

Maternity Healthscapes: Conceptualization and Index Development

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Abstract

Objectives: This article provides a conceptualization and an index of the multidimensional concept of maternity healthscapes (MHS). **Background:** Healthscape has emerged as a potential key aspect to improve patient experience. Surprisingly, there has been little effort to delineate the concept of MHS from a design perspective, while maternity wards have unique characteristics and particular challenges. Indeed, patients in maternity wards are usually not acutely ill but can feel highly vulnerable due to the pain, stress, and the many uncertainties surrounding labor and delivery—which can heighten patients' need for intimacy, supporter comfort, and additional supporting services. Thus, healthscapes need to be designed to account for the specificities of childbearing and needs of those patients and their family. **Methods:** A multidisciplinary literature review and 39 in-depth interviews were conducted with various stakeholders—mothers, midwives, heads of midwives, and chief executives. **Results:** The authors develop a conceptualization to establish a comprehensive understanding of the dimensionality of MHSs. Based on that comprehensive conceptualization, the authors develop an index providing a census of the aspects in the MHS that various stakeholders—such as healthcare providers, designers, and architects—should take into account when conceiving MHS. **Conclusions:** Healthcare providers, designers, and architects can use this conceptualization and index to closely monitor and measure for evaluations and further improvements of the MHS, thereby enhancing patient experience in maternity wards.

Keywords

healthscape, index development, maternity, patient experience, servicescape

Introduction

In the past 2 decades, the patient experience has moved to the forefront of healthcare research (Frampton, 2012). Nowadays, hospitals are more and more focusing on design to improve patient experience, even including hotel-like amenities (Suess & Mody, 2017). The quality of the healthscape (i.e., design of physical environments in healthcare facilities) can affect patient medical

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outcomes and the quality of care (e.g., promote quicker recovery, reduce stress; Berry & Parish, 2008; Ulrich et al., 2010; Ulrich et al., 2020). Moreover, improved patient experiences in aesthetically pleasing, functional healthscapes contribute to higher patient satisfaction ratings and higher reimbursements to hospitals (Suess & Mody, 2017).

There is little research investigating the concept of healthscapes within maternity wards, even though they deserve specific attention for several reasons (for an exception, see, for instance, Foureur et al., 2010; Foureur et al., 2011). First, maternity healthscapes (MHSs) play a key role in shaping the childbirth experience of mothers and families (Nilsson et al., 2020; Setola et al., 2019). Positive birth experiences offer long-lasting benefits, including improved self-esteem and empowerment that sustain patients' maternal roles (Aune et al., 2015). Negative birth experiences can cause lasting psychological impact, including enhanced risk of post-partum depression, post-traumatic stress disorder, fear of childbirth, difficulty breastfeeding, and problematic parental relationships (e.g., Bell & Andersson, 2016). Second, patients from maternity services have features that differentiate them from patients from other departments. In general, expectant mothers have ample time between their first knowledge of (possible) need for hospital services and their actual provision. Contrary to other patients, these expectant mothers are usually not acutely ill, so they often have plenty of time to search for hospitals that meet their needs. Third, maternity services are evolving at a rapid pace. There is an international trend of providing fewer but more comprehensive maternity services. For example, in Western countries, length of stay is shortening. Between 2008 and 2017, the average length of stay in Belgian maternities decreased by 1 day (Lefevre et al., 2020). Today, hospitals are increasingly reflecting on reducing the number of visitors and limiting visiting hours as restrictions regarding these issues was experienced positive by both mothers and medical staff during COVID-19 lockdowns. Fourth, MHSs are crucial to the wealth and reputation of hospitals

(Van de Voorde et al., 2017). For most first-time mothers, childbirth is their first (long) encounter with a hospital environment. Thus, creating favorable impressions among mothers and their family is key to ensure that families will consider the same hospital services in case of health issues. In general, all those specificities in MHSs strengthen the need to design efficient maternity facilities.

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Accordingly, we examine the MHS construct together with its dimensionality (i.e., aspects that are constitutive of the complex concept) to achieve two research objectives: (1) conceptualization of MHS and (2) offer an index uncovering the various key features of MHS for rigorously assessing MHS quality. We combine a multidisciplinary literature review with 39 interviews with various stakeholders: mothers, midwives, heads of midwives, and chief executives. This literature review spans multiple disciplines, including social sciences, architectural design, environmental psychology, healthcare, and service management.

Toward a Conceptualization of MHSs

The healthscape is likely to be crucial in MHS as mothers (and family) (1) are generally not acutely ill, (2) are generally younger, (3) stay for several days at the hospital, (4) experience strong emotions—such as anxiety, stress, and joy—as they are experiencing a life-changing event, and (5) may experience intense pain and/or complications. In this context, the quality of the MHS can

smooth the intense nature of labor and delivery for patients (Aburas et al., 2017).

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Noting that the MHS concept and its dimensionality lacks a clear conceptualization, we undertake a multidisciplinary literature review of existing written conceptualizations of healthscape. We selected two databases: Google Scholar and Scopus. We searched for “healthscape” articles in the general healthcare context, published from 1995 to 2021 and containing the words “healthscape” or “healthcare servicescape” in their titles, abstracts, or key words. We selected the year 1995 as our starting point, because it marked publication of an influential article on healthscape conceptualization by Hutton and Richardson (1995). We confined our search to English-language articles for which full text was available. In addition, the authors added the key article of Ulrich et al. (2010) as it significantly added to the concerned literature stream. Although this article used a different vocabulary (i.e., “built environment” instead of “healthscape”), the framework developed by those authors provided a strong base for continued research. We identified 20 articles that met our search criteria.

Two tables present a subset of relevant articles of the total list of 20 articles. The subset was selected to give an overview of multidisciplinary articles, that gave the most elaborated and in-depth insights, and redundancy of previous authors work was discharged. Table 1 presents an overview of 12 key articles that include conceptualizations and/or consequences (i.e., impact of the healthscape on its users) of the healthscape concept while Table 2 presents a summary of 13 pertinent articles that discuss healthscape dimensions.

Healthscape: Overview of Existing Conceptualizations

Hutton and Richardson (1995) recognize that, despite the paramount and permanent importance of physical facilities, little research addresses the role of healthcare facilities and physical environments in determining the patient experience. They propose the term “healthscape” (see Table 1) and define it by identifying components of atmospherics (Kotler, 1973) and servicescapes (Bitner, 1992) associated with healthcare. Then, they assess the strengths and predictive abilities of these features for patient satisfaction, quality assessments, intentions to return, and willingness to recommend healthcare providers to others. As Table 1 also shows, some studies (e.g., Han et al., 2020) adopt Hutton and Richardson (1995) conceptualization, but others propose their own context-specific conceptualizations (e.g., geriatric care; Chun & Nam, 2019). Still others do not provide specific conceptualizations but focus on the impact of healthscapes on patient and employee variables, such as patient and employee attitudes (e.g., satisfaction, quality) and behaviors (e.g., recommend). This literature review highlights not only the influential role of the healthscape in shaping perceptions, preferences, attitudes, and behaviors but also the lack of conceptualization of the term, which strongly indicates the need to define it. Based on the literature review, we conceptualize the healthscape as the design of the healthcare built environment, including the architecture of a facility, its implementation in its surroundings, and all tangible elements. Next, we examine the dimensions that are constitutive of healthscapes to, ultimately provide, a comprehensive conceptualization of MHSs.

Healthscape: Overview of Identified Dimensions

Table 2 presents an overview of articles that focus on healthscape conceptualizations and their dimensions. The dimensions identified in these articles build on the servicescape framework proposed by Bitner (1992) and the framework for the

Table 1. Overview of Selected Studies on the Concept of “Healthscape” and “Healthcare Servicescape.”

Study	Discipline	Perspective	Healthscape Definition	Healthscape Consequences
Hutton and Richardson (1995, p. 53)	Healthcare management Marketing	Patients and care providers	<i>We define healthscapes as the emotional, affective, cognitive, and physiological influence on patient–customer and staff–provider behaviors and outcomes caused by elements of the physical healthcare environment, including the facility and tangible elements of the service encounter.</i>	<ul style="list-style-type: none"> ■ Patient and employee cognitive, emotional, and psychological responses ■ Patient and employee approach and avoidance behaviors ■ Specific patient outcomes <ul style="list-style-type: none"> ■ (Perceived) quality ■ Value ■ Satisfaction ■ Willingness to return ■ Willingness to recommend
Becker et al. (2011, p. 128)	Evidence-based design	Patients, their families, and care providers	<i>The term healthscape recognizes and embraces a consideration of how multifaceted aspects of a system, including multiple settings, organizational culture, technology, work processes, workforce, and customer demographics, work together to create an overall outcome and experience.</i>	<ul style="list-style-type: none"> ■ Patient safety ■ Quality of care ■ Healthcare experiences for care providers, patients, and their families
Lee (2011)	Service design	Patients	No definition available	<ul style="list-style-type: none"> ■ Patient satisfaction with the facility ■ Patient perceived quality of care ■ Patient willingness to recommend ■ Patient willingness to return
Sahoo and Ghosh (2016, p. 602)	Marketing and strategy	Patients	<i>Healthscape defines the servicescape specific to any healthcare service and refers to the tangibles captured through our senses of sight, smell, sound, taste, and touch.</i>	<ul style="list-style-type: none"> ■ Patient satisfaction ■ (Service quality)
Sreejesh et al. (2016)	Healthcare marketing	Patients	No definition available	<ul style="list-style-type: none"> ■ Patient self-congruity ■ Functional congruity ■ Patient attitudes
Akmaz and Çadircı (2017)	Social science	Patients	<i>Healthscape refers to the physical environment of healthcare institutions.</i>	<ul style="list-style-type: none"> ■ Patient satisfaction ■ Patient loyalty ■ Repatronage ■ Recommendations
Suess and Mody (2017)	Hospitality management Healthcare marketing	Patients	No definition available	<ul style="list-style-type: none"> ■ Patient perceived well-being ■ Patient willingness to pay more
Suess and Mody (2018)	Service industry	Patients	No definition available	<ul style="list-style-type: none"> ■ Patients' overall satisfaction ■ Patient loyalty intentions ■ Patient willingness to pay out-of-pocket expenses
Han et al. (2018)	General healthcare environment	Care providers	Intelligent Healthscape Quality (IHQ) is “ <i>the quality of built environment where intelligent technology is deeply incorporated in the healthcare service.</i> ”	<ul style="list-style-type: none"> ■ Medical staff satisfaction
Chun and Nam (2019, p. 2)	Geriatric long-term care public hospitals	Patients	Public Healthscape Quality (PHQ) is “ <i>the quality of the built environment in which public elderly healthcare service is provided for continuum of care.</i> ”	<ul style="list-style-type: none"> ■ Social welfare of geriatric patients
Hsu and Hsiao (2019)	Dentistry	Patients	Definition of Hutton and Richardson (1995)	<ul style="list-style-type: none"> ■ Clients' positive emotions ■ Willingness to revisit
Han et al. (2020)	Nursing management	Care providers	Definition of Han et al. (2018) and Hutton and Richardson (1995)	<ul style="list-style-type: none"> ■ Nurses pleasure feelings ■ Nurse job outcomes ■ Job satisfaction

Table 2. Overview of (Sub)dimensions of Healthscape Identified by Previous Studies.

(Sub)dimensions	Articles											Total Number of Articles Discussing the (Sub)dimensions		
	Hutton and Richardson (1995)	Ulrich et al. (2010)	Lee (2011)	Sreejesh et al. (2016)	Sahoo and Ghosh (2016)	Suess and Mody (2017)	Akmez and Cadirci (2017)	Suess and Mody (2018)	Han et al. (2018)	Chun and Nam (2019)	Hsu and Hsiao (2019)		Han et al. (2020)	DCunha et al. (2021)
Exterior														7
Location and accessibility				•	•				•	•			•	
Surrounding area		•							•					
Entrance		•			•				•					
Parking		•				•			•					
Building design									•			•		
Interior design														
Color	•				•	•			•		•		•	12
Flooring									•				•	
Wall covering									•				•	
Finishing									•				•	
Material	•	•				•			•				•	
Style	•								•				•	
Attractiveness			•						•				•	
Furnishing	•		•	•	•	•			•				•	
Decoration/accessory		•		•	•	•			•				•	
Plants/nature		•							•				•	
Personalization	•	•											•	
(Outdoor) views		•											•	
Ambient factors														13
Temperature/humidity	•	•	•	•	•	•			•				•	
Ventilation	•	•	•	•	•	•			•				•	
Noise/acoustics		•	•	•	•	•			•				•	
Music	•	•				•			•				•	
Lighting	•	•	•	•	•	•			•				•	
Aroma/scent	•					•			•				•	
Cleanliness		•	•	•	•	•			•				•	

(continued)

Table 2. (continued)

(Sub)dimensions	Articles										Total Number of Articles Discussing the (Sub)dimensions		
	Hutton and Richardson (1995)	Ulrich et al. (2010)	Lee (2011)	Sreejesh et al. (2016)	Sahoo and Ghosh (2016)	Suess and Mody (2017)	Akmaz and Cadirci (2017)	Suess and Mody (2018)	Han et al. (2018)	Chun and Nam (2019)		Hsu and Hsiao (2019)	Han et al. (2020)
Functional													
Scale/size				●					●				
Layout	●	●		●	●				●	●		●	●
Space					●				●	●			
Traffic flow									●				
Wayfinding	●	●	●	●		●		●	●	●		●	●
Privacy		●	●						●	●			
Equipment	●	●	●	●	●	●		●	●				
Safety		●	●	●	●					●		●	●
Food and beverage services		●			●								
Spa services						●							
Sustainability		●											
Technology													
Innovative medical equipment/ robots				●									
Hi-resolution flat-screen TV		●				●							
Patient health-tracking						●							
Phone and Internet connection		●											
Service personnel													
Competence				●		●		●				●	●
Interpersonal skills			●	●	●	●		●		●		●	●
Number								●				●	●
Appearance								●				●	●
Support spaces		●											
Social													
Social programs										●			
Other patients													●
Family engagement		●								●			
Number of dimensions discussed out of a total of 7 ()	3	7	4	6	5	4	4	4	5	6	3	4	6
Number of subdimensions discussed out of a total of 44 (●)	13	25	10	17	14	10	17	17	26	14	4	2	19

domain of evidence-based design by Ulrich et al. (2010), forming an overview of the key dimensions of healthscapes. This comprehensive overview provides a base for meeting our second objective (i.e., development of an MHS index to uncover the various key features of MHS for rigorously assessing MHS quality).

We identified seven main dimensions and 47 subdimensions (see Table 2). Some articles take a general approach, focusing on main dimensions (e.g., Han et al., 2020); others examine subdimensions in detail (e.g., Suess & Mody, 2017). Accordingly, our review highlights the diversity of healthscape dimensions; many authors mention ambient factors (13 of 13), interior design (12), and functionality (12), and less authors mention exterior design (seven), social (four), and technology dimensions (four).

MHS: Overview of Existing Studies

The healthscape dimensions/subdimensions in Table 2 pertain to hospital settings in general. Although this comprehensive overview is insightful, some dimensions might not be applicable to specific hospital departments, such as maternity wards—considering that the journey of soon-to-be mothers is unique and includes particular and critical moments (e.g., Chun & Nam, 2019; Fourleur et al., 2010).

Therefore, to understand the impact of the healthscape on users in a maternity context (i.e., mothers, supporters, medical staff), we conducted additional searches for the following words in article titles, abstracts, and key words: “birth environment” OR “birthing facilit*” OR “birth space” OR “birth design” OR “birth architecture” OR “maternity environment” OR “maternity space” OR “maternity design” OR “maternity architecture” OR “midwifery space” OR “midwifery design” OR “midwifery architecture” OR “obstetric environment” AND “physical.” We confined our search to English-language articles for which full text was available.

We identified 78 articles that met the search criteria but excluded 66 articles because they did not explore: (1) user goals/needs that the MHS must accommodate, (2) the impact of the MHS on users’ medical or health related outcomes, or

(3) the impact of the MHS on user experience. These issues were all key to our research purposes. In addition, the key article of Fourleur et al. (2011) was included as it significantly added to the concerned literature stream (i.e., testing of the Birth Unit Design Spatial Evaluation Tool). Although this article used different vocabulary (i.e., “birth unit”), the study provided a strong base for continued research.

Next, to deepen our understanding of the MHS construct, we extended this multidisciplinary literature review by searching for articles that included the following words in their titles, abstract, or key words: “built environment” OR “servicescape” OR “healthscape” OR “physical environment” OR “spatial design” AND “maternity.” The same confinements were used here. In this case, we identified 38 articles that met the search criteria but excluded 19 that did not meet the previously identified exploration objectives. Next, we removed five duplicate entries (see Denyer & Tranfield, 2009). Table 3 summarizes the 27 articles identified that examine user goals and needs that MHS can facilitate.

Table 3 summarizes the goals and needs discussed in the 27 analyzed articles; it distinguishes the healthscapes’ impacts on (1) mothers’ experiences and behaviors, (2) supporters’ experiences and behaviors, (3) medical interventions, and (4) staff practices. It also categorizes goals and needs according to the type of maternity ward. By understanding these user goals and needs, we can predict how MHS might evolve, according to its users.

Online Appendix 1 provides more detailed information about the 27 articles and reveals that studies differ in their adopted perspectives (i.e., patient, supporters,¹ medical staff, administrative staff, researcher), geographical context (i.e., European/non-European), and type of maternity ward analyzed (i.e., hospital maternity care unit [HMCU], hospital delivery room [HDR], birth center [BC], home birth [HB], alternative [A]). Out of the total of 27 articles, 22 articles adopt a single perspective: 19 from the patients’ perspective, two from midwives’ perspective, and one from supporters’ perspective. Only five articles adopt a multi-stakeholder perspective. In addition, 18 articles report research conducted

Table 3. Summary of User Goals/Needs That MHS Can Facilitate.

	Type of Maternity Ward Discussed by Number of Articles						Total Number of Articles
	HMCU	HDR	BC	BC + HB	HMCU + HB	A	
Goals and Needs	14	5	3	2	1	2	27
Mothers' experiences and behavior							
Positive childbirth experience	•	•					2
Comfortable atmosphere	•	•	•	•			4
Accessibility to hospital	••						2
Waiting times	••		•				3
Safe and easy parking spots	•						1
Personal entrance	•						1
Social room	•						1
Visually appealing facility	•						1
Easy wayfinding	•						1
Distractions		•••					3
Relaxation area with tools	••	•••••					7
Projections		•••••					5
Birth bath	•						1
Feeling autonomous/control	•	••	••	••	•	•	9
Control over the environment	•		•	••	•		5
Control over the birth process	•		••	••	•		6
Feeling welcome/home	•••	•••	•	•	•		9
Cleanliness	•••••••				•		8
Art and décor style	•••••	•					6
Welcoming reception area	••						2
Wooden materials	••	••					4
Nonclinical furniture	••	•••					5
Hidden medical equipment	••	••••					6
Plants	•	•					2
Color	••	•		•			4
Clinical		•			•		2
Satisfaction with care	••					•	3
Up-to-date technical equipment	•••••						6
Emotional support	•••••	•	•••			•	11
Information and decision-making	•••••••	•	•••		•	•	14
Workshops	•						1
Flexible layout configuration	•••						3
Intelligence/technology	•						1
Physical comfort	•••••	•••	•	•	•		11
Temperature regulation	••••	•		•			6

(continued)

Table 3. (continued)

	Type of Maternity Ward Discussed by Number of Articles						Total Number of Articles
	HMCU	HDR	BC	BC + HB	HMCU + HB	A	
Goals and Needs	14	5	3	2	1	2	27
Ventilation	••						2
Noise	••••	••					6
Scent	••						2
Music	•	••••					5
Size	•						1
Lightning	•••••	•••	•	•			10
Double-sized sofa		••					2
Double-sized bed		••					2
Furnishing	••	•••					5
Upright birthing furniture		••					2
Enough space	•	•	•				3
Breastfeeding chair	•						1
Privacy and personal space	••••••••	••	••		•	•	16
Choice for single bedroom	•••						3
Privacy signs		•					1
Family centered rooms	•	•	•				3
Feeling isolated/alone	••						2
Proper partition	•••••	•					7
Private bathroom and toilet	••••••	•••					10
Space for personal belongings	••	••					4
Dignity and respect	•					•	2
Access to external areas	••		•				3
External view	•••	•					4
Provision recreation and leisure	•						1
Hair and beauty treatment	•						1
Alternative therapies	•	•					2
Films and series	••	•					3
Food and beverages	•••••		•				7
Telephone and Internet	••						2
Feeling safe/security	•	•	••		•	•	6
Free from harm and mistreatment						•	1
Slip prevention	•						1
Expectations	•			•			2
Birth plan				•			1
Supporters experiences and behavior							
Feeling autonomous/control	•			•			2

(continued)

Table 3. (continued)

	Type of Maternity Ward Discussed by Number of Articles						Total Number of Articles
	HMCU	HDR	BC	BC + HB	HMCU + HB	A	
Goals and Needs	14	5	3	2	1	2	27
Feeling welcome/home	••••	•					5
Involvement	•••	••	••			•	8
Comfort	••	••					4
Privacy	••						2
Flexible visiting arrangements	•						1
Restricted visiting	•						1
Facilities for the visitors	•						1
Food and beverages	•••						3
Children's play area	••						2
Overnight stays	•						1
Telephone and Internet	••						2
Social room	•						1
Medical interventions.							
Oxytocin augmentation	•	•				•	3
Epidural analgesia		•	•			•	3
Pain management	•						1
Episiotomy.						•	1
Instrumental/vaginal birth			•			•	2
Decreased episiotomy						•	1
Duration of labor		•					1
Mode of birth (natural/medical)	•	•	••	•			5
Enough sleep				•			1
Breastfeeding	••	•					3
Facilitating movement	•	•		•			3
Infection risk	•						1
Staff practices							
Safety preparations	•	•		•		•	4
Enough medical staff available	••		•	•	•		5
Continuity of care	••					•	3
Education/competence	•••••		••			•	8
Distance to midwife hub	••						2
Intra-professional communication	••						2
Appearance	•						1
Staff assist systems	•						1
Total number of subdimensions identified	87	46	22	17	11	17	

Note. The number of bullets points in each cell corresponds to the number of articles that discuss each type of goals and needs. Articles are categorized per type of maternity ward (i.e., hospital maternity care unit [HMCU], hospital delivery room [HDR], birth center [BC], home birth [HB], and alternative [A]).

in non-European countries, in which social security systems can differ from those of European countries. Regarding the type of maternity ward, 14 articles focus on overall maternity departments, five focus solely on delivery rooms, three focus solely on birth centers, three combine different settings, and two analyze alternative birth settings.

This variety of approaches and methods suggests the need for a more in-depth, comprehensive understanding of the MHS. Previous studies have neglected a multi-stakeholder perspective (e.g., excluding patient perspective; Foureur et al., 2010), adopted a rather small sample size, were not focused on European countries or only partially addressed the MHS (e.g., only focus on the delivery room; Nilsson et al., 2020). Our study (1) combines both theoretical and empirical data to conceptualize MHS and develop an index for rigorously assessing MHS quality, (2) to give a comprehensive overview of the MHS navigated by soon-to-be mothers. Hereby, a diversity of (3) hospitals (i.e., old and new) and (4) stakeholder perspectives (i.e., mothers, midwives, heads of midwives, and chief executives) is adopted to increase the sample size. In doing so, two different communities were considered (i.e., the Dutch and the French speaking part of Belgium).

Method

Overview of the Samples

Online Appendix 1 demonstrates that most research has focused on exploring only one stakeholder perspective and was conducted in non-European countries. For our research purposes however, there is much (more) value in exploring multi-stakeholder perspectives, as input from different stakeholders impacts experiences in MHS. For this reason, a multi-stakeholder perspective was applied by conducting qualitative interviews with three different samples collected in a Belgian population. Sample 1 includes 15 mothers who delivered their babies at a hospital; Sample 2 includes 16 midwives; and Sample 3 includes eight senior managers (i.e., six heads of midwives and two chief executives) working in 12 different hospitals.

In developing our three samples, we sought to maximize diversity among the respondents (see Online Appendix 2). Mothers (Sample 1) differ in their demographic characteristics, medical states, choices of hospital, and degree of hospital familiarity. The midwives (Sample 2), heads of midwives, and chief executives (Sample 3) vary in their demographic and professional characteristics. We ceased the sampling process at theoretical saturation for each sample, when the information gathered became redundant and no innovative information appeared.

The first author conducted the interviews for Sample 1 and Sample 3, using the critical incident technique (CIT) to reflect the exploratory nature of the study (Gremler, 2004). This technique collects data from the respondent's perspective, in the respondent's own words (Gremler, 2004), providing a rich source of data. Ten undergraduate students enrolled in a human-sciences course at a public university in Belgium conducted the interviews for Sample 2 (midwives); the students participated as data collectors as part of a class assignment. This technique has been used successfully in a variety of studies, especially in CIT research (Gremler, 2004). Prior to data collection, students received training in interviewing techniques, particularly the CIT method.

Interview Guide

The interview guides for Samples 1 and 2 were similar; they consisted of open questions related to the influence of the design of the maternity healthcare built environment, including the architecture of the facility, its implementation in its surroundings, and all tangible elements experienced by maternity users—along with prompts and follow-ups (see Online Appendix 3). Interviews began with general questions to establish rapport while putting the respondents at ease. The semi-structured guide contained three main parts. The first part asked interviewees to explain their patient journeys from the moment they entered the hospital until they left, from their own perspective. Their responses formed the basis for the next questions and made it easier for both the interviewer and interviewee to understand the situation holistically. The second part encouraged

interviewees to discuss generally negative and generally positive experiences during their patient journeys. Finally, the last part asked them to reflect on their choices of hospitals and gynecologists and overall satisfaction with their journeys.

The interview guide for Sample 3 contained three main parts. The first part asked senior managers questions about the hospital in general and the importance of the patient experience, the influence of the design of the maternity healthcare built environment (including its architecture and the architecture's implementation in its surroundings), the tangible elements experienced by maternity users, and their overall evaluation of those elements. Second, it posed detailed questions about the evolution of childbirth experiences, the architecture and design of hospitals in this regard, and future expectations. In the third part, we went over all the dimensions identified by the literature review and the interviews of Samples 1 and 2 to discuss them more in detail. This helped us to refine the index.

Analysis and Interpretation

All interviews were audio-recorded and transcribed verbatim before being coded and analyzed with NVivo (Version 12). We analyzed the data via a discovery-oriented, thematic analytical approach. Through an iterative process of reading, assessing, and identifying emerging themes and categories, we organized the data and described it in detail (Braun & Clarke, 2006). We followed a two-step thematic analysis procedure. First, we coded the verbatim transcript, paragraph by paragraph, to identify relevant themes. We established theoretical codes from extant prior literature first, then added inductive codes throughout the process to capture themes as they emerged from the data. We also developed a coding plan that we reviewed for internal consistency, leading to some adaptations of labels and conceptualizations. Second, we jointly developed theoretical, abstract categories for the identified constructs. During the categorization procedure, we constantly compared emerging findings with supplementary literature to integrate and extend prior knowledge (Strauss & Corbin, 1998).

Findings

Conceptualization of MHS

Thanks to our multidisciplinary literature review and interviews with various stakeholders, we conceptualize the MHS as *the design of the maternity healthcare built environment, including the architecture of a facility, its implementation in its surroundings, and all tangible elements. In particular, the MHS includes specific aspects such as exterior, interior design, ambient factors, functionality, technology, tangibles of the service personnel, communal spaces, and additional tangible services. All those healthscape aspects are likely to influence mothers and their family to, ultimately, ensure a smooth childbirth experience.*

MHS Index

To meet our second research objective, we built on the overview of the healthscape dimensions/subdimensions in Table 2. Following this line of thought, Table 4 demonstrates how we first modified and extended traditional healthscape dimensions such as ambient factors, functional factors, tangibles of the service personnel, and technology, and then added dimensions such as communal spaces and additional services. Table 4 summarizes (maternity) healthscape dimensions that emerged from (1) previous studies on healthscapes (i.e., overview of the healthscape dimensions/subdimensions, Table 2), (2) previous studies on maternity services (Table 3), and (3) data from the interviews with mothers, midwives, heads of midwives, and hospital executives. The second-to-last column in Table 4 lists the dimensions that we added to make the index more suitable for the maternity context. In the following paragraphs, we discuss each main dimension: (1) exterior, (2) interior design, (3) ambient factors, (4) functionality, (5) technology, (6) tangibles of the service personnel, (7) communal spaces, and (8) additional services, along with their subdimensions.

Exterior. The exterior dimension refers to the architectural elements that embody style, the general arrangement and components of all outer surfaces, how they fit into the surrounding

Table 4. Summary of (Maternity) Healthscapes Dimensions Discussed by (1) Previous Studies on Healthscapes (H), by (2) Previous Studies on Maternity Services (MS), and (3) Data From In-Depth Interviews (I).

H	MS	I	Dimensions	New (Sub)dimension	Illustrative Quotes
•	•	•	Exterior		
•	•	•	Location and accessibility		The people inside the elevator are looking at you and it was so busy, not nice to come in! People are wishing you "good luck," but you are sitting there trying to keep yourself decent while you are really suffering. It was so "au plain public," it's nothing to be ashamed of, but you are really stressed out. [ID 13, Mother]
•	•	•	Surrounding area		
		•	Protected/secured outdoor area	•	
		•	Places to sit	○	
		•	Positive outdoor distractions	○	When mothers arrive the day of delivery, we have a special entry in our new hospital, so it's easier for them to go directly from the parking lot downstairs to the maternity unit without encountering everyone, it's like a shortcut. The visitors, they must enter by the main entrance. [ID 37, Executive]
•	•	•	Entrance		
		•	Private way of entering/own entrance	○	
•	•	•	Parking		
		•	Safe and secure	○	
		•	Easily navigable	○	Due to the limited length of stay, I think it is less important that mothers can go outside. They have so many other things to do. We prefer not to take the baby immediately outdoor also for safety reasons. We are still responsible, and I don't want it on my conscience that the baby is stolen. A real protected outdoor area is something else. [ID 32, Head midwife]
		•	Short distance and logical route	○	
•	•	•	Building design		
•	•	•	Interior design		
•	•	•	Color		And then he [father] was like: "oh no but then I have to sleep here!:" I was like: "yes sorry, at this moment I really do not care, I just want you to be with me." He even fell over with that chair, BOOM, and I could not help him and the nurses did not come, and he did not get up on his own and the chair was a bit broken! Oh my god, he slept in that thing for 2 nights, very sad." [ID 5, Mother]
•	•	•	Flooring		
•	•	•	Wall covering		
•	•	•	Finishing		
•	•	•	Material		
		•	Wood	○	Here at home I could experience my contractions without stress because you are not stuck to the monitor, and I knew in the hospital you hang on the monitor for half an hour, lying on the bed, it is standard protocol. But I cannot do that. So I asked if I could sit on the ball, but then I felt obliged to remain seated, while I could not do this either, but you hang on to that thread, so I did try to walk up and down but that was a bit against protocol. I found that the most annoying, you are so attached to those wires and there is no space or tool to facilitate your movement. . . . Stripped of your freedom! [ID 14, Mother]
		•	Nonclinical	○	
		•	Linen	○	
		•	Natural materials	○	
•	•	•	Style		
		•	Homeliness	○	
		•	Hidden medical equipment	○	

(continued)

Table 4. (continued)

H	MS	I	Dimensions	New (Sub)dimension	Illustrative Quotes
•	•	•	Attractive design		<p>In the birth rooms, they really thought about this ambiance and they made these big paintings with the competence of psychology to support the mother while giving birth, to relax mentally and to reduce the pain. To be really in the room and stimulate the feeling of cocooning. At maternity they have privileged wood to have this warm atmosphere and each room has a view to the exterior, it was really important that each room has this view to nature. For the color, the nurses choose the color of each room. For the comfort, it is a little problematic for maternity because it is only for the mother, not for the father. Now we are looking for another system to privilege the comfort of the father too. In the satisfaction registration, it is a very negative point. [ID 37, Executive]</p>
•	•	•	Furnishing		
	•	•	Companion furniture	o	
	•	•	Double-sized mattress	o	
	•	•	Upright birthing furniture	o	
	•	•	Breastfeeding chair	o	
•	•	•	Decoration/accessory		
	•	•	Reference to femininity	o	
	•	•	Distraction tools	o	
	•	•	Movement facilitation tools	o	
	•	•	Birth assistance material	o	
•	•	•	Plants/nature		
•	•	•	Bathroom and toilet		
	•	•	En suite	o	
	•	•	Adequate space	o	
	•	•	Birthing bath	o	
	•	•	Two-sided access	o	
	•	•	Deep and wide enough	o	
	•	•	Easy to get out	o	
•	•	•	Personalization of room		
•	•	•	(Outdoor) views		
	•	•	Place to secure personal belongings	o	
•	•	•	Ambient factors		
•	•	•	Temperature/humidity		
	•	•	Adjustable	o	
•	•	•	Circulation/ventilation		
•	•	•	Noise/acoustics		
•	•	•	Music		
•	•	•	Lighting		
•	•	•	Aroma/scent		
					<p>Acoustics and thus privacy is missing there anyway! I had to rinse vaginally on the toilet, and yes defecation and so on, because I had my enema. Then I said to J. [father]: “chat a bit louder [to the visitors],” how embarrassing is that, they could hear everything when I was on the toilet! I found it so humiliating. You always have to open up and expose everything to all those people sitting there, oh my god” [ID 2, Mother]</p>

(continued)

Table 4. (continued)

H	MS	I	Dimensions	New (Sub)dimension	Illustrative Quotes
•	•	•	Cleanliness		
•	•	•	Functionality		
•	•	•	Control over the environment	○	I was in a double room, and I was on the side of the hallway so that is the side where it is super dark. There was a curtain between us, and she closed the window and the curtain all the time! But M. [baby] had jaundice so he needed a lot of daylight, but that was not possible. I complained to the midwives many times, but at one point, I really gave up. . . . [ID 12, Mother]
•	•	•	Scale/size/space		
•	•	•	Single room	○	
•	•	•	Layout/arrangement		
•	•	•	Flexibility	○	
•	•	•	Traffic flow		
•	•	•	Wayfinding		
•	•	•	Privacy elements		
•	•	•	Opportunity to close/lock doors	○	I had the large room and the couch was here [back towards the bed of the mother], because if I was breastfeeding or breast pumping [in bed], and there were many visitors, then they would settle here in such a way that they saw nothing, so that was always nice when the midwife came or when there was something with V. [baby] then we had a bit of our own privacy because the people sat in that other part of the room, I did not feel observed. [ID 1, Mother]
•	•	•	Choice for single bedroom	○	
•	•	•	Adjustable privacy signs	•	
•	•	•	Proper partitions	○	It is your privacy and people should treat it with respect because it is actually the most vulnerable moment of your life! I remember I had visitors from 9 am to 9 pm, all afternoon I had sat there alone with all those people, oh my god I was broken! The last visitor left and I said to my husband: "If I only had a key to close that door!" Suddenly his aunt calls: "We are coming to visit." Without asking! I started crying, I locked myself in the bathroom, this door I could close. I only left the bathroom when they left. I stayed there for half an hour and I took my baby with me. I was sitting there on the floor crying. [ID 9, Mother]
•	•	•	Private bathroom and toilet	○	
•	•	•	A "knock before entering" policy	○	
•	•	•	Up to date (technical) equipment		
•	•	•	Safety elements		
•	•	•	Scrub basin/soap and glove dispenser	○	
•	•	•	Sharps disposal box	○	
•	•	•	Slippage prevention	○	
•	•	•	Information tools/literacy	○	
•	•	•	Proper reception area	○	
•	•	•	Distance to midwives hub	○	
•	•	•	Sustainability		

(continued)

Table 4. (continued)

H	MS	I	Dimensions	New (Sub)dimension	Illustrative Quotes
•	•	•	Technology		I personally think that innovative technology is very important, but it costs a lot of money. We have tested now a monitor, which registers heart rate and contractions, and mothers can do this from their homes. This way, we can follow-up mothers from a distance. It is very stressful to come to the hospital 3 times a week, especially for a people with high blood pressure. They are completely stressed out to come here while they can stay at home and measure their blood pressure at their own pace, which also gives a completely different picture. [ID 34, Head midwife]
•	•	•	Innovative medical equipment/robots		
	•	•	Low-tech intervention tools	○	
	•	•	High-tech intervention tools	○	
•	•	•	Hi-resolution flat-screen TV		
•	•	•	Digital patient information system		
•	•	•	Staff assist systems		
	•	•	Interactive, digital projection system	○	
•	•	•	Phone and Internet connection		
	•	•	Entertainment (series and movies)	○	
•	•	•	Service personnel		Midwives themselves attach much more importance to their appearance than other nurses, like nails and hair, for example. I worked for 10 years in a regular ward, midwives focus differently on their appearance than standard nurses, I noticed that. [ID 35, Head midwife]
•	•	•	Physical appearance	○	
•	•	•	Neat and well-dressed		
	•	•	Accessories	○	
•	•	•	Communal spaces		Some communal areas for the mothers, to sit and share experiences, because sometimes you are alone all day. [ID 7, mother]
	•	•	Workshop rooms	○	
•	•	•	Family and friends centered rooms		We are recruiting patients with a difficult experience who share their experience from the patient perspective, to give advice to other patients who are in the same situation to help. We need accommodated space for this. [ID 37, Executive]
•	•	•	Mothers meeting place		
•	•	•	Service personnel place		
	•	•	Children's place	○	
	•	•	Additional services		We will go to this management where we open our operating room to independent nurses and mothers that want to birth at home; if there are complications, we're just next door to help, this asks for flexible and innovative design solutions. [ID 37, Executive]
•	•	•	Food and beverage services		
	•	•	Supporter access		
	•	•	Open breakfast buffet	•	
•	•	•	Spa services		
	•	•	All women care consultations	•	
	•	•	Hair and beauty	○	
	•	•	Overnight sleep option (hotel)	○	
	•	•	Flexible visiting arrangements	○	

Note. Newly identified dimensions added to the overview of the healthcare (sub)dimensions to comply within a maternity context are presented with ○. The dimensions identified through the interviews are presented with •. Articles are categorized by (1) previous studies on healthscapes (H), (2) previous studies on maternity services (MS), and (3) data from in-depth interviews.

neighborhoods and streetscapes, and their impact on sites and the people entering them. Some maternity research points out to the need for outdoor places to sit and relax, while in our interviews both mothers, midwives, and senior managers state that this is of less importance due to decreasing length of stay and safety reasons. Therefore, the need for protected outdoor areas that are safe for mothers and their babies were highlighted (see Martin et al., 2021). In addition, mothers highly preferred private ways to enter hospitals and parking spots close to entrances; they described these impacts in stressful situations and the importance of clear, efficient guidelines on how to enter hospitals (Foureur et al., 2011). One of the hospitals we visited (also the most recently built) has accounted for this issue by providing a special entrance for delivering mothers (see illustrative quotes in Table 4).

Interior design. Whereas healthscape research tends to be very general regarding interior design factors, both maternity research and our interviews highlighted more the engagement of mothers' supporters (see Harte et al., 2016), including detailed information on the comfort of mothers (e.g., upright birthing furniture), partners (e.g., comfortable furniture or double-sized mattresses), and visitors. Interviewees also highlighted distraction tools, such as those that facilitate movement. Provision of a homey, secure environment (e.g., visually hiding medical equipment, using non-clinical materials, providing places to secure personal belongings) was a top priority.

One of the newest hospitals in our sample includes large paintings in its birthing rooms (e.g., images of nature, see Aburas et al., 2017), that was established by a group of artists and psychologists to support mothers while giving birth, to help them relax mentally and reduce their pain. Therapeutic design in healthcare settings can enhance the environment, provide distraction, and aid wayfinding; it also can contribute to a patient's sense of personhood by creating dignified spaces.

Ambient factors. Ambient factors emerged from healthscape research, maternity research, and

interviews. Generally, they exist below the level of customers' immediate awareness (DCunha et al., 2021) and refer to background characteristics that trigger the five senses (Bitner, 1992)—such as temperature, ventilation, acoustics, music, lighting, aroma, and cleanliness.

Functionality. Functionality is the ability of architectural elements to facilitate performance and the accomplishment of goals inside the hospital (Bitner, 1992). Functionality within the MHS is of key importance, considering the chances of unexpected, unpredicted issues and timings. Easy wayfinding when entering the hospital is key, because it is essential to creating good healthcare experiences and organizational perceptions. Continuous information provision and close connection to midwife hubs are also examples of functionality. Privacy was one of the most discussed topics during our interviews, with several mothers mentioning their frustration about not having control over their environments or over who enters their rooms and when. They expressed their desire to have a sense of control over their actions, facilitated by good design that would enable them to move around ward areas, open and close curtains, control lights and temperature, as well as designs that aid rather than hinder their sense of normality (see Hamilton, 2021). One of the hospitals used adjustable privacy signs that mothers could regulate, as locking doors was no option due to safety reasons. Previous studies similarly have reported that fostering a sense of control, providing information, and allowing patients to take responsibility for aspects of their care reduces helplessness and improves outcomes (Douglas & Douglas, 2004).

Technology. Recently emerging technologies have expanded the area of services from physical spaces to cyberspace (Han et al., 2020), merged with advanced technologies such as robotics, artificial intelligence, and cloud computing. One of the most dramatic changes since Bitner's introduction of servicescapes in the early 1990s is the birth of cyberspace and rapid advances in technology (Sahoo & Ghosh, 2016). We intentionally exclude research on

the e-servicescape from our literature review, because we focus on tangible properties. Therefore, the technology dimension refers to technological tools and methods used in the hospital to improve the service from both medical and leisure perspectives. Technological support required for medicalized childbirth may increase anxiety for some women, thus optimal birth unit design should facilitate physiological birth while also providing access to technology for women and babies who need it (Foureur et al., 2011). From the interviews, we deduce that childbirth is as old as humankind, so compared with patients in other departments, mothers focus less on high-tech equipment. Nevertheless, the importance of technology continues to increase, along with patient expectations (Table 4). Patients tend to identify as important technology that provides time-passing distractions, such as proper phone and Internet connections and the ability to watch movies or television. Medical staff instead view technology as a tool to improve the overall functioning of the department; they highlight the need for digital patient information systems and health-tracking devices. The interactive digital projection system in Table 4 was not discussed during the interviews because it is not (yet) part of the hospital infrastructure within maternity departments.

Tangibles of the service personnel. Service personnel tangibles is mentioned extensively in health-care research, maternity research, and the interviews. For example, in a study by Chung et al. (2012), patients gave higher scores to competency, trustworthiness, empathy, and contentment with the consultation when the doctor was wearing a white coat. The tangible dimensions that are part of the MHS index represent three subdimensions: physical appearance, clothing, and accessories. Various mothers and senior managers stated that midwives attach more importance to their appearance than most other nurses.

Communal spaces. The communal dimension refers to the actions, programs, and people that create a feeling of being part of a group, sharing a similar background and/or common needs and interests, that can achieve something together. In most

hospitals, mothers do not tend to leave their rooms after delivery, even though most expressed the need to connect with other mothers and midwives to share information and experiences. Notably, in the selected hospitals, there are no collective rooms or places available to facilitate such (spontaneous) interactions or social norms did not support them leaving their rooms. One newly built hospital provides communal spaces, such as a central breakfast place in an enlarged corridor, in which parents can meet one another or else create specific projects to connect patients, such that those who previously have experienced specific difficulties can support others (see Table 4). For many, the idea of hominess was defined by the presence or provision of space to welcome visitors and facilities for their other children to play or, in contrast, providing places for patients to be alone.

Additional services. Within the maternity department, additional services can improve the patient experience and well-being before, during, and after delivery. This dimension refers to extra services that are not part of the medical act of giving birth but support the act. The services are specific to each health-care department. As Table 4 indicates, these additional services will become more important in the future, because lengths of stay in Western hospitals are decreasing (e.g., overnights sleep options for parents with a premature baby). Because of the risks linked to home births, staff members at one of the hospitals we visited are considering how to open their hospital to independent nurses and mothers who experience difficulties during home birth. Another topic discussed during our interviews is the importance of continuity of care, which is inextricably linked to the various services mothers use, before, during, and after childbirth.

Conclusion

The design of the MHS can have a major effect on women's experience and their families and on the overall perception women have about the quality of care within the MHS (see Table 1)—which is in line with recent work on the role of the healthscape on patient experience in various wards (Martin et al., 2021; Ulrich et al., 2020)—including maternity wards (e.g., Aburas et al.,

2017; Nilsson et al., 2020; Setola et al., 2019). With this article, we have sought to summarize and structure the current discussion of MHS research to conceptualize the MHS concept together with its dimensionality. According to our multidisciplinary literature review of healthscapes in general and maternity services in particular, but also our interviews with multiple stakeholders (mothers, midwives, heads of midwives, and hospital executives), we acknowledge the unique needs of maternity ward users in terms of design, built environment, architecture of the facility, its implementation in its surroundings, and all tangible elements experienced by maternity users. We also developed a strong conceptualization and index of MHS to best capture the concept while providing an instrument to closely assess and monitor the quality of MHSs. Both conceptualization and index contribute to theory development by stimulating further research that also can improve the healthscape and experiences of mothers, other parents, babies, and families. Our detailed MHS index should help designers, architects, and managers identify key aspects to consider when improving maternity service experiences. Beyond the maternity sector, our enriched conceptualization of the healthscape can guide other healthcare departments to conduct detailed investigation of the characteristics of their specific departmental healthscapes. Moreover, for hospitals, improved healthscapes may be a source of increased competitive advantage, especially in terms of enhancing stakeholders' trust, loyalty, and recommendations.

... we acknowledge the unique needs of maternity ward users in terms of design, built environment, architecture of the facility, its implementation in its surroundings, and all tangible elements experienced by maternity users.

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Several limitations of our study suggest opportunities for further research. First, our research is limited by both its sample size and its restriction to Belgian hospitals. Second, the index we propose assumes that stakeholders' MHS expectations are homogeneous. However, the importance that stakeholder groups attach to the various dimensions of the maternity construct may vary (e.g., between mothers who have Caesarean versus vaginal births). Research also could examine the negative consequences (i.e., dark side) of improved MHSs; for example, patients offered hotel-like services might become more demanding than other patients. Moreover, research on the social consequences of the MHS is highly relevant, because the built environment, architecture, and design likely affect the quality of social interactions between users.

Our findings also provide hospital managers, architects, and other relevant stakeholders with insights into patients' perceptions, expectations, and preferences regarding maternity facilities, which they can use to improve their services and design of MHSs that trigger positive patient experiences. We complement data about patients' perceptions with those of midwives and senior managers to produce a holistic overview. The findings thus add to growing evidence that can inform the development and creation of patient-focused healthcare environments for the future and—with the help of supportive organizational behaviors—contribute to desired therapeutic outcomes for patients and satisfaction for them and their families.

Implications for Practice

- Healthcare providers, designers, and architects can benefit from the comprehensive overview of the (sub)dimensions of MHS to carefully examine each (sub)dimension of maternity wards. As some (sub)dimensions are unique to maternity wards, those professionals can rely on our comprehensive index to design the facilities of maternity wards.
- The index dimensions and subdimensions suggest topics that can be closely monitored and measured for evaluations and further improvements.

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Note

1. The role of a support person—such as a spouse, family members, or friends—is to help a loved one heal through support, encouragement, and communication during the loved one's stay.

Supplemental Material

The supplemental material for this article is available online.

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