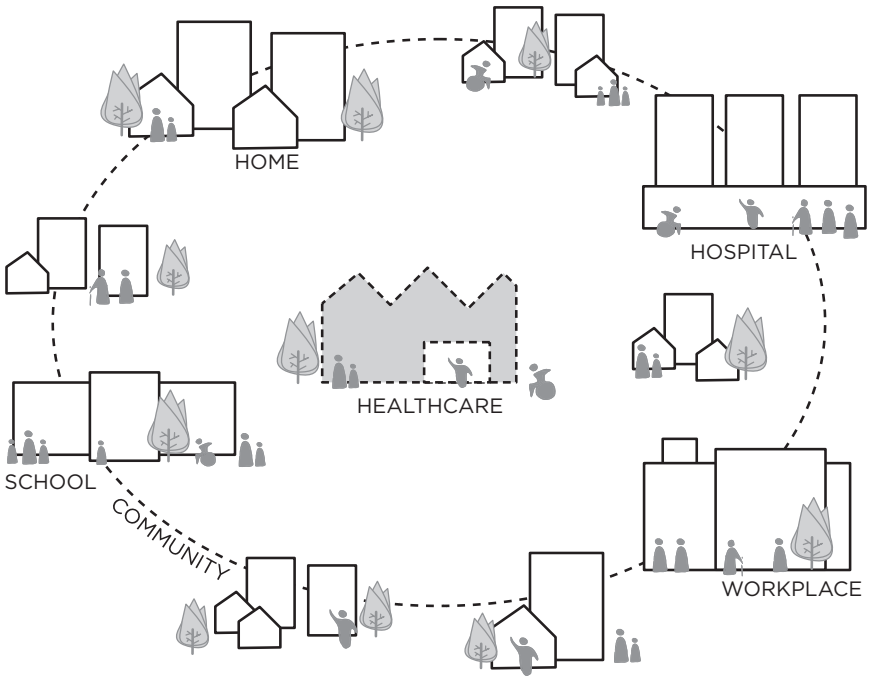

Figure 4. Diagrammatic visualisation of diverse health-promotive settings

2.5 Health promotion in healthcare

A major health-promotive settings is that of healthcare organisations (Goel & McIsaac, 1999; Johnson, 1999; Pelikan et al., 2001; Whitehead, 2004a; WHO, 2004) such as hospitals, primary care clinics or psychiatric institutions. These healthcare organisations are increasingly encouraged to incorporate health promotion in their services (Antonovsky, 1996; Becker et al., 2010; Johnson, 1999; Wilson et al., 2010) and thereby move from a curative approach and expand to incorporate a holistic health-oriented approach (Aujoulat et al., 2001).

Not all scholars are convinced that a hospital is a good setting for health promotion (Hancock, 1999; Johnson, 1999). While traditional hospital organisations are characterised as medicalising, individualising and institutionalising, health promotion emphasises health and the group or collective, with a focus on the community rather than the institution (Hancock, 1993). While patients in hospitals are largely dependent on the medical staff and healthcare system, health promotion is focused on empowering people (Johnson, 1999). Green et al. (1999) argued for the HPH:

> *'Where else does one encounter an organization so predominantly focused on (..) health and illness? Where better to play out the full (...) dimension of health promotion? In its seeming antithesis of health promotion, the hospital reveals the power of settings as a place for health promotion'.*

I agree with Green and others who argue that the hospital plays an important role in representing the healthcare system (Milz & Vang, 1988), that healthcare organisations are the main providers of healthcare (Aujoulat et al., 2001), that most people will visit a hospital at some point in their lives, and that the hospital is a major employer in communities (Johnson, 1999; Milz & Vang, 1988). Moreover, healthcare organisations are part of health-promotive communities and provide health-promotive workplaces (Hancock, 1999; Whitehead, 2004a). Thus, the HPH must be a part of the process of creating healthier communities (Hancock, 1999), and healthcare organisations must modify their philosophies, values and practices to be effective (Hancock, 1999).

Since 1990, several HPH networks have supported healthcare organisations' taking an HPH approach (Pelikan, Gröne, & Svane, 2011). As illustrated in Figure 5, there is one global HPH network, several regional networks such as the European HPH network, and multiple national networks such as the Swedish HPH network. The networks have provided the visionary concept and concrete strategies for the implementation of health promotion in healthcare, resulting in hundreds of interventions in hospitals in Europe as well as in other countries such as Australia and Canada (Pelikan et al., 2011). These networks aim to share the knowledge and experiences from those HPH projects among the different regions, countries, and organisations (Pelikan et al., 1998). This is achieved by organising international conferences (e.g., health promotion charters), newsletters, websites, guidelines and standards (Pelikan et al., 1998; Pelikan et al., 2011; WHO, 1991a, 1997). This makes these networks important stakeholder in the development of HPH and probably in the development of HPBD.

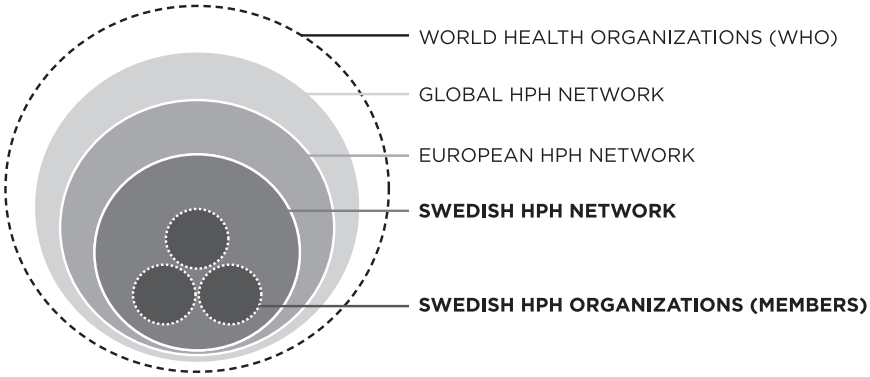

Figure 5. Illustration of relationship between the WHO and HPH networks

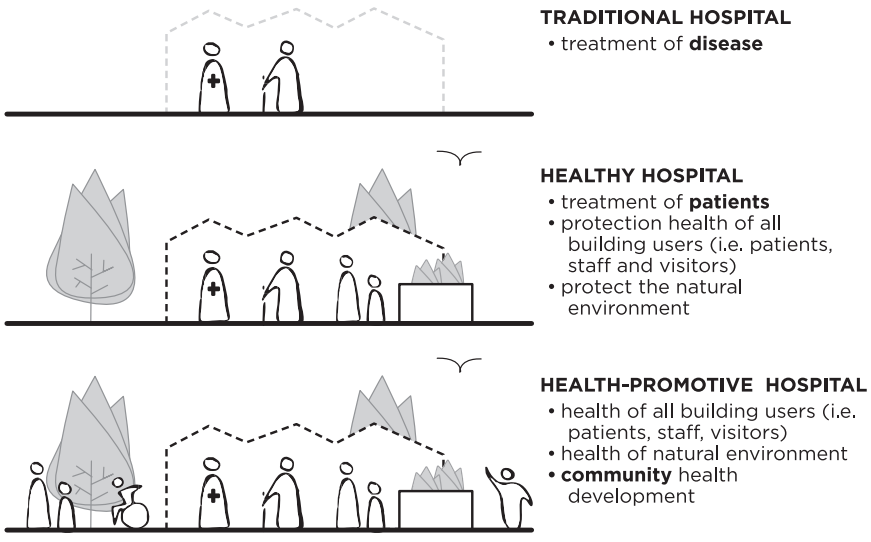

Figure 6. Illustration visualising the distinction among traditional (curative), healthy and health-promotive hospitals (based on Hancock (1999))

It has been argued that not all healthcare organisations that incorporate health promotion strategies should be referred to HPH organisations (Hancock, 1999). Hancock (1999) distinguished health-promotive hospitals from traditional and healthy hospitals (see Figure 6). A traditional hospital focuses only on the treatment of patients (Hancock, 1999). A healthy hospital has an inward focus, with the aim of creating an effective and environmentally-friendly healing environment for all users through the building design and the operationalisation of the hospital (Hancock, 1999). In comparison, a health-promotive hospital is externally focused on the health and wellbeing of the community and on salutogenic approaches, aims to narrow the gap in health status within the community and involves strategies guided by the Ottawa Charter (Hancock, 1999; WHO, 1991a).

According to the Ottawa charter (WHO, 1986b), an HPH hospital provides highly comprehensive medical and nursing care, develops a corporate identity that embraces the aims of health promotion, develops a health-promotive organisational structure and culture including participatory roles for patients and all staff members, and actively cooperates with its community. Moreover, an HPH hospital should develop a health-promotive physical environment (WHO, 1991a), which should include the creation of a health-promotive built environment. There are examples of health-promotive interventions that do not involve the built environment. For instance, the organisation can stimulate active behaviour of employees by financial aids for sports activities. This may stimulate more active behaviour outside of work, but not at the workplace. There are also examples where the changes to

the built environment are not required although probably more convenient. For example, if the employees and organisations want to introduce standing and walking meetings, to promote more active postures during work, it could happen in existing building. However, this is probably more successful if there are standing desks and meeting tables, or attractive circulation spaces. HPBD is thus an important part of HPH development (Dietscher et al., 2017; Golembiewski , 2017; Hancock, 1999, 2012; Pelikan et al., 2001). While attention has been paid to the importance of the built environment for HPH, few studies have focused on the built environment in support of HPH (Dietscher et al., 2017; Golembiewski , 2017; Verderber, 2010), nor how the actors in the HPH network perceive this. This thesis therefore focuses on health promotion in healthcare settings in relation to the design of healthcare buildings.

2.6 Healthcare building design

The design of healthcare buildings refers to the buildings of healthcare organisations including the structure, layout, openings, furniture and finishing. Healthcare building design is considered to be one of the most complex projects for building designers. First, such buildings must be dynamic enough to embrace new political, societal, technical and medical changes (Carthey et al., 2011; Hamilton & Watkins, 2009). For instance, technological innovations can lead to new care procedures, which can create new demands for the built environment (Carthey et al., 2011). Second, a complex infrastructure is needed to support diverse and multifaceted flows of people and material (DeFlitch, Geeting, & Paz, 2015; Jiang & Verderber, 2017). For instance, some flows must be separated from public flows to create clean zones (Jiang & Verderber, 2017). Third, healthcare buildings are often located in an urban context with existing buildings and infrastructure that restrict future possibilities (Carthey et al., 2011). For instance, a corridor system may not align with new building regulations that require higher floors, which makes it difficult to link existing and new buildings to each other. The buildings should also be accessible as there is a relatively high proportion of vulnerable people who will come to the buildings to receive healthcare services. Moreover, healthcare visits can be accompanied by intense positive or negative emotions. Both vulnerability and emotions make people more sensitive to their environments (Golembiewski , 2010). Healthcare buildings should thus be accessible and convenient for all people. The combination of these challenges makes each healthcare project temporary and complex, which means that the built environment should not be disconnected from the development of healthcare (Ulrich et al., 2010).

RESEARCH ON HEALTHCARE BUILDING DESIGN

There is also increasing interest in the research on healthcare building design in connection with health-related outcomes. The first empirical study on healthcare building design was performed slightly more than 30 years ago by environmental psychologists Ulrich (1984).

Ulrich compared patient recovery results for patients with a view of nature and patients with a view of a brick wall (Ulrich, 1984). The study showed that patients with a nature view needed less pain medication, had a shorter recovery and had fewer complications. This ground-breaking study led to renewed attention to the role of the built environment in health-related outcomes in healthcare settings. Since then, several literature reviews (Bosch & Lorusso, 2019; Coutts, 1979; Dijkstra et al., 2006; Frank, Kavage, & Devlin, 2012; Gharaveis, Hamilton, & Pati, 2018; Huisman et al., 2012; Jellema, Annemans, & Heylighen; Laursen, Danielsen, & Rosenberg, 2014; Nimlyat & Kandar, 2015; Ulrich et al., 2008) and studies have been conducted on this topic. These studies have been carried out by researchers in various disciplines such as architecture, construction management, nursing, medicine, environmental psychology and public health. In 2010, Ulrich developed a conceptual framework that demonstrates the connection between building design features and diverse outcomes for different populations (see Figure 7).

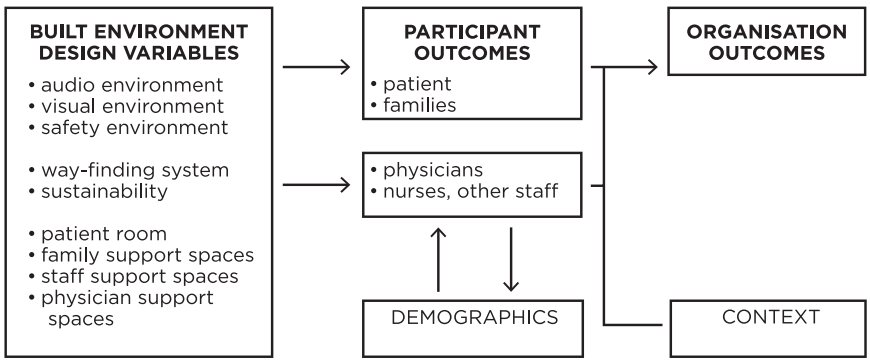

Figure 7. Conceptual framework of Evidence-Based Design (adapted from Ulrich et al. (2010))

BUILDING DESIGN FEATURES

Ulrich et al. (2010) framework represents the built environment in nine categories of what the authors refer to as 'built environment design variables': the audio environment, the visual environment, safety enhancement, the way-finding system, sustainability, patient room, family support spaces, staff support spaces and physician support spaces. Each of these built-environment variables includes multiple design features. For instance, the audio environment includes acoustic materials, equipment noises and music. The visual environment includes windows that contribute to natural lighting and views onto nature, the orientation of the building site, and art as well as visual stimulation from ceilings and walls, gardens and plants, TV, internet and video games. In comparison, Harris, McBride, Ross, & Curtis (2002) distinguishes between five types of built-environment 'features':

- Ambient features
- Architectural features
- Interior design features
- Maintenance features
- Social features

Ambient features include features that may be a source of satisfaction or dissatisfaction with the environment such as light, acoustics, air quality and temperature (Harris et al., 2002). Architectural features are the permanent features of a building (Harris et al., 2002) such as the plan layout, structure, room size and shape, and the placement of doors and windows. Interior design features are less permanent (Harris et al., 2002) and include equipment, finishing, and the placement of the furniture. Maintenance features refers to housekeeping services and is thus related to cleanliness and wear (Harris et al., 2002). Social features, according to (Harris et al., 2002), refers to social aspects relative to spatial features such as privacy, control, access and familiarity. This distinction of design features can also be helpful in evaluating the use of building design features in relation to HPBD.

DIVERSE SETTINGS

Ulrich et al. (2010) framework identifies several places in the hospital as design variables including patient support spaces, staff support spaces, and family support spaces. Patient room involve patients' choices between single- or multi-patient rooms, private or shared toilets, or the ability to control one's environment such as lighting or temperature. The quality of workstations, breakrooms and meeting spaces as well as proximity to offices, storage, medication and parking fall under the categories of staff support spaces in the built environment. For instance, certain floorplan layouts can support team work and communication (Gharaveis et al., 2018). Family support spaces are based on building design that supports family presence such as quiet waiting areas with group seating, extra beds in patients' rooms, and workspaces for relatives.

The research on healthcare environments often takes place in healthcare organisations that provide inpatient care such as hospitals and psychiatric facilities where patients stay overnight. The inpatient setting allows for the observation of long-term effects. Moreover, these organisations generally already collect data that could further contribute to assessments of the built environment. Recently, the design of outpatient healthcare services has also attracted attention (Bosch & Lorusso, 2019; Haddox, 2018). However, in general, the research on outpatient departments, such as primary care or departments for day treatments, is limited (Bosch & Lorusso, 2019; Haddox, 2018) even though such institutions are visited more frequently (Bosch & Lorusso, 2019).

Dannenberg and Burpee (2018) found that those involved in the design of healthcare buildings, compared to other building types, usually consider the health-related outcomes of their designs. First, the design of a building should do no harm to people (Dannenberg & Burpee, 2018) but instead should protect people. The protection of people's health includes patient and staff safety, which is expressed in terms of reducing or minimizing levels of infection, medical errors, or falls (Ulrich et al., 2010). For instance, the placement of hand sanitizers can reduce bacterial spread. The protection of human health also involves the protection of the natural environment (Spencer, Corbin, & Miedema, 2018; Verderber, 2010). The design of sustainable buildings minimizes their environmental impact and contributes to the protection of the natural environment, thereby indirectly protecting human health. Thus, healthcare buildings should be designed for sustainability (Ulrich et al., 2010; Verderber, 2010) and to protect human health.

Initially, the research on healthcare environments focused primarily on patients, their safety, treatment processes, psychosocial health, and whether they were satisfied with the care they received (DuBose et al., 2018; Ulrich et al., 2010). For instance, treatment has often been measured in biomedical outcomes such as length of stay, re-admission, perceived pain or the need for pain medication (Huisman et al., 2012; Ulrich et al., 2010). Patients' psycho-social health has been evaluated in terms of their sense of social support, family presence, sense of privacy or control and whether they felt emotionally stressed (Dijkstra et al., 2006; DuBose et al., 2018; Huisman et al., 2012; Laursen et al., 2014; Ulrich et al., 2010).

Several studies have shown the importance of family support spaces to encourage family presence to benefit patient recovery. Diverse family outcomes, in relation to healthcare building design, include psychological support, accessibility, and satisfaction with care (DuBose et al., 2018; Gharaveis et al., 2018; Huisman et al., 2012; Ulrich et al., 2010). However, the research on healthcare building design in relation to family outcomes has not yet been well developed (Ulrich et al., 2010).

In addition to the focus on patients, most other attention has been paid to the built environment and the health-related outcomes of staff members such physicians, nurses and other staff (Ulrich et al., 2010). Staff health outcomes include work performance (Gharaveis et al., 2018; Nimlyat & Kandar, 2015; Ulrich et al., 2010), satisfaction (Huisman et al., 2012; Nimlyat & Kandar, 2015; Ulrich et al., 2010), psychosocial health (Bosch & Lorusso, 2019; Ulrich et al., 2010), and organisational outcomes (Huisman et al., 2012; Nimlyat & Kandar, 2015; Ulrich et al., 2010). In general, more attention has been paid to the health outcomes of physicians than that of other staff (Ulrich et al., 2010).

Increased attention has also been given to the assessment of the healthcare built environment with regard to vulnerable user groups such as people with disabilities (Anåker, Koch, et al., 2017; Kurowski-Burt & Haddox, 2018; Nordin, McKee, Wijk, & Elf, 2017; Shannon et al., 2019), children or the elderly (Cerruti & Shepley, 2016; Chiou & Chen, 2009; Choi & Bosch, 2013), or individuals of low socio-economic status (Brittin et al., 2015). For

instance, Ganz et al. (2012) and Rousek and Hallbeck (2011) studied the role of healthcare building design in terms of wayfinding for people with visual disabilities. It seems that studies on vulnerable populations tend to focus on one specific vulnerable population and their specific needs and wants.

Limited studies have focused specifically on healthcare building design and local populations (Brittin et al., 2015; Gulwadi, Joseph, & Keller, 2009; Shepley & Song, 2014). For instance, Brittin et al. (2015) studied the factors that motivated low socioeconomic-status community members to use healthcare facilities. Davis (2011) notes that a hospital garden could also involve the community.

Ulrich's review revealed enormous knowledge development that has already contributed to better healthcare facilities that are less risky and stressful, offer better treatment for patients, and provide an improved workplace for staff (Ulrich et al., 2010). The review also indicated that most of the strong, evidence-based research has focused on patient outcomes while there has been much less trustworthy research on family, staff or organisational outcomes (Ulrich et al., 2010). Moreover, when considering the framework from a health promotion perspective, it seems that more attention has been paid to pathogenic rather than salutogenic approaches, and limited attention has been given to questions of empowerment population health, and vulnerable groups. Thus, while a tremendous amount of research has been conducted on healthcare building design, more attention is still needed on health promotion including salutogenic perspectives on health development as well as a focus on population health and an equity perspective.

2.7 Design knowledge for healthcare building design

The decision-making surrounding healthcare building design projects requires a broad set of knowledge. Preferably, design decisions should be based upon scientific evidence if it is available (Hamilton, 2016; Hamilton & Watkins, 2009; Lundin, 2015; Ulrich, 2012; Ulrich et al., 2010). However, healthcare building design is constantly evolving, which means evidence must be complemented with best-practices and the involvement of stakeholders.

IMPLEMENTING SCIENTIFIC STUDIES

Using evidence from scientific studies to make decisions about healthcare building design is often referred to as evidence-based design (EBD) or research-informed design (RID) (Stichler, 2016). EBD is more extensive and includes the following steps: setting design goals and expected outcomes based on the previous research, making a design proposal, building a design object, evaluating the designed object, and communicating the findings of that evaluation. RID is a part of EBD, and it refers to the first 3 steps using published research findings to guide design goals and develop solutions (Stichler, 2016). Still, RID as a term is not yet well established, and EBD is often used instead (Stichler, 2016). The problem is that some projects are then named EBD, which may be misleading as these do not involve evaluation of

design projects. This also makes them appear more 'scientific' than they are. Note that RID and EBD are not limited to healthcare buildings; all building projects can benefit from them (Dannenberg & Burpee, 2018). This also means that the results on HPBD from this thesis might be used in other contexts such as schools or offices. Moreover, neither EBD or RID provides clear solutions for complex design problems, and something that works in one context will not necessarily work in another (Shepley & Song, 2014). Instead, they are processes that are focused on collecting knowledge and making informed decisions in collaboration with an informed client (Hamilton & Watkins, 2009).

BEST-PRACTICE

Best-practice or reference projects can be described as projects with foundations in knowledge derived from building design solutions that are commonly accepted as good examples for other building projects. Best-practice projects are a popular way to study how others have solved design challenges. For example, a design team could learn from another hospital with regard to how they resolved a challenge with the ward layout or patient rooms. Best-practice can also be used in comparative studies that show the positive and negative consequences of certain design solutions. Best-practice can also be used in design conversations with clients to discuss diverse solutions or to identify the style of projects a design team wants to develop. This approach also relates to the next section.

INVOLVING STAKEHOLDERS

The involvement of stakeholders can support complex design processes (Carthey, 2020; Elf et al., 2015; Fröst, 2004), such as healthcare building design. The quality of a healthcare building design improves when stakeholders are involved in the design process (Elf et al., 2015; J. Eriksson et al., 2012; Fröst, 2004). Stakeholders of healthcare building projects can include the client (e.g., building owners) as well as general or specific patient populations, staff, relatives, or management. For instance, nursing staff can be asked to actively participate or co-develop the requirements of healthcare buildings. Effective stakeholder involvement (e.g., interdisciplinary collaboration) involves understanding each other's diverse abilities, decision making approaches, design-related priorities, and expectations (Carthey, 2020). Effective stakeholder involvement has been related to higher satisfaction with buildings (Carthey, 2019, 2020); it can uncover the diverse needs of the different building users (Bianchin & Heylighen, 2017; Heylighen, Van der Linden, & Van Steenwinkel, 2016; H. Persson, Åhman, Yngling, & Gulliksen, 2015) and empower those involved to influence the building design (Granath et al., 1996). Both the general involvement of stakeholders and the ability to empower them seem to overlap with health promotion goals. It is thus expected that HPBD could also benefit from stakeholder involvement in the design process.

Attention has recently been paid to the importance of supportive documentation, such as design briefs, for the building design process (Blyth & Worthington, 2001; Elf, Lindahl, & Anåker, 2018; Elf, Svedbo Engström, & Wijk, 2012; Ryd, 2004). Several studies have indicated the importance of design briefs for the quality of building design (Blyth & Worthington, 2001) and specifically that of healthcare buildings (Elf & Malmqvist, 2009; Elf et al., 2012; Ryd, 2004). It has been argued that design briefs that indicate clear design goals and link them to expected (health-related) outcomes can support the design of healthcare environments. A lack of clear design goals can also result in missed opportunities and reduced quality of healthcare buildings. The quality of healthcare buildings has been related to healthcare quality (Anåker, Heylighen, et al., 2017), and the incorporation of strategies for the built environment in the strategic documentation of a healthcare organisation can result in improved quality of care (Elf & Malmqvist, 2009; Elf et al., 2012). Therefore, both design briefs and healthcare strategies should address the relationship between healthcare building design and health-related outcomes to improve healthcare building design and healthcare quality. Based on the abovementioned research, it is suspected that the strategic documentation for HPH should also mention the built environment, and the design brief for the HPBD should also specify what is meant by HPH. However, no studies have focused on the design briefs of HPH nor on the incorporation of the built environment in HPH strategies.

2.8 Health-promotive healthcare building design

Several people involved in healthcare building design have begun to brand their buildings as salutogenic or health promotive (Golembiewski , 2017; Verderber, 2010). However, it has been argued that both health promotion and salutogenics design, when used by healthcare architects, seldom means more than 'intentions to create restorative environments by providing views to nature' (Golembiewski , 2017). Nevertheless, it is expected that the introduction of health promotion in healthcare organisations will lead to new demands for buildings. However, while the previous research indicates that healthcare building design can contribute to protecting health, preventing illness and disease, and supporting treatment, limited research has focused on healthcare building design and how it contributes to health promotion. In addition, it is expected that the introduction of health promotion will result in new demands for healthcare building design. There is also increasing research highlighting the importance of the built environment as a resource for health promotion and HPH. Nevertheless, few studies have actually focused on the role of the built environment for HPH. This thesis therefore explores health promotion in healthcare settings from a building design perspective, i.e., HPBD.

CHAPTER 3

SITUATIONAL CONTEXT – SWEDISH HEALTHCARE

3.1 Swedish health trends and challenges

It has been argued that Sweden, compared with other European countries, has a relatively well-functioning healthcare system (Anell, Glenngård, & Merkur, 2012). Life expectancy is high, and healthcare services perform well and are of good quality (Anell et al., 2012). However, similar to other European countries, in Sweden, there has been a decline in health equity (United Nations, 2017). In Gothenburg, the second largest city in Sweden, the average life expectancy of men varies by 9 years among different parts of the city (Lundqvist, 2014). For women, the average life expectancy varies by 7 years depending on the location in the city (Lundqvist, 2014).

Such health inequity is related to multiple factors including unequal availability of and access to healthcare services (Anell et al., 2012). For instance, the wait times to see a doctor have increased (Anell et al., 2012). The increased wait times are related to several factors. First, the ageing population has resulted in a larger proportion of people in need of care and fewer people who work. Moreover, the previous public health efforts have decreased communicable diseases, which are relatively short term. The majority of health problems are now non-communicable and are often chronic and preventable (Wilson et al., 2010). Another challenge for the current healthcare system is the disproportionate number of people visiting emergency departments who have very advanced health issues that could have been easily treated in primary healthcare (Anell et al., 2012). The Swedish healthcare system is thus faced with a range of complex health challenges.

The responsibility of Swedish healthcare is divided amongst the national, regional and municipal governments (Anell et al., 2012; Office for Clinical Studies, 2019). The national government establishes the principles, guidelines, regulations and overall political agenda of Swedish healthcare (Office for Clinical Studies, 2019). The 21 regions are responsible for making healthcare accessible for all citizens (Office for Clinical Studies, 2019). The 290 municipalities are responsible for the care of the elderly population and people with physical and mental disabilities. The municipalities are also responsible for providing support and services for people after their therapy or hospital stay and for providing healthcare at schools (Office for Clinical Studies, 2019).

This division has resulted in several healthcare services including national, regional, and primary healthcare (see Figure 8). National healthcare is highly specialised care that

is divided across seven university hospitals. A certain type of specialised care is available in a maximum of five of those hospitals (Office for Clinical Studies, 2019). These healthcare organisations work in close collaboration with education and research institutions. Regional care is provided in seven university hospitals in Sweden. Regional healthcare organisations have the skills and abilities to treat most areas of disease (Office for Clinical Studies, 2019). Healthcare is mostly inpatient care; however, it can also include outpatient services. Regional healthcare is offered in 60 regional hospitals. Primary care constitutes the majority of the healthcare services across the country. These services are usually an individual's first contact with healthcare, which might result in a referral to specialised care. There are over 1000 primary care services across the country.

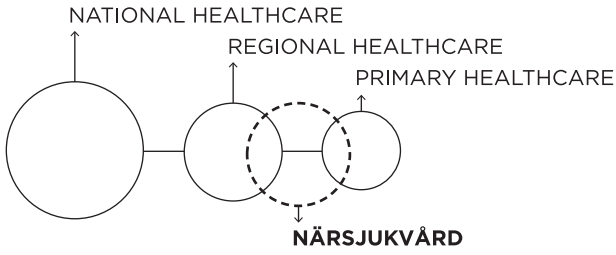

Figure 8. Diagrammatic visualisation of different healthcare organisations in Sweden

These healthcare organisations, which offer multiple services, have different organisational structures and sizes. This leads to diverse requirements for healthcare buildings. Most of these buildings are older than 30 years old and are in need of renovations due to changing building requirements and healthcare procedures (Lövtrup, 2011). Since these buildings are owned by the region or the municipality, the renovations require large investments of public tax money (Lövtrup, 2011). The need for these investments has led to a re-evaluation and discussion of the role of healthcare building design and new demands as a result of emerging healthcare models such as health promotion. Discussions about future healthcare buildings and the introduction of health promotion are still ongoing. At the same time, healthcare buildings are already being planned, designed and built (Alfredsson & Nordin, 2006; Linnarson & Ernstson, 2006; Miedema, Lindahl, & Elf, 2017).

SWEDISH HPH

The different healthcare organisations form a healthcare network around the country (H. Johansson et al., 2009). The Swedish Government proposed that the whole healthcare network should incorporate health promotion and disease prevention as important aspects of all care and treatment (H. Johansson et al., 2009; G. Persson & Johansson, 2002). Swedish healthcare organisations are currently considered to be front runners in health promotion development, and the majority of them brand themselves as HPH organisations.

HPH organisations are members of the Swedish HPH network (HFS-nätverket, 2014a) (see Figure 9). The network supports HPH organisations in their efforts to provide 'good and equal care' for all patients 'with respect for differences in needs, values and culture' (HFS-nätverket, 2017, 2018). The network focuses on four population groups: patients, the local population, employees, and management (HFS-nätverket & Karlsson, 2018).

National and international knowledge exchange is one of the networks' major strategies (Pelikan et al., 2011; WHO Europe, 2007). This exchange includes, for instance, organising HPH conferences to share information and experiences with HPH organisations in Sweden and other countries. The network also shares material that can support healthcare organisations to become HPH organisations, e.g., reports of different international conferences such as the Ottawa Charter (WHO, 1986a), Vienna Declaration (WHO, 1997) and Budapest HPH standards (WHO, 1991a). The HPH standards developed by the European Region indicate that creating HPH includes 'the creation of a health-promotive built environment' (WHO, 1991a, 2004). The Swedish network describes (HFS-nätverket, 2018) the creation of HPH as follows:

> *'Creation of the conditions for health-promotive meetings where the patient is strengthened in confidence in their own ability to manage their illness and improve their health and quality of life'.*

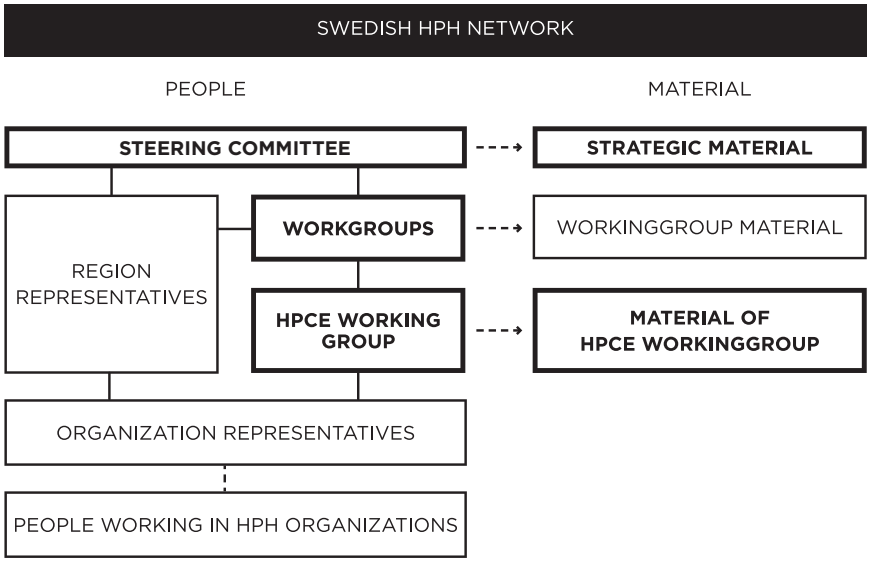

Figure 9. Diagram visualising the organisational structure of the Swedish HPH network

The members of the Swedish network pay an annual fee, write a health promotion strategic workplan and appoint a health promotion representative (HFS-nätverket, 2014a). Organisation representatives may take on different roles in the HPH network. Some are responsible for the communication between the HPH network and the HPH organisations in their region, e.g., region representative (n=21). Seven representatives are involved in the network's steering committee and are responsible for the everyday management of the network. Other representatives are involved in one of eleven workgroups such as health-promotive workplaces, health-promotive primary care or healthy diet workgroups. There is also a workgroup that focuses specifically on creating health-promotive (built) care environments (Mezei, Noorlind Brage, & Temagruppen Hälsofrämjande vårdmiljö, (unknown); Noorlind Brage, 2017).

HEALTH-PROMOTIVE CARE ENVIRONMENTS

The health-promotive care environment workgroup has observed 'the importance of internal and external environments as well as the benefits of care' (Noorlind Brage, 2017). The workgroup aims to collect and provide information to support the development of health-promotive care environments (HFS-nätverket & Karlsson, 2018). The material on the HPH built environment webpages includes photos, presentation material, literature, and links to additional literature, external webpages and websites.

3.2 Local healthcare (närvård)

The changes in the Swedish healthcare network, including the introduction of health promotion, have led to the introduction of a new healthcare approach, närvård. Närvård provides decentralised 'equal and accessible care' for the local community that is 'close' to their everyday lives (Linnarson & Ernstson, 2006; Olsson, 2009). Here, 'close' refers to healthcare services that are close in distance and time, economically accessible and tailored to local needs (Garcia-Barbero, 1998; Melin, 2012).

The development of närvård has also resulted in a new healthcare organisation: the närsjukhus. As närsjukhus as a typology is still developing, thus far, there are no clear definitions or guidelines. In general, these hospitals should address 80% of all local healthcare needs (Linnarson & Ernstson, 2006; Olsson, 2009). Närsjukhus can be characterised by (1) a holistic approach to healthcare that strives for continuity throughout life; (2) an emphasis on collaboration between the patient and primary, municipal, specialised and medical care; and (3) the implementation of a health promotion approach (Alfredsson & Nordin, 2006). Some Närsjukhus may include inpatient wards and overnight stays while others only have outpatient care.

3.3 Angered Närsjukhus

The new Närsjukhus in Angered, Gothenburg, was one the first hospital organisastions that planned to provide närvård (see also Figure 10). More importantly, it was the first building that was designed to facilitate närvård (Melin, 2012) and health promotion (Linnarson & Ernstson, 2006; Lövtrup, 2011; Norden, 2011). The project has received particular praise for

its participatory process with a focus on health promotion. The process involved regional and municipal representatives, an architectural firm, local community members and future users of the building (Norden, 2011). The participatory process helped the planning and design team understand local needs. The inhabitants of the greater Angered area, people working in the area, and politicians were important actors in engaging and empowering the community (Norden, 2011). Recurring meetings focused on the investigation of the different needs and wishes expressed by architects and other key actors such as department heads, representatives of patients and visitors, and inhabitants of Angered. These aspects made the Angered project an example of Närsjukhus as well as healthcare building design in general. Because it was the first building in this type, it received much attention from people involved in healthcare building design in Sweden and the Nordic countries. For instance, the Centre for Healthcare Architecture organised several study visits to the building site. They also included presentations about Angered's Närsjukhus in their professional and academic education. Regardless of the attention paid to the project, there have been no studies on the building design of this local HPH.

Figure 10. Photos Angered's Närsjukhus outside (photo by: Bert Leandersson)

The new building of Angered's Närsjukhus houses both primary and specialist care that is close to the local community. The design team designed one reception area for both types of healthcare services so that all visitors will know where to go (Norden, 2011; SWECO, 2017). The reception desk is designed for both standing and seated conversations (see Figure 11). There is a small LGTB+ flag to indicate the inclusive vision. There are screens between the reception desks that provide acoustic and visual privacy. From the reception, there is easy visual connection to the entrance, the stairs, the elevators, some waiting areas and the courtyard. There is also a visual aid on the floor to support wayfinding in the building.

The building also has a re-occurring pattern that is incorporated in the entrance cover, balcony glass, the back wall of the reception and the side walls near the elevators (see Figure 12). This pattern was the result of a design competition that allowed any one to enter, and the jury consisted of a mixed group of stakeholders including local inhabitants. The chosen pattern represents the surrounding nature and the little creek that runs through the forest.

Angered's Närsjukhus also has an educational kitchen for families to learn how to cook healthier meals (see Figure 13). There is a spiritual room designed to accommodate patients who follow Christianity, Judaism and Islam (see Figure 13). The stairs are located centrally in the building and is visible from the entrance and the main corridors (see Figure 14). The larger waiting areas are all positioned next to the courtyards. This positioning allows extra light into the waiting areas and the adjacent walkways. The waiting rooms all have a wall of health information and art as well as different types of furniture so people can choose where to sit. Both the waiting areas and examination rooms have been designed to fit more people so that patients can bring relatives or an interpreter. Moreover, the extra space allows for larger healthcare teams when multiple health issues are combined. Angered's Närsjukhus does not have an inpatient ward or an emergency department. There are, however, several operation and recovery rooms for scheduled treatments.

The building is designed so that the sizes of the departments can grow or shrink depending on the changing health demographics. The building structure is also designed to accommodate another floor when needed. The roof now contains solar cells to reduce the energy footprint of the building.

Figure 11. Photos of Angered Närsjukhus. Left; seating area for café and reception desk. Right; reception desk, elevator entrance and top of the stairs (photos by: Bert Leandersson)

Figure 12. Photos Angered's Närsjukhus. Left; pattern on entrance cover. Middle; pattern on balcony. Right; facade east (photos by: Bert Leandersson)

Figure 13. Photos of Angered's Närsjukhus. Left, middle; educational kitchen (photos by author). Right; spiritual room (photo by Bert Leandersson)

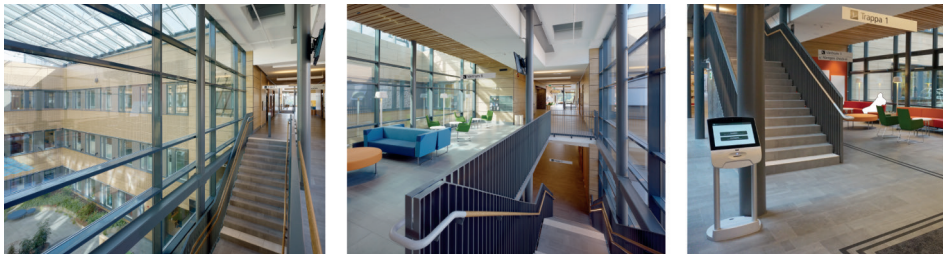

Figure 14. Photos of Angered's Närsjukhus. Left; stairs with view on courtyard. Middle; stairs and waiting room. Right; stairs visible from entrance

CHAPTER 4

AIM

The overarching aim of the thesis was to gain knowledge about diverse perspectives on health promotion in healthcare settings from a building design perspective, i.e., the exploration of HPBD. The generated knowledge may contribute to discussions about the role of healthcare building design to support HPH and thereby the development of HPBD.

4.1 Specific aims

The diverse studies focused on perspectives found in literature, design practice, HPH network, and in HPH organisation. The specific aims per study translated into the following questions;

- How was health promotion conceptualised in relation to healthcare building design? (study 1 and 2)
- How was the built environments conceptualised in relation to health promotion in healtcare settings? (study 3&4)

CHAPTER 5

METHODOLOGY

5.1 Research design

The thesis is based on four studies (see appendix). To achieve the aim of the thesis, an explorative, cross-sectional, multi-method design was applied, which included quantitative and qualitative methods. A scoping review, document analysis, interviews and administered questionnaires were used for the data collection. An overview of the studies is presented in Figure 15.

Aim	Exploring conceptualisations of health promotion in healthcare building design		Exploring conceptualisations of the built environment as used in relation to health promotive	
Research question	How was health promotion conceptualised in relation to healthcare building design?		How was the built environment conceptualised in relation to health promotion in healthcare?	
Multi-perspective	Literature	Design practice	HPH network	HPH organisation
Study	Study 1	Study 2	Study 3	Study 4
Data collection	Literature from • 4 data bases • 3 journals • 14 papers	• Semi-structured interviews (n=11)	• Strategic material (n=5) • HPCE working group material (n=13) • Semi-structured interviews (n=3) • Survey (n=11)	• Survey (n=22) • Semi-structured interview (n=1)
Data analysis	Scoping review	Thematic content analysis	Selected document analysis & content analysis	Thematic content analysis & descriptive statistics
Result	Paper 1	Paper 2	Paper 3	Paper 4

Figure 15. Schematic overview of the research included in the thesis

EXPLORATIVE RESEARCH

This thesis adopted an explorative research approach, which is appropriate for areas and phenomena that are new and underdeveloped (Babbie, 2016) such as the research in HPBD. The explorative design can support researchers to become familiar with a new subject (Babbie, 2016) without a pre-set theoretical framework. The design may not lead to strong statements

about the relationships between variables due to small samples (Jaeger & Halliday, 1998). Instead, the strategy is used to understand problems, map the context and create new insights as I have done in my doctoral work.

MULTI-PERSPECTIVE APPROACH

The fundamental principle of the thesis is the use of a multi-perspective approach. A multi-perspective approach has been identified as a promising approach to studying complex social systems (Courtney, 2001; Mitroff & Linstone, 1993; Turpin et al., 2009). Thus, a multi-perspective approach is particularly useful for complex issues without an existing solution (Mitroff & Linstone, 1993; Turpin et al., 2009) such as the introduction of health promotion in healthcare organisations and the expected changing demands for healthcare building design. The thesis explored four perspectives that relate to the built environment, health promotion and the healthcare setting to provide a diverse and broad understanding of HPBD:

- A literature perspective, i.e., the perspective found in literature on healthcare building design (study 1)
- A practice perspective, i.e., the perspectives of those involved in the design process of Angered's Närsjukhus (study 2)
- A network perspective, i.e., perspectives as found in the Swedish HPH network (study 3)
- A healthcare organisation perspective, i.e., the perspectives of the representatives from the Swedish HPH organisation (study 4).

The combination of all the studies and their different approaches allowed for the triangulation of the results and the recognition of larger patterns (Groat & Wang, 2013).

The first step of my work was to perform a review of the health promotion and healthcare building design literature. The purpose of the literature study was to help me to obtain a general idea of what had been written about health promotion in relation to outpatient healthcare building design. The review provided background for the rest of the studies. A scoping review method was chosen as it is can be used to examine a wide range of literature addressing the central concepts when a subject is still vague (Arksey & O'Malley, 2005). A scoping review aims to summarise the relevant fields of study, identify research gaps in the existing literature, and clarify working definitions and/or conceptual boundaries (Arksey & O'Malley, 2005; Pham et al., 2016).

The next step was to study how the concept of health promotion was used by those who were involved in a design project with the goal of designing a health-promotive hospital. The specific building project was a good example of healthcare building design in an area that needed a focus on health promotion. A perspective from an ongoing project supplemented the knowledge and discussion of the concept of health promotion that I had found in the literature. The design project was also timely as the building was almost finalised and the

people who had been involved in the building project were willing to contribute to the study. This made it possible to interview those involved in the process even before the official opening of the building. The interviews could therefore focus on what they expected of the building design, i.e., the design goals. Interviews can be a useful research approach to explore perspectives that would otherwise remain inaccessible such as people's subjective experiences and attitudes (Peräkyla & Ruusuvuori, 2013). A semi-structured approach is particularly useful when a subject is still underdeveloped, and an interview can therefore focus on a participant's knowledge (Flick, 2014).

The third study focused on the Swedish HPH network and how this network, via its published documents, and those engaged in the network described and presented the built environment. The HPH network is an important stakeholder in the development of HPH in Sweden, and therefore, network actors should be familiar with HPBD. This characteristic makes them important informants in the study of HPBD. The study was mainly based on analyses of the network's published documents. Although documents should not be seen as static or stable, the documents can be considered a reflection of the HPH network and its actions as these documents are part of its actions (Prior, 2003). Therefore, to trace the institutional or everyday processes of the HPH network, I analysed records that were developed to support everyday practices in the network (Bowen, 2009; Flick, 2014). To complement the document analysis, I surveyed the main representatives of the HPH network workgroups and interviewed three members of the HPCE workgroup. I chose to survey workgroup representatives because they could give insight into whether and how these themed workgroups worked with the built environment. The interviews with the HPCE workgroups focused specifically on their work on HPBD in the hospitals and in collaboration within the network to obtain a deeper understanding of how they related the built environment to HPH.

The last study focused on the practices of HPH organisations in Sweden in describing and presenting the built environment. Understanding whether and how representatives who were responsible for developing HPH and health-promotive environments described the role of the built environment was important for the work of this thesis. I expected that these HPH representatives would have suggestions about how the built environment could be designed to be health-promotive. This study used data from a survey of regional representatives of HPH organisations in Sweden and semi-structured interviews with members from the steering committee.

CHAPTER 6

METHOD

6.1 The study settings

ANGERED'S NÄRSJUKHUS (STUDY 2)

The study of design practice was performed with actors involved in the design project of a Närsjukhus in Angered, a neighbourhood in Gothenburg, Sweden. This project was chosen because it was considered to be a precedent and an example for future hospital development in Sweden. This hospital was one of the first hospitals that was designed and built to be health-promotive, combining primary and specialised care with special attention to the reduction of health inequality between population groups (Lundquist, 2014, Olsson, 2009). Moreover, at the time of the investigation, the hospital was still under construction, which allowed me to study expectations rather than actual end results. Additionally, because the project was in the early stages, a follow-up study would be possible.

HPH NETWORK (STUDY 3)

The third study was conducted in the Swedish HPH network. The network is represented by its public website, which includes published documentation and information on the steering committee and thirteen workgroups. The focuses of the workgroups include alcohol prevention, physical activity, a health-promotive workplace, a health-promotive approach, health-promotive primary care, a health-promotive care environment (HPCE), eating habits, patient-reported outcome measures, mental health, targeted health talks, tobacco prevention, and mission/follow-up (evaluation of HPH strategy goals) (HFS-nätverket, 2014b). The HPCE workgroup focuses on the built environment (Noorlind Brage, 2017) and HPBD. Figure 9 on page 28 illustrates the structure of the Swedish HPH network and the data sources used in the study.

HPH ORGANISATION (STUDY 4)

Study 4 was performed within the context of HPH organisations in Sweden. The healthcare organisations are represented through their regional HPH representatives and members of the steering committee of the HPH network. The regional representative works in health promotion in Swedish HPH organisations and represents all the organisations in the region. The steering committee consists of people who also work at HPH organisations. However, as the members of the steering committee are responsible for the communication between the HPH organisations and the network, they were asked to provide their reflections and

explanations on the use of supportive HPH documentation, the interpretation of HPH and the perceived role of the built environment for HPH.

6.2 Participants

Diverse participants were selected to be involved in the different studies. All of them can be defined as 'good informants', which means that they were expected to be knowledgeable about the subject of the study, provide detailed information, and be able and willing to talk (Morse, 1998).

For study 2, nine participants who were involved in either the planning or building design for Angered's Närsjukhus were selected. These participants were expected to be familiar with the goals of the Angered's Närsjukhus organisation and how these goals were related to the building design of the hospital. The informants were identified in planning and design documentation or were introduced by other informants. One informant contacted us after hearing about our study. The sample included 4 men and 5 women. More specifically, the group consisted of an expert on public health and health inequalities in Gothenburg; an initial planning architect; the architect responsible for the final design; the project leader; and the director of the new healthcare organisation, marketing and heads of care departments.

Study 3 included 11 participants for the survey and three participants for the following interviews. The survey participants were the main representatives from the HPH network's thematic workgroups. All main representatives (n=13) of the network were contacted by phone before participation, and eleven responded to the survey. Regarding their professional backgrounds, they were in health and nursing (n=8), physiotherapy (n=4), public health (n=3), management (n=1) and health administration (n=1). The participants were expected to know the most about the work within their respective workgroups. For the interviews, three members of the HPCE workgroup were chosen for specific purposes. One member was chosen for being the main representative of the workgroup, one member was chosen for being known for the research in healthcare building design, and one member was proposed by the main HPCE workgroup representative. They had professional backgrounds in physiotherapy, nursing and public health.

In study 4, 17 participants completed the survey, and two participants were interviewed. The survey participants were the regional representatives of the HPH organisation; they worked with health promotion in the HPH organisation and represented their region in the Swedish HPH network. They were recruited from the 22 regions in Sweden and had different backgrounds including health and nursing (n=8), physiotherapy (n=4), public health (n=3) and management or administration (n=2). They were recruited for the study because they were supposed to have an overall view of what occurs in the organisations within their region. The survey was intended to obtain insights into their interpretations of the role of the built environment as understood in Swedish HPHs. Their names and contact information were assembled from the Swedish HPH network website.

Two of the seven HPH network committee members participated in the interviews in study 4. These committee members were responsible for contact between the different HPH networks and the HPH organisations. The committee supported the development of health

promotion strategies and were expected to have knowledge of how the built environment was included as an aspect in HPH strategies. The committee members received the survey data prior to the hour-long online interview to allowed them to reflect on the answers.

6.3 Data collection

The data collected in the included studies consisted of both first-hand (surveys and interviews) and second-hand (literature and documents) data. The combination of first-hand and second-hand data allowed an analysis of the differences in perspectives as found in theory and practice. The data for the different studies were all collected by the research team between September 2014 and November 2018.

LITERATURE REVIEW

The scoping review in study 1 consisted of 5 iterative phases according to Arksey and O'Malley (2005) method:

- Identifying the research question
- Identifying relevant studies
- Selecting certain studies
- Extracting the data
- Collating, summarising and reporting the results

The literature search was based on several parameters including the choice of database and journals, the search terms and selection criteria. The literature was collected from four scientific databases (Web of Science, Scopus, ProQuest and MedLine), and hand searching was performed in three journals (Health Environments Research & Design, Health Promotion International and Health & Place). These databases were chosen after discussions with the research team and the librarians of Chalmers University of Technology. The chosen databases and journals included articles from various disciplines to represent the cross-disciplinary nature of the study. For instance, the PubMed database focuses on medical and health science research while Scopus and Web of Science have broader scopes. Health Environments Research & Design and Health & Place are journals that combine health aspects and the built environment. Both journals were hand-searched, i.e., all issues were scanned from cover to cover. Health Promotion International was added after the initial title search in the databases as many titles found in the first search were from that journal.

A set of keywords was developed (health promotion, healthcare facility and architecture) based on the prior knowledge of the research team and conversations with the librarians (see Table 2). I chose to limit the search to outpatient facilities for two reasons. First, the pilot search indicated that a broader scope would be overarching, and I had to narrow down the search. Then, I thought that outpatient facilities might place more attention on health promotion as outpatient

facilities have patients who do not require constant care. The keywords were supplemented with similar terms (see Table 2). These additional terms came either from MeSH term listings or from background knowledge of health promotion or healthcare building design.

TABLE 2. OVERVIEW OF SEARCH TERMS

'Health promotion'	'Healthcare facility*'	'Built environment'
Salutogenics	'Health facilit*'	Architecture
'Universal design'	'Ambulatory care facilit*'	'Physical environment'
Wellbeing	'Health cent*'	'Facility design'
Wellness	'Community health cent*'	'Building design'
	'Outpatient facility'	

Several search strings were developed from the keywords. Initially, I tested one search string combining all keywords (search string 1, Table 3). However, this provided only seven titles, with only one paper fitting the criteria. As a result, the initial search string was split into three search strings, combining two keywords at a time: 'health promotion and architecture' (search 2a), 'healthcare facility and architecture' (search string 2b), and 'health promotion and healthcare facility' (search string2c). The precise writing of the search string was adapted to the specific database and applied to title, keywords and abstract.

TABLE 3. SEARCH STRATEGIES

Initial search: Health promotion AND Architecture AND Healthcare Facility	('Health promotion' or salutogenics or 'universal design' or wellbeing or wellness) and (architecture or 'built environment' or 'physical environment' or 'facility design' or 'building design') and ('healthcare facility*' or 'health facilit*' or 'ambulatory care facilit*' or 'community health cent*' or 'outpatient facility')
Search string 1: Health promotion AND Architecture	('Health promotion' or salutogenics or 'universal design' or wellbeing or wellness) and (architecture or 'built environment' or 'physical environment' or 'facility design' or 'building design')
Search string 2: Health promotion AND Healthcare Facility	('Health promotion' or salutogenics or 'universal design' or wellbeing or wellness) and ('healthcare facility*' or 'health facilit*' or 'ambulatory care facilit*' or 'community health cent*' or 'outpatient facility')
Search string 3: Architecture AND Healthcare Facility	(Architecture or 'built environment' or 'physical environment' or 'facility design' or 'building design') and ('healthcare facility*' or 'health facilit*' or 'ambulatory care facilit*' or 'community health cent*' or 'outpatient facility')

In the search queries, I specified that articles should be written in English and be published between 2005 and 2015. To provide a scientific base of the literature, newspaper articles were excluded. Full dissertations were also excluded.

All identified titles were entered into a digital reference manager (EndNote). The titles were checked for duplicates. All remaining titles (n=4506) were exported to one database with the following information: (1) author, (2) year, (3) title, (4) keywords, and (5) abstract.

According to the search strategy, all three main keywords should be referenced in the titles to be included. However, the first title search was inclusive rather than exclusive to avoid the exclusion of papers due to ambiguous titles. Therefore, I selected all titles that included two or three of the keywords (health promotion, healthcare facility and architecture). This resulted in 615 abstracts for review, of which 160 referenced all three keywords (see Figure 16). The reading of the full texts resulted in 36 papers to be discussed among the research team to determine whether they should be included in the study. Finally, 14 papers were selected for inclusion. The whole selection process was documented to ensure methodological rigour.

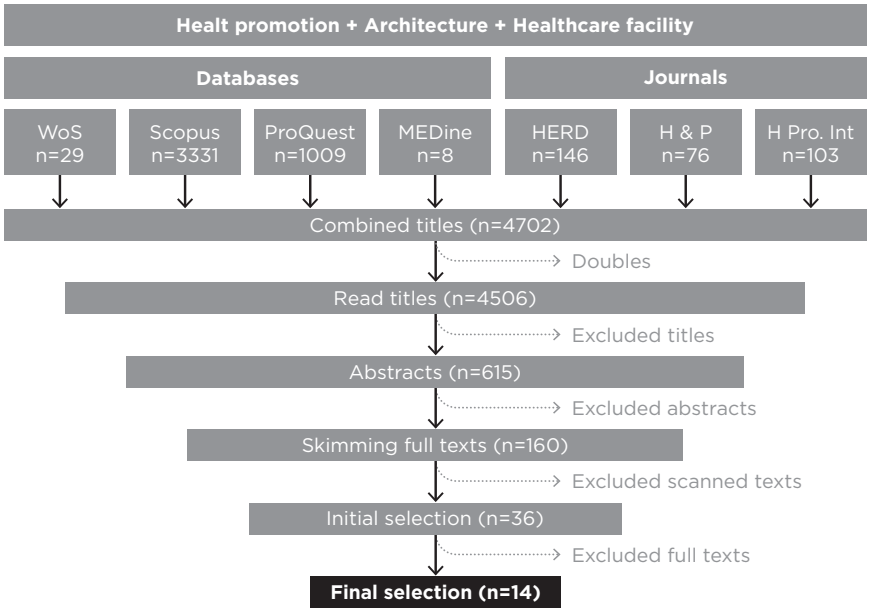

Figure 16. Overview of the selection process of the scoping review (originally developed for Miedema et al., 2019)

The data were extracted from the 14 papers and compiled in one table that included (1) source information, (2) topic, (3), method, (4) descriptions related to health promotion, and (5) descriptions related to HPBD.

SEMI-STRUCTURED INTERVIEWS

Semi-structured interviews were used to collect the data in studies 2, 3, and 4. According to the semi-structured approach, several themes and questions were prepared, and the conversation could follow emerging topics (Flick, 2014). All participants were provided written and verbal information about the studies before the interview. The participants were notified that they could stop the interview at any time. After consent was obtained from the participants, the interviews were audio recorded and then transcribed. The interview venues were chosen by the participants; some participants chose to meet in their old or new office, my office at the university or even to be interviewed by phone.

In study 2, the data were collected through semi-structured interviews with participants who were involved in the planning and design project of Angered's Närsjukhus (see page 29). An interview guide included questions related to building aspects and health-promotive aspects. To obtain a broader understanding of the project, these questions were not limited to the building or the built environment. Rather, they referenced topics such as the participant's role in building design planning and design, the challenges and opportunities of the new building, and what the participant expected as outcomes. The interviews were held just before the opening of Angered's Närsjukhus in August 2015.

The individual semi-structured interviews with the HPCE workgroup representatives (study 3) focused on the role of the built environment in relation to health promotion. The questions addressed the overall goals of the HPCE workgroup, the participant's interpretation of HPBD, his or her involvement in building projects, and his or her collaboration with other groups within the HPH network. The interviews were conducted either face-to-face in a common familiar setting or over the phone. The respondents could answer in either Swedish or English. All the interviews were audio recorded with permission and transcribed.

For study 4, two members of the HPH network steering committee were interviewed. The interviews were based on the participant's answers to the survey that was conducted prior to the interview. For example, the respondents reflected on why supportive documents, such as the HPH standards and the letter of intent, were not used in the HPH organisations. The respondents were also asked to reflect on the built environment as a factor for HPH.

SURVEY

Online surveys were used to collect the data in studies 3 and 4, for which the participants received an email with a link to the survey website. All surveys were administered in Microsoft Forms in line with the GDPR.

The survey for study 3 was developed to assess how the workgroups in the network described the built environment in relation to their health promotion work. The survey included the following open-ended questions:

- What are the main strategies of the workgroup?
- What hospital interventions are developed in the workgroup?
- In what way does the work in the theme relate to the built environment?
- In what way might the built environment hinder health promotion?
- In what way might the built environment support health promotion?

Table 4. List of survey questions for the HPH organisation representatives (study 4)

HPH
How would you define an HPH?
What makes the HPH health-promotive?
What does it mean to be a member of the Swedish HPH network?
HPH documentation
Are you familiar with the letter of intent?
Are you familiar with the content of the letter of intent?
In what way do you base your work on these intentions stated in the letter of intent?
Are you familiar with the European HPH standards?
Are you familiar with the content of the European HPH standards?
In what way do you base your work on these intentions stated in the European HPH standards?
Built environment
Do you think the design of the HPH relates to the success of health promotion?
In what way do you integrate aspects of the built environment in your health promotion aims and strategies?
If you would be part of a project to (re-)design a complete healthcare facility,
- What building design would limit health promotion?
- What building design would support health promotion?
Involvement in building project
Are you involved with building projects within your organisation?
Are there other HPH representatives involved in building projects within your organisation?
If you are engaged in a building project, is it as part of your role as HPH representative?
Do you have people who are working with the health-promotive building environment continuously?

In study 4, an online survey was also used to collect both quantitative and qualitative data to obtain a better understanding of the respondents' answers. The survey developed for the study included questions about topics such as HPH network members' understandings of the meaning of HPH network membership, the meaning and content of the letter of intent and European HPH network standards, as well as the built environment (Table 4). All survey responses were compiled in a table and used as the basis for follow-up interviews with the committee members.

DOCUMENTS

Document data were used in study 3. The material, including 279 webpages and 198 linked documents, was retrieved from the HPH network's website as it was available for download. The study did not include informal documentation such as notes, email threads, or case records.

The HPH website was searched for documentation related to (a) overall HPH strategies and visions of the HPH network and (b) documentation shared by the HPCE workgroup. The material included webpages with texts and images; links to external webpages and entire websites; and links to documentation such as newsletters, presentations, reports, standards, planning and strategic material, photos and video clips. This material was then skimmed for descriptions of the built environment, e.g., the setting, physical environment, design, architecture, or building design. All documents were scanned and selected if they described aspects of the built environment such architectural or interior design features (see page 20). The selected documents (n=18) were then read in-depth, and the 'meaningful text units' were extracted from the documents by the research team. Meaningful text units refer to parts of a text that are relevant to a study, in this case, parts describing some aspects of the built environment. The extracted data were used to create an Excel template that mapped (a) the data sources and (b) the selected original meaning units.

6.4 Data analysis

Throughout the thesis project, the data have been analysed in multiple ways, including thematic content analysis, selected document analysis and descriptive statistics. All analysis methods had iterative phases.

THEMATIC CONTENT ANALYSIS

A thematic content analysis, based on Erlingsson and Brysiewicz (2017), was used in all studies. This allowed to precisely transcribe the verbal language, or written material, to identify underlying categories and develop a structured and concise overview of the key findings and categories (Erlingsson & Brysiewicz, 2017). Content analysis is useful when examining patterns and trends in documents (Stemler, 2001) and can be performed without a theoretical framework to guide coding and categorisation (Hsieh & Shannon, 2005). The content analysis according to Charmaz (2014) consisted of several stages. First, I read and re-read all material to familiarise myself with the data and to gain an understanding of the

topics addressed. I then divided the text material into smaller comprehensible fragments, e.g., 'meaning units' (Graneheim & Lundman, 2004). I then summarised and shortened these meaning units to develop 'condensed meaning units' that still included the original meaning of the text fragments. I then coded and categorised these condensed texts.

SELECTED DOCUMENT ANALYSIS

Selected document analysis was used in study 3 with selected documents from the HPH network. In general, document analysis combines aspects of content analysis and thematic analysis (Bowen, 2009). In contrast to content analysis, document analysis uses mostly secondary data (Bowen, 2009) such as webpages, presentation material, planning documents, strategic plans, reports and newsletters. Selected document analysis is a type of document analysis that allows the selection of material that will be included and the text fragments that will be analysed (Bowen, 2009). Document analysis was helpful for study 3 as no predefined framework is required. Document analysis is instead intended to pinpoint important text sections (e.g., meaning units), key themes, and different meanings of textual material through the reading and re-reading of material. Document analysis was useful in providing the background and context of the HPH network. Since document analysis should be combined with other methods to provide a more complete interpretation (Bowen, 2009; Hodder, 2012; Yin, 1994), document analysis was used to verify other findings from other data sources such as interviews and surveys (Bowen, 2009).

I followed the selected document analysis procedure as described by (Bowen, 2009) for finding, selecting, appraising (making sense of), and synthesising the data contained in documents. Thus, the research team first focused on finding all documents from the whole HPH website that were related to the HPH network strategy and the HPCE workgroup, which allowed us to quickly narrow down the material that concerned aspects of the built environment rather than analysing all material used within the organisation. These documents were then scanned for descriptions of aspects of the built environment such as 'layout' or 'building'. Only the documents that addressed some aspects of the built environment were selected for further analysis, and the text sections related to aspects of the built environment were extracted into one table that listed (1) the webpage where the document was found, (2) the original name of the document, and (3) the selected text units. The text units were then translated into English and reduced to shorter coherent texts (see Table 5). These condensed units were then read, re-read, and structured into major and subcategories.

TABLE 5. EXAMPLE OF THE DATA ANALYSIS PROCESS, FROM THE ORIGINAL SWEDISH MEANING UNIT, TO TRANSLATED MEANING UNIT, TO THE CONDENSED MEANING UNIT, AND THEN TO THE MAIN CATEGORY

Data source	Original (Swedish) meaning unit	Translated meaning unit (case example)	Condensed meaning unit (case example)
HPCE workgroup documents	'Planlösningar som ökar personalens effektivitet, tid för patientvård och patientsäkerheten'	Planning solutions that increase staff efficiency, time for patient care and patient safety	Plan solutions increase staff efficiency, time for patient care and patient safety

DESCRIPTIVE STATISTICS

The study of the organisational perspective of the built environment for health promotion included the use of descriptive statistics. Descriptive statistics were chosen to summarise quantitative data and provide a description of the sample of a study (Fisher & Marshall, 2009; Thompson, 2009). Moreover, I used descriptive statistics to visualise the distribution of answers rather than explain causalities (Fisher & Marshall, 2009).

The research included both nominal and ordinal data. For instance, yes/no answers were sorted and counted (nominal). Then, I categorised the data related to value statements (ordinal), such as questions with Likert scales (e.g., the extent to which the participants thought the design of the HPH was related to the success of health promotion), into hierarchical groups. Based on these categories and groups, the relationships between the answers emerged. For instance, the participants expressed the extent to which they thought that the built environment could support or hinder the success of health promotion in healthcare facilities on a 5-point Likert scale. The Likert scale allows participants to rate the extent to which they agree or disagree with a certain statement, e.g., strongly agree, agree, neutral, disagree, or strongly disagree (Joshi, Kale, Chandel, & Pal, 2015). The use of a Likert scale allowed us to group the qualitative data related to the statements (Joshi et al., 2015). In study 4, the descriptive statistics were primarily intended to provide the general context of the study sample.

6.5 Ethical considerations

The empirical studies were conducted based on the ethical principles described in the Declaration of Helsinki on medical research involving people (World Medical Association, 2001). Therefore, the research described in the thesis respected the health and wellbeing of all people involved and aimed to minimise potential harm or discomfort for the participants (World Medical Association, 2001). Most empirical research is associated with discomfort at some level for participants; however, the potential risk varies between projects. The included studies did not involve patients; instead, the studies included participants who were recruited based on their professional roles as experts on the subject. Because of their roles, they were less vulnerable than patients in other medical research, and the studies therefore did not involve

an application for ethical approval. Regardless, the participants were asked to spend their time on the research study without compensation and thus to experience some sort of discomfort. All study participants were informed that they could stop the interview at any time.

The Declaration of Helsinki notes that precautions must be taken to protect the privacy of research, and according to the GDPR stipulations on privacy, the studies performed after the introduction of the new law were fully anonymised. Thus, all personal and organisational data were removed from both the articles, the thesis and the data. During the survey, the collected data were not linked to email addresses or to the names of the respondents or organisations. However, all the names and personal data of those contacted are known by the researchers involved and are archived in analogue versions of the data. The participants were asked for permission to audio record the interviews and were notified that the data would be used only for the particular study.

Health promotion is about the empowerment of (vulnerable) individuals and communities (Office of the UN & High Commissioner for Human Rights, 2007; WHO, 1986a, 2000). Some may argue that health promotion research should also be empowering itself and should involve vulnerable communities (Allison & Rootman, 1996; Koelen MA, Vaandrager L, & C, 2011). For instance, a participatory-action research approach that involves different stakeholders, including vulnerable communities, could have co-created research questions, collected data, analysed work and written up the findings (Allison & Rootman, 1996; Koelen MA et al., 2011). This approach may have led to different results in terms of knowledge development for those involved. In hindsight, this approach might have been possible to some extent, for instance, by asking those in the Angered's Närsjukhus project what they would have liked to know. However, at the time, it seemed there was little time to conduct the research in that manner, and I still suspected that the knowledge in this domain had already been more developed.

While the study includes multiple perspectives from different domains, in this thesis, I did not focus on community or patient perspectives. Nevertheless, I asked the professionals who participated my research about how they related to the community and patients. However, in the future, researchers might want to include interviews with patients and the surrounding community.

CHAPTER 7

SUMMARY OF THE FINDINGS

7.1 Conceptualisation of health promotion in relation to healthcare building design

The results from the studies found that several aspects of health promotion were addressed. The interpretations of health promotion differed among the studies and within the studies. The results showed few explicit definitions for health promotion, various health-promotive perspectives and different target populations.

DEFINITIONS OF HEALTH PROMOTION

The studies found four explicit definitions for health promotion. Two definitions were found in the literature review:

> *'Health promotion as a focus on long-term population health in addition to individual health, with an understanding of the similarities and differences amongst local ethnic groups' (Brittin et al., 2015).*
>
> *'Health promotion [for older people] as the opportunity and ability to control (deterrents to) health as an essential part of human dignity and integrity throughout life' (Chiou & Chen, 2009).*

Some documentation of the HPH network did refer to the definition set by the WHO (1986a):

> *'The process of enabling people to increase control over and to improve their health [in which] health is a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity'*

The HPH network does provide a definition of HPH:

> *'... all patients should receive good and equal care with respect to differences in needs, values and culture' (HFS-nätverket, 2018).*

The other study material may have used health promotion, or related to aspects of health promotion, but did not provide a clear definition.

The studies showed several re-occurring and overlapping perspectives of health promotion. These health-promotive perspectives were related to either wellbeing, healthy behaviour, health equity, empowerment, or health protection, illness prevention, restoration, and cure.

These health-promotive perspectives represent diverse focal points that were also combined. The literature study mainly related to wellbeing and salutogenics as well as to healthy behaviours and health equity. The practice study mainly focused on healthy behaviours, health education and prevention, and accessibly and health equity. Both HPH studies also paid attention to cure, protection and restoration while neither of them related to salutogenics.

Wellbeing – The wellbeing perspective focused on the enhancement of individual health and represents a holistic view of health. The wellbeing perspective was referenced in terms of health enhancement, fitness, wellness, salutogenics, psychosocial health, health-orientation, and wellbeing. These terms were also used interchangeably. This positive health perspective was found in the literature, network and organisation perspectives while not explicitly in design practice of Angered's Närsjukhus. For instance, a paper included in the review described that a salutogenic approach creates an architecture that serves the needs of mental health patients as well as their sense of coherence, mental wellbeing and recovery (Golembiewski , 2010). An HPCE representative in the network study described the following:

> *"... a health promotive environment is where you have positive distraction, where you feel well, not anxious, not stressful, it should promote wellbeing when you visit the hospital ..."*

A participant in the organisation study described the need for a health-orientation while another described human-centred approach instead of a disease focus.

Healthy behaviour – The healthy behaviour perspective emphasised stimulating healthy behaviours such as physical activity, social interaction, and healthy nutrition. The healthy behaviour perspective was found in all of the studies. In particular, the topic of physical activity, such as taking the stairs and increasing walking or cycling, emerged in multiple studies. For instance, a participant in the practice study noted that:

> *"... the building design makes you see the staircase first; the elevators are actually a bit further away. It is a way to encourage people to actually engage and walk the steps rather than taking the elevator".*

While less attention was given to social interaction, in comparison to physical activity, it was described in all studies. Social interaction could refer to interactions among multiple staff members, staff and patients, or patients and family. For instance, the review included a paper that noted the importance of the floorplan and physical layout of the nursing unit to support nurse communication and social support (Trzpuc & Martin, 2011). In the network study, a

document described that a single patient room can improve communication between staff and patient. A participant in the practice study mentioned that the size of the waiting and examination rooms was expanded to allow patients to bring an interpreter and/or a relative. In the study on the organisations, a survey participant stated that a health promotive hospital should support human encounters.

Healthy nutrition was only found in studies 2 and 3. Multiple participants in the practice study stated that Angered's Närsjukhus includes a teaching kitchen for families to learn how to cook healthier food. One added that the co-location of diverse care disciplines allows for collaboration between dietarians and other medical staff. A document shared by the HPH network described that both eating and cooking environments should be attractive.

Health equity – The health equity perspective focused on reducing unjust health differences. While neither health equity nor health equality were mentioned in the studies, there were descriptions related to accessibility, vulnerable populations and the diverse needs found in all of them. For instance, a participant of study 2 stated the following:

> *"... the environment must be accessible to all".*

Accessibility could refer to economic accessibility, information access, the availability of health services, opening hours, physical accessibility and cultural accessibility. Physical accessibility in particular received much attention, indicating the availability of elevators for wheelchair users, distances within the building, routes to the healthcare facility and closed doors. Cultural accessibility, e.g., the need to consider the local and cultural context when designing healthcare facilities (Shepley & Song, 2014), was addressed in the literature, project and organisation studies. Rousek & Hallbeck (2011) address the question of accessibility for visually impaired visitors and refer to accessible design that:

> *'... meet[s] the needs of visually impaired or blind people and take[s] into consideration the principles of independence, dignity, and safety'.*

Health equity was most dominant in the design practice study followed by the healthcare literature study. In the HPH organisation study there were two participants who addressed accessibility, one relating to access to the outside and another to "... access to generous stairs (...) for those who can use them". The HPH network did not have any data on equity or vulnerable groups in relation to the built environment.

Empowerment – The empowerment perspective relates to the participation of individuals and population, particularly with regard to partaking in their own health development. The empowerment perspective was described in terms of autonomy, pro-active behaviour, activation, (self-) control, participation, increased ownership, pride, and an improved understanding of specific needs and values of the local community. All of the studies describe such aspects of empowerment. Empowerment was particularly described in relation to

participation in the design process. Such collaborative design aimed to empower the local community, increased ownership or pride of the building, and improved understanding of specific needs and values of the local community. Multiple participants in the study on Angered's Närsjukhus mentioned the importance of a participatory design process. For instance, one participant in the practice study argued that the design process was aimed at giving a voice to the local stakeholders. Another participant described that the design process:

> *"... focused on the needs of people there [by] involving staff who could describe quite well the situation of the people living in Angered ..."*

Ownership was also described by a participant in the practice study as follows:

> *"... the hospital should be owned by local population and staff, [and it should] therefore [provide] accessible public functions at [the] entrance level ..."*

The HPH network study describes stimulating pro-active behaviour such as self-control and the ability to research health information, especially when people are waiting. For instance, one of the interview participants expressed the following:

> *"... [an HPH] is an environment [in which] people don't feel like patients, where they are empowered ..."*

A similar notion was also expressed by a survey respondent in the organisation study who argued that the patient should be a co-producer of their own health. The respondent later replies that patients and staff should be asked what their needs are in the healthcare built environment.

Health protection – Health protection refers to the protection of human health. Health protection comprises concepts such as safety and contamination. Safety-related outcomes included reductions in errors, injury, and falls. Contamination was addressed in terms of hygiene, washing hands, sterility, reductions in airborne and contact-related infections, and bacterial spread. An organisation informant wrote that:

> *"... it is important (...) the environment must be more or less sterile".*

Health protection was found in all of the literature; however, the HPH network and organization paid more attention to health protection than the literature or design project studies. Notably, health protection also included aspects of sustainability, such as environmental pollution, which can also result in human health issues.

Illness prevention – Illness prevention was addressed in terms of health education, a good workplace, and the restriction of unhealthy behaviour such as smoking. Illness prevention was found in studies 2, 3 and 4, mainly in terms of reducing or stopping smoking. In study 2, one interview participant mentioned the following:

> *"... for health promotion, it would be good if people also [were to] come [to the hospital] to quit smoking or so".*

A participant in the HPCE workgroup in study 3 also described that they were contacted to help develop the hospital into a non-smoking hospital. For instance, the HPCE workgroup helped with the placement of non-smoking signage, the (re)moving of ashtrays and the recycling of filters.

Restoration – Restoration outcomes were discussed in relation to stress reduction, a sense of coherence, positive distraction and rehabilitation. All studies included data related to restorative outcomes. Restoration was often referenced in combination with patient groups or staff members. Restoration was described in terms of nature, art and sound environments. A participant in study 2 stated that patients would benefit, in terms of stress, from being in nature and being physically active.

Curative – Curative objectives were related to treatment outcomes such as shorter hospital stays, a reduced need for pain-reducing drugs, and shorter recovery time. Curative objectives were found in the literature and in both HPH studies. In study 4, a survey respondent wrote that the hospital environment is important for the recovery of patients, families and employees. Curative outcomes were also combined with several organisational objectives such as the quality of healthcare and satisfaction. A participant in the design practice study described the hope that the building would provide the staff and the local inhabitants very good healthcare nearby.

TARGET POPULATIONS

The studies indicate that there are four target populations represented in relation to HPBD:

- Patients
- Staff
- Other building users
- The local community

Patients were most commonly considered to be the target population for health promotion approaches across all studies and all data sources. The patient was primarily addressed as patient. For instance, the HPCE workgroup documentation described that a 'patient's health can be improved by different aesthetic and environmental elements in the caring surroundings'. In other instances, the patient was specified more by terms such as psychiatric patients, depressed patients, or visually impaired patients.

Staff and employees of the healthcare organisations, such as physicians and nurses, psychologists and dietitians, were also referenced in all studies. Other staff included members

were interpreters, receptionists, and management. For instance, the HPH network shared documents that describe that the HPH goals was to create a good working environment for employees. For example, the HPH network states that a staff perspective of an HPH network includes developing working environments, which may serve as an example of a good workplace.

The studies showed that less attention was paid to other building users such as relatives or visitors. For instance, relatives or family were mentioned in studies 1, 2 and 3 but not at all in the study on the HPH organisation. Visitors were referenced in several of the review papers (Chiou & Chen, 2009; Davis, 2011; Dilani & Armstrong, 2008; Golembiewski , 2010; Gulwadi et al., 2009; Jordan, 2004; Mroczek, Mikitarian, Vieira, & Rotarius, 2005; Rousek & Hallbeck, 2011; Siddiqui et al., 2015). For example, (Golembiewski , 2010) write that a meaningful environment should provide good spaces for visitors and possibly even for pets. While relatives and visitors were found in all studies, they were not dominant.

The community was referenced in all studies but not to the same degree as the other target populations. For instance, half of the reviewed literature addressed the (local) community (Brittin et al., 2015; Chiou & Chen, 2009; Davis, 2011; Gulwadi et al., 2009; Jordan, 2004; Shepley & Song, 2014). For instance, Brittin and colleagues (2015) explored community needs for the planning of a new hospital in an urban context. The practice study related the inhabitants of Angered to specific community challenges such as language barriers, lack of trust in healthcare, limited health literacy, and unfamiliarity with the Swedish healthcare system. The importance of a community focus was specifically highlighted by a participant in study 2:

> *"Some politicians wanted a normal hospital, but the idea [of a Närsjukhus] disappears without a focus on the local population".*

The two other studies on HPH paid little attention to the question of community. However, the HPH network goal recognises community as a target group, and the HPCE workgroup described that the healthcare building design influences the health of patients, staff and community. Nevertheless, none of their other documents, surveys or interviews referred to a community perspective.

Vulnerable populations, such as the elderly, children, low-socioeconomic-status individuals or those with visual impairments, were mentioned in all studies. Attention to vulnerable populations is generally related to the consideration of the diversity of abilities, needs and values. One participant in the building design project noted:

> *"We are individuals, we are unique, we are different, and there is no way you can purpose-build for everyone. However, there are certain basic things that you should try to achieve (...) and it is difficult".*

Similar descriptions were also found within the HPH network: '... the patient perspective addresses the network's desire that all patients should be met with respect for their differences in needs, values and culture'.

7.2 Conceptualisation of the built environment in relation to health promotion in healthcare settings

Throughout all studies, the built environment was addressed in multiple ways. The terms that were used can be grouped under the headings of the built environment, places, design features, and building design process (see Table 6). The terms that were identified in the study data were used without definitions or explanations. Therefore, the meaning had to be extracted from the context. For instance, the terms 'built environment' and 'building design' were seldom used. Building design instead was addressed through comparable terms such as 'structure', 'space', 'physical environment'.

TABLE 6. OVERVIEW OF SPATIAL TERMS USED IN RELATION TO HPBD

Concepts	Spatial terms used in the data
Built environment	Spaces, structure, built environment, designed environment, man-made structure, building design, interior design, design of room, room design, architectural design, design elements, physical environment, physical work environment,
Places	Area, surroundings, conditions, where the patients spend their time, place (s), placement
Design features	Window, doors, furniture, colours, finishing
Building design process	New building, design project, building new buildings, new building part, new hospital, new room, construction, planning new hospital, planning hospital building, build rooms, creating a room, architecture, well-designed

PLACES INDICATED FOR HEALTH PROMOTION INTERVENTIONS

Several places for health promotion were identified in all studies i.e. specific health-promotive settings. These places included different building types, such as academic, community and local hospitals; healthcare centres; and psychiatric facilities. These places ranged in scale, meaning they could refer to the whole hospital campus, as little as the window in a patient room and everything in between.

Most descriptions of where health promotion could take place were related to certain building functions. Some of these places were more commonly referred to in some studies than others. For instance, medicine storage was found only in the examination of the HPH network perspective and was often discussed in combination with the prevention of medical errors. The waiting room, on the other hand, was found in the investigation of three perspectives: the practice perspective, the HPH network perspective and the HPH organisation perspective. References to circulation environments, especially stairs and corridors, were identified several times in all studies. The re-occurring building functions as found in the studies could be grouped under:

- Patient environments such as patient rooms or areas and waiting rooms
- Staff environments such as workstations and administrative spaces
- Care environments such as examination and meeting spaces
- Supportive environments including toilets and medicine storage
- Circulation environments such as the entrance, corridors, stairs and elevators
- Outdoor environments such as gardens, parking and the hospital site

HEALTH-PROMOTIVE DESIGN FEATURES

The studies revealed multiple building design features that were discussed in relation to health promotion and HPH. These design features could be grouped according to aspects Harris et al. (2002) such as ambient, architectural and interior design aspects; social aspects; and maintenance aspects (see page 20).

Ambient – The ambient features described in the studies included acoustics, light and climate. References to acoustics re-occurred in multiple studies with the use of terms such as 'noise', 'music' and 'sound'. For instance, noise was discussed in relation to sleeping problems, and music was mentioned in relation to positive distraction. References to light, especially daylight, were identified in all studies.

Interior – Interior features described in the material included art, furniture, computer location, plants and signage. The interior design features that were described included different types of furniture, finishings, artwork and plants. In particular, art and plants were often addressed in the different studies. Finishings were discussed in terms of colours and material choices in the design practice, network and organisational studies.

Architectural – The described architectural features included the layout, stairs and elevators, the ceiling character, lifts and decentralised workstations. The architectural features that were mentioned in the studies included the (building) structure, plan, layout, placement, size, shape and distances. The placement of openings (i.e., windows or doors) and the layout of building parts (e.g., the patient room layout) were described in all studies. Openings were often related to the creation of sightlines while layout was associated with wayfinding.

Social – Aspects related to territoriality, culture, privacy and contextuality (e.g., related to local circumstances) were grouped under social aspects.

Maintenance – Design features associated with maintenance were mentioned only twice: the need for clean and tidy environments and artwork that is easy to maintain. Descriptions of maintenance were observed only in the HPH network study; one document indicated the need for artwork materials that are easy to clean and sustainable, and another document noted that 'attractive' and 'clean' waiting environments should have no old papers or dirty dishes. An HPCE workgroup noted the need for an attractive eating environment.

Among the different perspectives studied, there were only slight nuances among the building design features described. For instance, the study of the practice perspective revealed more attention to architectural features while the study of the HPH network indicated more attention to interior design. Study 3 found that no design features were identified in the strategic material, and such features were observed only to a small degree in the survey data. Most design features were described in the interviews and HPCE documentation (n=46). The HPH organisation did not pay much attention to design features at all. However, nature was referenced repeatedly throughout the all studies with terms such as 'parks', 'gardens', 'trees', 'plants' and 'flowers'.

7.3 Conceptualising health-promotive building design

The results also found that there are different roles of building design to contribute to health promotion and multiple strategies that aim to result in HPBD.

ROLE OF HEALTHCARE BUILDING DESIGN FOR HEALTH PROMOTION

The actors involved in the planning or design of Angered's Närsjukhus mentioned several roles for healthcare building design:

- Accommodating specific health-promotive activities
- Supporting health-promotive processes
- Symbolising health promotion visions
- Empowering through the design process

Most participants referred to the ability of the building to accommodate health-promotive activities. The accommodation of health-promotive activities refers to the availability of health-promotive programmes that are not commonly present in healthcare facilities such as educational kitchens, fitness facilities, health libraries, lecture spaces, interpreters' offices and spiritual spaces. Below is an example expressed by a participant in study 2:

> *"We have a kitchen for the dietitians and those who teach [healthy cooking] for patients and their families. Hopefully in the future also other people of the community".*

Support of health-promotive processes refers to the usability of the building for health-promotive processes. Examples of such usability include the adaptability of the departments and the possible expansion of the building to adjust to changing health demographics or a floorplan that allows easy access between divisions and thus supports cross-division collaboration among staff members. Support of health-promotive processes could also mean the stimulation of healthy behaviour through the positioning of stairs in an attractive environment. One participant in study 2 said:

> *"The building can contribute to better collaboration because we see what people are doing and it is easier to talk and get to know each other".*

The participants in the design practice study highligheted the symbolic role of healthcare building design and that the building attempts to reflect the health-promotive visions in the design. For instance, Angered's Närsjukhus was designed as one building with one entrance and one reception area to symbolise the intensive collaboration between primary and specialised care. The placement of the stairs in the centre of the building also symbolises the importance of physical activity and healthy behaviours for health-promotive healthcare. Another participant in study 2 also explained that the Scandinavian style of building design, (e.g., use of wood, light colours and much daylight) was chosen to represent what unites the multi-cultural local community; their current Scandinavian place of living.

BUILDING DESIGN STRATEGIES THAT AIM TO RESULT IN HEALTH-PROMOTIVE BUILDINGS

The studies also exposed several design strategies, e.g., descriptions of attention points for creating an HPH built environment including design strategies that focus on the following:

- Implementing research
- Involving diverse stakeholders with diverse knowledge
- Developing supportive documentation
- Considering the environmental impact

Implementing research – The most commonly addressed design strategy focused on incorporating the research and was found in all studies. Implementing the research could refer to collecting data from the existing research and obtaining knowledge from scientific papers, conducting one's own project-specific research, and integrating the research into design strategies. One of the documents shared by the HPCE workgroup in study 3 stated that:

> *'Good architecture combines research-based knowledge with the field of care, local issues, the location, the organisation, technology, the care process, treatments, patient perspectives, staff interests and knowledge of different design features related to clinical or experimental outcomes'.*

Another participant in study 3 summarised this concept:

> *"There is constantly new research in the [area of health promotion and the built environment], and we really need to look into it when we design new buildings".*

Several participants in the HPH organisation noted that they lacked the knowledge to describe how they believed the built environment could support or hinder the success of health promotion.

Involving diverse stakeholders with diverse knowledge – The findings also imply that it is important for HPBD to include collaboration with and the involvement of stakeholders such as patients, future building users, the community, and different professionals from diverse disciplines. For instance, the participants in the study on Angered's Närsjukhus highlighted the importance of a participatory design process. The participatory design approach was expressed by them as a method to involve members of the local population to empower them, create ownership and generate a sense of pride in the new healthcare building. The participants also expressed that they thought that the participatory design process improved the local people's understanding of their particular health needs. One participant stated:

> *"Some politicians wanted a normal hospital, but the idea [of a Närsjukhus] disappears without a focus on the local population".*

Later, the same respondent admitted satisfaction as the building demonstrates 'how their vision is integrated into the hospital'. One informant of the HPH network also underscored that those who work in health promotion should be involved in healthcare building design:

> *"Big hospitals are always under construction, and we are building completely new [departments; it] would be a natural for us to be involved I think".*

Several participants in the HPH organisation study had been involved in healthcare building design projects at their healthcare organisations. These participants did not connect their work on healthcare building design projects to their responsibilities as HPH regional representatives.

Developing supportive documentation – The need to develop supportive documentation (e.g., design briefs, strategy documents) was explicitly described only once in the data (study 3). For instance, the documents from HPCE workgroup in study 3 highlight the need for supportive documentation to guide design decisions and the need to be able to trace the design process. However, the results of study 4 indicated that the documentation intended to support HPH organisations was not used by or well known to the regional representatives. Of the 22 participants in the study, only 13 were familiar with the letter of intent, and ten were familiar with the HPH standards. The network committee members argued that these documents were not actively promoted by the HPH network as the documents were considered to have a narrow view of health promotion and to lack clear guidance for the implementation of health promotion in the healthcare organisations. Instead, the HPH organisations were encouraged by the Swedish HPH network to develop their own, hopefully more holistic, definitions of health promotion and HPHs.

Considering the environmental impact – While consideration of the environmental impact of the building was found in all studies, it occurred only to a limited extent. The environmental impact of the building was expressed in terms such as environmental responsibility,

sustainability, green design, energy efficient design, flexible design, green roofs, and waste and stormwater collection. In study 1, only a paper by Foote (2012) noted that a patient-centred hospital should include 'green' design and should be designed for change. In study 2, several participants noted the importance of adaptable departments that can grow and shrink in size. For instance, one participant said:

> *"Angered's Närsjukhus [building] has to be flexible, easy to change parts, change the entrance, make departments larger, smaller, change them".*

Other participants in the same study also noted that the building includes sustainable installations such as solar panels. Within the HPH network, a participant from the HPCE workgroup said that sustainability goals should be combined with health promotion goals to 'make a bigger picture'. Sustainability was addressed by a participant in study 4 by describing that their health-promotive work is guided by, amongst others, sustainable development goals.

CHAPTER 8

DISCUSSION

This thesis explored diverse perspectives on health promotion in healthcare settings from a building design perspective. The thesis included two studies on the conceptualisation of health promotion in the context of healthcare building design and two studies exploring aspects of the built environment as a factor in health promotion in healthcare as expressed in relation to HPH. The results may facilitate discussions on the role of healthcare building design to support HPH by providing a theoretical framework, indicating the current problems in the development, indicating research gaps, and providing new insights.

The findings showed multiple descriptions of health promotion in healthcare settings related to healthcare building design. The findings additionally indicated that the subject is underdeveloped and that the definition of and vocabulary used to describe HPBD are still vague, inconsistent and diverse. Nevertheless, the findings provide an overview of diverse definitions and perspectives of health promotion and HPH and the jargon that was used in the different study contexts to refer to HPBD.

8.1 Health promotion as presented in relation to healthcare building design

DEFINING HEALTH PROMOTION

The studies indicated only four explicit health promotion definitions: two found in the literature study, and two found in the HPH network material. This is problematic as previous studies have indicated that health promotion is a diverse and complex concept with many interpretations (Green et al., 1999; H. Johansson et al., 2009; Rootman et al., 1997), which can lead to misunderstandings in practice (H. Johansson et al., 2009). For instance, there is ongoing disagreement about the difference between health promotion and disease prevention. This means that the term health promotion thus requires clarification of its particular meaning when it is used (H. Johansson et al., 2009). That is also important when the term is used in a design process of a HPH setting as the present studies in this thesis indicated that diverse interpretations can lead to diverse, even conflicting, demands for the built environment.

There are several possible explanations for the inconsistent and confusing vocabulary. One reason for the lack of a consistent vocabulary could be that HPBD development is in an early phase. There have only been a few studies on the subject (Miedema, Lindahl, & Elf, 2019), and no reliable theory or framework exists that combines health promotion with healthcare building design. In general, the vocabulary of a subject in the early stage of development is

still broad and overlapping. Another likely reason for the diverse and inconsistent vocabulary is the diverse interpretations of health promotion, which depend on the contexts in which the concept is used and the disciplines involved (Green et al., 1999; H. Johansson et al., 2009; Rootman et al., 1997). The findings showed, for example, that certain health-promotive aspects received more attention depending on the discipline of the informant. An informant with a physiotherapy background in study 3 may pay more attention to the promotion of physical activity in relation to people's physical abilities than other informants. It has already been argued that the diverse interpretations of health promotion may make it impossible to find one definition that works for every context (Green et al., 1999).

The problem with the underdeveloped vocabulary and inconsistency in terminology is that it makes it difficult to search the literature and to identify best-practice examples. For instance, a search for 'health-promotive design' provides literature that specifically uses the term 'health promotion' or 'health-promotive'. Instead, there may be good literature and practice examples that are available that cannot be found with the term 'health-promotive design' because they are instead labelled 'salutogenic' or 'health-enhancing'. These difficulties to find literature and best-practices is problematic as it can result in building design decisions that are not well informed. For instance, if a designer thinks that HPBD is the same as curative or healthy building design, it is likely that their design decision are based on the work summarised by Ulrich (2008) that focuses on patients, staff and visitors with a pathogenic orientation. With a more consistent vocabulary, it would be possible to find more literature and examples using the same words. This would allow those involved in the design process to learn from previous research and practices and thereby support them to make more informed design decisions.

In the scoping review I therefore used a broad initial filter which made it possible to include literature that addressed subjects closely related to aspects of health promotion, building design and outpatient healthcare. This scoping review may have been the first to combine diverse terminology. Nevertheless, a future study could expand the keywords based upon health-promotion criteria by Green et al. (1999), the HPH criteria by (Hancock, 1999), or the findings of this thesis. H. Johansson et al. (2009) also showed that a lack of clear health promotion definitions results in misunderstandings in practice, implementation difficulties, and difficulties collaborating. This is problematic as collaboration has been decribed as essential to health promotion strategies (Goodstadt, 1995; Green et al., 1999; Groene et al., 2005) as well as healthcare building design (Carthey, 2019; Elf et al., 2015; Fröst, 2004).

To avoid misunderstanding, support discussions, improve collaboration and thereby develop HPBD, it would be valuable for those involved in research and design projects on HPBD to clarify their interpretations of health promotion. One definition that can be implemented and used in all contexts is not necessary nor possible; however, each project should develop its own definition or choose an existing definition. Based on the present studies, the health-promotive criteria by Green and colleagues (1999) and health-promotive settings theory (Green et al., 1999; Poland et al., 2009), a new definition of health promotion was developed in the present thesis that could be used in building planning and design projects:

> *'Health promotion is a process devoted to empowering (vulnerable) individuals and communities to take control over the factors that positively influence their health and quality of life including their social, natural and built environment'.*

This definition specifies the target population as (vulnerable) individuals and communities and emphasises health promotion and a salutogenic orientation, which are both important for health promotion (Green et al., 1999) but easily overlooked. Furthermore, this definition indicates that the built environment can support health promotion, which underscores the importance of the built environment in developing health-promotive settings. The work of HPH networks would be strengthened if they also worked with clearer descriptions and definitions of health promotion, HPH and HPBD.

DIFFERENT PERSPECTIVES

The different studies in the present thesis indicated a range of health-promotive perspectives of healthcare building design including the wellbeing, healthy behaviour, health equity, empowerment, health protection, illness prevention, restoration, and healthcare perspectives. These perspectives can be categorised as either salutogenic or pathogenic approaches. Notably, there is a difference between stimulating healthy behaviours (salutogenic approach) and reducing unhealthy behaviours (pathogenic approach). Reducing unhealthy behaviours was grouped under prevention as it is part of a pathogenic orientation.

Bauer et al. (2006a) and Becker et al. (2010) argued that pathogenic perspectives should not be considered health-promotive; instead, health protection, illness prevention, restoration, and healthcare should be seen as parallel to salutogenic perspectives (see also Figure 3 on page 14). Nevertheless, the results showed that these pathogenic perspectives were considered health-promotive within the contexts studied. It is therefore suggested that a distinction should be maintained between pathogenic and salutogenic perspectives, specifically, to ensure that salutogenic perspectives are represented.

It has previously been suggested that diverse health-promotive perspectives merely represent diverse focal points but do not involve fundamentally conflicting meanings (Green et al., 1999). However, the results of the literature review suggest otherwise, indicating that the diverse focal points of the different perspectives can result in dissimilar demands for the built environment that can result in conflicting solutions. What is more problematic is that the results additionally indicate that a lack of attention to some health-promotive criteria can result in design solutions that may hinder future health promotion interventions.

Moreover, the thesis shows that none of the health-promotive perspectives that were identified were related to all of the health-promotion criteria listed by (Green et al., 1999) (see p 16). For since, all perspectives adhered to the first criterion, a holistic view of health. However, only half of the perspectives included a salutogenic perspective of health while the others had a pathogenic orientation. The wellbeing, health equity, empowerment and restoration perspectives included a consideration of the socio-cultural context. However, none

of the other perspectives were specifically related to the socio-cultural context. Equity and social justice, such as attention to vulnerable populations, was explicitly mentioned only in the health equity and empowerment perspectives. Moreover, the encouragement of participation by individuals and populations was explicitly described only in the empowerment perspective but could be incorporated into the healthy behaviour and healthy equity perspectives. Fostering collaboration was mentioned throughout the studies, mainly in relation to improved quality of healthcare.

Furthermore, only four of the perspectives represented a salutogenic approach, and only two considered health equity. It should therefore be asked whether these health-promotive perspectives should even be called health-promotive perspectives.

Golembiewski (2017) and Verderber (2009, 2010) previously noted that health-promotive design tends to refer to 'health enhancement'. Some authors have indicated that the built environment of HPH should be based upon the research on 'healing environments' and 'the work of Ulrich' (Dietscher et al., 2017; Golembiewski , 2017). The results of the present studies suggested that health promotion means more than simply health enhancement when used in the context of healthcare building design. Nevertheless, it seems that those involved in healthcare building projects could benefit from a clear distinction between curative, healthy and health-promotive design.

While the study results showed that diverse health-promotive perspectives can have conflicting demands, this does not have to be the case. The study of Angered's Närsjukhus showed that the people involved in the building design expressed that various design solutions could reflect multiple health-promotive goals, such as the stairs and elevator grouping that allowed both the stimulation of physical activity and accessibility for those who cannot take the stairs. This finding suggests that design teams that are aware of the diverse dimensions can develop solutions that are not conflicting and that might even address multiple health promotion goals.

TARGET POPULATIONS

The studies revealed that multiple target groups, including patients, staff, other building users and the community, were considered in relation to health promotion and HPBD. Green and colleagues (1999) suggested that health promotion should incorporate the participation of both individuals and the community. Moreover, Hancock (1999,2012) underscored that a health-promotive hospital should pay attention to patients as well as other building users and the local community. HPBD should therefore probably also consider patients, building users, and the local community, and it is good that the results indicate such a consideration. However, it can be argued that too little attention is paid to visitors and the local population, suggesting the poor incorporation of a community perspective in HPBD. Similarly, the study results showed that vulnerable populations were seldom considered. Attention to vulnerable populations is important as it suggests attention to diverse needs and thus attention to equity and social injustice, which is a health promotion criterion (Green et al., 1999). Based on the

study findings and the prior research, it is therefore suggested that HPBD should also pay attention to the diverse needs of patients, staff, visitors and relatives, and the local population. Future research could focus on the effect of healthcare building design on health promotion for the local community.

HEALTH PROMOTION IN HEALTHCARE

The results indicated that there are diverse perspectives on health promotion and HPH. However, it could be argued that most of the data do not actually constitute descriptions of HPH but rather descriptions of traditional curative or healthy hospitals. As Hancock (1999, 2012) mentioned, not all healthcare organisations that incorporate health-promotive approaches are HPH organisations. There is a distinction among traditional (curative) healthcare, healthy healthcare and HPH (see also page 18). It could therefore be argued that there should also be a distinction among curative, healthy and HPBD. For instance, descriptions that relate aspects of healthcare building design to the treatment of patients could therefore be referred to as curative building design (see Figure 17). Descriptions that relate aspects of healthcare building design to pathogenic approaches directed at building users or the natural environment should be referred to as healthy building design. Based on this line of reasoning, only descriptions that relate aspects of building design to salutogenic approaches that are directed at building users, the community and the natural environment should be called HPBD. However, the results showed a broader description of HPBD that also includes pathogenic approaches. This becomes problematic when projects are named health-promotive while they actually address should be named curative or healthy. This lack of distinction is likely unintentional, although it could be misleading as it indicates health-promotive approaches which it does not incorporate. Moreover, this lack of distinction may reinforce simplified interpretations of HPH and HPBD that pays little attention to community and environmental health, or salutogenic health-orientation. This again underscores the importance of discussing, reflecting upon, and specifying how health promotion is understood when designing healthcare buildings that should be health-promotive.

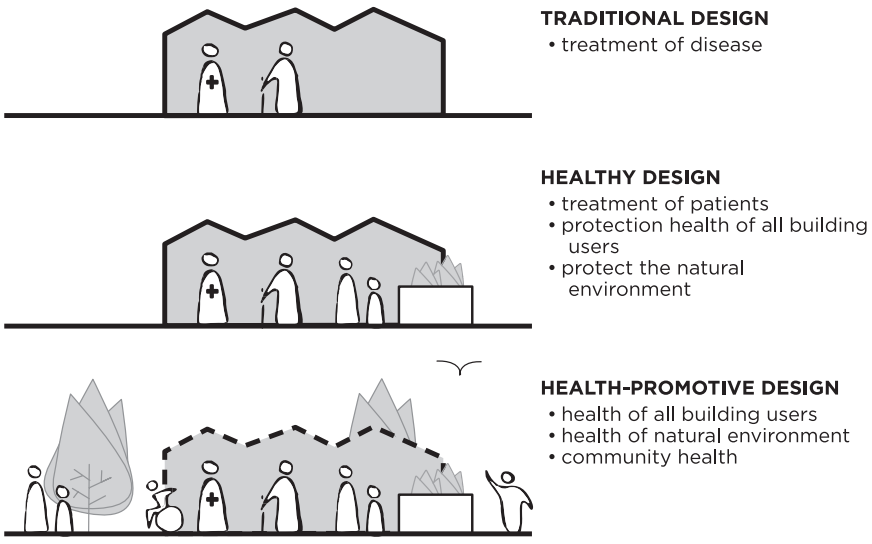

Figure 17. Visualisation of the differences in focus between traditional (curative), healthy and HPBD

8.2 Built environment as described in relation to health promotion in healthcare settings

The studies showed that the built environment was discussed in relation to HPH in both the HPH network and the HPH organisations. The results of study 3 showed that the built environment was referenced in the HPH network including in the HPBD documentation, interviews with representatives from the HPCE workgroup, and the survey of the workgroups. The strategic material of the HPH network mentioned the physical environment only a few times and did not mention the built environment at all. Study 4 showed that the built environment was not commonly incorporated in the development of Swedish HPH organisations. Nevertheless, the participants described several aspects related to the built environment including design objectives and design features.

In the studies, the built environment was addressed in multiple ways, in relation to the building design process, built environment, design features and setting. The results also showed that these concepts were used without clear distinction. The previous research had identified a distinction between the setting and the built environment (Canter, 1977). However, this distinction can become complicated as the studies indicate that the term 'physical environment' is used for both the built environment and setting. The lack of differentiation between these concepts is probably related to the diverse disciplines involved in health promotion, HPH and HPBD. For instance, it seems that building designers tend to use both 'physical environment' and 'built environment' interchangeably to refer to building design. In comparison, healthcare

professionals seem to consider the physical environment to be the setting, and they often include aspects of the built environment in the physical environment or setting. Nevertheless, the lack of distinction between the setting and the built environment poses several issues. First, it has been argued that settings theory should not be used for the built environment without substantial reflection (Canter, 1977). Thus, health promotion settings theory may guide HPBD; however, it should be adjusted to be used for HPBD. Second, there may be missed opportunities for HPBD if the built environment is not specifically mentioned as part of the setting as the built environment may be overlooked as an active resource for health promotion and HPH. This is also apparent in the HPH network strategies that describe the need to develop HPH (setting) but that do not specifically describe the built environment as an important aspect of the HPH setting.

Either way, the development of HPH involves HPBD (Dietscher et al., 2017; Golembiewski, 2017; Pelikan et al., 2001). It is therefore suggested that those involved in the design process should reflect, discuss and clarify their interpretations of the setting, physical environment, built environment and HPBD (see also Figure 2 on page 8). Furthermore, those who read about the physical environment should ask themselves if the texts refer to the setting or the built environment. The clarification of these concepts helps distinguish between the research on health-promotive settings and HPBD. The clarification can specify the role of the setting and particularly the built environment as a factor in health promotion and the development of healthier and more equitable communities.

PLACES INDICATED FOR HEALTH PROMOTION INTERVENTIONS

The results showed that several repeated indications of several places where health promotion could occur such as patient environments, staff environments, care environments, supportive environments, circulation and outdoor environments. This finding implies that HPBD is not restricted to certain parts of a healthcare building; rather, health promotion can take place in a range of places in and around a hospital. The previous studies on healthcare building design and health-related outcomes have also indicated places for design interventions (Ulrich et al., 2010). For instance, Ulrich's framework specified patient, family, and staff support spaces. Other researchers have studied the design of circulation spaces (Jiang & Verderber, 2017), for instance in relation to improved wayfinding. Unfortunately, the majority of the present research seems to be focused on the pathogenic health-related outcomes of circulation space such as treatment time, stress reduction or health protection. Nevertheless, the results suggest that circulation spaces could also be incorporated in HPBD. The waiting room, for instance, was mentioned in the studies, and it was noted that rooms designed for passive waiting should instead be designed to support learning about one's own health (health education) and allow people to engage in healthy behaviours instead of sitting and waiting. The design of health-promotive places, such as waiting areas, would probably benefit from a better understanding of what is meant by health promotion and HPBD. More research is needed including studies that evaluate such design efforts in practice.

The results showed that multiple types of building design features were discussed in relation to HPH including ambient environment, architectural and interior design features, and maintenance features (see px). Most of these design features have also been mentioned in other studies on healthcare building design and their health-related outcomes (Dijkstra et al., 2006; DuBose et al., 2018; Harris et al., 2002; Huisman et al., 2012; Laursen et al., 2014; Ulrich et al., 2010). For instance, architectural features can improve satisfaction with healthcare by improving wayfinding and reducing the time required to move between different places in the hospital (Carpman & Grant, 1993; Harris et al., 2002). Moreover, it has been argued that one design feature may refer to several design ambitions, and vice versa (Schmidt & Austin, 2016). This finding suggests that multiple design features can be used in connection to diverse HPBD goals. For instance, a visual connection to nature is considered to be a design solution for multiple design goals including healthcare, restoration, wellbeing, equality and healthy behaviour. Design for health equity, as a design goal, can be related to diverse design solutions such as the closeness of parking for people with disabilities, visual and physical access to elevators, clear wayfinding and access to gardens. However, importantly, the study results indicate only which features are expected to contribute to HPH, not whether such design features are health-promotive. While it is difficult to evaluate health promotion interventions (Rychetnik & Wise, 2004; Tang, Ehsani, & McQueen, 2003), future research could test these expectations.

ROLE OF HEALTHCARE BUILDING DESIGN FOR HEALTH PROMOTION

The study on Angered's Närsjukhus suggests that the role of health building design for health promotion includes its ability to meet, support or symbolize health promotion and its activities, processes and visions. Moreover, as mentioned, healthcare building design tends to reflect ongoing development in society (Wagenaar, 2006) and healthcare (Carthey et al., 2011). It is thus not surprising that healthcare building can not only accommodate health-promotive programmes but also support health-promotive processes and symbolise the ideas behind health promotion. This notion then leads to the question of whether we can distinguish among curative, healthy and health-promotive buildings by merely considering the design. Does Angered's Närsjukhus look very different from a regular hospital, should HPBD have another appearance, and should a building user, such as a pateint perceive that difference? I suspect that building designed with a health-promotive approaches in mind will lead to different design solutions, and those hospitals will look different. I would also argue it would be good if building users would also recognise this difference, because it might trigger different types of behaviours; as Canter (1977) argued, people's reaction to places are influenced by what they perceive and what their expectations are from similar places previously visited. For instance, patients may be used to passively wait until their care professional is ready, while an HPH organization would like for them to actively inform and educate themselves about

their health issues. Nevertheless, it remains difficult to design for health promotion without a clear understanding of what health promotion entails since the design objectives have such an influence on the final resulting building design.

8.3 HPBD strategies

The studies included in the thesis indicate multiple building design strategies for health promotion in healthcare settings including design strategies that focus on implementing research, involving diverse stakeholders, developing supportive documentation, and considering the environmental impact.

The results distinguish among implementing scientific research, researching contextual aspects and evaluating design interventions. The implementation of scientific research has been referred to by others as RID or EBD or EBD (Stichler, 2016). The findings suggest that the research that should be implemented in HPBD includes the work of Ulrich (Ulrich, 1984; Ulrich et al., 2010; 2008) and the reports developed by the Centre for Healthcare Architecture (Ulrich, 2012). However, this research primarily pays attention to the pathogenic aspects of health promotion related to patients, families, physicians, nurses and other staff (see Figure 18). Designing HPBD should instead entail research on health-promotive aspects with a salutogenic orientation and attention to the local population and natural environment.

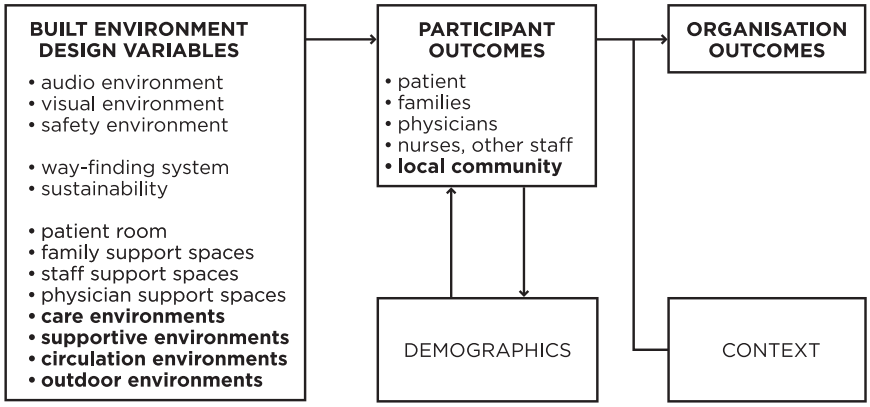

Figure 18. Contribution to Evidence-Based Design framework

The findings additionally suggest that the HPBD process should involve diverse stakeholders with diverse knowledge. The limited available research can provide valuable data to facilitate healthcare design (Lundin, 2015), particularly if design teams involve stakeholders in design conversations (Fröst, 2004; Lundin, 2015). Participatory design processes can support complex building design projects (Carthey, 2020; Elf et al., 2015; Fröst, 2004) and multiple objectives

including an understanding and consideration of diverse user needs (Bianchin & Heylighen, 2017; Heylighen et al., 2016; H. Persson et al., 2015) or the empowerment of individuals and populations (Granath et al., 1996). The participatory design process seems to fit well with diverse health-promotion criteria such as the participation of individuals and communities, a consideration of the socio-cultural context, attention to equity issues, and cross-disciplinary collaboration (Green et al., 1999; WHO, 2013, 2014). Nevertheless, the HPH organisation study shows that health promotion professionals involved in building design projects do not necessarily link their health promotion objectives to building design projects. Moreover, health promotion, HPH and healthcare building design are all complex disciplines and require cross-disciplinary collaboration. It thus seems that co-design can play an important role in HPBD and that collaboration between healthcare architects and HPH professionals has mutual gains and is therefore a good base for collaboration.

The previous studies have indicated that the development of supportive documentation can improve the quality of healthcare and healthcare building design (Blyth & Worthington, 2001; Elf et al., 2018; Elf et al., 2012; Ryd, 2004). For instance, the results of study 2 show that the design brief for Angered's Närsjukhus mentioned health promotion as a design objective, even though there was no explanation of what health promotion entailed in that context. To support HPBD, it is therefore suggested that HPH standards, letters of intent and HPH strategies should explicitly mention the importance of the built environment for health promotion. In addition, HPBD design briefs should explain what is meant by health promotion, HPH and HPBD and possibly connect their definitions to expected outcomes.

The results show that references to aspects of sustainability were found in all the studies. The previous research has shown that poor environmental health can lead to human health issues (Spencer et al., 2018), and health promotion and sustainable development can therefore no longer be separated (Harrisson, 2002; Spencer et al., 2018). For instance, environmental pollution such as water pollution, can lead to human health issues. As Hancock (2012) wrote:

> *'A health promoting hospital is necessarily a green hospital'*

The previous research has also indicated that sustainability is important for healthcare building design (Shepley, Baum, Ginsberg, & Rostenberg, 2009; Ulrich et al., 2010). HPBD should also include environmental responsibility.

8.4 Health-promotive dimensions model

Based on the findings of this thesis and other research (Becker et al., 2010; Green et al., 1999; Hancock, 1999), a health-promotive dimensions model was developed (see Figure 19). The model was developed to provide a quick overview of the diverse dimensions of health promotion and thereby support discussions of the meaning of health promotion for healthcare building design projects.

The model consists of two sides, each with four perspectives. The left side represents to the salutogenic approach including the wellbeing, healthy behaviour, health equity and

empowerment perspectives. The right side represents the pathogenic approach including the healthcare, (re)habilitation, prevention and health protection perspectives. The model also consists of four layers or circles: patients, other building users, the local community and the natural environment.

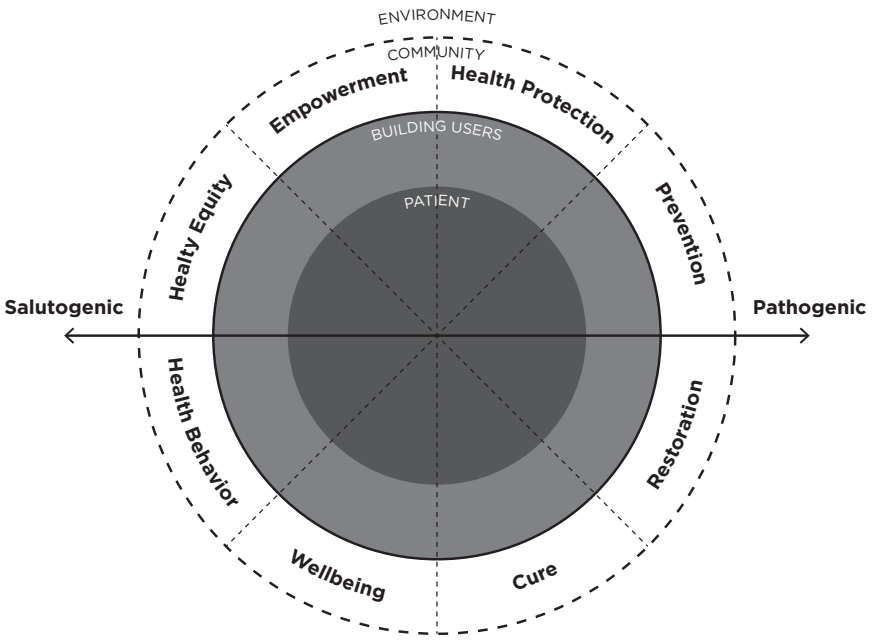

Figure 19. Visual representation of the multiple dimensions of health promotion

The model provides a visual overview of the diverse and interrelated dimensions of health promotion and HPH. While there is another visual model of health promotion by Bauer (see also page 14), that model does not specify the diverse approaches to health promotion. A visual model, such as the proposed model, is a tool that is familiar to designers. In addition, while the model has not been tested in practice, it is expected to be able to support multidisciplinary discussions of interpretations of health promotion that also involve people with no prior knowledge of health promotion or HPH theory. For instance, the model could be used to enable architects to consider how their designs can support diverse dimensions. When Angered's Närsjukhus was designed and planned, the people involved in the design process did not use a framework to guide their design decisions and a subsequent evaluation of the completed building. The model may also be used to evaluate design solutions, e.g., to evaluate which health-promotive dimensions have been represented. A future evaluation based on this model might indicate whether and how Angered's Närsjukhus is a good example

of HPBD. The model might also function to direct the research on HPBD through its use in mapping which dimensions are underdeveloped or by combining the research from diverse dimensions. Finally, the model may support more general discussion of the development of health promotion and HPH.

8.5 Methodological considerations

This doctoral thesis adopted an explorative, multi-perspective approach combining qualitative and quantitative, first- and second-hand data.

An explorative approach requires that the results from empirical studies be considered within their contexts (Jaeger & Halliday, 1998). For instance, the descriptions of aspects of the built environment in the Swedish HPH network or organisations cannot be used to make general statements about HPH networks and organisations outside of Sweden. However, the knowledge from the studies can be adapted to inform other HPH networks and organisations. For instance, other HPH networks and organisations could probably also benefit from clarifying their interpretations of health promotion and HPH and specifying the role of the built environment for health promotion. Moreover, the study results provide in-depth knowledge of the chosen contexts, with suggestions for their practices and future research.

Study 1 adopted a scoping review approach as described by (Arksey & O'Malley, 2005). A scoping review is not meant to make value assessments of the included literature (Antman et al., 1992). Instead, the strength of a scoping review is that it can be used to indicate trends and map research gaps (Arksey & O'Malley, 2005). Moreover, a scoping review can help readers quickly familiarise themselves with the subject without having to do their own extensive scoping review (Arksey & O'Malley, 2005; Nicholas Mays, Emilie Roberts, & Popay., 2001). A scoping is particularly useful for such a multidimensional subject as a scoping review, compared to a systematic review, can combine perspectives from diverse disciplines (Nicholas Mays et al., 2001). The scoping results were a product of the keywords and the synonyms used. Other research teams might have used other words. Nevertheless, due to the multidisciplinary nature of the research team, which included health, caring and architecture scientists, it is expected that the keywords were well informed. These terms were also discussed with librarians, and the team searched for the specific MeSH terms associated with the keywords. Moreover, another point of a scoping review is to investigate whether a systematic study could be relevant (Arksey & O'Malley, 2005). The keywords used in the scoping review could then be expanded to include health-promotion criteria, and a value assessment of the literature found could be conducted. For this study, the scoping review primarily indicated the lack of research performed, and a more systematic review seemed premature.

Study 2 investigated one project, Angered's Närsjukhus in Sweden. It might have been beneficial to study multiple healthcare building design projects and compare to what extent they referred to health promotion and HPBD. However, at the time, there were no other known projects in the Swedish context that were specifically designed with health promotion in mind. Moreover, the study included a limited data sample from 11 interviews, which means

this study by itself should not be used to construct theories. Nevertheless, the study was also supported with planning and design documentation that provided additional background for the study. The interview data could additionally be used to express views of HPBD as described in a healthcare building design project.

All interview and survey questions were developed for the studies, meaning that the instruments were not previously validated. However, all instruments were discussed among the research team and tested in a trial survey or interview. The need to develop questions resulted from a lack of previous studies on the subject and the lack of a theoretical framework. The results may support the development of future instruments. Due to the small sample the results should not be used to make strong statements about the Swedish HPH organisations and their interpretation of HPBD, nor about HPH organisations in general. However, the sample was able to give some qualitative indications about the current issues surrounding the incorporation of the built environment in HPH strategies. Moreover, the results could provide directions for future studies.

Importantly, the empirical studies were based upon first and second-hand data. First-hand data refers to data that are collected by the researcher himself or herself for a specific study (Hug & McNeill, 2008). The first-hand data for this thesis included interview and survey data. Both interviews and surveys produce new verbal or written data that are based upon the participant's understanding of a situation (Flick, 2014). Thus, the use of this type of data should be considered based on the context and the translation processes the data have undergone (Flick, 2014; Silverman, 2000). The participants from study 2, for example, described their individual interpretations of the healthcare building design project and process, which probably varied depending on their roles in the process, their professional roles and their expectations. While the data thus reflect an interpretation of a situation, it is assumed that the situation can be understood from the participants' words. Secondary data refers to data that are collected or developed by others and not specifically for the study for which the data are used (Hug & McNeill, 2008). It is argued that material developed within or collected by an organisation reflects the perspectives of the members of the organisation (Bowen, 2009). As second-hand data are collected for other purposes, it is important to consider the context for which the data were initially intended (Hug & McNeill, 2008). For example, it is important to consider the intended audience, who collected the data, and the thoughts that were central to the material (Hodder, 2012). As documents should not be used alone to form a full understanding of an organization (Bowen, 2009), I combined data from documents with other data such as interview and survey data.

When a theoretical framework is lacking, an explorative approach is required; an explorative approach is particularly useful for an understudied subject (Babbie, 2016; Stebbins, 2001) such as HPBD. To ensure the validity of the research without a predefined theory, multiple contexts representing diverse perspectives on the subject were explored. Moreover, multiple data sources and methods were combined to allow methodological triangulation, which made the results of this doctoral thesis credible.

CHAPTER 9

CONCLUSIONS

The thesis has highlighted a number of issues that relate to health promotion, the healthcare setting and the built environment. In doing so, it provides an overview of health promotion considerations and design-related notes. The main contribution, however, is that the thesis summarises and structures this material and provides a model to support further studies, research and discussions. Below is a summary and considerations for future work and implications.

9.1 Summary of the work

This thesis sought to explore health promotion in healthcare settings from a building design perspective. The findings, simply put, have shed light on the current status of discussions and awareness of health promotion in relation to the built environment in healthcare settings. The results contribute to the discussion of health in relation to the built environment and may contribute to healthier and more equitable communities.

The presented studies showed that there is a lack of research that focuses on health promotion as a defined ambition of healthcare building design. The thesis therefore examined how health promotion is actually conceptualised in relation to healthcare building design. The studies carried out within the framework of this thesis showed that aspects of health promotion were addressed in the selected literature on healthcare building design. Furthermore, health promotion was identified as an objective of the Angered's Närsjukhus design project. The references to health promotion that were identified in the studies were (1) related to diverse health promotion definitions, (2) connected to diverse health-promotive perspectives, and (3) related to several target populations. Definitions of health promotion were generally missing in the data, making it difficult to extract interpretations of the meaning of health promotion from the data and to determine how these interpretations had been acted upon. The diverse health-promotive perspectives found in the study data were predominantly focused on pathogenic approaches such as cure, prevention, health protection or restoration. Salutogenic approaches related to wellbeing, healthy behaviours, health equity or empowerment were less dominant in the material. Moreover, the approaches identified were mainly focused on patients and staff; however, HPH requires attention to all building users such as relatives and other visitors, or the local community.

A lack of research on the built environment as a factor in the development of health promotion in healthcare settings was also identified. The thesis therefore additionally explored how the built environment was addressed in relation to HPH. The studies showed that the

built environment was (1) described as a factor in HPH, (2) based on multiple related spatial concepts and (3) that several places were suggested for health-promotive interventions. The studies also showed that several built environment features were used to create HPBDs and that diverse approaches to the design process were adopted to develop HPBD. The identified spatial concepts were not always easily distinguished. Nevertheless, a few categories could be identified: the built environment as an object, the building design process, and the setting. The places indicated for health-promotive interventions ranged from patient and staff environments, to healthcare environments, to supportive spaces and circulation spaces. In particular, patient rooms, gardens, circulation spaces and waiting areas were often indicated as places that are suitable for health-promotive strategies. I did not group the types of identified HPBD solutions according to place; however, I expect that there are place-specific health promotion interventions. For instance, a supporting environment, such as the waiting room, may offer more opportunities for health promotion interventions than a caring environment, which should focus primarily on the treatment of patients.

Overall, a wide range of built environmental features were mentioned in the studied material that could be related to health-promotive goals. The majority of the identified features were ambient, architectural and interior design features. These features can be seen as design tools to develop HPBD. Diverse strategies to design health-promotive built environments including strategies related to implementing research, involving diverse stakeholders, developing supportive documentation, and considering the environmental impact, were referenced. I could not identify one design strategy that addressed all dimensions of health promotion. However, one may conclude that it may be possible to combine diverse strategies.

The doctoral thesis also demonstrates that issues related to HPBD have just begun to develop. This is also exemplified in the quote of an HPCE workgroup representative:

> *"... it is very easy to talk about new topics, but it is very difficult to implement new ideas and new ways of working in healthcare ..."*

The studies indicated a lack of a consistent vocabulary, even across diverse contexts. Therefore, to be able to develop HPBD, cross-disciplinary collaboration is crucial. A challenge, however, is the fact that the inconsistent terminology makes precision in communication difficult. It is thus important to develop definitions, terms and interpretations of health promotion, HPH and HPBD for first projects and, more importantly, for the design and construction of health-promotive environments as a whole.

The findings also give rise to new questions. First; how can design processes be developed to include a health-promotive perspective, and second; which stakeholders and disciplines are of importance to a health promotion approach? A further question then comes to mind: who is responsible for inviting participants, documenting their needs and wishes, and choosing which demands are prioritised over others? The development process of healthcare building projects thus also may become a political process, in which the initiators have both the power and responsibility to consider for whom, why and with what means health promotion occurs.

9.2 Contributions

The main contribution of the thesis is its structured attempt to integrate subjects that have seldom previously been integrated: health promotion in healthcare settings and healthcare building design. This new integration allows for new perspectives, and the knowledge generated can support discussions of the design of healthcare buildings with health-promotive goals. The results further develop knowledge of healthcare building design by expanding and linking to the domain of public health and health promotion as well as adopting a salutogenic perspective of health. If broadly interpreted, the results may also contribute to the development of the design of building types, other than healthcare buildings, that aim to contribute to the creation of healthier, more equitable communities.

The health promotion model provides a quick visual overview of the diverse dimensions of health promotion and thereby contributes to the development of HPBD in particular and health promotion and HPH more generally. Based on the model, both laypeople and professionals may ask what health promotion means to them or to their projects. This may contribute to better informed discussions of HPBD that question which dimensions should be incorporated and which dimensions are underrepresented. Moreover, the model can help designers consider how their buildings can support these different dimensions. The model hopefully supports a health promotion approach that pays attention to salutogenic and community aspects.

Other contributions are the development of a new definition of health promotion, the reflections on health-promotion criteria in relation to healthcare building design, and the summary of health-promotive design strategies. The new definition specifies the establishment of the built environment as a component of health promotion, which may increase attention to the role of the built environment. The criteria for HPBD may support design decision making in healthcare projects. The proposed design strategies may provide design teams with directions to start engaging in HPBD. Nevertheless, while these design strategies are considered to result in HPBD, their ability to do so has not been tested, which is a challenge beyond the scope of this thesis work.

Each of the papers contributes to the overall development of the thesis and makes its own contributions to the development of HPBD. The literature study (study 1), in particular, contributes to the development of HPBD by providing an overview of the current knowledge of the HPBD of outpatient facilities. The study reveals the diverse perspectives of health promotion and the lack of a common language. Moreover, the paper provides a theoretical background for subsequent studies. The practice study (study 2) indicates and presents the different roles of the built environment and the design process for health promotion. The findings provide an example for others developing design processes with the purpose of empowering the local community and improving the factors that influence their health. The paper also opens up discussions on the role of the built environment, not only in facilitating health-promotive programmes but also in providing an active resource to support health-promotive processes and in symbolising the health-promotive visions of an organisation.

The findings from the HPH network study (study 3) provide suggestions for HPH networks to emphasise the importance of the built environment for HPH. The findings also include suggestions for the improvement of HPH definitions and standards that aim to support healthcare organisations. The last study on HPH organisations (study 4) contributes data which indicates that people who work with health promotion in healthcare organisations and are involved in the design of healthcare buildings lack knowledge of how to incorporate these roles. The thesis as a whole would thus be beneficial to help this group engage in HPBD.

In addition to contributing to healthcare building design and HPH, the thesis may influence building design in other settings such as schools or workplaces. Dannenberg and Burpee (2018) suggested that research on healthcare built environment design is also relevant for other settings and thus for all building designers. The healthcare setting includes the workplace setting but is also part of the community setting (Goel & McIsaac, 1999; Scriven, 2011) and thus is part of the development of healthy and health-promotive cities (Scriven, 2011). However, to be able to compare the different settings, it will be necessary to reflect on the (different) interpretations of health promotion that are used in different contexts.

Finally, the thesis work contributed to my own understanding of architectural research in relation to other disciplinary subjects. It has been a challenge to find my way through the theory on health promotion, health-promotive settings and HPH. However, I am certain there is an enormous opportunity for designers of the built environment, as well as those outside of the healthcare context, to support the development of healthier and more equitable communities. I hope that this thesis will introduce these concepts to architects and that architects will be inspired, as I have been, to further explore the health-promotive built environment.

9.3 Implications for practice

As the research on HPBD is scarce and is developing, it is too early to create a conclusive checklist that can guide the practice of the design of health-promotive buildings. Nevertheless, all stakeholders involved in healthcare building design projects and interventions would benefit from increased awareness of the relationship between health promotion and healthcare building design. Several ways to support this awareness are listed below.

Different HPH networks, for example, could help support the distribution of knowledge of the importance of building design for health promotion in healthcare. They could employ the following strategies:

- Incorporate aspects of building design in strategic and supportive documentation such as HPH standards or letters of intent.
- Propose and debate definitions of concepts related to healthcare building design including HPBD.
- Actively share and distribute the most recent knowledge of the role of building design in HPH including recent studies and possible best-practices.

Those working in health promotion in general, including architects designing healthcare environments, could adopt the following approaches:

- Discuss and clarify the definitions of health promotion that they use in their practice and their projects.
- Link the HPBD goals to expected outcomes.
- Reflect on which dimensions of health promotion they consider and whether these dimensions correspond to a salutogenic approach or mainly pathogenic approaches.
- Incorporate the needs of a broad group of stakeholders that includes not only patients and staff but also visitors, vulnerable populations and the local population.

People involved in healthcare building design projects should engage in the following:

- Systematically discuss, reflect and share their work on HPBD to establish best-practices.

As mentioned, one of the most important aspects of health promotion development is intersectional collaboration (Green, 1999). Efforts should be made to incorporate people with different professions and backgrounds into practice. Those working in health promotion would benefit from working in teams with professionals with experience in designing and building, and those working with building design would benefit from the experiences of health professionals.

9.4 Suggestions for future research

While this thesis provides insights from several perspectives of HPBD, the findings also indicate a need for more research, specifically, in relation to a salutogenic orientation with a focus on community health and equity. Based on my findings, I propose five directions for future research.

- First, a more comprehensive understanding of HPBD in design projects is needed to enable and support the development of the field. Studies could focus on analysing design briefs that refer to aspects of health promotion and could interview the people who are responsible for the development of the design briefs and the final design. The objective would be to develop knowledge on approaches and effects. This research would focus on professionals engaging in health promotion.
- Second, to obtain a broader understanding of the incorporation of the built environment into the development of HPH, studies should be conducted in contexts other than Sweden. This would enable a discussion on culture, context and health promotion in design. This research would focus on networks, organisations and different views of health promotion.
- Third, future studies could study the effects of building design that aims to support health promotion. This research would aim to establish or analyse what could be regarded as a benchmark for best-practices. This research could also investigate the

relationship between health promotion models and the built environments associated with them. Other contexts, such as offices, schools and industry, should be studied. This research would focus on effects and design approaches.

- Fourth, to develop knowledge on healthcare building design and community health promotion, there should be more studies on building design in relation to community empowerment that include community perspectives. Such studies could address community issues such as (in)equities related to gender, socioeconomic issues or power distribution. These studies could also focus on more practical solutions, such as walkability in the community, with regard to the diverse abilities and needs of community inhabitants.
- Last, studies on HPBD could adopt participatory research methods that aim to empower those involved as health promotion, HPH and HPBD should pay attention to the public participation of individuals and communities. This approach would give the research health-promotive characteristics.

For all of the proposed studies, a clear description of the key concepts, such as the built environment, the setting, health promotion and the health-promotive built environment, would be necessary to avoid misunderstanding and to make it easier for other researchers to find information related to the studies.

CHAPTER 10

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