THE ADOLESCENT’S HOSPITAL EXPERIENCE: PREFERENCES FOR ENVIRONMENTAL DESIGN

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Thesis submitted for the Doctor of Philosophy

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“This world demands the qualities of youth; not a time of life but a state of mind, a temper of the will, a quality of the imagination, a predominance of courage over timidity, of the appetite for adventure over the life of ease.”

Robert F. Kennedy
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Declaration

I certify that this thesis is a record of original work and contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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_______________________________________________________________________

Deborah Norton-Westwood

Date
For Suzi,

“Understanding is perhaps one of the most important gifts one human can give to another. If we learn not only with our minds but with our spirits, the meanings of experience, we might better be able to say, 'I understand’”

Munhall 1994
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Abstract

Aim
The principle aim of this study is to examine what key aspects of the hospital built environment contribute to either a positive or negative hospital experience for the adolescent population.

Background
Research to date has demonstrated that adolescents in respect to Healthcare are an underserved population. In recent years with new construction and the renovation of existing healthcare facilities, attention is now being directed to the healthcare environment as a result of its’ ability to impact patient care outcomes and patient and family satisfaction. However, adolescents pose a unique demographic due to: 1) Transition of Care 2) rapidly evolving stages of development and life changes and 3) the cost vs. benefit ratio in that adolescents represent a small demographic in comparison to the overall paediatric and adult population. Appreciating, understanding and highlighting the needs of adolescents in respect to the physical environmental will assist in the design of age appropriate healthcare environments that generate healthcare benefits for this dynamic age group.

Method
Utilising a qualitative interpretive approach informed by Heidegger’s Hermeneutic Phenomenology, a convenience sample of twelve adolescents aged 12-19 years of age living in Doha, Qatar were interviewed via open ended questions following a minimum of three days in hospital. Field notes were taken immediately after each interview with interview transcripts transcribed verbatim into narrative text via the Joanna Briggs Institute Thematic Analysis Programme (JBI-TAP). Aided by van Manen’s six steps of thematic analysis common themes were identified.
Results

Four main themes were identified:

- The importance of physically engaging and stimulating environments that are age appropriate;
- The desire for privacy and personalisation of space;
- The importance of sustaining opportunities for family engagement within the hospital environment; and
- The world of connectivity - the sense of normality amidst chaos.

Conclusions

The findings are congruent with previous research that support the overall benefits of dedicated adolescent units and age appropriate environments. The adolescent perspective rarely acknowledged in unit design needs to foster a culture of community and openness where adolescents can feel safe to articulate their physical, cognitive and psychosocial needs.
Prologue:

In commencing the programme of research for the award of Doctor of Philosophy I had many questions ranging from: who will read it and where and how do I begin? Yet, the most poignant question is not the question that would be answered that day or even the next, but rather it is the question that drives the need for the research itself. Determining a topic of inquiry that upon completion is intended to contribute to an existing body of knowledge, resting in originality of approach and/or interpretation of findings, can present a formidable challenge. An orientation of inquiry commences with a thoughtful reflection on the knowledge, experience, and interest of the researcher and more importantly, determining an area of inquiry that is of importance and urgency to both the participants of the inquiry and also the audience (in this case, healthcare professionals, architects, and designers).

This study consists of two distinct phases: Phase 1 is a comprehensive systematic review of the international evidence (Chapter Four). In conducting a comprehensive systematic review I sought to answer the question ‘Do design strategies reduce anxiety in paediatric patients?’ The results of that inquiry identified a gap in adolescent care which formed the proposition for the 2nd Phase of this inquiry – ‘The Adolescent’s experience of hospitalisation and as a result their preferences for hospital design’.

In keeping with the methodological grounding of Phase 2 of the study (Heideggerian Phenomenology) I commence this report of my research with a gesture of ‘transparency’ in the form of a description of myself as a paediatric nurse who has a lifelong interest in design, and current employment on a project building a Women’s and Children’s hospital in Doha, Qatar. However, despite my education and experiential grounding in healthcare where the objective assessment of patients and positivism is the dominating paradigm, I was concerned that my chosen research question was too esoteric. Interestingly, such doubts were soon set aside as I had the opportunity to meet a young man.
His name is Ahmed* and accompanied by his mother he came to our project offices in the autumn of 2011 seeking assistance with his high school science project. Now two years later, Ahmed has completed his project and I was curious to hear about his experience. The following Case Study is a description of the conversation I had with Ahmed, in his home with his mother present, December 2013.

**Ahmed’s Story – A Case Study**

Ahmed’s story began in 1997 in Montreal, Quebec, Canada. The first and only child, Ahmed was born to a culturally diverse family; his mother French and his father Lebanese both had immigrated to Canada many years prior. It was during his mother’s pregnancy that the antenatal diagnosis of a severe and complex cardiac anomaly - Atrioventricular Canal defect commonly referred to as AV Canal, was first discovered. For Ahmed’s expectant parents, the news was devastating. Experiencing joyful anticipation of their first healthy newborn, such feelings were suddenly and unexpectedly replaced with anxiety and fear as they faced uncertainty at what lay ahead for their child and for themselves as parents.

Complex cardiac malformations frequently require ‘staged’ repairs and thus multiple ‘palliative’ surgeries. Regular visits to the Cardiologist and/or Cardiac Surgeon become a regular part of life. At the time of interview, Ahmed had undergone a total of eight surgeries and numerous minor invasive procedures. The surgeries all performed at Sainte-Justine’s Children’s Hospital (CHU), Montreal began with most significant surgery, the primary repair performed at five months of age, necessitating a hospital stay of 30 days.

Today at 17 years of age Ahmed’s memory of past events related to hospitalisation,

*To protect anonymity and confidentiality of the participant(s) the names have been changed.*
remain strong. Although details of early hospitalisations are lost or dulled a result of his very young age at the time, Ahmed’s preferences for hospital design, particularly in the outpatient setting due to his many follow up visits, are clear. In fact, helping architects and interior designers create comfortable and engaging spaces for the paediatric/adolescent patient has become a passion of Ahmed’s.

This passion became evident to all those around him when for a high school science assignment Ahmed chose to interview 50 patients visiting a cardiac outpatient clinic and based on what he learnt from these interviews Ahmed created a computer 3D design model of the ‘ideal’ clinic waiting room.

Below are excerpts of the interview with Ahmed:

“Ahmed can you describe some of your experiences as an adolescent inpatient?”

“In one of my surgeries I think it was for my gums, I was sent into a room after the surgery what is it called?” (Interviewer) “Recovery Room?” Ahmed continues, “Yes that is it. In that room there was a person next to me and I don’t know the issue ....but he was very noisy- he would cry and complain. I don’t know what happened but it was very disturbing as a patient. I can’t blame him because you never know what has happened however you know in such an environment the situation is very stressful to the other party. It is not like the person who is in pain or is feeling sad can do much about it because that is how they feel, however with the environment being a very cramped room it has an effect on certain patients, especially due to the fact that you are nervous and you don’t really know what is happening all these factors come into play- it is very stressful.”

“You mention it is stressful can you describe that further?”

“Stressful in that you are thinking about what is going to happen to yourself and having that distraction coming into your thoughts. It is basically a negative – the unknowing-
things are happening and there are stages where you are completely alone other than the nurse, people you know and trust are not always with you. As adults they probably experience similar but being younger these thoughts come into play and you start to create these images in your mind. When faced with situations such as a person crying, pleading, or moaning it can lead you to thinking of the worst scenario. You may be perfectly fine, but it gets you thinking of the negative…. of what is going to happen.”

“In your opinion what do you think would help to alleviate such stress?”

“At that point you just have to have separate rooms I know it is not always the ideal case for a hospital but that is how it should be. When you are put in these recovery rooms you should feel that only the people that you know and trust are going to be inside the room with you. You are at a point where you are getting better however you are not there yet. Having two families worry about someone in the same room sure it saves space, and sure it does save money, however it is definitely not the way to go. It doesn’t make the journey for the patient comfortable. For patients in a critical state, having space for your family is a must so you need to have single rooms I think that is an obligation- you just have to.”

Inpatient Paediatric Units:

“I was pretty young when I was an inpatient but my experience was good at Sainte-Justine and being in a paediatric hospital they definitely made sure the children were taken care of. Areas within the unit if I remember were different sections- if you were a toddler you were with other toddlers and older kids with older kids. I was an open room but there weren’t that many patients in the room.”
Ambulatory or Outpatient Clinics:

“In more recent years apart from minor procedures, you mention that your main access to the healthcare system has been through follow up visits to the outpatient clinics. Can you describe some of your impressions of that experience?”

“In the hospital I was at in Canada, the waiting areas were sectioned off by specialities and because it was a paediatric hospital there was a lot of entertainment for the children to keep them busy such as toys and games, while arriving here in Qatar it was different. I was transitioned at the age 10 to Adult services- a decision that was more for my parents- they wanted to meet and have the same doctors as I got older. However for myself, although it definitely was a different experience, I think I matured or adapted to the environment pretty well. I was with older people. I was used to having entertainment you know or television to keep my mind off things or to keep me busy while waiting. Here, while they had television most of the time what was playing was the News. It was in Arabic and it was not like anything really happy, it was ‘Breaking News’- things happening in the world- terrible things which personally I don’t think is the best thing to show to someone waiting to have a check-up for a heart condition. You are already anxious and something could be happening in your home country and you are worried about your family and your blood pressure goes up. It is these factors that people have to think about as it really does have an effect on the patient themselves.”

“Was it these issues that motivated you to do your own research for your science project?”

“Definitely, it was not only the fact of the environment it was also the state of the waiting rooms, the way they organised the patients, it was kind of uncontrollable at times. In Canada it is more controlled but here I have seen it where sometimes there are so many patients that at times you don’t really know where to put them and they are just standing. When you are in a clinic room, patients would knock on the door
asking if you were finished or the Doctor was free. You wouldn’t see that in Canada mainly because the waiting rooms and check-up rooms are in different sections. Here, you have seats for waiting right outside each check-up room. It’s fine, but when you have a whole row of seats full it is a problem. I have told them and they (the hospital administrators) agree and have noticed themselves that it is an issue of concern. Like myself, those I interviewed also commented on the comfort of the seating, cleanliness of the area and the lack of colour in the areas. At the new Heart Hospital- that is what it is called, I have noticed they have improved on such issues- they have comfortable chairs, couches, indirect lighting, use of colours, plants, windows- it was really nice and you could see that the patients were more organized. Waiting rooms are still a bit claustrophobic but much better as the patients I interviewed agreed.”

“Based on your experience as a patient, and having conducted your own research can you describe what the ideal inpatient room would look like if your friend had to go into hospital tomorrow?”

“You have to think not only of the patient but also the family and friends visiting.”

- “Private room with space for family or whoever the patient wants to be there”
- “Comfortable seating- chairs and/or couches”
- “Windows, natural light and indirect lighting”
- “Access to Internet is a must.”
- “Colours of the wall - I personally like beige, orange and yellows but it is difficult as each person has their own colour preferences.”
- “Plants”
- “Since I was young I have always had a thing about bathrooms and using public bathrooms so that is a big issue from a cleanliness and privacy perspective.”
- “Double room but only maximum of two patients and of similar age. This can have both pros and cons but if you have someone with the same disease you have this mutual experience can offer someone who is supportive and communicative.”
“People don’t consciously realise that such little things help, but when you have been in both environments like I have both when I was younger and now that I am a teenager, you actually feel different- you can see it – you can compare. That is why I had the thought and motivation to conduct such a project. I have been in such different hospitals and many different situations that I can create a comparison; together with my fellow cardiac patients we can try to provide the information and highlight our issues and hope that those who run the hospitals listen.”
Chapter One - Overview of the Study

“The effect in sickness of beautiful objects, of variety of objects and especially of brilliancy of colour is hardly at all appreciated...... I have seen, in fevers (and felt, when I was a fever patient myself) that most acute suffering produced from the patient (in a hut) not being able to see out of the window, and the knots in the wood being the only view. I shall never forget the rapture of fever patients over a bunch of bright-coloured flowers. People say the effect is only on the mind. It is no such thing. The effect is on the body, too. Little as we know about the way in which we are affected by form, by colour, and light, we do know this, they have an actual physical effect. Variety of form and brilliancy of colour in the objects presented to patients are actual means of recovery.”

Florence Nightingale p33-34 D(2)

Introduction

It has long been known that the environments we live and work in can affect not only our emotional well-being, but also our physical and mental health.([3-6]) Children in particular are a vulnerable population as the coping skills typically used by adults to mitigate such experiences are underdeveloped.([7]) When entering a hospital setting children are subjected to an onslaught of new experiences: unknown faces and foreign sounds, sights and smells. The unfamiliarity and uncertainty of the environment can create feelings of fear and anxiety for the parent and for the child. A child’s imagination, which in normal circumstances provides a source of joy and excitement can, when faced with “scary” situations, painful procedures and unknown entities, have a contrary affect - further increasing a child’s level of fear or anxiety. For adolescents the nature and complexity offered by the hospital environment is exacerbated. In a pivotal period in their development, adolescents are often confronted by a lack of age appropriate environments in which to address their psychosocial and developmental
needs in the provision of care. In recent years, with a growing appreciation of the impact that the physical environment and space can have on patients, designers, architects, and healthcare professionals have been challenged to design age appropriate spaces that not only enhance the patient experience for children and adolescents, but optimize their health outcomes. When considering the renovation or building of healthcare settings, ‘getting it wrong’ can have significant operational and financial consequences. Historically the “art of design and the science of construction were paired and based on empirical evidence”p30. Today, architecture and design professionals alike recognise the lack of evidence arising from rigorously designed research to demonstrate the impact of design on healthcare outcomes. In large part, such deficiencies in conducting cause and effect studies are a direct result of the practicality in attempting to manipulate and control the various design features.

**Purpose for the Study**

The principle aim of this study is to examine what key aspects of the hospital built environment contribute to either a positive or negative hospital experience for adolescents. The primary benefits achieved from this research although not generalizable, are intended to contribute and ‘grow’ the existing but limited body of knowledge and to provoke thought and consideration of the unique needs of adolescents particularly when considering the re-design, renovation, and build of paediatric healthcare environments.

**Background**

In seeking to find research that supports design strategies to reduce anxiety in paediatric patients a comprehensive systematic review was conducted. The results showed that the available research, whilst lacking in design and reporting rigor, clearly demonstrated a relationship between the design of a healthcare environment and the subsequent anxiety experienced in the paediatric patient. An important finding from the review was the lack of research-based knowledge regarding the adolescent patient
and their preferences for hospital design. For adolescents in particular, contributing to this dilemma and receiving global attention is the relatively new phenomena termed ‘Transition of Care’.

**Transition of Care**

As a result of advances in the technology and science surrounding the diagnosis of different chronic diseases, children are being diagnosed at an earlier age. Once diagnosed their engagement with healthcare services accelerates.\(^9\) In years past, disease conditions such as arthritis, rheumatism, cystic fibrosis, congenital cardiac anomalies, and diabetes were frequently met with poor prognoses. Nowadays, with the rapid advancements in therapeutic and diagnostic technologies, more effective treatments and medications, children are not only surviving, but are able to lead fuller and more active lives.

With these advances, come the challenges of the ongoing management of chronic illnesses - particularly as children grow and move into adolescence. The accompanying need for their care to transition from a paediatric specialist to an adult specialist has become a healthcare issue of growing concern and attention.\(^9\) Multidimensional and interprofessional in nature this process has been termed ‘Transition of Care’ and is defined by Blum as

> “the purposeful planned movement of adolescents and young adults from a child-centred to an adult-oriented health care system”. “Transition from such child-centred to adult-oriented health care systems is important for all teenagers, healthy or ill”\(^{p570}\).\(^{10}\)

To date, it is the opinion of many patients and healthcare professionals that the Transition of Care is poorly managed.\(^{11, 12}\) This mismanagement has been associated with adverse health outcomes for the patient such as worsening glycaemic control,
graft failure in transplant recipients and/or decreased utilization of healthcare services often termed ‘loss to follow-up’ in reported cases of surgical and oncology patients.\(^9,13,14\) It is for this reason that leading organisations such as the American Academy of Pediatrics, Royal College of Physicians of Edinburgh and the British Department of Health advocate that this transition of care needs to be a purposeful, planned process.\(^9,15,16\) A child with a chronic illness will transition a range of healthcare systems and services including hospitalization throughout their life. Determining who is best suited to manage the care of patient as they transition from being classified as paediatric to adolescent to adult is a hotly debated topic in the discussions about Transition of Care. Adapting the hospital environment to accommodate the unique needs of the different and specific age groups is an evolving concern in the discussion regarding Transition of Care.

To date the research available to inform healthcare professionals regarding adolescent preferences for the built environment is limited. Subsequently, adolescents are an underserved population, caught between care provided either on a ‘child-like’ paediatric unit or adult setting, both of which can become an unnecessary source of anxiety.\(^17-19\) A lack of consensus within the international healthcare community regarding the age that defines paediatrics and adolescents tends to result in an ‘all or nothing’ approach in research. Some countries characterize the age of adolescents from as young as 12 years of age to as late as 21 or even 25 years of age.\(^20,21\) This lack of consensus has resulted in an upward shift of young adults now accessing paediatric care facilities at increasing proportions; a practice that challenges the healthcare community as it strives to not only offer specialized services and quality health care, but tries to do so in an environment that is age appropriate.\(^22,23\)

Conversely the older adolescent who is now entering adulthood may not want to access a paediatric facility particularly if its’ design is geared to young children. This may be especially true in cultures where by the age of 14 a male is commonly seen as ‘a man’ and females by the age of 18 may be married with children. It is a complex issue
that many either do not understand or choose to ignore. Case in point, despite increasing research demonstrating that dedicated adolescent units result in increased patient satisfaction and an overall higher level of quality care as compared with being nursed on child or adult units, many general and paediatric hospitals throughout the world lack dedicated inpatient units for adolescents.\(^{17, 18, 24}\) How many? The exact figures are not known; however a 2001 national United Kingdom (UK) survey estimated that only 12% of all hospitals in the UK had a dedicated inpatient adolescent unit.\(^{24, 25}\)

Hospitalization can be an isolating and restrictive experience for adolescents, who at 12-19 years of age, are in a period in their life when they are striving for self-actualization and independence.\(^{26}\) The very ‘rules and routines’ that they endeavour to break free from at home, can be even more imposing in the hospital setting. Issues such as privacy, control, separation from and limited access to peers, school and family, are all intensified in the healthcare setting.\(^{24, 26}\) Failure of healthcare professionals to recognise that these young adults ‘want’ and need to be included in their care is a common theme in the research literature for the adolescent patient.\(^{24, 26, 27}\) Adolescents want and need healthcare professionals to treat them as they would an adult in the management of confidentiality and information sharing. Adolescents want and need to be included in the decision making process.\(^{24, 27}\) From this descriptive research regarding the adolescent hospital experience healthcare professionals are learning to appreciate that adolescents have the cognitive ability to understand their illness, the implications of which may preoccupy their thoughts with feelings of fear and even sadness in anticipation of what the future may hold.\(^{22}\) Gaining a better understanding of the adolescent preferences for how the hospital environment is designed can assist healthcare professionals to further facilitate the adolescent’s healing whilst in hospital.

Although there is a general acceptance that Transition of Care programmes should be practised, there is no one model that has been adopted as a care standard.\(^{28}\) Adult services, not accustomed to the presence of parents, predominantly focus on the
patient, providing care that is described as “collaborative and empowering” whilst the philosophy of care in paediatric services is frequently referred to as “prescriptive and nurturing”\(^6\).\\(^{28}\) Protective of their young patients, paediatric teams are often reluctant to relinquish their program of care to adult services underpinned by a concern that the adult skill set lacks the knowledge of paediatric diseases and childhood developmental stages. Of foremost concern for the patient is the loss of the ‘therapeutic' relationship of trust and security that has developed throughout the years between the patient, family, and physician.\\(^{11}\)

Therefore finding strategies to effectively achieve a smooth transition of services has become the subject of considerable debate. At minimum the strategy will require a comprehensive programme that moves beyond the mere physical transfer from paediatrics to adult care. Instead, the strategies need to acknowledge and facilitate the adolescent’s physical, psychological, and social development.\\(^9\) Hence, appropriately named *Transition of Care*, the issue remains a contemporary healthcare concern, one which additionally and pointedly impacts daily on the healthcare environment.

The goal of this research is to provide healthcare professionals, and architects an insight - a glimpse into the preferences of adolescents for the hospital ‘built environment’. This insight arises from a hermeneutic process of listening to and interpreting the reflections of 12 adolescents who live and have undergone or undergo repeated hospitalisations in Doha, Qatar.

**Chapter Structure**

In an effort to provide the reader with a synopsis of this thesis the following short descriptions of each chapter and their purpose is provided:

**Chapter One:** Provides a brief background for the study and presents an overview and rationale of the conceptual framework for this dissertation.
Chapter Two: Presents an overview of the history and conceptual foundations related to hospital design- in particular the evolution of hospitals designed for children.

Chapter Three: Discusses the emergence of the science of environmental design and its various theoretical underpinnings offering existing theories and research that form the basis and influences in today’s modern design of healthcare facilities globally. Examining the theories and key developmental milestones that are necessary to be achieved in the course of adolescent development, such descriptions are intended to provide a greater understanding and appreciation of adolescents’ preferences and expectations of the built environments they inhabit. Key design elements such as privacy, noise and colour and their possible impact on an adolescent’s hospitalisation are discussed in detail.

Chapter Four: Reports on Phase One of this programme of research – a Comprehensive Systematic Review on ‘What Hospital Design Features Impact Event Related Anxiety in Paediatric Patients’? This chapter details the results of a comprehensive search of all quantitative and qualitative research that met the inclusion criteria set forth in the protocol for the review. As a result of this systematic review, a gap was identified in respect to the healthcare needs of adolescents. It was this gap, the lack of research-based knowledge regarding the adolescent patient and their preferences for hospital design that determined the focus of Phase Two of this research study.

Chapters Five - Seven: These chapters concentrate on Phase Two of the study. Chapter Five provides an overview of the philosophical underpinnings of Phase Two (Hermeneutic Phenomenology) and the rationale for choosing this methodology. Chapter Six in addition to the discussion on field notes describes the study setting, inclusion/exclusion criteria, data collection, ethical considerations and limitations to Phase Two. Chapter Seven presents the findings according to the principles of hermeneutics and thematic analysis. A particular focus of this chapter is the discussion
of the trustworthiness of the research findings as demonstrated through concepts of ‘credibility, transferability and dependability’.

**Chapter Eight:** Building on the thematic analysis of Chapter Seven this chapter discusses the findings of the study; puts forward a conceptual model that represents the central thesis that emerged from the study; and posits the implications for healthcare administrators, design/architects to direct their design of new - or redesign of existing - hospital spaces for the adolescent.

**Explanation of Key Terms used throughout the Thesis**

**Method:** A certain mode of inquiry, research technique and the procedure for carrying out the research.\(^{(29)}\)

**Methodology:** Includes the philosophical framework and assumptions underpinning the research. Describes the process by which insight about the world and the human condition are generated, interpreted and communicated.\(^{p174}\)\(^{(30)}\)

**Phenomena:** Objects and events as they appear assuming that there is a world and that it is social in nature.\(^{(31)}\)

**Epistemology:** The study of knowledge and how it is judged to be ‘true’.

**Ontology:** The study of human existence- the meaning of ‘being’.

**Consciousness:** Refers to the presentation of objects to the human experience through the process of intuition.

**Intuition:** Refers to the way in which we respond to objects.

**Please Note:** While the majority of literature referenced is dated from the year 2000 and above, there are several references that date back many years. For the latter, some are seminal works such as Florence Nightingale’s ‘Notes on Nursing’ while others are the result of topics that today remain largely under documented or researched.

To protect anonymity and confidentiality of all participants within the study the names have been changed.
Chapter Two: The History of Hospital Design

‘Who would believe that so small a space could contain the images of the whole universe?’

Leonardo Da Vinci

Introduction

Various forces (economic, public health & safety) have influenced the choices in hospital design. Historical analysis reveals the emergence of the science of environmental design and its’ accompanying theories such as environmental psychology:

“Since the beginning of the industrial age, we have preferred to abandon what is old or outdated, whether things or people. That paradigm is now changing, giving way to maturity, neither young nor aged, new nor old, what is emerging is a respect and understanding for what has gone before - maturity entails the acquisition of a wisdom that transcends the either-or-stereotypes.” \(^{(32)}\)

It is within this paradigm that healthcare is also evolving. Shifting from the doctor-patient relationship whereby the patients with complete trust placed themselves almost unquestionably in the ‘hands of the physician’ to today, where healthcare’s focus first and foremost is (or should be) on the patient and the patient’s family in what is appropriately termed, ‘Patient-and Family-Centred Care’ (PFCC). \(^{(33)}\) It is in this concept of PFCC that the patient and family have the ability to take a more central and active role in their treatment thus empowering them to be genuine partners in their care. \(^{(33-35)}\) Accessibility to timely, relevant communication and information provide the
patient and their family the opportunity to make more informed choices and to collaborate with, rather than being only a recipient of, healthcare professionals.\(^{(32, 33, 35)}\)

In parallel, architects of healthcare facilities are challenged to create designs that not only accommodate PFCC but compliment and actively facilitate the concept. Establishing models drawn from the retail and hospitality industry in conjunction with access to information via the integration of digital technology, the opportunity for a new age of healthcare is beginning to emerge. The traditional, overwhelming and oppressive majesty of healthcare institutions are gradually being replaced with architecture that strives not only to keep pace with and synchronize with healthcare advancements, but be in the forefront, exceeding healthcare expectations.\(^{(36)}\)

Healthcare architecture can be modern and insightful; empowering the patient and healthcare professional rather than be seen as stifling, restrictive and anxiety provoking.\(^{(32, 36)}\)

It is understandable that the healthcare marketplace, through necessity driven by current economically challenged times, ever increasing healthcare costs and dwindling resources, is under unceasing pressure to reinvent itself. One foremost strategy is a committed proactive approach to education aimed at the prevention of illness and promotion of health.\(^{(33, 34, 37)}\) The renewed focus on education and prevention, has resulted in shifts from urgency care to primary care, and from inpatient care to ambulatory, community, and home-based care.\(^{(32)}\) Similarly, inpatient hospitals must have well defined and standardized care processes to streamline and improve efficiency and effectiveness of care thereby reducing the patient stay.\(^{(34, 37)}\) This realization and transition in healthcare has taken many years to emerge and for some organisations it is still in process or yet to be achieved.

**Understanding that which has gone before**

For hospitals and healthcare centres the challenge is clear. Architects pride themselves on the belief that the spaces they create profoundly affect the people for whom they
are intended. Notable environmental psychologist and professor of architecture, Craig Zimring in this Heideggerian-like present-at-hand comment states:

“For many of us the built environment is no more conspicuous than the surrounding air. Like air, the built environment only intrudes on our consciousness when it causes particular harm, discomfort, pleasure or awe” p145. (38)

Despite the root of the word ‘hospital’ having stemmed from the same origin as the words hospitality, hotel and hostel, it can have different connotations for both patients, visitors, and staff. (32, 36) For many, if surveyed, the re-call of past or present hospital experience(s), are often punctuated by strong emotional and unfavourable responses. It may be for this reason that over the years the United States Navy has chosen to name their hospital ships after emotions that evoke a positive and optimistic outlook: Hope, Solace, and Repose. (32)

Sadly, the hospital designs of yesteryear were not an accident but rather a product of the ever evolving ideas and values of society, science, and the status of the medical community at the time. (32, 36) From as early as the Greek temples of 1200 B.C. to 400 B.C. and the time of Hippocrates, temples such as Asclepios offered not only a place of worship but also a refuge for the sick. (32) According to historians, such temples resembled structures more reminiscent of spas with an emphasis on the belief that health would be optimized through exposure to the natural elements: fresh air, sunlight, rest, proper hygiene-bathing, exercise, and a reasonable diet. (32) In the dark ages with classical medical knowledge largely forgotten, ecclesiastic ‘hotels’ were erected beside churches where care to the ill was provided primarily by priests, lay brothers and friars with an emphasis on compassion and spiritual comfort. Such buildings evolved into large open wards that featured an altar or chapel to ensure that patients could see and hear the religious services. (32, 36)
With the emergence of the early renaissance, ‘hospitals’ began structurally to exist as separate entities from the church. Patients were classified according to type and severity of illness, with a separate unit provided for women post childbirth.\(^\text{(32)}\) Through functionality similar to what can be seen in many organisations today, departments were created with a ‘head’ assigned to each department, a board to oversee the overall operation and charges rendered to those patients who had financial means. Following the French Revolution and secularization, the privatization of many hospitals occurred.\(^\text{(32, 36)}\) No longer retaining their religious affiliations, hospitals did, where possible, preserve symbolic structural reminders.

**The Palladian Design**

Eighteenth century England proved to be a most lucrative time for the builders of hospitals.\(^\text{(36)}\) Built in part by the military to promote the maintenance of adequate manpower in the army and navy, the Palladian mansion became the architectural structure of choice for hospitals.\(^\text{(32, 36)}\) A military hospital, “Stonehouse” in Plymouth (1762) was the most notable.\(^\text{(32, 36)}\) To offset the prevailing zymotic theory of the time that causality of disease related to miasma or ‘bad air’, the hospital was built in a series of detached pavilions connected in the middle by open arcades to allow for the ventilation with fresh (outside) air. (Diagram 1) Endorsed by the medical profession, the Palladian model was an accepted design well into the mid-19th century.\(^\text{(32)}\)

Popular with the local gentry, many of whom served as governors of the hospital board, the building design was thought to not only add to the aesthetics of the town but to also provide a symbol of their philanthropic ideals. These design features in turn helped to attract more funds and add to the social status of benefactors and board members.\(^\text{(32)}\) The mansion-like hospital with its baronial architecture conveyed authority and control. The concentration of those less fortunate in a central location, although facilitating more economical care and increased access to resources, served more to regulate moral conduct than to actually promote the provision of care.\(^\text{(32, 36)}\) The architectural structure featured corridor plans that reflected and reinforced the
bureaucracy and social hierarchy of the organisation, from the board of governors, to medical staff, nurses, servants, and lastly to the patients themselves.\(^{(32, 36)}\)

Diagram 1: Palladian Model p42\(^{(32)}\)

Wealthier individuals from the middle and upper classes were seen and treated in the privacy of their own homes, exercising considerable authority over the physician and their own personal healthcare and treatment plan. Ironically, physicians at the time were considered to be of a social class on par with tradesmen and they were often seen to be similar to servants in that they permitted themselves to be at the beck and call of their paying clients. As a result of their social standing, physical contact was discouraged. The rarity of physical examinations necessitated the physician to rely predominantly on observation and the description of symptoms for diagnosis. It was therefore in the hospital setting that patients of lower social class, having few rights and being under the control and convenience of physicians, served as the training ground for clinical practice and research to further medical science.\(^{(32, 36, 39)}\)
The Pavilion Design

With empirical medicine advancing, in large part made possible by the hospital inpatient setting, physicians began to gain respect, social standing and authority in decisions affecting hospital design. By the mid-19\textsuperscript{th} century, in addition to the concern regarding miasma and the subsequent need for ventilation, was the growing apprehension for cross-infection believed to be the result of indiscriminately cohorting patients on undifferentiated wards.\textsuperscript{(32)} Impacting hospital construction, the Pavilion-plan design popular in France and England supported separating patients as surgical and non-surgical with attempts also made to isolate patients according to symptoms. Unlike the Palladian model which had wards virtually end to end separated by the ‘administrative committee room’, the Pavilion model consisted of separate buildings joined at one end by a single corridor. (Diagram 2) Made prominent neither by an architect nor by a physician but by a nurse - Florence Nightingale, the Pavilion model became known as the ‘The Nightingale ward’.\textsuperscript{(32, 36, 40)}

Diagram 2: Pavilion Model p45\textsuperscript{(32)}
A reformist, Florence Nightingale was not only an advocate for the profession of nursing but in her influential work ‘Notes on Nursing’ published in 1859, she demonstrated innovative ideas realizing even then, the powerful influence of the environment to affect patient care outcomes.\(^\text{2, 40}\) Environmental factors documented included sanitation reform, ventilation, temperature, noise, windows, light, plants, music, wall finishes, furnishings, and even colour.\(^\text{32, 41}\) Promoting the design for the ideal unit, the Nightingale ward consisted of a long rectangular space with 15 beds arranged along an extended wall with only one entrance available, adjacent to the nurse’s station.\(^\text{32, 39}\) Patients were positioned according to the acuity of their condition rather than by age or gender.\(^\text{39}\) Notable dimensions were the distances between beds, the height of the ceilings, and the relationship of windows to beds and patient beds to the nursing station.\(^\text{39}\) Plants were even sometimes used possibly in an attempt to lessen the room’s institutional appearance.\(^\text{39}\) Such a design, although providing large ward space, ample ventilation and interior austerity, sacrificed patient privacy for nursing efficiency. It eliminated small spaces (closets, sculleries - small kitchen, and lobby areas) which Miss Nightingale believed were unhygienic and served only as hiding or ‘skulking’ areas for patients and staff.\(^\text{32, 40}\) Regardless of the supporting research and the discovery of the germ theory, the Pavilion design remained a dominant model, some say due to its’ imposing style and its’ ability to socially elevate the physician’s role.\(^\text{32}\) However, as cities grew the disadvantages of the design gained relevance; its’ expansive footprint required large tracts of land and increased construction and maintenance costs.

**The Emergence of Paediatric Facilities**

According to historical architectural drawings and photographs, children cared for in such general and teaching hospitals were not accorded any special attention other than possibly given spaces in which to play.\(^\text{32, 39}\) It was not until in the late 1800s that pioneering institutions specific to the care of children started to emerge. The first hospital for children was Hôpital des Enfant Malades in Paris in 1802, followed in 1821
by Ireland’s ‘Institute for Sick Children’ which is now part of Dublin’s Tallaght Hospital; London’s Hospital for Sick Children on Great Ormond Street (1852); the Nursery and Child’s Hospital in New York City (1854); the Children’s Hospital of Philadelphia (1855), and the Toronto’s Hospital for Sick Children (1875). Such hospitals in the western world were rare, not without controversy and, like non-medical institutions such as orphanages, schools, and day nurseries, had their roots in the late-Victorian child rescue movements. Akin to the medical specialty of paediatrics, children’s hospitals did not originate as a result of medical specialization (disease or technology), but rather their origins stemmed from benevolence, and meliorist programs for the social reform of children. Like their peers, parents who were of financial means would never willingly choose to send their children to hospital, instead opting to have medical care provided at home. It is for this reason that effective therapy and accurate diagnosis for such children was also rare. In time Victorian hospitals became part of a worldwide explosion of medical building construction. However, even for these rare children’s hospitals, the only distinguishing feature that hinted to their paediatric population was the outdoor playgrounds provided for convalescing children. Play and fresh air were thus fundamental to their mandate.

Children’s hospitals and areas within generalist hospitals dedicated to children emerged slowly over time influenced by German paediatrician Carl Rauchfuss in 1877 and Emil Freer in 1938 - staunch advocates for separate areas and ideally separate hospitals in which to isolate children diagnosed with infectious diseases. Opponents to such a cause included Dr. Henry Dwight Chaplin in the United States who argued that it was in the infant’s best interest to be at home, cared for by the mother. He believed that “the multiplication of infant’s hospitals throughout the country should not be encouraged”. It is interesting to note that currently - more than 100 years later - and although the rationale may have changed both views had merit and questions regarding how and where to best care for children continue to be a topic of extensive debate. It is for this
reason that adolescents as cited in the author’s comprehensive systematic review, caught between the role of child and adult, remain at the forefront of such debates. Similarly, a continuing tension exists as to how to best integrate space that provides age appropriate care and diversional activities designed for children in an environment that enables the functionality and efficiency needed to provide quality care. Should the built environment reflect a ‘home for children or an institution devoted to science’ or is it possible that we can meld the two and meet the needs of the patient and family on all fronts? \(^{(32, 36, 39)}\)

**Conclusion**

This chapter has presented a history of hospital design. Understanding where we have been illuminates and provides insight to the goals we currently seek to achieve. This chapter explores the evolution of healthcare facilities from their humble beginnings where care was synonymous with spiritual healing, to the expansive, infamous Nightingale’ wards to the design/build of hospitals for sick children. Appreciating that the design of hospitals continues to morph, what has not changed is the central tenet for all healthcare professionals- Primum, non nocere- “First Do No Harm”. With this historical perspective the discussion can now move to the conceptual and theoretical principles underpinning the human experience of the environment, the science of environmental design and the resulting design features.
Chapter Three: Theoretical & Conceptual Grounding of the Study

“We shape our buildings and afterwards our buildings shape us”

Winston Churchill (42)

Introduction

This chapter provides a detailed analysis of the various theoretical and conceptual frameworks that need to be considered when researching an adolescent’s perception and preferences of the built environment of a hospital. Although the concept of space as it relates to Heideggerian Phenomenology will be discussed in Chapter Five this chapter commences with an overview of the dominant theories of Environmental Psychology - in particular the different variables that have been studied and their impact on a person’s perception and preferences of a ‘built’ environment. This discussion is followed with a careful analysis of the developmental theories of Adolescence and the central hypotheses regarding adolescent needs and desires to increasingly control their surrounding environment. The chapter concludes with a discussion of how both the theories of Environmental Psychology and Adolescence are influencing the science of environmental design as evident in the design choices being upheld by architects and interior designers engaged in either the design of new healthcare facilities or the remodelling of old. Foundational Theories of Environmental Psychology

As a product of nature, we as humans are inextricably woven into the fabric of our environments. (43) Daily in each action we take, we impact the environment and conversely the environment influences us. It is a symbiotic relationship that presents the timeless question that researchers have struggled to answer, which comes first, the behaviour or the environment? (43) The cause and effect relationship between humans and their surroundings whether in the natural and infinite space of the outdoors, or
within our enclosed inner sanctums creates a world in which we as humans are forever having to adapt.\(^6, 43, 44\)

The field of Environmental Psychology is one of the few sciences recognized to exclusively examine the relationship between humans and their environment. Approaching the discipline from both the social and physical science perspectives, environmental psychologists contend that human environmental behaviours extend beyond a single variable approach. Instead the relationship is conceptualised as multimodal and holistic in nature; an interplay between multiple biological, social and environmental factors. Influencing our behaviour, biological factors involve the absorption and secretion of neurochemicals and hormones within the brain or other regions of the body. Social factors are derived from our unique cultural, religious, social and/or personal experiences, in some cases mimicking behaviours observed from our families or peer groups.

Poised to explain why humans engage in particular behaviours in relation to their environments, environmental psychologists not only consider these biological and sociological factors, but use methods of environmental modification to enhance preferred actions and reduce undesirable behaviours.\(^{43, 45}\) It is this interaction between the physical characteristics of the environment, the social organisation and norms of the setting and the characteristics of the people that a framework is built for understanding the effects of the environment on human behaviour. Through theoretical foundations such as the human-environment relationship and environmental perception, environmental psychologists attempt to generate the knowledge that in turn informs the practical application of design.\(^{43, 45}\)

**The Human-Environment Relationship**

Much of the research conducted on the concept of the human-environment relationship has been based on four key theories - Integration, Stimulation, Control and the Behavioural-Setting (Table 1).\(^{43}\) The **Integration theory** proposes that it is through
a combination of design features that individuals are influenced to behave in a particular way.\textsuperscript{(43)} The **Stimulation theory** draws upon the impact of sensory stimuli (predominantly sight, sound and smell) and their ability to influence our relationship with the environment.\textsuperscript{(43)} A person’s level of perception will often be influenced by how much the stimulation (minimum or maximum) must change before it is noticed. The **Control Theory** states that having a sense of control over ‘our’ world and our sense of place is key to harmony and well-being. Environmental control involves behavioural-ability to change the environmental event; cognitive-ability to change the way in which we conceive the environment and decisional-ability to choose a response. Lastly, **Behaviour Setting Theory** considers the ability to adjust or accept behaviours dependent on the environment (location or event).\textsuperscript{(43)} For example, boisterous behaviour acceptable in an outdoor green space or a teen lounge would not be appropriate in a hospital waiting area or a ward setting.

**Social-Learning theories** differ from human-environment theories as they suggest that learning occurs first through the observation of others with the reproduction of such actions over time. Social learning theory emphasizes three concepts:

- people are intrinsically motivated to seek positive reinforcement and avoid negative stimulation;
- personality represents an interaction of the individual with the environment and is a relatively stable framework for responding to situations in a particular way;
- understanding our response to the environment involves consideration of a person’s life history and learning experience as together these influence our subjective interpretation of the environment.\textsuperscript{(43)}
### Table 1: Theories of Human-Environment Relationship p30\(^{(43)}\)

<table>
<thead>
<tr>
<th>Theory</th>
<th>Major Premise</th>
<th>Key Concept</th>
<th>Relevance for Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integration/Integral Theory</td>
<td>Elements of the environment work in harmony to facilitate a particular behaviour</td>
<td>Global environment instigators, goal objects and noxients, supports constraints, directors</td>
<td>Offers a holistic approach to design.</td>
</tr>
<tr>
<td>Stimulation Theory</td>
<td>Environment is a source of sensory information (stimuli) that leads to arousal.</td>
<td>Threshold, arousal, environmental load, overload, adaption level.</td>
<td>Holds that design styles can lead to over or understimulation.</td>
</tr>
<tr>
<td>Control Theory</td>
<td>Group of theories (Behavioural, Cognitive, Decisional) that address behavioural constraints and a person’s perceived control over his/her actions and behaviours.</td>
<td>Psychological reactance</td>
<td>Suggests that design elements lead to perceptions of control</td>
</tr>
<tr>
<td>Social Learning Theory</td>
<td>Determines that we learn first by observing others and eventually reproducing their action.</td>
<td>Reciprocal determination modelling</td>
<td>Encourages an understanding of established societal norms.</td>
</tr>
<tr>
<td>Behaviour Setting Theory</td>
<td>Public places or settings evoke particular patterns of behaviour.</td>
<td>Operant conditioning interactional theory</td>
<td>Emphasizes design is an important component of setting, contributing to a certain behaviour</td>
</tr>
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### Environmental Perception- Is Beauty in the Eye of the Beholder?

As humans we interpret the environment through the manipulation of information that allows us to function in our journey towards health. Perception and cognition are difficult to separate as a result of the interrelated mind/body link, and therefore given the complexity of the medical/healthcare space, we heavily rely on each skill.\(^{(46)}\) The
process and use of perception is both physical and cognitive.\textsuperscript{(6)} Research on environmental perception, difficult to conduct because of a myriad of personal and physical influences, has evolved from a historical focus on simple stimuli (object perception) such as colour-brightness and depth to a more recent emphasis on large scale scenes treated as whole entities (environmental perception).\textsuperscript{[43, 44]} The latter, while offering stimuli that differs not only in size and complexity, also assumes that the participant is engaged as part of the environment, thus experiencing it from multiple perspectives.\textsuperscript{(43)}

In our everyday life such perceptions are similar to Heidegger’s notion of ‘ready-to-hand,’ serving a pragmatic or - in this case - aesthetic purpose, for the most part going unnoticed until brought into our consciousness through an unexpected event or problem (‘unready-to-hand’).\textsuperscript{[46, 47]} For example, when a person walking down the street is so deep in thought they step off the curb only to be jolted into reality by a car honking his horn in warning, or you are asked if you are going to answer the phone that you did not even realise was ringing?

With the constant bombardment of stimuli in today’s busy world, our awareness and ability to adapt is continually being refined. Termed environment numbness, adolescents are a prime example.\textsuperscript{(44)} Adolescent’s ability to concentrate and complete homework while music is ‘blaring’ through their earphones or focus on their mobile phones while selectively ‘tuning out’ other sounds, can be a source of considerable parental frustration. In the Intensive Care environment healthcare staff have the capacity to adapt, differentiate, acknowledge or disregard a multitude of alarms and sounds that are consider noxious sounds for non-healthcare personnel.

It goes without saying that perceptions and resulting preferences of the environment may differ based on each individual. For the physical environment, there is controversy regarding the relative importance of person-based and environment-based influences in respect to the actual scene that is being perceived.\textsuperscript{(43)} Our perceptual ability and the
differences in how we perceive the environment can be attributed a number of factors. The quality and range of our senses - sight, hearing, smell, taste, and touch and characteristics such as gender and age are all demonstrated to be personal influences. (6, 43, 44)

Level of education and career choices are also strong influencing factors affecting the way we perceive and engage our surrounding environments. This is readily played out from the roles people play in the construction of a new healthcare facility. For example, the architect and engineer are focused on structural design, construction and building codes, whilst the interior designer’s perception is focused on the aesthetic and functionality of space; the healthcare administrator and staff judge and perceive the space from a point of functionality, resource and time efficiency. Amidst all these interdependent perceptions are the patient and family who, as the recipients, have preferences for space based on their physical and emotional response and needs- how it makes them feel. Perceptions and preferences drive the overall global perspective of space- its’ form and functionality, aesthetic value of the interior and exterior design, and ability for space to meet the needs of the patient population it serves. The way in which we see the world physically and cognitively is also strongly influenced by our cultural context. Tradition, language, religion and health beliefs can in isolation or in combination attribute to the variations that may be displayed by an individual or a group. (43, 44)

Environmental perception like the human-environment relationship is based on a series of theories, models and frameworks in an effort to understand the nuances that affect perception and guide research. (44) Although today there remains no one proven theory of environmental perception, it is possible that the subsequent theories may individually or in combination provide insight in to the understanding of how individuals perceive their environments. (43, 44)
The **Probabilistic Lens Model** used for the subjective interpretation of an environment’s beauty or usefulness, is a theory based on the influential work of Egan Brunswick, a functionalist researcher. Brunswick maintained that both the individual perceiving the environment and the environment itself are important. Brunswick encouraged us to view the human-environment as comprised of a multitude of cues that a person unconsciously chooses the cues that enable them to function within the environment. Cues are highly individual and therefore differ in importance according to a multiplicity of variables, with age being the most obvious. Brunswick emphasises that no single cue can be considered 100% reliable or unreliable in its ability to facilitate the individual’s successful functioning in the environment. Hence cues have a range of ‘probability’ in presenting the true nature or ecological validity of the environment.\(^{(43, 44)}\)

In contrast, James J. Gibson takes an ecological approach in his **Affordance theory**.\(^{(43, 44)}\) Gibson believed that perceptions are formed directly through the receiving and creating of recognizable patterns based on an arrangement of cues rather than through the perception of individual elements (light, colour, form and shape). He contended that people in actively engaging with their environments, experience and perceive objects in a variety of ways; the functional properties of such objects referred to as affordances. Understanding that the environment in which we live, is composed of substances (such as wood, steel, glass); surfaces (such as floors, walls, and ceilings), and textures, Gibson proposed that it is the arrangement or *layouts*, which provide affordances instantly recognizable functions.\(^{(43, 44)}\) Therefore architects and interior designers of today not only try to build children’s hospitals that provide for the delivery of care, but to do so in an environment that takes into consideration a broader range of functionality and purpose: age appropriate care, safety, cultural considerations, healing aspects-natural light, and the provision of outdoor/indoor green spaces, all ideally based on the needs and consultative input of patients, visitors and staff.
Extending the distinction between environmental perception and cognition, Daniel Berlyne was one of the first psychologists to develop the model of aesthetics. Berlyne surmised that the ability of the environment to stimulate and arouse a person’s interest, aesthetic opinion, and intrigue to further explore or compare, arise through environmental characteristics that he termed Collative Properties. Applicable only to the built environment, collative properties include: Novelty, anything new, innovative or something familiar but used in a different way; Complexity, a large variety of items displayed; Surprise, unexpected elements and Incongruity, design features that are out of place. The ability of collative properties to stimulate a response based on two psychological dimensions: hedonic tone (beauty or pleasure) and uncertainty-arousal (subjective uncertainty), often causes perceptual conflict with other present or past stimuli. Berlyne’s collative properties influenced by a person’s attitude, worldview and predisposition to the stimuli being perceived, have implications for design and therefore must be understood and considered.

The Pleasure-arousal-dominance hypothesis highlights the view that people need to feel that they have some measure of control over their circumstances. Proposed by James Russell and Albert Mehrabian, the theory is based on three primary emotional responses to the environment: pleasure (positive feelings), arousal (excitement or challenge), and dominance (control) with the common link being that emotion. In turn, such emotional responses act as a mediator between our environment and our personalities and behaviours. Later modified by Russell, he rejected dominance as a primary response instead hypothesizing that people respond more positively to settings that are moderately arousing and offer maximum pleasure but unpleasant settings though they may initiate a response (moderately arousing), they are the least desirable.

The Preference Framework is based on the idea that people prefer scenes that are engaging and exciting as opposed to simple, one dimensional and boring. Kaplan and Kaplan created a theoretical framework based on four elements: Coherence refers to
the manner in which objects in a setting ‘form an understandable context’

Legibility is the ability to understand the setting and what is in it; Complexity refers to
the number and variety of the elements within the setting and Mystery is the degree to
which a setting contains hidden information enticing one to explore further.

The last theory, advocated since the 1980s in exploring environmental preferences is
Phenomenology. Chosen by environmental psychologists Phenomenology was viewed
as a pragmatic approach to gain insight into how environments are viewed by those
who experience them, and to understand the meaning and relevance of place. As
author, I would argue the presentation of Phenomenology as a theory, presenting
instead as detailed in chapter five, Phenomenology as a philosophical methodology.
Appreciating that environmental design does not lend itself well to empirical research,
it is for that reason that Hermeneutic Phenomenology was chosen to drive the research
question - ‘Adolescent’s preferences for hospital design’ as Phenomenology does by
virtue of its’ methodology emphasize the individual’s perception through their ‘lived
experience’. Interestingly, it is specifically Heideggerian Phenomenology that
environmental psychologists have indicated, aligning with environmental psychologist
Gibson and contrasting with Brunswick stating “Phenomenologists try to overcome or
ease the distinction between the setting and the perceiver”

Table 2: Theories of Environmental Perception

<table>
<thead>
<tr>
<th>Theory</th>
<th>Major Premise</th>
<th>Key Concepts</th>
<th>Relevance for Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Probabilistic Lens Model (Brunswik)</td>
<td>Stimuli from the environment become focused through our perception</td>
<td>Distal and proximal cues leading to cue validity and cue utility</td>
<td>Emphasizes the perceptual relationship between design and the human observer</td>
</tr>
<tr>
<td>Affordances (Gibson)</td>
<td>The world is composed of substances, surfaces, and textures, the arrangement of which provides</td>
<td>Environmental layout, contextual cues, direct perception</td>
<td>Highlights perceptual influences of design styles and probably dual users of designs</td>
</tr>
<tr>
<td>Study/Model</td>
<td>Description</td>
<td>Key Terms</td>
<td>Conclusion</td>
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<tr>
<td>Collative Properties (Berlyne)</td>
<td>We respond to aesthetics based on the collative stimulus properties (i.e. properties that elicit comparative or investigative responses and cause perceptual conflict with other present or past stimuli).</td>
<td>Novelty incongruity, complexity, surprise, hedonic tone, uncertainty-arousal</td>
<td>Claims that the joint nature of design elements merge to develop one overall impression</td>
</tr>
<tr>
<td>Pleasure-arousal-dominance-hypothesis (Russell)</td>
<td>Three primary emotional responses are translated to positive feelings, excitement or challenge, and control over the setting or situation; later modified to use a circumplex model, with pleasure and arousal as the two main axes.</td>
<td>Pleasure, arousal</td>
<td>Offers a method to evaluate environmental designs</td>
</tr>
<tr>
<td>Preference Model (Kaplan &amp; Kaplan)</td>
<td>People prefer engaging scenes to boring scenes.</td>
<td>Coherence, legibility, complexity, mystery</td>
<td>Offers a method for designing engaging environments</td>
</tr>
</tbody>
</table>

The ability to measure a person’s perception of his/her environment is a challenge and typically done through a reflection or description of their experience with the environment. The most common approach is through **self-reports**. Research methods such as questionnaires, interviews, checklists, and free descriptions provide a
reasonably accurate and economical means to study perception. Other research methods include time sampling where the participant reports their observations of the environment as they ‘move’ through a setting categorising their experience of the environment such as stationary, moving, large, small, near, and far.\(^{43, 44}\) The behaviour-inference method as the name implies, involves the ability to make inferences based on the person’s behaviour.\(^{43, 44}\) For example, is the length of time visitors spend looking at an art exhibit a reliable indicator of their level of interest?\(^{43}\) The psychophysical method suggests that people will adjust a physical variable (i.e. light) in direct proportion to their perception of the psychological construct (i.e. types of architecture).\(^{43, 44}\)

**Environmental Cognition**

If environmental perception is the manner in which we gather information by way of our senses, then it is through environmental cognition that we process, store, recall, intellectualize, and organize information perceived from the environment. As indicated, environmental perception and cognition are for the most part inextricably linked, psychological processes working simultaneously. Integral in environmental cognition is the concept of spatial cognition, the ability to estimate distances, recognise route cues, read maps, generally understand the relative location in space of different places.\(^{44}\) Conversely, non-spatial cognition is the recognition of space independent of any measurable reference point or location. In the 1950s Kevin Lynch conceived the **Elements of legibility** (the promise of making sense).\(^{43, 44}\) In his work for the city of Boston, Massachusetts’s planning department he comprised five predominating city elements that like above simplistically speaking aid in our cognitive ‘wayfinding’. Paths such as walkways, roads, and transit lines provide an avenue for people to travel back and forth. Edges such as borders, mountain ranges shorelines are envisaged as boundaries. Districts offer special features or characteristics defining one area of the city or area from another (i.e. San Francisco’s Chinatown; Sydney’s Opera House, or London’s Chelsea Gardens). Nodes being central or well-known points within the
environment in which people travel to and from (i.e. elevators, information desk, airport landmarks). Areas or features that are easily seen, popular or historic that serve as reference points for directions and meeting places within the environment (i.e. a clock tower, unique or tall buildings, and statues) are all intended to enhance ease of understanding and familiarity to the city for each of its citizens.\(^{(44)}\) With the increasing landscape of built environments mega structures such as shopping malls, airports and self-contained resort destinations, have through the creation of their own micro communities included such wayfinding elements.\(^{(43)}\)

A further key component of environmental cognition is memory. Like all of the above, and as with environmental perception, each is influenced by factors such as familiarity and experience, personality, age, and gender. Although many questions remain, to date most research is focused primarily on spatial cognition.\(^{(43, 44)}\)

Table 3: Environmental Cognition p60\(^{(43)}\)

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Is there a precipitating or predominant factor influencing such perceptions or as upheld by environmental psychologists, is it multifactorial, a delicate and symbiotic interplay of all of the above? In examining adolescent’s preferences of the hospital environment the results, similar or different, oblige the researcher and reader to acknowledge the influencing role that culture may impart.

Insight into Adolescence

“**Youth is a dream a form of chemical madness**”

F. Scott Fitzgerald

**What is Adolescence?**

Appreciating the challenges associated with this period of human development, the following section will explore the dominant theories of adolescence; present an overview of ‘normative’ adolescent development (physical, cognitive and psychosocial), and provide a brief insight into contemporary debates reflected in the literature regarding human development. Understanding the struggle that adolescents experience in their normative development serves to guide the reader toward a greater appreciation of the challenges adolescents encounter when faced with acute and chronic illness and the influence this may have on their preferences for the spaces they occupy whilst hospitalised.

A careful review of the literature reveals a lack of consensus about a definition for Adolescence. Subsequently there is no consensus for the age range for this period of development called adolescence. This lack of consensus may be a consequence of the considerable breadth of the adolescent experience. The lack of clarity on a definition has not however prevented a plethora of terms used to ‘tag’ this period of human development. For example: teenager, young adult, adolescent, youth, and the new popular if not commercial reference ‘tween’.
The World Health Organisation (WHO)\(^{48}\) refers to this transitional phase of growth and development as ‘Adolescence’. Appreciating that it may vary by culture, the WHO defines adolescence as any person between the age of 10 and 19 years. However in many societies adolescence, due to of hormonal changes, is narrowly equated with the appearance of puberty and the resulting cycle of physical changes and reproductive maturity. In other societies, given the physical aspects of maturation adolescence is understood in broader terms, such as those that encompass the psychological, social, and moral terrain.\(^{49}\) For the purpose of this study and to align with the inclusion criteria of the Comprehensive Systematic Review detailed in Chapter Two, the term adolescence will be defined as the period of human development that occurs between the ages of 12 to 19.

**Theories of Adolescent Development**

**Psychiatric Perspective**

In 1909 prominent American scholar, G. Stanley Hall, founder of the American Journal of Psychology (1887) and credited with popularizing the study of adolescence, invited Sigmund Freud, considered by many to be the founding father of psychoanalysis, to the United States to give the first open forum discussion on the psychiatric perspective of adolescence.\(^{49, 50}\) Freud’s professional and academic dominance resulted in his theories of adolescence profoundly influencing 20\(^{th}\) century thought and practices related to adolescent developmental needs. Characterizing humans as individualistic and selfish, Freud highlighted the contrast between two powerful opposing forces – the inherent instinct (sexuality and aggression) and human beings essential need for socialization.\(^{49}\) Integral in this concept are his infamous contributions of *id* (instincts), *ego* (executive functions), and *superego* (a form of conscience).\(^{49}\) Freud proposed that should any imbalance occur between our individual demands and societal pressures, the human ego would respond to the resulting internal conflicts: anxiety, personal inadequacy, and discomfort, through the use of *defense mechanisms*.\(^{49}\)
In the 1930s a period in time considered by many to demonstrate declining moral values of the younger generation, Freud’s daughter Anna, a psychiatrist, sought to further advance her father’s work promoting the idea that adolescence was a period of disharmony — linking manifestations of adolescence with mental illness.\(^{[49]}\) Anna maintained that the onset of adolescence was accompanied by a temporary disruption of the “intrapsychic equilibrium between instinctual demands and the ego mechanism” resulting in a period of ‘storm and stress’ p4.\(^{[49, 51]}\) Rousseau used a similar metaphor evident in the following extract from his classic text: ‘Emile, or Education’

\[
\text{“the roaring of the waves precedes the tempest, so the} \\
\text{murmur of rising passion announces the tumultuous} \\
\text{change”}^{p3.}\(^{[51]}\)
\]

Author Johann Wolfgang von Goethe (1774) would also popularize the term ‘storm and stress’ giving rise to stories such as ‘Sorrows of Young Werther’ wherein he writes of a young man lamenting over lost love by succumbing to suicide.\(^{[51, 52]}\) According to Freud, the adolescent is in a state of psychological turmoil; a constant struggle to balance id (instinct) with ego necessitating the use of a whole series of defence mechanisms.\(^{[49]}\) For example, to mitigate anxiety associated with regressive urges to possess love and attention from a parent, Anna Freud suggested that adolescents use displacement and reaction formation. In the case of displacement, a parent may be treated with indifference while affection is extended or displaced to a parent substitute - teacher, coach, or family friend.\(^{[49]}\) In reaction formation the adolescent projects to a parent, feelings that are opposite to his/her true feelings. In either instance, such reactions, although intended as a measure of self-preservation, only serve to heighten emotions of denial, hostility, and uncooperativeness toward the parent. In the case of other adolescents, they may withdraw leading to an inflation of one’s own self-importance and increased fantasies of narcissism and omnipotence.\(^{[49]}\) It is through this use of defence mechanisms, that Anna Freud proposed the defensive world of adolescents.\(^{[49]}\)
The 1960s witnessed a revolution in the psychosocial and cultural interpretations of human development. Amidst the freedom and mystery of ‘Flower Power’, Janis Joplin, free love, sexual liberation, and experimentation with all manner of drugs. In 1968, Erikson, a leading developmental theorist at the time developed a theory of adolescent identity development that shifted the management of adolescent behaviour from being perceived as a disorder that needed to be ‘therapeutically manipulated’ to an appreciation of the behaviour as a fundamental part of the maturing of the individual and therefore needs to be understood and guided.\(^{(49, 50)}\) In the 1980s sociologists promoted an appreciation of the individuality of the adolescent and that ‘problematic’ behaviour was no longer regarded as ‘typical’ and therefore the norm but rather the actions of a few.\(^{(49, 52)}\)

**Sociological Perspective**

Sociological theory encouraged an appreciation of the influence/impact that norms, cultural expectations, social rituals, peer pressures and technological elements have to play on adolescent behaviour.\(^{(49, 53)}\) It is the position of the sociological perspective that each of us as children are raised by parents whose influence stems not only from their parents and their parent’s before them, but is reflective of their generation’s own cultural and historical content. In today’s world of constant change and modernization the ensuing advantages and disadvantages can lead to what some call *intergenerational conflict* or what casually refer to as the ‘generation ‘gap’. Whether it is the eye hand coordination demonstrated through X-Box games, texting on smart phones, or just overall knowledge of the Internet, even very young children typically have a range of electronic gadgets and exhibit a level of technological savvy that often positions them as ‘teachers’ of technology and social media to their parents. Where learning once occurred via encyclopaedia Britannica and the glossy pages of National Geographic magazine, access to learning is now as simple as a click of a button that ‘opens’ a virtual world comprised of live video streams, podcasts, virtual universities all courtesy of the World Wide Web (WWW). The information age - accessible via
extensive computer programs, the Internet and websites such as YouTube, Twitter, Facebook and Skype now bring knowledge, information and communication from across the globe to our fingertips....in seconds.

Margaret Mead offers observations on social change with respect to culture suggesting there are three general cultural types: Postfigurative culture, Cofigurative culture, and Prefigurative culture.\(^{49, 54}\) **Postfigurative culture** provides guidance for cultural stability and continuity through parents and grandparents.\(^{49, 54}\) Within the postfigurative culture group membership and identity are generally predetermined or ascribed from birth. Essentially adolescents do what they are told to do. Parental expectations and values determine how children grow up. In a **Cofigurative culture** each generation acquires different values, norms, or mores with influence attained more from peers than parents. As it is expected, with differences between the generations, there may be some degree of conflict may result.\(^{49, 54}\) Within the **Prefigurative culture** adults emulate the new authority of children. Parents learn how to parent through their children’s feedback or instructions on what is right and expected. The prefigurative adolescent shapes their parents expectations through youth-centric instruction and guidance.\(^{49, 54}\)

**Anthropological Perspective**

In the sociological perspective the primary focus is how society affects the adolescent, whereas in the anthropological perspective the guiding question is “**how do adolescents affect society?**”\(^{p6}\) For Schlegel\(^{55}\) adolescence is a period in an individual’s life for learning and unlearning social processes; a stage of life known as **social adolescence**.\(^{49}\) It is within this period of social adolescence that individuals begin to explore new behaviours that in turn impact their developing independence. Theorized that such reorganisation is underpinned by hormonal changes and physical maturity, anthropologists focus on how the role of the family and peer group accommodate and support the adolescent as they engage in newly acquired behaviours and responsibilities.\(^{50}\)
During such periods of change it is inevitable that conflicts will occur. Conflicts that escalate to more serious concern are of special interest to anthropologists, as they often result in behavioural changes for the family (i.e. material, spiritual and/or psychological). The anthropologist’s research contributing significantly to our knowledge base around gender and social status are also followed. Girls traditionally socialised by older women and more restricted in their freedom as a result, are considered to have stronger socialisation, bonding, and supervision. Conversely boys, who generally experience far greater freedom, are thought to be predominantly socialised by unsupervised peer groups thus opportunities for individuation and influence by peers is strong. Lastly, understanding how puberty and gender roles are impacted by culture is of significant interest to cultural anthropologists who observe commonalities and differences in behaviour across cultural groups examining sociocultural structure, values and expectations and their resulting influence on adolescent behaviour.

Evolutionary Perspective

Contemporary evolutionary theorists support the notion of Darwin’s evolution and natural selection. They argue that understanding the ‘why’ of human development will help us acquire a better understanding of the ‘how’ and ‘what’ of human development. It is proposed that developmental change may occur as a result of genetically-controlled processes known as maturation, or as a result of environmental factors and learning, but most commonly involves an interaction between the two. It follows from evolutionary theory that individual differences depend in part on genotypic differences. Glenn Weisfeld psychology professor and author of the ‘Evolutionary Principles of Human Adolescence’ states that

“Culture and biology collaborate to direct our behaviour along adaptive lines. There's always an
environmental context, and always a genetically programmed brain” p 7.\(^{(49)}\)

In evolutionary theory there is considerable attention given to pubescent rites of passage. Significant in that they facilitate separation from parents, a process of individuation for boys these rites lead young males to seek socialization beyond the family unit to a broader social matrix. Puberty rites are often accompanied by gender segregation leading to the mastery of gender-specific tasks and behaviours frequently taught formally or informally by a coach or teacher of the same gender. Through such processes, adolescents receive training that ultimately transitions the novice into adult society. If acknowledged by a ceremony, for boys the focus tends to be on accomplishments and re-entry back into society after a period of separation and trial; whereas for girls, the event often focuses on reproduction, fertility, beauty or other rituals that reinforce the dominant cultural mores of the feminine role\(^{(49)}\)

**Psychological Perspective**

Within the literature many psychological perspectives have been proposed in an effort to further the understanding of adolescence. Adams\(^{(49)}\) aligning with social psychology, suggest that each individual forms their own sense of identity by attaching meaning to specific psychological constructs. Research suggests that in the adolescents’ creation/generation of a sense of ‘self’ they transition through four levels of identity: diffusion, foreclosure, moratorium and identity achieved.\(^{(49)}\) The least mature state diffusion is regarded as a state of avoidance in identity formation and is characterized by a relative absence of self. Foreclosure is a period of psychological development where the ‘self’ begins to form and is sculpted by the child’s relations with key authority figures in their life. Moratorium is arguably the level most commonly associated with the period of adolescence. This period is characterized by a desire and subsequent search to begin to formulate a sense of self.\(^{(49)}\) As the adolescent progresses through the stages, important psychological attributes start to emerge such
as goals and values; a secure sense of self; self-confidence, and self-efficacy until a final state of mind is successfully reached known as \textit{identity achieved}. Success in reaching identity achieved can only be done if facilitated in an environment that supports a balance between individuality and connectedness; the adolescent is motivated by his self-perceived knowledge that achievement of the final goal is of importance to those he cares about.\textsuperscript{(49)}

**Ecological Model of Adolescent Development**

The ecological model of development conceptualises human development as a joint function of the individual and his or her environment. It assumes that development occurs within a ‘web’ of relationships - ‘transactions’ between the individual, their environment and others.\textsuperscript{(49)} The remaining sections of this chapter describe and highlight the Ecological model’s approach to theorizing and therefore understanding the contextual nature of an adolescent’s psychosocial development.

**Physical Development**

The beginning of adolescence, not necessarily marked by chronological age alone, varies according to each individual. Influenced by genetic, biological, socioeconomic, ethnicity, gender, nutritional factors, and age, adolescence is often marked by an accelerated rate of physical growth accompanied by significant, sometimes awkward, appearance changes.\textsuperscript{(49, 53)} Alterations in physical appearance such as increased weight gain and height- the infamous ‘growth spurt’ can average 3.5-4.1 inches in one year with such rapid growth known to begin two years earlier for girls than for boys.\textsuperscript{(49, 53)} At a very early age the gradual hormonal process begins, reaching its’ dominant peak in early adolescence. This process labelled ‘puberty’ is considered by many the developmental milestone that signals the transition from childhood to adolescence. In some cultures this change in physical appearance signals the transition of the individual from childhood into early adulthood.
Sexuality tends to define this period of transition. It is this changing and dramatic increase of hormonal levels that plays a significant role in the activation and development of secondary sex characteristics. Sex characteristics that include for girls the first period/menses and development of breasts and for boys increased penile growth and deepening voice changes. Both genders display the growth of body hair (face, underarm, and pubic); increased sweat gland activity; and increased production of follicular oil that can result in the psychologically painful experience of acne. \(^{49, 53}\)

The development of the brain largely complete in early childhood continues in adolescence to undergo a maturation process particularly of the frontal cortex which is responsible for impulse control, decision making, and affect regulation. According to Blakemore and Choudhury,\(^{57}\) research suggests while neuron proliferation is expanding at ages 0-3 years, it is in adolescence that a process which they refer to as synaptic pruning is occurring. Synaptic pruning allows for an increase in the speed of information processing that in turn provides the adolescent with the ability to refine, contextualize and respond more efficiently to incoming stimuli from their surrounding environment. Likened to toddlers learning to walk, this process of neuronal rewiring takes time, hence offering explanation to the frequently seen inability to make decisions, control emotions (mood swings), impulses, and judgments.\(^{53}\) Sadly, for a variety of reasons, the adolescent is rarely prepared for these overwhelming physiological changes which only amplifies the inevitable psychosocial challenges they face during this period.\(^{49}\)

The behavioural responses exhibited in adapting to such physical changes not only affect the adolescent and impact on others but are often misunderstood by their parents and family members. For example, to cope with the increased growth, it is said that adolescents need approximately 9 - 9½ hours of sleep a night yet often parents complain of how lazy their teenagers are - always sleeping in late and encountering difficulty trying to wake them for school each morning.\(^{58, 59}\) Fortunately, the educational system has attempted to respond in a proactive manner to this knowledge. For example, several research projects\(^ {58, 60, 61}\) demonstrated that an improvement in
attendance and retention rates through adjusting class schedules. Through this simple change, the students showed decreased rates of tardiness, less sleeping in class, and decreased student-reported depression. During a period of development when their sexual attraction is heightened, the adolescent’s attention is naturally orientated to their physical appearance. Adolescence is therefore typically characterized by an increased attention to their weight or distress regarding their outward appearance that overnight appears to be transforming into an ‘Avatar-like’ body. Frequently seen and teased for tripping and/or being clumsy adolescents are concerned not only at how they are growing, but are they growing at the same speed and developing in the same way as their friends and peer groups?\(^{(53)}\)

**Cognitive Development**

Like physical development, there are considerable changes in intellectual functioning that occur in the influential years of adolescence. For the majority of adolescents, studies have shown that over the childhood years intellect develops in a manner reflecting a stable and steadily increasing pattern of IQ from age two to 17.\(^{(49)}\) Girls confident, excel in their reading and social skills while boys generally display confidence in mathematical and athletic abilities. For either gender the most notable cognitive change is the capability of *formal operational* thought.\(^{(49)}\) The transition from a focus on concrete, pragmatic here-and-now thinking to more advanced complete thought, encompassing both the observable and abstract world thus allowing one to consider infinite possibilities.\(^{(49)}\) Emerging within operational thought is the ability for the adolescent to reason, consider the possible versus the impossible; explore and plan the future, and engage in self-reflection and cognitive self-regulation.\(^{(49)}\) It is through this gradual process that the development self-awareness begins to evolve.

However, in formulating an understanding that their thoughts are separate from others confusion and consequently a sense of *egocentrism* begins to arise. Adolescents recognise but fail to differentiate between their thoughts and those of others, falsely believing that others are as focused and critical on their thoughts, behaviours and even
appearance as much as they are themselves. David Elkind acknowledges the adolescent’s egocentrism is a result of “preoccupation with and self-consciousness about physical attractiveness, appearance, and body image” no doubt heightened by the perceived criticism of others which Elkin labels as the *imaginary audience* p11.\(^{(49)}\)

Evaluating themselves globally by way of several distinct dimensions: academics, athletics, appearance, social relations, and moral conduct adolescents grade themselves thus adding or detracting from their sense of self-concept and global self-worth.\(^{(50)}\) As adolescents are socialized and mature, they gradually begin to appreciate the thoughts of others as well as their own and in doing so recognize their own limitations.\(^{(49)}\) Through cognitive self-regulation adolescents ask questions, gather information, and develop understanding in an effort to begin to problem solve effectively and efficiently.\(^{(49)}\)

**Psychosocial Development**

Huebner\(^{(53)}\) states that there are five psychosocial issues for adolescents that are central to the adolescent question “Who am I?” The question is not a literal one, nor even one that adolescents may consciously contemplate; instead the search for *identity* often begins as adolescents develop their own preferences frequently based on the opinions of those who are influential in their lives. Seeking to feel secure in their relationships; establish values and a belief system, adolescents want to understand where they fit in their world. For children who are ill and in particular those with chronic illness, the question takes on even greater significance. Do they define themselves in relation to their illness, does their illness define them, and how do others define them? Independence - to be *autonomous* is also a highly valued achievement. Not by way of emancipation or in a rebellious sense, separate from the influence and care of parents but rather the opportunity to be self-governing within relationships. It is this recognition of the adolescent and their desire to be included in the decision making process regarding their care, that is central to the concepts of Patient-and-Family-Centred-Care. For adolescents *intimacy* not to be equated with sex is first
established through relationships with same-sex friends and others who they trust, care for and see as equals. Learning to be comfortable with their own sexuality, adolescents practice their social skills and explore both school and family based relationships. During the adolescent years, it is also a time to consider future academic and vocational aspirations in planning for career opportunities; reflecting on talents, skill set and achievement preferences.

Adams refers to the period of where adolescents are most susceptible to positive and negative influences as the ‘window of vulnerability’.\(^{(49)}\) Understanding that experimentation and risk taking are a natural part of growing up it also serves to shape identity and challenge decision making skills.\(^{(49)}\) While the majority of adolescents do take advantage of downtime to visit with their friends, study, attend athletic workouts or other school activities, there are some who may engage in risky behaviour. Exploring and participating in activities such as sex, smoking, drugs, absenteeism, and minor criminal acts such as shoplifting is all done in an effort to seek excitement, fun, novelty and to test boundaries. However, engaging in such behaviour could also possibly be the result of being goaded by friends, challenged by peer groups as part of initiation rituals, emulating behaviour seen in the media, a result of teasing and bullying, or just following the crowd. There are a multitude of reasons for risk taking behaviours just as there are a multitude of opportunities. In today’s families, it is not uncommon for both parents to be working thus frequently presenting adolescents with unsupervised time after school. Determining when risk behaviours move from normal experimentation to problem behaviour and where parents should be alarmed may be based on the age the behaviour commenced; its’ consistency, frequency, and if the events occur across multiple contexts.\(^{(49,62)}\)

**Therapeutic Alliance**

Therapeutic alliance refers to the relationship between the healthcare team and the adolescent.\(^{(53)}\) Traditionally relegated to the specialty of psychotherapy, incorporating therapeutic alliance to the care of adolescents is appropriate and of significant
relevance. All patients regardless of age need, want, and should have faith and trust in their healthcare team. Optimal communication to achieve mutual understanding of treatment goals is an absolute in order to reach the priority outcome - a state of wellness. However, in caring for adolescents as described previously, successful attainment of their developmental milestones is paramount as they progress towards the independence of adulthood. A cornerstone of psychosocial development and integration into society lies in the ability to build meaningful relationships.\(^{(49, 53)}\) It is within such dynamics that the ability to trust is absolute as one seeks the development and confirmation of self.

**Storm and Stress- Is it Fact or Fallacy?**

Aristotle stated that youth “are heated by Nature as drunken men by wine” while Socrates characterized youth as inclined “to contradict their parents” and “tyrannize their teachers”\(^p317.\)\(^{(51)}\) G.S Hall in his magnum opus on adolescent development was the first to consider the emotional and behavioural distinctiveness of adolescence as a time of “sturm and drang” roughly translated – ‘storm and stress’.\(^{(51, 52)}\) Since the days of G.S. Hall in the early 1900s adolescent behaviour or misbehaviour as denoted by ‘storm and stress’ is a topic that has been examined, debated, and extensively documented by anthropologists, psychoanalysts and contemporary scholars alike.\(^{(51)}\) Parents and healthcare workers all agree that it is without a doubt a challenging time for all involved. The view of adolescence frequently portrayed both historically and in contemporary times, is a reputation of ‘storm and stress’ but does the intended definition written so many years ago truly characterise adolescence and therefore apply to the majority and not the minority? Three undesirable behaviours dominate the historical definitions of adolescence characteristics documented consistently include: conflict with parents, mood disruptions and risk behaviours.\(^{(51)}\) Such behaviours are closely associated with the onset of puberty and an increase in circulating oestrogen and testosterone. In addition to hormones, increased gene activity and sleep-deprivation are also hypothesised as contributing factors.\(^{(51)}\)
However the fact that not all cultures characterise this period of development as storm and stress gives reason to believe that these behaviours are a result of sociocultural factors as opposed to physiological. Margaret Mead\(^{[54]}\) and Schlegel\(^{[63]}\) in their 1970 analysis of adolescence, were of the opinion that storm and stress is predominantly a ‘Western’ phenomenon indicative of cultures that emphasize and value individualism. In more traditional, collective cultures, conflict is rarely seen. The primary issue of contention involves the degree of independence; the expectations of what an adolescent desires, balanced with the degree of control in which parents are willing to succumb. In Western individualistic cultures this is a rite of passage - inevitable. However, the rate at which this transition occurs is theorised as one of the causes for the adolescent’s display of risk behaviours. In traditional cultures, independence is less valued and therefore less likely to be a source of conflict and strife.\(^{[51]}\) Ethnographic studies have revealed that there may be differences within the traditional cultures themselves.\(^{[51]}\) For example, the prevalence of mood swings or behaviours exhibited may be seen especially in traditional cultures where boys are excluded versus included in the activities of the adult and respected senior men.\(^{[51]}\) After considering the above Arnett\(^{[51]}\) concludes that the biological changes of puberty do not make ‘storm and stress’ universal or inevitable.\(^{[51]}\)

What language does the hospital environment speak?

This section introduces the reader to the theory motivating both the interior and exterior of hospital space. A body of research built over the past 25 years is providing hospital architects and project teams with important insight into some of the ways the design of a healthcare setting can positively impact a child’s psychological and physiological needs.

**The Meaning of Place**

Rarely are buildings designed by the people who will ultimately use them. As adults, our experience of built environments centres on how we *use* spaces. When the pre-
defined purpose the building intended to serve is adults, the approach to the design of buildings and central to all decisions is pragmatic functionality. Determining the utilization of space while being mindful of energy efficiency and sustainability are just some of the thoughts influencing design decisions.\(^{(64)}\) For children, contingent on their stage of development, the central premise and critical distinction is more about what buildings say, how they as children see and experience the built environment.\(^{(43, 64, 65)}\) In their innocence and naiveté, children have the unique ability to fully experience the built environment and the space it creates without any preconceptions – expectations.

For a child, each space and object within that space is not necessarily seen for its' functionality but instead is seen as an opportunity for exploration and adventure.\(^{(64)}\) Walls are not intended to provide boundaries but are to bounce balls off, run hands along, even opt as a surface to draw on; chairs offer an invitation to climb; railings to play underneath and swing on and if given the chance, to slide down. In each case, the utilization of space is a process of understanding the multiple ‘uses’ (its potential) that the space provides. Piaget in his consideration of how children learn stated that knowledge does not develop in linear progression; instead it is dynamic, melding together a relationship with that of the elements- perception, action, and interaction.\(^{(64)}\) Children engage every facet of their senses: sight, sound, smell, touch, and taste, providing for them the ability to know and enjoy the world in an almost limitless realm. A world of colour, light, imagery, texture, volume, movement, form and rhythm; such intuitive learning is “whole body and multisensory”\(^{p4}.\)\(^{(64)}\)

Transitioning into adolescence, children seek out concrete learning experiences as opportunities to explore the relationships between the ‘parts’ (sensory experiences) and the ‘whole’ (concrete structures). The challenge for the healthcare environment is to create sensory rich environments that stimulate and nurture curiosity and creativity while taking care not to over stimulate or confuse.
According to Christopher Day\textsuperscript{(64)} children envisage spaces in a way that he refers to as their ‘mood-world’. Where adults assign space as single-mood places, each room having its’ own specific function (i.e. living room or bedroom), children have the ability to visualise the potential of a room according to its distinct places, each serving a different purpose. Similarly, the stature of a child also impacts on his/her perception of the environment; lower eye level shrinks spatial boundaries and relative scale; reach and range makes places seem large.\textsuperscript{(64, 65)} For example, as an adult you may be surprised when experiencing a place that you frequented as an adolescent (i.e. high school) at how small it is in your current reality as compared to your memory of it as a youth. It is for this reason that consideration to age appropriate design conveys an understanding and respect for the developmental stages of youth.

The concept of embracing or developing a connection with the social and physical aspects of an environment is often referred to as place attachment.\textsuperscript{(43, 65)} Seen in chronic illness where patients either stay for long periods of time or because of the nature of the illness, re-visit the same place on multiple occasions, place attachment is impacted by the functional and aesthetic qualities of a space. Research asserts that people who have a strong sense of place attachment reflect a more positive mood, are more content, and generally are well-adjusted, all of which is believed to impact their overall physical and mental health.\textsuperscript{(43, 64, 65)} Likewise for children and adolescents, place attachment through the establishment of continuity and safety, is a positive influence on their development.\textsuperscript{(43)} However, for adolescents developing an attachment to ‘place’ can be difficult or compromised, particularly in healthcare settings. Despite studies assessing specific design features and their impact on patient outcomes such as reduced psychosocial morbidity; increased adherence to treatment regimens and decreased length of stay, many healthcare environments still do not accommodate the developmental and social needs of the adolescent.\textsuperscript{(24, 66, 67)}
Space and Privacy

Design theorists argue that how we interact with space and the people within that space can influence or shape our perception of space.\(^{(26)}\) We imbue our ‘lived space’ with meaning through our relationship with and our interactions with the space.\(^{(26)}\) The exterior and interior architecture of a building coupled with the interior design, and technology, can influence and affect the behaviour of those who use it – patients, visitors and staff alike.\(^{(26)}\)

A common experience with a hospital or clinic environment is the loss of freedom associated with the subsequent need to conform to the culture of the unit and its preset ‘rules and policies’. For adolescents, the patient room itself assumes a level of importance, the significance of which may not be entirely obvious to parents and healthcare workers. Once a patient is assigned a specific bed or room a sense of territoriality emerges.\(^{(68, 69)}\) Jurisdiction over space is enhanced by actual or symbolic ownership. Design considerations, can aid in the patient establishing these personal boundaries, helping to promote a feeling of private space.\(^{(68)}\) Of additional significance for the adolescent is the ability to have a degree of control as to what transpires within the room.\(^{(68)}\) In hospitals, the provision of comfort can be enhanced by ‘the ability to tailor the room to the individual through the freedom to bring into the space a variety of personal effects such as bedding, pictures, and perfumes all of which serve as reminders of their home, family, and friends.\(^{(68)}\) Adolescents who are at a stage in development where the need for autonomy and a sense of self is of particular importance often struggle with the loss of privacy they experience with being hospitalised.\(^{(68)}\)

Noise

Mazer describes hospital noise as ‘pandemic’\(^{(70)}\). The spectrum of sound can range from pleasant to irritating, from intermittent to continuous, and from
predictable to unpredictable. Florence Nightingale highlighted the important role that sounds plays on the patient’s experience in her ‘Notes on Nursing’:

“Unnecessary noise, or noise that which creates an expectation in the mind, is that which hurts the patient. Unnecessary noise, then, is the most cruel absence of care which can be inflicted on either sick or well”p27\(^{(2)}\)

In the 19\(^{th}\) century noxious noise was limited to “squeaking floors, brushing crinolines, and inappropriate conversations”p350.\(^{(70)}\) Unfortunately, advancements in healthcare’s technological systems of care, have resulted in a sensory environment that some have described as “hostile” p95.\(^{(71)}\) Studies\(^{(72-75)}\) have demonstrated an association between reduced patient outcomes and the presence of unrelenting sounds (such as the second by second beeping of an infusion pump). The Joint Commission (USA) highlights that noxious noise can be a contributing factor in adverse patient outcomes.\(^{(70)}\) The Environmental Protection Agency and World Health Organisation recommend ambient noise levels not to exceed 35-45 decibels(dB),\(^{(70)}\) however even in neonatal units where a quiet environment is critical for the developing brain of a premature infant, many of the equipment and environmental sounds register as high as 90dB.\(^{(75, 76)}\) Based on the plethora of research expounding the detrimental psychological and physiological effects of noxious noise, industry has responded with innovative sound absorbing floorings and ceiling tiles, acoustic baffled ceiling designs, and communication devices that enable effective yet ‘quiet’ interaction between staff. Similarly, the literature is replete with case studies of those inpatient areas traditionally renowned for their high volume noise such as critical care intensive care units adopting a variety of strategies to reduce the noise levels within their everyday care environment(s).
Lighting

The ability for light to powerfully affect mood is well-known.\(^{64}\) Dependent on strength, spectrum and duration, light has the capacity to uplift or conversely, depress a person’s mood.\(^ {64}\) Although at the time there were many sceptics, in 1984 Norman E. Rosenthal formally described a type of depression known as Seasonal Affective Disorder (SAD).\(^ {64}, 77\) Rosenthal and colleagues researched and documented an association between the seasons of the year and a person’s affect (mood). It is hypothesized that the reduced seasonal exposure to light diminishes serotonin metabolism in turn decreasing the levels of serotonin and resulting in alterations with the a person’s circadian rhythm.\(^ {78}, 79\) Light replacement therapy is considered one of the primary and most widely studied treatments for SAD.\(^ {78}, 79\)

In healthcare environments the use of lighting is of extreme importance particularly in vulnerable populations such as the elderly or those who are cognitively impaired.\(^ {43}\) A study conducted by Sumaya et al\(^ {80}\) in 2001 found that elderly patients cared for in nursing homes and confined to their room as a result of physical decline or immobility lacked exposure to natural sunlight and therefore displayed signs of depression consistent with SAD. It is also noted that as we age the ability for our pupils to dilate and constrict is deceased in response to glare from sunlight, bright lights or under lit areas. Access to natural sunlight is foremost in the minds of healthcare architects and interior designers.\(^ {43}\)

Research into lighting and its impact on human performance and health has resulted in the belief that natural light is superior to electrical and in particular office fluorescent lighting.\(^ {43, 64}\) So convinced are the Dutch about the impacts of natural light on human performance and health, that the Netherland government has mandated legislation that no person be assigned a workspace further than 16 feet from a window.\(^ {45}\)

Windows themselves can be a source of not only light but fascination, particularly for children. Window views into nature such as moving water displays, an aquarium, or a
view to the natural elements and outdoor activities beyond have shown to promote calm and restoration. For children, windows can offer not only developmental and educational implications but can affect children’s attention and feelings of security.\(^{(65)}\)

The Victorian schools of yesteryear created windows with sills at a height intended to minimize distraction on the child. Whilst such designs were regarded as ‘conducive’ to the educational setting, this did not diminish the value of natural light and the sense of connection to the wide open spaces outside the confines of the classroom that windows afforded the child. Research has shown that depending on the child’s sensibility, the design of the window itself will stimulate different responses. For some children they prefer unimpeded views whilst smaller children often prefer the protective enclosing of subdivided windows.\(^{(64)}\)

Colour

Colour is a fundamental element of environmental design. However, the evidence base for making informed decisions regarding the use of colour and its application in different design spaces has been considered by many interior designers as anecdotal and fragmented. In 2004 Tofle and colleagues\(^{(81)}\) conducted a literature review to examine how colour is utilized in the healthcare environment. Based on the findings of this literature review, Tofle et al undertook a series of carefully design research studies to test the assumptions regarding colour. The aim of their body of research was to determine to what degree the choice in colour influences a person’s perception of the size, shape, intended usage and geographical (cultural) location of the space.\(^{(81)}\) The conclusion of Tofle’s et al programme of research is that there is no reliable explanatory theories to predict how colour influences people in the healthcare setting, nor is there clear evidence to establish a causal relationship between colour and patient outcomes.\(^{(81)}\) The research findings do however suggest that there is an association between a person’s perceptions of colour and their subsequent use of the space.\(^{(81)}\) In such cases this is thought to be due to the intensity of the colour rather than by the hue itself. Despite some studies demonstrating an association between a
person’s mood and surrounding colour there is no evidence to suggest a direct or consistent relationship between a given colour and a specific emotion – thereby reaffirming that the relationship an individual has with colour is highly personal and likely associated with a person’s history and experiences.\(^{81}\)

Of note is that although Tofle’s research has provided important information to the field of building design and space, the research is not without its limitations. The literature review indicated that in addition to databases, information was also sourced from sites such MSN and Google (Google scholar was not mentioned). Also absent was documentation of inclusion/exclusion criteria; an algorithm with detailed search strategy; indication if included studies were published/unpublished, and if studies retrieved were sourced from peer reviewed journals and critically appraised with levels of evidence indicated. Conducting research in the field of colour is complex and challenging and like environmental design, does not easily lend itself to empirical or interpretive study designs. Studies on colour have been conducted,\(^{82-85}\) yet by today’s standards are either considered outdated or may not be generalizable because of a lack of demonstrated rigour in study design.

A plethora of literature exists on colour theory principles however “most are scientific in nature and require intense study to comprehend”\(^p4\).\(^{86}\) This theoretical base encourages an appreciation that light and colour are elements of our visual sense and can be created, used, and manipulated as a powerful tool within the design process to alter our environment.\(^6\) As with light, colour can be inviting and uplifting or cold and impersonal yet when used symbiotically can create attitudes that are thought to stimulate emotions, support healing, and promote well-being.\(^6\) All colours have three dimensions: \textit{hue} the attribute that distinguishes one colour from another; \textit{saturation} the purity or intensity of the hue, and \textit{intensity} which is synonymous with the lightness or darkness of a hue.\(^{81, 87}\)
There are globally variances to colour preference – encouraging a belief that culture has a role to play in a person’s choice of colour. A considered reflection on various rites of passage, religious icons and momentous life events help to substantiate the belief that colour is influenced by our cultural inheritance. Throughout history many cultures have used colour and light in healing.\(^{(6)}\) The Chinese Taoist tradition, art of placement, Feng Shui is based on the five elements of nature - earth, metal, water, wood, and fire with each associated with a range of colours. Colour is central in Feng Shui’s understanding and management of the environment to optimize the unencumbered flow of ‘chi’ throughout any given space.\(^{(6, 88)}\) According to the principles of Feng Shui, the various colours in our environment should protect, nurture, and balance our physical, emotional, and spiritual state of being. In the ancient tradition of Sanskrit the body’s seven energy centres or chakras are a series of coloured ‘wheels’ of energy that run along the central energy channel of the body (the spinal column). Each chakra is associated with a major endocrine gland corresponding to a state of consciousness and personality type with each responsive to or ignited by a different colour.\(^{(6)}\) Colour therapy once limited only to complimentary medicine is being increasingly practiced within contemporary medicine for example, the use of blue irradiance light in the treatment of infant jaundice and colour and light therapy for inflammation of the eye.\(^{(6)}\)

The question of whether colour has a biological correlation or is a by-product of socialization requires further research. According to Kopec “there appears to be a correlation both ways because learned responses can cause biological manifestations”\(^{p85}\).\(^{(43)}\) Marberry and Day advocate that when the natural order of colour is used in design it strongly influences human emotions and physiology.\(^{(64, 86)}\) Red is thought to stimulate the Sympathetic Nervous System (SNS), increase brain wave activity, accelerate heart rate blood pressure and respirations.\(^{(84)}\) Blue triggers the SNS and is credited with a tranquilizing effect. With the use of cool colours time is underestimated, weight seems lighter, objects seem smaller and rooms appear larger.\(^{(36)}\) The opposite is true for warm tones. Colour can also influence thermal
comfort; people often feel cooler in cool-toned rooms and warmer in warm-toned rooms although the actual temperatures may be the same.\(^\text{(36)}\) Colour perception can also be influenced by age.\(^\text{(36)}\) Infants respond to contrasts and hard edges - first being able to distinguish black and white and then bright, highly saturated primary and secondary colours.\(^\text{(36)}\) As infants develop, they respond to more subtle shades and by the teenage years their response has matured.\(^\text{(36)}\) An individual’s perception of colour is believed to be affected by the tint or value of the hue and by the adjacent colours, patterns and texture.\(^\text{(81, 87)}\) Colour hue, saturation, and intensity can be affected by geographic location as light quality and intensity, natural colour palettes, and regional preferences impact upon colour choices.\(^\text{(36)}\)

**Conclusion**

This chapter has provided the reader with insight into the various theoretical and conceptual frameworks that are influencing myself as the researcher in the interpretation of the participant’s reflections on their hospital experiences and associated preferences (needs and desires). The body of research into the area of design and its various elements such as light, colour and noise has also been presented. Whilst the research base is weak and continues to evolve, the research is suggesting the following:

- Adolescents are underrepresented in the history of research on hospitalization;
- Buildings are designed for efficiency and appearance but they are “unavoidably imprinted with values of how the people who design, build, administer and maintain them view the inhabitants”\(^\text{p144}\);\(^\text{(64)}\);
- That no single colour by itself is good or bad but rather it is in the choice of where and how it is used;
- Colour preferences are individual, time dependent and can be based on a person’s background, culture and emotional state;
• Warm colours are more active, drawing visual, emotional and social interest outward;
• Cool, soft colours are more passive and therefore encourage concentration;
• Active hues - yellows, oranges and reds energise and excite; passive hues, blues and greens tend to calm.

There is urgency in the need for these design principles to be considered for the creation of hospital spaces that are responsive to the unique developmental needs of the adolescent. While adolescence has and can be portrayed as an uncertain time in our lives, it brings with it new possibilities and a glimpse into what our future may hold as adults, thus creating new opportunities, more autonomy and intimacy with others.\textsuperscript{(89)} Good hospital design can go beyond merely limiting patient stress and instead facilitate patient coping strategies by providing optimal settings for these strategies to occur.
Chapter Four: Comprehensive Systematic Review

“The very first requirement of a hospital is that it should do the sick no harm”

Florence Nightingale (2)

Introduction

In the healthcare setting, anxiety is a commonly experienced phenomenon. Often unknowingly, such facilities can add to the already stressful and anxiety provoking experience of illness.\(^6\) When the complex equilibrium of our daily lives is challenged, anxiety can result. The magnitude and frequency of such anxiety is theorised to be influenced by a variety of interdependent factors leading to a perceived or actual loss of control, lack of understanding, or fear of the unknown.\(^{91, 92}\)

The result is a complex stress response, the outcome of which is a cascade of neuroendocrine hormones being released.\(^{91}\) If realignment to the imbalance in homeostasis cannot be re-established, impaired functioning of the immune system, delayed wound healing and the pathogenesis of disease has been well documented.\(^3, 92-94\) Physiologically stress can manifest in a sense of helplessness and feelings of anxiety and depression. It can affect behaviour resulting in restlessness, lack of concentration, verbal outbursts and sleeping disorders.\(^3, 94\) Physiological stress and anxiety can increase heart rate, blood pressure and respiration. Oxygenation requirements, metabolism and nutrition of the brain, heart and skeletal muscles are also increased.\(^{95, 96}\) All are ‘organs crucial to the central coordination of the stress response and the ‘fight or flight’ reaction’ (p375).\(^{91}\)

To evoke a feeling of security and aid in alleviating anxiety in healthcare settings, a phrase readily used throughout the literature is that of the ‘Healing environment.’\(^5, 6, 97\) According to Huelat, a healing environment is a place that allows the mind, body and spirit to heal.\(^6\) Healing environments have also been described as environments that promote the healing process and patients' feelings of well-being. Definitions such as
these encourage the novice designer to appreciate the importance that design has on the human experience during provision of healthcare. \(^{4, 97-99}\)

For children, the environment in which they receive care, whether it is a hospital or dental office, even the mere mention of a facility and its unfamiliarity can instil anxiety, stress and fear.\(^{100}\) Such experiences can be emblazoned in their memory, influencing not only the short term in respect to subsequent visits, but experiences that can follow them for many years. Many adults still get anxious just walking into a dentist’s office. The sterile smell of anaesthetic mixed with clay moulds, plastic and dental creams, the high-pitched sounds of drills, the pale impersonal colours, the visualisation of the large cold grey leather chair, the stainless steel implements with various ‘torture-like’ end-designed for purposes that only the active imagination of a child can envision-and the white porcelain bowl with the endless swirling of water \textit{escaping} to who knows where…..all these sensory experiences can quickly transport an adult psyche back to the memory of the scared six year old child who with palms sweating, desperately clutches his mother’s hand.

Children, in their various stages of development and understanding have imaginations that can transport them to places of wonder, yet when faced with unfamiliar environments or situations their vivid imagination can lead them to intense feelings of stress and anxiety.\(^{101}\) In order to focus on the patient and their needs, researchers in the area encourage us to appreciate that healthcare facilities are much more than places in which to receive treatment but rather understand their full potential to positively impact health through being spaces of restoration and healing.\(^{6, 98, 102, 103}\)

In the coming decades many healthcare facilities will require extensive renovation or replacement.\(^{104-107}\) In 2006 a report titled: ‘Planning, Design and Construction of Healthcare Facilities’ sponsored by the Joint Commission, predicted that construction costs (redesign or build) of healthcare facilities in the US alone could exceed 20-25 billion dollars by 2010; or approximately one million dollars per patient bed.\(^{108-110}\)
Historically, healthcare settings have been portrayed as cold, austere environments that by their very design are anxiety provoking.\textsuperscript{(90, 97)} Research increasingly demonstrates that the design of an environment can positively or negatively affect the human experience.\textsuperscript{(4, 111)} In this era of evidence based healthcare, any assumptions of clinical effect must first be substantiated by credible, valid research.

Given the fiscal restraints surrounding healthcare, architects and interior designers have to demonstrate the effectiveness of their design solutions. The need to ‘get it right’ has never been more crucial than when embarking on the design and build of a new healthcare facility.\textsuperscript{(112)} However, unlike other disciplines such as medicine and nursing, the world of architecture and design are only just beginning their transition towards a consistent understanding and reference to evidence based practice.\textsuperscript{(5, 8, 113-115)}

‘Not all healthcare architects have an equal understanding of Evidenced based Design (EBD), so it is not used uniformly across our profession. However, the popularity and acceptance of EBD definitely is growing. As more architects gain sophistication about the impact of EBD on healing, workplace productivity and safety, more of them will incorporate into the design process’ (p15).\textsuperscript{(116)}

In healthcare the majority of design research has focused on demonstrating the effect that design of ‘space’ has on improving patient outcomes, particularly in the adult population.\textsuperscript{(104)} Understandably patient safety, always foremost in the minds of healthcare professionals, has taken the lead. As an example, a key initiative in the efforts to reduce nosocomial infections is to move towards single patient rooms.\textsuperscript{(101, 104)} Likewise, the rate of patient falls has also been positively impacted by design research that has been experimenting with various design strategies. The placement of the
bathroom directly adjacent to the patient’s bed and the strategic positioning of safety accessories such as handrails and lighting have all contributed to reducing patient falls.\textsuperscript{(117, 118)}

In paediatrics, the majority of studies have focused on the neonatal population. Research investigating excessive noise and its detrimental effects on neonatal development has led to design recommendations such as the use of single family rooms, sound absorbing acoustic ceiling tiles, carpeting, thick insulating incubator covers and the dampening or elimination of noxious high pitched sounds such as equipment alarms, phones and pagers.\textsuperscript{(76, 104, 119-121)} The exposure of infants to direct lighting and the effect of circadian (cycled) lighting are also high on the priority list for neonatal design research.\textsuperscript{(122, 123)} These examples are just a sample of the positive impact that research on environmental healthcare design has had on patient outcomes. Many more exist predominantly in the areas of medication errors and improving patient and staff satisfaction/retention.\textsuperscript{(104, 117, 124, 125)}

**Why it is important to do this review?**

A large volume of research has been conducted within the discipline of architecture and healthcare design however its integration into practice: build and redesign of new facilities is not consistent.\textsuperscript{(5, 8, 114, 116)} Is this because the numbers of studies are few or is it that the quality of the research itself is not designed to measure effect? The scholarly texts are replete with literature relating ‘the design of the physical environment with patient, staff and family outcomes’.\textsuperscript{(37, 101, 126, 127)} However the literature also acknowledges the difficulties encountered in fully evaluating the influence design has on patient outcomes.\textsuperscript{(5, 8, 128)} A 1998 report by Rubin from the John Hopkins program for Medical Technology and Practice Assessment, discusses a review of 70,000 titles that linked to 1,000 articles which when critically appraised against the criteria for inclusion, resulted in a final count of 67 studies of suitable quality.\textsuperscript{(126)}
A 2009 Cochrane protocol by Drahota is focused on reviewing the research related to impact of design on patient outcomes in the adult population.\(^{(103)}\) Similarly, a systematic review by Watts et al published in 2009 with Joanna Briggs Institute assessed the impact of physical design elements of a pediatric hospital environment on patient outcomes. Design elements included architectural, interior design, ambient features and/or features that supported patient and family centered care.\(^{(129)}\) The primary outcomes of interest were clinical or psychological, with additional outcomes of interest being patient and family perceptions. The review cited 162 articles as potentially relevant, 38 were assessed against eligibility criteria and eight studies met the quality and specifics of the review question. In summary, no firm conclusions could be drawn.\(^{(129)}\) The authors did however suggest that positive elements of physical design could be implemented to support healing environments within a pediatric healthcare system.\(^{(129)}\) As the above review did not specifically address the question of the effect of design on reducing the experience of anxiety in the pediatric patient, it is the aim of this review to systematically search and assess the quality of existing studies that have design and anxiety as primary variables in the pediatric population.

So why do a systematic review, particularly within a discipline where the science and its rigor is still developing? The response to this question is grounded on the very principles of Evidence-based healthcare which is, that before additional primary research can be undertaken, one needs to fully appreciate the strengths and weaknesses of the current science – and a systematic review is the perfect place to begin.
Review Methods

Inclusion Criteria

*Types of Patients:*

1. The American Academy of Pediatrics in their policy statement, defines a pediatric patient as a patient from fetus upwards to 21 years of age\(^{(20)}\). However this definition varies in the international medical community. As the purpose of this review was to analyse research conducted worldwide and the outcome measure to be determined was the level of anxiety, the pediatric age range included was from one to 18 years of age.

2. Patients admitted to or entering, with no defined time limit, any pediatric health care facility: for example a hospital (inpatient or outpatient facility), clinic or dental office.

Exclusion Criteria

Any pediatric patients receiving psychotropic medication for underlying psychiatric conditions

Types of intervention(s)/Phenomena of Interest

The interventions of interest were design strategies that provided positive distraction, elimination of environmental stressors, access to social support and choice (control) and connection to nature including:

1. *Positive Distraction:*
   - Interior design: in particular the use of colour, texture and furnishings
   - Art and interactive art

2. *Elimination of environmental stressors:*
   - Lighting: natural versus fluorescent
• Sound: noise reduction, types and levels of sounds
• Scents: ability to provide or remove (contain) aromas such as food, perfume
• Wayfinding aids: use of landmarks, design features
• Acuity adaptable rooms with standardized layout (same handed)
• Design of Patient room:
  a. Private versus non-private
  b. Spatial layout
  c. Size
  d. Family zone
  e. Patient centric versus equipment centric

3. Access to Social support and choice (control):
   • Meditation and/or Spiritual areas
   • Private versus open spaces

4. Connection to Nature
   • Access to green space/garden environments: Views of nature as restorative device (actual or virtual)

Comparator

The comparator was non-purposeful designs, commonly found in standard conventional health care setting or environments such as General Hospital, generic dental office or health care clinic.

Types of Outcomes

Outcomes of interest were:
• Measures of anxiety or stress using validated assessment tools that measure the concept via discreet physiological indicators such as blood pressure, heart rate, respirations or sensory cues such as perspiration, agitation, tone of voice and lack of concentration
• Patient satisfaction
Types of Studies

In this area of research it may often be very difficult to conduct a Randomized Control Trial (RCT) as a result of the nature of the intervention and logistical complexities. Therefore for this review the focus was Qualitative studies and a variety of Quantitative study designs such as RCTs, and Quasi-experimental. Utilizing the search strategy mapped below, a total of seven Quantitative Descriptive studies were retrieved three of mixed methodologies and thirteen Qualitative studies. The latter, although mostly descriptive included such methodologies as Grounded Theory, Ethnography and Phenomenology.

All of the twenty included studies addressed the four main categories for interventions of interest. No studies were found to address interventions of interest in the following subheadings: comparison of natural vs. fluorescent lighting, meditation or spiritual areas, scents/aromas, and equipment centric vs. patient centric. There is literature that does address the topic of acuity adaptable rooms and open bay vs. private rooms however the research is limited in scope and to date has primarily focused on the adult and neonatal populations.

Search Strategy

The JBI standardized approach to database searching was not specific enough for the complexity of the question being asked. The subject matter for this systematic review straddles the disciplines of medicine, psychology and architecture. Therefore, under the guidance of a medical librarian, core concepts (see appendix I) were explored in a preliminary search of both MEDLINE and CINAHL databases to identify relevant subject headings (both MeSH and CINAHL Headings) and keywords until the specificity and sensitivity of the finalized search strategy to be implemented across multiple databases (including JBI CONNNECT+ and the Cochrane Library) was refined. A revised approach of identifying core keywords was utilized for searching resources that lacked thesauri with subject headings (for example, Trip database and AHRQ). It should also be noted that
the finalized search strategy and revised keyword searching had limited success in retrieving articles from the architectural databases. This was not surprising considering discussion with an Associate Professor of Architecture at Texas A&M University and the Co-editor of Health Environment Research and Design Journal, who advised that to date, in addition to the limited number of subject matter databases related to architectural literature, the quantity and quality of well-designed architectural research is minimal.

The following databases covering the fields of: health, medicine, nursing, dental, psychology, architecture and design were searched:

- CINAHL
- MEDLINE
- The Cochrane Library
- The Joanna Briggs Institute (JBI) CONNECT+ database
- Embase
- PsycINFO
- InformeDesign
- ICONDA (International Construction Database)
- InfoTrac
- Ingenta
- The TRIP database
- Centre for Review and Dissemination databases
- ACP Journal Club
- Web of Knowledge
- Avery Index to Architectural Periodicals
- Agency for Healthcare Research and Quality (AHRQ)

The search for unpublished studies included:

Dissertation Abstracts International
Definitions

**Event**: An event is defined as any activity that occurs within the confines of the health care facility, (i.e. entering the lobby or reception areas, waiting for a test to be done, having an exam or procedure done in a room dedicated for such purposes).

Assessment of Methodological Quality

Papers selected for retrieval were assessed by two independent reviewers for methodological validity prior to inclusion in the review using the standardized critical appraisal instruments from the Joanna Briggs Institute; Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAtARI) and the Qualitative Assessment and Review Instrument (JBI QARI) (Appendix II). As there was agreement on all studies assessed, a third reviewer was not required. Reviewers were not blinded to the authors’ names, affiliations or source of the studies. The topic of this review is unique. It combines an outcome of interest, anxiety which is commonly described in the discipline of Medicine, with interventions of interest that are the result of Interior Design and Architecture. The result is being that research in this field is not only a challenge to conduct but understandably it is in the developing stages. The discipline of Architecture clearly positions itself as novice in research trial design which is reflected in the following assessment of methodological quality.\(^8\)

Of the twenty studies retrieved, seven studies were quantitative, three \(^{130-132}\) reflected a mixed methodology; the remaining thirteen were of a qualitative design. Overall the seven quantitative studies lacked rigor in design and reporting of outcomes. For five of the seven studies, the method of randomization was either not identified or clearly described.\(^{130}\) Sample sizes were small \(^{18, 27, 131, 133}\) and loss to follow up was not explained nor accounted for. Ten of the thirteen qualitative studies did not position themselves methodologically and thereby had no clear description of their philosophical grounding/orientation. The majority of studies used the non-specific descriptor: ‘Qualitative’, a description that by the JBI critical appraisal standards is
insufficient. This resulted in a lack of congruency between the studies’ methodology, research question and interpretation of results. Studies generally lacked clear descriptions regarding demographic, cultural and socioeconomic backgrounds; ethical approval; identification of confounding factors and sufficient details of research method. Only one study of the twenty studies was designed in a manner that attempted to measure effect by the use of physiological indicators.

Data Collection/Extraction

Data were extracted from papers included in the review using the standardized JBI-MAStARI and the JBI-QARI data extraction tool (Appendix III). The data extracted included specific details regarding the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

Data Analysis

As the seven quantitative studies were of various study methods addressing a variety of topics, it was not possible to pool the results using a statistical meta-analysis provided by the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI). Rather quantitative findings have been provided in narrative form.

Description of Included Studies

Following the assessment of methodological quality, twenty two studies which investigated the link between Healthcare design strategies and event related anxiety in Paediatrics were included in the review (see Appendix IV for summary of included studies). From the search of the literature a total 145 articles were identified as potentially relevant to the review. This included hand searched articles noted in the study reference lists and contact with authors. From those, 51 were assessed in detail against the eligibility criteria; twenty met the inclusion criteria (see Appendix V for studies excluded by this process). Two studies were not included as efforts to retrieve
the articles were unsuccessful.\textsuperscript{74, 75} One study was consideration for exclusion.\textsuperscript{130} The study, a mixed methodology had inconsistencies noted in the reporting of Phase 2 and Phase 3 in respect to the number of pediatric patients and the intervention applied to each. Attempts made to seek clarification by contacting the author were unsuccessful. The study was retained but for the purpose of this review, only phase 3 will be examined. The studies included in the review were conducted in the following countries: Australia (2) Canada (2), Finland (2), New Zealand (1), Sweden (1), United Kingdom (4), and the United States of America (8).
Figure 1.

Illustrates the process of assessing studies for inclusion in the review

Citations (records) identified through database searching  
\( n = 129 \)

Full text retrieved against eligibility criteria  
\( n = 43 \)

Studies excluded after review of title and abstract, duplication and failure to meet eligibility criteria  
\( n = 86 \)

Studies excluded as did not meet eligibility criteria  
\( n = 29 \)

Studies meeting all eligibility criteria  
\( n = 14 \)

Additional studies retrieved from hand search and contact with authors  
\( n = 6 \)

Final number of studies retrieved meeting all eligibility criteria and assessed for methodological quality  
\( n = 20 \)

Studies included  
\( n = 20 \)

Quantitative 7  
Mixed Methods -3  
Descriptive -4  
Qualitative 13  
Grounded Theory-1  
Ethnography- 1  
Phenomenology-1  
Descriptive/Observational-10
Sample Sizes

The number of pediatric patients in the twenty studies retrieved ranged from four to 8071 (UK National survey), with a total number of 10,673 pediatric patients.

Study Setting

Studies were conducted in a variety of settings that included: General, Paediatric and Specialist Medical hospitals, pediatric inpatient and outpatient clinics, adolescent units including a purpose-built adolescent unit, ‘Specialist teenage cancer unit’, handicapped rehabilitation unit, emergency department, central atrium located in an acute care pediatric hospital, doctor’s office and waiting areas, ‘healing gardens’ surrounding two children’s hospitals and an elementary and intermediate school classroom setting inclusive of one kindergarten.

Paediatric Patients

Information such as demographics, ethnicity, socioeconomic and cultural background of study paediatric patients was not consistently provided. The paediatric patients in the studies covered a wide range of conditions from chronically ill patients who experience multiple readmissions within the healthcare setting; to healthy school aged children. Ages of study paediatric patients ranged from 5 months to twenty years of age. The inclusion criteria set forth in the protocol states 1-18 years of age; however one study had two patients aged less than 1 year\(^{134}\) while another\(^{135}\) indicated an age range from 12-22 years. In the latter study, specific numbers for each age was not provided rather a mean range of 15.5 years was given. In each of the two studies as all were reported within age groupings that contributed to the overall findings of the study, both were included. Common reasons cited for excluding children within the studies were that children and/or their parents were absent at the time of intervention, lack of verbal ability or cognitive understanding, injury preventing ability to write or draw as required, severe illness, disinterest or refusal to participate in study.
or unable to provide data because of an inability to comprehend and speak the language in which the study was conducted.

**Results:**

Despite an extensive search of the literature which identified twenty two studies that met the inclusion criteria only one study retrieved measured the outcome of interest by physiological indicators (blood pressure and respirations).\(^{(130)}\) However as indicated, this study had considerable inconsistencies noted in its’ research methods and therefore only one section of the study, phase three was reviewed for the purpose of this review. The remaining studies addressed a range of architectural strategies that can directly influence the ability to increase or decrease the level of fear or anxiety a child may experience. Such architectural strategies include the use of colour, art, gardens, and hospital spaces such as the design of playrooms and an ‘Atrium’ hospital entrance-way. Through observation and follow up discussion, the researchers were able to identify additional issues for consideration such as noise, sound, and utilization of space.

**Interventions addressed by existing research:**

1. **POSITIVE DISTRACTION**

   **a. Interior design: use of colour, texture and furnishings**

   Three of the twenty studies measured children and adolescent preferences in respect to colour and thematic design (art, images design and textures).\(^{(19, 82, 83)}\) For two of the three studies \(^{(82, 83)}\) the research setting was inpatient/hospital setting whilst the third study by Tivorsak focused on outpatient healthcare offices and waiting areas.

   Parks used a simulation method to compare colour preferences. Results showed that group differences were not significant (p>0.05) and that regardless of gender, healthy pediatric (inpatient)/ outpatient) children reported blue and green as their most-
preferred colours and white as their least. However both pediatric inpatients and outpatients preferred the colour yellow less than healthy children.

The second study used a two phase mixed method design. The purpose of the study through the use of semi-structured interviews, was to illicit children’s and young people’s views on colour and thematic design. Three colour spectrums were explored; blue-green, red-pink and orange yellow. Although some younger children (aged 11 years) did prefer the darkest range of blues and a range of mid, warm yellow – oranges (not lemon), ‘bold’ pinks, silver and black, overall the mid blue-green colours were the most popular. None of the colours chosen were bright colours, instead the pale to mid-colour ranges were predominantly chosen. Simplicity in the use of artwork and thematic design was preferred, as were textures that incorporated metal, glitter or shine and patterns; stars and striped materials. Although the general concept of having a theme was popular, against common assumption, theme preferences such as the sea, nature and animals was not dependent on gender, but rather age was the determining variable. For example, children aged 3–5 years preferred the sea ‘to be almost cartoon-like’, whilst children aged 6–10 years viewed the sea more as an ‘idyllic holiday scene’ and the adolescent group, aged 11 years and older often viewed the sea more ‘conceptually in waves, patterns, and abstract-like designs’.

Choice of interior design also influenced the pediatric patient’s ‘comfort’ in the hospital setting. The more the choice of textures and colours reflected a home environment the more the participant’s conveyed a sense of comfort: a ‘home away from home’ feel. Similarly, the idea of using colour and lighting in a manner that allows one to ‘personalize’ their own space was an appealing interior design concept for adolescents. The ability to change a room based on their personality or mood, in essence providing them with the control, was a comforting feature. The researcher in conclusion suggested that while consideration to popular themes or ‘fads’, both cultural and historical contexts can be entertained but there are no absolutes when it comes to colour and design choices.
“I think it should be a design that hides the hospital, so a fish or tree painted across a door, and when the door closes you see the fish or whatever it is . . . This will help me stay calm, I think” (Girl, 11 years old) p 41(82)

The third study, Tivorsak used a series of focus groups to develop a greater understanding of adolescents’ views on offices and waiting areas. Two major themes were identified: 1) make the interior design of offices more adolescent friendly 2) improve the appearance, provide interesting diversions while waiting. The pediatric patients (predominantly adolescents) disliked that they often seem to wait or be seen in rooms that, by design, are intended for young children:

“The environment, it’s set up for little kids. I mean, you go to a paediatrics office and a 3 year old would like what’s in there. There’s Winnie the Pooh wallpaper and there are little balloons and clowns all over the place, and I’m like 17 years old now.” p57(19)

They would prefer if the offices spaces were less pediatric, less ‘hospital-like’ and more homelike. Colours in a more neutral palate and the addition of teen-oriented posters such as musicians and sports figures were also stated to add to their comfort as “that’s what you’re around every day”p57(19) Feeling of fear were also provoked in the pediatric patients whenever medical supplies such as needles and equipment where visible on the counters of examination rooms. The general display of educational materials in the form of ‘human anatomy’ posters was often a stimulus for anxiety in the adolescent patient:

“You forget what you are doing there and then they just remind you by looking at these posters”

(Girl, 12 years old) p58(19)
Uncomfortable furnishings, in particular examination tables often described as ‘cold and rock-hard’ were a constant reminder to many of an unfriendly, and therefore anxiety provoking environment. However, if given the choice between separate facilities-exam or waiting rooms, a range of opinions led by age rather than gender was the influencing factor. Subjects seemed to favour separate examination rooms for young children and adolescents, rather than separate waiting areas.

The fourth study involved a play environment in hospital for disabled children. The main goals were to describe the process of designing a play environment and to assess the impact of a play structure on the behaviour and activity of the hospitalised children. Based on whoever entered the playroom at the time, initial observations divided into five play and five non-play categories were conducted on young disabled children in an existing playroom (pre-test), followed by structured interviews with staff. Based on review of the data, the play room was then re-designed. Emphasis was placed on an added play structure and the following considerations: controlling unnecessary stimulation (i.e. decreasing clutter/improving storage/neutral background), and encouraging exploration and self-initiation (i.e. use of colour, display and accessibility to toys) all within the overall appreciation of the children’s physical and cognitive abilities. The observations and interviews were then repeated (post-test). Post test results showed a significant (p<.001) increase in total play and partial play and decrease in total non-play. Similarly, a significant increase (p<0.1) in symbolic play and decrease in unoccupied/wandering was also noted. Concluding that the ‘nature of the physical environment can have a dramatic effect on children’s play’ p205.

b. Art and Interactive art:

In a descriptive, three phase multi-method study Eisen examined of the use of various types of art images to induce comfort or stress in hospitalised children. Within the publication itself there were several inconsistencies making it difficult to clearly distinguish between Phase two and Phase three in respect to the number of paediatric
patients and the intervention applied to each. As attempts to contact the author and seek clarification were unsuccessful, for the purpose of this review only phase three as described on page 185 has been included.\textsuperscript{130} The primary outcome of interest in phase three of the study was to determine what type of art when placed in the child’s hospital room was stress-reducing and thereby most therapeutic. The sample group was evenly divided into thirds. Two of the three groups were exposed for a time period of two hours to each of two art interventions: nature art (images dominated by natural vegetation, flowers or water) or abstract art (no identifiable subject). The third group acted as the control and had no art displayed. Health-related outcomes were measured using a validated Varni Peds QL\textsuperscript{TM}PFM tool and measurements of physiological parameters (blood pressure, respiratory rate) were taken pre and post exposure to art. For analysis pediatric patients were into four age categories. There was no significant difference in the psychophysiological ratings of stress between the age groups and the type of art. The only significant difference found in regards to gender was for boys aged 8-10 where significantly (p= 0.046) more boys were positively affected by exposure to nature art than girls. Following the exposure to art (post intervention) there were no significant differences, except in the child PFM abstract art group where rating on ‘worrying’ were higher in the abstract group compared to the nature art group (M=42.62,SD 35.38).

2. ELIMINATION OF ENVIRONMENTAL STRESSORS:

a. Sound: noise reduction, types and levels of sounds

None of the twenty studies addressed noxious stimuli as a variable to manipulate in managing environmental stressors. Rather, the anxiety provoking effects of such stimuli were raised primarily in discussions on overall experiences of hospitalization. Of specific concern was the effect of noise on disruption of sleep, especially at night.\textsuperscript{24, 27}
“Every night they (the babies) would scream, they were forever waking me up screaming and crying... I didn’t get that much sleep... I felt physically exhausted... I got my sleep during the day because it was quieter” Male, 15 years old p202.\(^{(27)}\)

b. Wayfinding aids: landmarks, design features

Only one of the twenty two studies addressed ‘wayfinding’ as variable to control.\(^{(137)}\)
The study’s objective was two-fold; to examine children’s views regarding a hospital environment and to reveal the architects’ intentions as far as philosophy and functionality. In addition to observational and photographic data, a survey posed the following questions: (1) How do children and youth perceive and respond emotionally to the space and; (2) How do they use the space, furnishings, services and amenities within it? In comments directly relating to the intervention of interest, many found that central architectural features such as the yellow painted glass elevators and an adjacent stair tower were not only ‘fun to ride’, but they provided a vantage point from which to view people and be viewed as well as orientating them to space and place. Bright, easily recognized and recalled features often served to reduce frustration by acting as a central reference point in which to easily orient to other areas of the hospital. In this study the ‘atrium’ provided a space for pediatric patients to escape the ‘solitude’ of their rooms. However not all children saw it positively, in particular adolescents found the open public space of the atrium an additional stressor and saw their personal appearance and the need to appear presentable as an additional ‘embarrassment’. The public atrium also provided patients with an opportunity to see other children who were ill with cancer or had been victims of accidents which created a stressor in making them worry or become increasingly distressed about their own futures. Whilst for others, having the opportunity to see patients in greater need provided a form of relief in their own experience of illness.
For the architects’ finding a balance between safety of design features and managing the logistics of large and fluctuating traffic volumes posed many challenges. At the outset, concern was raised that if the atrium’s vertical space was built ‘too high’ it could be frightening for children. In reality, it turns out the children had mixed views; while a small number did comment on their ‘fear of heights’ and the feel of the space as ‘intimidating’, the majority found the large open space that the lobby design afforded as a positive feature. Comments reflected that children found it comforting; enjoyed the diversional aspects offered and that the vastness of the atrium became a symbol of the hospital as a place to be safe.\textsuperscript{137}

c. Design of patient room: private versus non-private/family zone

In a quantitative descriptive study, Miller via the aid of a focus group, developed a questionnaire inviting adolescents’ views on rooming preferences during hospitalization (inpatient) and comparing with those who had not been hospitalised (in the study referred to as outpatient).\textsuperscript{138} The results showed that adolescents were equally divided between preferences to room alone (40%) or with one other person (39%). Few adolescents (20%) preferred more than one other roommate. When analysed by gender, adolescent females were more likely to prefer to room alone (53%) than were adolescent males (28%). In support of the family zone, a majority of both inpatients (50 of 55) and outpatients (34 of 35) indicated that they would like someone to stay overnight with them during medically difficult times in the hospital. Therefore according to this study ideally there should be roughly equal numbers of double and single rooms in an adolescent inpatient unit to accommodate for individual preferences. Additionally, provisions should be made to accommodate a parent or other adult to stay with the adolescent as needed.

1. ACCESS TO SOCIAL SUPPORT AND CHOICE (CONTROL)

This intervention of interest will be discussed further in the synthesized results of qualitative studies. However two quantitative studies highlighted access to social
support and choice (control) as a shared concept. Miller’s study (methodology of study detailed above) was primarily aimed at examining the views of adolescent preferences for rooming during hospitalization. However, within the discussion of ‘room types’ the issue of availability of social support was raised. For adolescents who were either currently or previously hospitalised when given the choice for a support person to stay with them during medically difficult times, the overall preference regardless of gender was their mother.

The second study by Viner involved secondary analyses of The English Young Patients Survey undertaken as part of the 2004 English National Health Service (NHS) patient survey program. The purpose of the study was to test the hypothesis that nursing young people in adolescent wards improves aspects of quality of care and patient satisfaction compared with pediatric or adult wards. The survey was conducted over 150 NHS acute and specialist hospital trusts inclusive of general hospitals, children’s hospitals and specialist medical hospitals (excluded were psychiatric and chronic care facilities). It was weighted to take into account variations in hospital size and response rate. Questionnaires were sent to 125,827 young patients and after considerations such as a 50% response rate, deceased patients and compliance with the inclusion criteria, a final sample for analyses was 8,071 pediatric patients. The study showed that for young children across the age group of 12-17 years there is no standard practice as to what type of unit they are admitted to (i.e. child ward, adolescent or adult ward). When responses were assessed by age groups, the 12-14 year olds rated care in the adolescent ward as significantly (p<.05) superior to that of a child ward. Highlighted in the contributing factors was the issue of noise and involvement in self-care. For those aged 15-17 years care was rated as excellent (p<.001) on the adolescent ward as compared to the adult ward. Contributing factors being information provided by nursing staff, involvement in self-care, less bored and less disturbed by noise. It is interesting to note that older adolescents when cared for on an adult ward reported dissatisfaction with the overall level of care, safety, and provided information. Additionally they did not feel they received the same level of dignity and respect as
those reported in an adolescent ward. The author concluded ‘that the core aspects to quality of care, confidentiality, communication, information-giving, partnership and respect were rated significantly higher by young people nursed in inpatient adolescent wards compared with peers nursed in either child wards or adult wards’ p752.\textsuperscript{64}

4. CONNECTION TO NATURE:

\textit{a. Access to green space/garden environments: Views of nature as restorative device (actual or virtual)}

Two quantitative studies\textsuperscript{131, 139} evaluated a prominent conceptual model that advocates nature as a ‘restorative environment’ in its’ ability to reduce stress, provide a calming effect thus “replenishing our emotional and mental processes” p168.\textsuperscript{131}

Utilizing behavioural observation, survey and semi-structured interviews, data were collected from both studies via pre and/or post occupancy evaluations regarding the patterns of use by children and families of the garden spaces surrounding paediatric cancer hospitals.

In 2001, Whitehouse and colleague’s in an attempt to inform more effective garden design in pediatric settings conducted the first empirical study on a children’s hospital garden. The research questions were straightforward: Who uses the garden? Where do people walk and move? What are people doing and how much time are they spending in the garden? The garden, an enclosed space provided colourful and interactive structures such as a windmill, water feature, plants and benches.

It was disappointing that in over 200 people randomly chosen and observed, only twelve were children/adolescents of which only five were pediatric patients (4 outpatients, 1 inpatient). The majority of guests to the garden were adults, (family members, staff and adult visitors). All the children observed in the garden but one appeared healthy. As noted also by Sherman’s study, children who are ill are rarely brought to the garden. This was substantiated by interviews done with five hospitalised
children; only one had actually been in the garden and only two were aware of its’ presence.

For example:

‘A two and a half year old female outpatient from hematology-oncology had not been to the garden, but very much enjoyed the other outdoor spaces at the Hospital, “I am going to see the doctor because I am broken and to see the ‘animals’”. Her mother added “She likes the topiary animals and can name them in the front of the hospital, she brightens up coming here because there are animals and places in the hospital that she recognizes that help to make her feel more secure here.” In fact, it appeared that this young patient associated the hospital more with seeing the ‘animals’ than with her treatment for cancer.’ p308(139)

The ability of the garden to ‘de-stress’ and provide solace are also reflected in some of the comments by family members and staff.

‘A mother who comes back to visit the garden periodically described how it helped her to make sense of a very difficult time. “My son was only in hospital for 17 hours then he died.”’p306 (139)

‘A Pediatric resident stated “we had something really stressful happen just prior to coming here and, we came here to debrief. It is a good setting
to get away from hospital stress, to feel more peaceful” p306\(^{(139)}\)

‘Another Doctor commented “it makes me feel more positive, relaxed and serene even though I can be out there only for a few minutes” p307\(^{(139)}\)

In addition to the gardens ability to reduce anxiety it also seems to have an influence on increasing consumer satisfaction. Fifty percent of garden users indicated that the garden definitely ‘increased their overall satisfaction with the Children’s hospital.

“We have been to a lot of hospitals over the last 3 years. None of them have anything like this. If the hospital takes this care, at this level, then it makes me think there would be an emphasis, you know, on preventative medicine at all levels, which is a very good thing” p306-7\(^{(139)}\)

“For my son, the garden is wonderful. He’s autistic and the garden seems almost built for him. He loves the waterfall. He is very visual and is also working at learning the names of the animals. He does much better out here than in a waiting room, so it is less stressful to me and a lot more enjoyable to bring him to this hospital. I tell all kinds of people to come here” p308\(^{(139)}\)

However not all results were positive. As mentioned above, in addition to the lack of usage by pediatric patients, observation showed that overall the garden was not used as frequently or as effectively as intended. While mid-day proved to be the most popular time for garden guests, nearly half of all visitors spent less than five minutes in
the garden while a smaller number lingered and spent 15-20 minutes. Not surprising, areas of the garden that encouraged interaction or provided shaded seating, experienced higher usage. Barriers to garden usage included lack of knowledge of the garden’s existence and its whereabouts, confusion over the purpose of the garden and who it was intended for, and difficulties with access either due to distance or availability of personnel or equipment (i.e. wheelchair). A number of pediatric patients and family members noted there were insufficient staff to accompany the patient and staff priority seemed to be more focused on direct patient care needs.

In conclusion the study highlighted that children’s needs in respect to a garden may differ depending on their state of health and age. Young children (4-5yrs old) seek places where they can run, hide and jump (active play) whereas older children (6-10 years) request structured play areas that provide creative ‘things to do’ (manipulative play). Finally the author acknowledges that in referring to the garden as a ‘healing garden’ it may have unduly biased pediatric patient’s results. That along with brief exposure times in the garden and small sample sizes indicates that the issue of sustained emotional coping and subsequent health benefits remains a question for further research.

In the second two phase study done by Sherman, the answers to the following questions were sought: 1) Who were the main user groups (patients visitors or staff) utilizing the gardens? 2) What was the relationship between active garden use (by people in the gardens) and patient’s passive garden use as experienced via the view from their window? 3) In order to explore the link between garden use and health outcomes the levels of pain and emotional distress were compared between individuals in the garden versus those in the hospital. The three gardens utilized were all similar in respect to the presence of landscape features (i.e. plants, benches, and flowers). The main differentiating factors were ease of access and individual garden theme as demonstrated through the use of design structures such as a water feature or an interactive child-friendly structure such as a life sized playhouse. Additionally in all
but one garden, ground level patient rooms were designed with windows that overlooked the garden plus doorways that provided direct access to the garden.

Using a validated Pediatric Quality of Life Inventory™ model (PedsQL™ PFM) the results, like Whitehouse’s study above, demonstrated significant difference (p<.001) in the primary user groups of gardens with visitors - adults and young children (2-12yrs) being the most common user, followed by staff whilst pediatric patients encompassed less than 20% of the overall garden usage. Despite patient and child friendly design, it was hypothesized that the low incidence of patient garden use may reflect oncology treatment strategies; for example a large proportion of ‘well’ patients are treated in either the outpatient or home setting, whereas only the most ill receive their care as inpatients. When present in the gardens, children (visitors or patients) were more engaged and directly interacted with both the natural elements and play structures provided than did their adolescent or adult counterparts. Important to note that for all age groups, the most popular design features were not only those that provided for an interaction between individuals and the environment (i.e. water features) but also those that encouraged the opportunity for interaction between each other (i.e. looking and touching features or climbing inside and sitting together in a structure). As for active and passive garden use, it was noted that that window blinds were lowered when garden use was high, but also when it was low (21%). This suggests that not only was privacy a concern, but other factors may be coming into play. Finally, in the ability for a ‘healing’ garden to lower stress across the six domains (anxiety, sadness, anger, worry, fatigue and pain), the effect sizes calculated and t-tests were not significant as a result of the small sample sizes and heterogeneity of the groups. However visual analogue scales consistently demonstrated higher scores for each domain suggesting more distress in the hospital than garden setting.
List of Study Findings / Conclusions:

Study: "Kids in the atrium: comparing architectural intentions and children's experiences in a pediatric hospital lobby." Author: Adams\(^{(137)}\)

<table>
<thead>
<tr>
<th>Finding 1</th>
<th>Atrium offers wayfinding and vertical integration (U)</th>
</tr>
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<tbody>
<tr>
<td>Illustration</td>
<td>&quot;It’s amazing for wayfinding because you can always reference an outside point or the atrium as you are trying to find places. it didn't require a lot of signage” p663</td>
</tr>
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Finding 2 The question of appropriateness for the wide range of pediatric pts infants to adolescents-was addressed through the planning of artwork and choice of colour (U)

| Illustration | "We didn't want to do a Disneyland or primary colour things that some people like to do, but we did want to liven it up a little bit and have some playfulness. these kids are as old as eighteen and you don't want them to feel like they are in a romper room" (design architect) p665 |

Finding 3 Plants in the Atrium helped to create a relaxed, calm atmosphere, another form of distraction or escape (C)

| Illustration | Seven pediatric patients commented on plants an early adolescent outlined how plants made the atrium feel like a little village while they reminded others of their homes and being outside. Another commented that the presence of plants in contrast to features he felt “cluttered’ the space. |

Study: “Chronically Ill children coping with repeated hospitalizations: Their perceptions and suggested interventions.” Author: Boyd\(^{(140)}\)

| Finding 1 | Behavioural distraction was mentioned by all of the informants as a coping strategy used to deal with many of the stressors of hospitalization (C) |
### Illustration
Examples of behavioural distraction included deep breathing, watching TV and videos, listening to music, going for a walk, playing games, doing crafts and bugging the nurses. p335

### Finding 2
Positive strategies that offer support (C)

### Illustration
The day bed in each room encourages parents to remain with their child during the night for ongoing support and reassurance. p339

### Finding 3
Coping strategies-positive influence of hospital (U)

### Illustration
“Even the ability to see outside from their hospital beds provides distraction and avoidance” p339

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Study: "Children’s views of hospitalization: an exploratory study of data collection."

Author: Carney(73)

<table>
<thead>
<tr>
<th>Finding 1</th>
<th>The physical environment was more likely to be important to older children/adolescents and more so with males. (U)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>In line with the survey undertaken by Kari et al. (1999) The hospital environment was identified by 52.1% of the children worthy of comment p35</td>
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<tr>
<th>Finding 2</th>
<th>Children were very aware of their own space within the ward and the social environment which included descriptions of interactions with other children on the ward, play area and the adolescent room. (U)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>“some kids were friendly. The playroom is a really good idea the Robert Scott (adolescent) room was good. It helped me get more privacy” p32</td>
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<tr>
<th>Finding 3</th>
<th>For younger children having continuity with caregivers was important and reflects their difficulty tolerating separation(C)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>Questionnaire results (Table 4) p35</td>
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Study: “Adolescents' experiences of emergency admission to children's wards” Author: Clift\textsuperscript{(27)}

<table>
<thead>
<tr>
<th>Finding 1</th>
<th>Previous research has shown that peer support is a principle need for hospitalised adolescents and has recommended that adolescents should be accommodated with other individuals of a similar age. (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“There wasn't really anyone of my own age...It would be better if there weren't so many young kids there... There were times when I wanted to stay up and I couldn't because of the younger ones... When you are bored you think things that are going to happen to you.” (14 year old male) p202</td>
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<thead>
<tr>
<th>Finding 2</th>
<th>Those adolescents who were placed with peers talked of the friendships that they had made and seemed to have a more a positive outlook on their hospital experience. (U)</th>
</tr>
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<tbody>
<tr>
<td>Illustration</td>
<td>“There were a couple of people around my age that was good. We could have a talk and we did kind of the same things . . . It's really nice when you have got really nice people who are near your age . . . I think that improves things . . . For the times when I was on my own I did feel quite isolated.” (female, 11 years) p203</td>
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<tr>
<th>Finding 3</th>
<th>The pediatric patients were adamant that they would not wish to be isolated and stated that they would want to be accommodated in an open bay, regardless of the possible issues surrounding noise and intrusion from younger children. (U)</th>
</tr>
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<tbody>
<tr>
<td>Illustration</td>
<td>“I preferred to stay where I was [in an open bay] because when you are alone and not listening to anyone that makes you worse.” (male, 14 years) p203</td>
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Study: “Children and young people's preference of thematic design and colour for their hospital environment.” Author: Coad \(^{(82)}\)

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<tr>
<th>Finding 1</th>
<th>Overall it was agreed that themes needed to work for both genders. (U)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>“I think you could make it different and interesting. Everywhere we look there should be something happening and changing, like when you look underwater at the seaside. Everywhere we look there should be something new to look at” p41</td>
</tr>
<tr>
<td>Finding 2</td>
<td>Colour differences across the range of age groups of the pediatric patients was not found to be significantly different with respect to colour preference, but this may reflect the small sample size of the study (C)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“We do need variety in the ward, but I don’t think it should be crazy colours” p43</td>
</tr>
<tr>
<td>Illustration</td>
<td>“You don’t want it dull but you don’t want it over the top either” (U)</td>
</tr>
<tr>
<td>Illustration</td>
<td>“I think you could have one colour like blue and just change it in the different kids areas so, like, the little ones get more pale colours and we older one get stronger colours and used more like art picture, kin do graphically, d’know what I mean?... yeah... I’d like that” p43</td>
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Study: “Obtaining adolescents' views about inpatient facilities using conjoint analysis.” Author: Gibson \(^{(135)}\)

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<tr>
<th>Finding 1</th>
<th>Environment suitable for adolescents (C)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>The young people spoke of wanting ‘a bright environment’, not the ‘busy wall decorations of a pediatric ward’, nor the ‘gloom’ of an adult ward. p37</td>
</tr>
<tr>
<td>Finding 2</td>
<td>Importance of adolescent friendly environment and ability to socialize</td>
</tr>
<tr>
<td>Finding 3</td>
<td>The least preferred scenario with the lowest utility score had the options of adolescent unit adjacent to pediatric ward; shared ward sitting room; and no cell phones allowed. (C)</td>
</tr>
<tr>
<td>Illustration</td>
<td>Some shared their experience of being placed in a cubicle alongside adults with cancers. One young woman described being nursed, as a 16-year-old with newly diagnosed leukaemia, in a bed next to a woman who had just had a total mastectomy. p37</td>
</tr>
</tbody>
</table>

Study: “Consumer perspectives in adolescent ward design” Author: Hutton \(^{18}\)

| Finding 1 | Designing bathroom areas in such a way to make visiting the bathroom less obvious. Additionally a space or small corridor between bathrooms is recommended to ensure increased privacy for grooming or ablutions. (C) |
| Illustration | While in hospital, adolescents expressed fears about toileting and showering, because this space was not adequately equipped to facilitate privacy. p540 |

| Finding 2 | Adolescent pts wanted bathrooms in all side rooms (single rooms) which included a separate toilet and shower. (U) |
| Illustration | “...the main thing that got to me is the shower and the toilet in the same room... if someone is in the toilet you could never get to the shower and vice versa” (Simon 17 yrs. old) p540 |

| Finding 3 | The activity area was seen as a private space for adolescent patients and viewed as a way of maintaining independence and autonomy within the ward environment. (C) |
| Illustration | From the data collected, activities which are noisy (such as Nintendos\(^{TM}\))
and stereos), and more physically demanding (pool tables, table tennis and air hockey), were all placed in an area away from the general ward traffic, towards the end of the ward. p541

### Finding 4
Adolescents wanted to share activity space with their peers, yet they also wanted this area kept private from the rest of the ward and the nursing and medical staff. (U)

| Illustration | “so they (nurses) don't keep on nosing down in what happens down the end of the ward” (14 yrs. old) p541 |

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**Study:** An adolescent ward; ‘in name only?’. Author: Hutton (17)

### Finding 1
What this study has shown is that being a patient takes precedence over being an adolescent (C)

| Illustration | The ward space is set for patient care and not adolescent patient care. Even though adolescent environments have been purpose-built for the delivery of adolescent healthcare, these activities do not always mesh smoothly with that environment and create tensions within this space. In this instance, the ideological use of this space is not upheld. p3148 |

### Finding 2
Adolescent patients do produce their own space on the adolescent ward. (U)

| Illustration | They do this by being adolescents who seek their own space by their own means. In these spaces, adolescent patients determined who would be part of their space (if need be), and they determined the activities of and within these spaces, having these spaces under their control. p3148 |

### Finding 3
It was found that adolescents sought to produce their own space through their own means on the ward, and did so quite effectively (U)

| Illustration | “Sonja's bed area is crowded with objects brought from home. On her bed she has a quilt in a pink and blue colour. On top of her folded quilt |
cover, Sonja has an array of stuffed toys....” p3146

Study: “A qualitative evaluation of an adolescent cancer unit.” Author: Mulhall[133]

<table>
<thead>
<tr>
<th>Finding 1</th>
<th>The physical layout and facilities of the unit were important in shaping the experience of the adolescents, families and staff. (C)</th>
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<tbody>
<tr>
<td>Illustration</td>
<td>One mother spoke of how being given privacy in a side room was important during her son's first admission. This provided them both with some initial protection from the reality of being on a cancer unit: “I am thinking please pick the side room, which he did, and he had all the blinds down the first time we were here because he didn't want to see all these bald heads walking past the room . . . it was quite frightening for me” p19</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Finding 2</th>
<th>The facilities and equipment such as the day room, pool table and music contributed to lessening the feeling of being in hospital and helped to promote an atmosphere of normality.(U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>Parents described this as: “being switched on to the needs of young people; there being plenty for the family to do” p19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finding 3</th>
<th>Comparing their experience in other health care settings, patients and parents unanimously agreed that pediatric, adult or general adolescent wards were inappropriate. Adolescents preferred being with people of their own age who had cancer.(C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“I have been in other wards and it is different” p19</td>
</tr>
</tbody>
</table>

Study: “Children in the hospital: elements of quality in drawings.” Author: Pelander[141]

<table>
<thead>
<tr>
<th>Finding 1</th>
<th>Regular hospital furnishings and nursing instruments were also represented in the patient rooms, as well as plants, carpets, paintings, and colourful curtains. (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>Drawn by a 10-year-old boy, provides a clear illustration of the basic</td>
</tr>
</tbody>
</table>
elements of an ideal hospital's patient room: the presence of electronic entertainment, an aquarium with fish, and various things for children to do. The environment has a familiar look about it and is not at all threatening. p338

Finding 2  The Children's expectations concerning patient rooms had to do with entertainment, furnishings and food. (C)

Illustration  In the case of entertainment, the basic elements appearing in their drawings included a TV set, videos, toys real animals, books, cartoons and playgrounds with swings and other activities. p338

Study: “Children’s needs during hospitalization: An observational study of hospitalised boys.” Author: Runeson^{(134)}

Finding 1  The children clearly demonstrated the need for what is familiar stating they wanted to go home. (U)

Illustration  When he had vomited for the third time, he cried that he was tired and wanted to go home (2-year-old). A 3-year-old boy woke up after minor surgery. He looked around, confused and disoriented, and started crying. He did not calm down until his mother brought his own pram. p163

Finding 2  The study provided examples of inquiring children who investigated how things around them functioned. (U)

Illustration  When the boy and his parents entered the room the boy started investigating the bed. He raised and lowered it and pushed all the buttons he came across. He jumped up and down on the bed and finally he put the bedside table in order. (9-year-old) p161

Study: “Coping with hospital-related fears: experiences of pre-school-aged children.” Author: Salmela^{(7)}

Finding 1  The experience of security related to coping with hospital related fears included the following themes: the presence of parents, and
experiences of proximity and tenderness. (U)

**Illustration**
The children described their constant need to remain near their parents and to maintain contact with other family members. p126

**Finding 2**
Playing was the factor that most of the children mentioned as bringing them pleasure and helping them to manage their fears. (U)

**Illustration**
Interviewer: What could you do when you get scared? Boy, 6 years: He could play games and stuff. He can watch some cartoons and play with the play station at the same time. He could watch the telly. p126

**Finding 3**
An often-mentioned element that created security was the child’s own toys. (U)

**Illustration**
The children described how it was important for them to have with them in the hospital their toys or other objects that gave them a feeling of security, so that they could hold them close and squeeze them. Interviewer: What do you do when you get scared? Girl, 6 years: “I just think about my Mum and Dad.” Girl, 4 years: “Then I just pick up my toy” p126

---

Study: “Are pediatric practice settings adolescent friendly? An exploration of attitudes and preferences” Author: Tivorsak

**Finding 1**
Subjects reported that they frequently waited and were seen in rooms designed or decorated for younger children. (U)

**Illustration**
“I would make it more of a teenage environment....the environment they have now is more for, like little kids.... I’d just make it more mature.” 14 yr. old male with Crohn’s disease p57

**Finding 2**
Age appropriate décor (U)

**Illustration**
“.the exam room had wallpaper with pictures of little palm trees and spiders and bugs. .it’s really, really annoying to me. We are not teeny tiny kids” 14yr old male with cystic fibrosis p57
<table>
<thead>
<tr>
<th>Finding 3</th>
<th>Age appropriate educational and artwork. Content of anatomical teaching posters. (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“…..I think they’re, like, more for adults, because kids don’t understand them...they are not pleasant to look at; they are kind of disgusting” 12yr old female with cystic fibrosis p57-8</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Finding 4</th>
<th>Separate waiting areas for younger children and adolescents (C)</th>
</tr>
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<tbody>
<tr>
<td>Illustration</td>
<td>“That’s actually pretty cool. I think that a good idea to have it so that there are not little kids running around so the older kids don’t actually trip on the. The do!...it’s hard not to step on them” 14yr old male with cystic fibrosis p58</td>
</tr>
<tr>
<td>Illustration</td>
<td>“In a hospital like this, the name is Children’s Hospital implies that mostly the patients here are going to be children and not kids our age. I don’t think, in building a whole new waiting area just for 10% of the patient population, it’s a waste of money” 17yr old male with cystic fibrosis p58</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Finding 5</th>
<th>Some subjects, most of whom had chronic illnesses, state that the furniture in the exam room should be more comfortable. (U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illustration</td>
<td>“Put a sheet on the beds because the beds are rock hard” …“Get new beds and make them more comfortable” 13 yr. old male and 12 yr. old female with Cystic fibrosis p58</td>
</tr>
</tbody>
</table>
Synthesis 1

Anxiety in children and adolescents can be reduced when hospital design accommodates environmental features that positively engage and therefore distract.

<table>
<thead>
<tr>
<th>Synthesised Finding</th>
<th>Category</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Artwork to engage and re-direct</td>
<td></td>
<td>Age appropriateness of artwork, what works for a young child may not be appropriate for school aged child or adolescent. (U)</td>
</tr>
<tr>
<td>Diversional activities serve as a positive coping strategy</td>
<td></td>
<td>A factor in the area of theory development is the child’s awareness of the hospital environment and its effect on coping. (C)</td>
</tr>
<tr>
<td>Personalization of space</td>
<td></td>
<td>Adolescents also wanted a variety of activities to relieve boredom and motivate them while they were in hospital. (U)</td>
</tr>
<tr>
<td>Normalisation of daily activities (i.e. school)</td>
<td></td>
<td>The children said that using their imagination and thinking of familiar, funny things helped them deal with their fears. (U)</td>
</tr>
<tr>
<td><strong>The need for psychologically and physically engaging environments</strong></td>
<td></td>
<td>An often-mentioned element that created security was the child's own toys. (U)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schooling emerged as extremely important for adolescents, with several paediatric patients highlighting their initial concerns about falling behind while hospitalised. (U)</td>
</tr>
</tbody>
</table>

- The need for psychologically and physically engaging environments: The ability of hospital environment to provide age appropriate diversional activities to positively affect coping strategies and thus decrease anxiety.
Synthesis 2

Anxiety in children and adolescents can be reduced when the hospital design allows the reaffirming presence of clinical support without being intrusive.

<table>
<thead>
<tr>
<th>Synthesised Finding</th>
<th>Category</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Continuity of Care</td>
<td>For younger children having continuity with caregivers was important and reflects their difficulty tolerating separation. (U)</td>
<td></td>
</tr>
<tr>
<td>Design that is safe and secure for patients</td>
<td>Older male paediatric patients wanted the nurses’ station to be in a position to observe patients who are ill. Moreover at 17 and 18, these paediatric patients may have experienced the death of peers, and therefore understood the necessity of being observed while they were ill. (U)</td>
<td></td>
</tr>
<tr>
<td>Hospital environment (noxious stimuli (i.e. noise, lighting))</td>
<td>Hospital planners stressed that finding a balance between physical openness and the safety and security of patients was a crucial challenge (U)</td>
<td></td>
</tr>
<tr>
<td>Visualisation of medical paraphernalia</td>
<td>The paediatric patients described the ward environment as extremely bright and noisy at night. Consequently, all reported problems with sleeping (U)</td>
<td></td>
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<tr>
<td></td>
<td>Sleep disturbances were considered most often to have been a negative aspect of adolescent’s experiences (U)</td>
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<td></td>
<td>Posters of human anatomy might increase adolescent anxiety about the visit (U)</td>
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<tr>
<td></td>
<td>Adolescents expressed discomfort with visible medical paraphernalia as it can be intimidating and scary to patients (U)</td>
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</table>
**Synthesis 3**

*Anxiety in adolescents can be reduced* by the acknowledgement and respect of their transition from childhood to a new role of independence and identity as a ‘young adult’.

<table>
<thead>
<tr>
<th>Synthesised Finding</th>
<th>Category</th>
<th>Findings</th>
</tr>
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<tbody>
<tr>
<td><strong>Defining a space as Adolescent assists with transcending the perception of patient</strong></td>
<td><em>Allocated spaces/ Strategies for privacy and independence.</em></td>
<td>Adolescents garner what they can around them in hospital to produce a space for themselves that cuts across the very fabric of existing ward space (C)</td>
</tr>
<tr>
<td></td>
<td><em>Need for Privacy/Independence/ Control</em></td>
<td>All adolescents commented on food as a negative aspect of their stay. The paediatric patients considered choice as extremely limited and as a result they ate very little (U)</td>
</tr>
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<td></td>
<td></td>
<td>The use of a cell phone was seen to be the most important aspect of their inpatient experience (U)</td>
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<td></td>
<td></td>
<td>Requests for locks and curtains were expressed equally by both genders and by both the younger and older paediatrics patients. (U)</td>
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<tr>
<td></td>
<td></td>
<td>While in hospital, adolescents expressed fears about toileting and showering as space was not adequately equipped to facilitate privacy. (U)</td>
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</tbody>
</table>
**Synthesis 4**

**Anxiety in children and adolescents can be reduced** when interior design allows for a harmonious balance between private and common space.

### Synthesised Finding, Category, Findings

<table>
<thead>
<tr>
<th>Synthesised Finding</th>
<th>Category</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most of the paediatric patients repeatedly spoke of their parents and family visiting and found this to be a positive aspect of their hospitalization. However, this was in conflict with their need for independence: (U)</td>
<td></td>
<td></td>
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<tr>
<td>One participant thought that this had improved his hospital stay by providing constant support from a familiar face, which reduced the feelings of anxiety that he had experienced initially: (U)</td>
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<tr>
<td>Adolescents wanted to share activity space with their peers, yet they also wanted this area kept private from the rest of the ward and the nursing and medical staff. (U)</td>
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<td></td>
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<tr>
<td>All the paediatric patients concluded that an adolescent room within wards should be an immediate priority. (U)</td>
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<td></td>
</tr>
<tr>
<td>Atrium serves as a welcoming space with legible links to other parts of the hospital (U)</td>
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**Design strategies need to account for an important balance between social space versus private space**

Children and Adolescents express that having access to and the ability to accommodate peers/parents close by provides a sense of comfort and security.
Discussion:

The following discussion is organized according the JBI grading framework: FAME.\textsuperscript{(142)}

Feasibility

When considering the feasibility of available research the criteria of importance is practicality in respect to cost effectiveness and the ability to physically and culturally apply the activity or intervention within a given context.\textsuperscript{(142)} Case in point, architecture and design choices are a luxury that even many ‘Western’ countries due to financial constraints cannot afford, leaving few in a position to either rebuild or undertake major renovations. Similarly, there is not widespread assessment of cost/benefit analysis in the existing evidence to promote such undertakings.

That said, research based primarily on patient experience does address many practical solutions that regardless of geographical location or culture are achievable and can have an impact in reducing anxiety in the pediatric population. Minor (low cost) changes such as: colour, theme choices and décor according to the dominant age groups receiving care; placing out of view education materials, medical equipment and supplies that can evoke feelings of fear; aiding contact with peers and loved ones through the provision of communication via unrestricted cell phone usage and where feasible access to computers or wireless technology; the accommodation where possible for family or friends to stay overnight; the use of colour and design features and to aid in way finding; increasing awareness and access of gardens (if present) through availability of personnel and public in-house advertising; review of artwork and diversional activities available, are they the ‘best’ or most effective for the ages being served? The existing research encourages either through practical solutions or extensive rebuilds to engage children in a positive manner that facilitates their ability to cope with the anxiety and fear they experience whilst hospitalised.
Appropriateness

Determining the appropriateness of existing evidence is aided by reflecting on how well the evidence supports current circumstances.\(^{(142)}\) The available evidence whilst lacking in design and reporting rigor clearly demonstrates a relationship between the design of a healthcare environment and subsequent anxiety experienced in the pediatric patient. The most striking deficiency highlighted was the continued lack of the healthcare system to adequately acknowledge the needs of the adolescent population. Frequently underserved, adolescents are caught between care provided either on a youthful pediatric unit or adult setting. As stated in one study this leads to them being ‘vulnerable, emotional, and marginalized’ p538.\(^{(18)}\) Others like Clift comment that currently “some conclusions about best practice for adolescents do not have an underpinning in evidence base” p206.\(^{(27)}\)

Meaningfulness

The meaningfulness of evidence is essentially determined by its purpose and/or value for the individual.\(^{(142)}\) Research shows that pre-school children and adolescents need ‘active coping strategies’ to deal with the stress and anxiety of the healthcare environment. It is for that very reason that design needs to be intuitive and respond to the needs foremost for the child but also for that of the family as a whole. Too often healthcare design like the services offered, are based solely on the knowledge, experience and opinions of engineers, architects, administrators, physicians/nurses and other healthcare professionals, rather than from direct contribution of the end user. Only one study in this systematic review, built upon pediatric patient recommendations to aid in the design of a purpose build facility.\(^{(82)}\) From the conceptual planning to the design specifications, it is imperative to have children and parents input in the initial planning stages.\(^{(112)}\) Sadly this is rarely the case. The available research demonstrates that rarely are children involved in the planning of supposedly ‘purpose’ built facilities. However, upon inviting the contributions of patients/parents and providing for
meaningful choice to children the research also shows the potential for the physical environment to cultivate quality care, reduce anxiety and thus nurture and aid healing.

**Effectiveness**

The effectiveness of evidence is determined by reflecting on the strength of an intervention to positively or negatively impact an outcome. Today, prior to making any change, we want to know two things: what evidence is there that the change is warranted and what will be the impact in terms of outcome, can it be measured? When such decisions involve inordinate human and financial resources the onus to substantiate such expenditures is vital. However, in this area of research the ability to conduct empirical studies is difficult and thereby the facility to validate information obtained from empirical research lacking. In fact, only one study was designed in a way to measure effect.\(^{(130)}\) Irrespective of the challenges that researchers face in attempting to randomize, manipulate and control for the numerous environmental variables that impact a question such as this, such challenges need not nor should not, prevent or discourage architects and healthcare researchers from collaborating to seek answers to this important question.

**Conclusion**

The available evidence suggests the design of the built environment *does have* the ability to positively or negatively impact the level of anxiety and fear that children experience when exposed to a healthcare setting. The evidence to determine how effective one design strategy is over another is yet to occur. The quantitative research is limited and restricted to descriptive studies. However, there is a solid grounding of qualitative research both present and continuing to form that in particular raises an awareness of the specific needs of the adolescent population; needs such as privacy and independence yet, during uncertain times, the desire for peer and family support. Such dichotomies once expressed and understood, can then be translated into the
design of healthcare ‘spaces’ that are flexible and reflect an appreciation of the young adult.

Central to the discussion is also the importance of the end user voice during the planning and design phase of ‘purpose’ built facilities.\(^{(59)}\) Vital at the onset of any planning project it is also important to be maintained through the lifespan of the healthcare facility, a concept frequently upheld through the use of a child advisory group. The child brings a unique and valuable perspective particularly if based on previous hospital experience; their understanding and usage of space can be in direct contrast to that of the healthcare professional whose use of space is often based primarily on efficiency, workflows and functional delivery of care.\(^{(17)}\) However the appreciation and melding of both perspectives can lead to efficient, effective and innovative environments that ideally not only meet, but supersede the expectations and needs of all. In the meantime, until the research is designed in a way that clearly quantifies the effect of design on measureable outcomes such as pediatric anxiety the value of evidence based design is in doubt.

**Implications for Practice:**

This review highlights an insightful look into the preferences of children as consumers. Although sample sizes were small and results were not quantified in measureable outcomes, the ability for such studies to inform design should not be underestimated. Key is the understanding of the various stages of child development and the extent of coping strategies required to offset the fears and anxiety that a visit to the hospital or clinic setting may instill. That said the ability to employ the many suggestions mentioned within the studies may not be feasible or practical depending on access to resources. Extensive re-builds or even renovations take vast materials and human resources which in translation means money and lots of it!

However, realistically speaking such financial capital is not within the reach of most. Therefore with a will for change, bountiful enthusiasm and creativity, practical
applications can be achieved and at minimal cost. Ideas such as noted above: a variety of diversional activities that are engaging and age appropriate; the use of colour; attention &/or access to improved communication channels-cell phone and computer use; acknowledgement of need for private spaces even if just a small corner set aside or a room not in use that can improvise as kiddies’ playroom or young adults’ lounge; cohorting adolescents or similar age groups together on units; access to and use of outdoor spaces with age appropriate activities; hiding from sight ‘scary’ medical equipment/supplies; the careful choice of artwork or poster displays in waiting and exam rooms; a detailed human anatomy poster while for some may be educational for others may be intimidating or scary. (19)

On a grander scale for those that do have such opportunities, the question to be asked is: does the overreaching design of the healthcare facility be it hospital, medical or dental clinic give the impression that it speaks to whom it is intended for? In respect to the patients, in this case children, does the design address the needs of children across the age groups and additionally also the needs of the parents? For the latter, the parent, their needs cannot be diminished as the threat of their child’s well-being is a pivotal and frightful experience; their stress and anxiety can reflect and be an influencing factor on the child. Consideration of design strategies such as single versus double or multi-bedded rooms, the choice as revealed in Miller’s study may not be as straightforward as we thought. Adolescent preferences were equally divided between the desire to room alone or with another person, with some even choosing more than one roommate. Such findings as recommended by the study could lend support on an adolescent unit, to the consideration for a mix between single and double rooms. (138)

The ability of design to support family centered care by the introduction of multi-zoned patient rooms in particular the family zone; attention to the use of colour, texture, design features and art generally throughout the facility but also as a means to provide intuitive wayfinding particularly to aid those who as yet cannot read or who may not speak the local language; design of social and private spaces: playrooms, adolescent and/or parent lounges; school; gardens and outdoor spaces again with age appropriate
diversions; and wireless technology to aide in communication.\textsuperscript{(143)} Such design strategies whether of minor or major proportion all endeavour to make the hospital experience one that is positive and less anxiety provoking as for many the visit to the hospital will not be their first.

**Implications for Research:**

Currently the evidence is of poor quality to direct Healthcare Administrators and or Architects in their decision making regarding purpose built facilities and healing environments. Only one study included in this review attempted to measure effect.\textsuperscript{(130)} Others studies both quantitative and qualitative were restricted in size and overall were lacking in methodological quality. Therefore at present while the marketplace through organisations such as Centre for Healthcare Design and National Association for Children’s Hospitals and Related Institutions (NACHRI) in the United States and other international organisations have extensive and creative recommendations for the design of children’s hospitals, many of these originate through intuitiveness based on extensive knowledge and experience in the healthcare field rather than on actual empirical studies. It is for this reason appreciating the logistical complexity of this topic, there is a need for research that meets the needs of both the disciplines of architecture and healthcare. Research conducted to determine whether facility design enhances the hospital stay of children across the entire age spectrum. Until more research is undertaken that is designed in a way to clearly measure effect, discussions proposing ‘healing environment’ design recommendations remain exactly that – discussions and not definitive recommendations for practice.
Chapter Five: Methodology

‘To give language to an otherwise unseen world of personal human experience’

Hodges p390 (20)

Introduction

This chapter introduces the reader to the philosophical underpinnings – the methodological groundings – of this research project. The methodological choice is orientated by the research question itself. Given that the research question is about human experience – in particular – human preferences, it falls within the ‘interpretive’ paradigm and therefore is supported by the philosophical works of Hermeneutic Phenomenology – as explicated by Heidegger, Gadamer and van Manen. It is the goal of the following chapter to present to the reader an overview of Phenomenology; examining the main schools of Phenomenology and their criticisms, and in congruence with the philosophical underpinnings begin to position myself as the researcher in the hermeneutic circle.

Phenomenology is both a philosophy and a research methodology. This statement is deceptively simple as it is complex. Whilst I consider myself a novice when it comes to research, my nursing practice is that of an ‘expert’ in with my career spanning General Paediatrics, Paediatric Intensive Care to the care for the most vulnerable of all patients, that of the premature infant in the specialty of Neonatal Intensive Care. It is therefore not surprising that as a member of the healthcare team with exposure to the science of medicine, my grounding has been predominantly in the ‘positivist’ paradigm. However, empirical studies, although indispensable, cannot and are not appropriate, to answer all health related questions. Illness is a human experience and therefore if we wish to better understand all aspects of this human experience we need to acknowledge the patient wholly, holistically, experientially, inside out and outside in.
Today, it is not uncommon amongst educators, scholars and the scientific community at large when conducting either primary or secondary research to hear colleagues inquire “What type of research are you doing, qualitative or quantitative?” Frequently researchers themselves will even admit pressure to conduct the latter, as sadly an incomplete view still exists that empirical research is the only true research and that anything else by scientific standards is considered inferior. It is my aspiration going forward to be an added voice in altering this perception. Influenced by respected leaders in the nursing community, some whom I consider myself very fortunate to call my mentors, I have come to appreciate not only their work but the wisdom of their advice which is to approach all published research, with a healthy dose of skepticism until proven otherwise. Second and most importantly, always remember to ask first and foremost “What is the question driving the need for research?” for it is the question that gives rise and provides direction to the inquiry; to the research. It is the question that determines the philosophical paradigm (the methodology) and it is the question that determines the method of inquiry.

It is therefore through critically reviewing the existing research as part of a comprehensive systematic review conducted in my Master’s program in Evidence-Base Healthcare that my research question began to take shape. From the comprehensive systematic review an existing research a gap was highlighted in respect to Adolescents (detailed in Chapter Four). With a lifelong interest in architecture and design and a career dedicated to the caring of children, I have recently had the opportunity to culminate both passions in my current employment as a member of an international project team building a ‘greenfield’ tertiary care Women’s and Children’s Hospital in Doha, Qatar. In view of, and uniting such knowledge, it seemed a natural progression to explore the adolescent’s experience of hospitalization and as a result their preferences for hospital design. An inquiry decidedly best answered by the philosophical interpretive paradigm and by extension, Hermeneutic Phenomenology as informed by Martin Heidegger and Max van Manen.
Unlike other research methodologies, Phenomenology is identified by what appears to be a variety of aliases, but in fact many do represent various schools of Phenomenology. Frequently referred to as Hermeneutics; Hermeneutic Phenomenology; Philosophical Hermeneutics; Existential Phenomenology; Interpretive Phenomenology; Critical Hermeneutics; Classical Phenomenology; Empirical Phenomenology; Descriptive Phenomenology; Transcendental Phenomenology, and Interpretive Hermeneutic Phenomenology each it seems has a myriad of supporting literature. What is not always clear, nor well explained, is that although some names are slight variations of the other, there is a distinct difference between the two leading research methodologies ‘Hermeneutic Phenomenology’ and ‘Transcendental Phenomenology’. Each is grounded in the philosophical positions of esteemed philosophers past and present such as Aristotle, Socrates, Descartes, and Kant to Husserl, Heidegger, Ricoeur, Merleau-Ponty, and Gadamer to name just a few.

Understanding Phenomenology begins with an acceptance that it is a rich and sophisticated philosophy about human existence and knowledge that has been drawn upon to inform the design, conduct and analysis of research; the research methodology. As a student having immersed myself in the literature on this topic, I am humbled by this popular research methodology that Nursing has so eagerly embraced. Yet, I realize I have only begun to scratch the surface on what is an exceedingly complex, convoluted methodology; one not easily understood nor it appears, conducted.

**Controversy of Phenomenology in Nursing Research**

It was 1984 in a publication titled ‘From Novice to Expert’ that unbeknownst to the author, the landscape of nursing research was about to dramatically change. Renowned thought leader, Patricia Benner, first introduced the philosophical tradition of Phenomenology to the discipline of nursing research. Decades later, this seminal publication still remains one of the most influential concepts in nursing education. Credited with giving rise to what is now one of the most widely conducted research
methodologies within the field of Nursing, 37% of all nursing research grounds itself in the philosophical orientation of Phenomenology.\(^{(144, 145)}\) Ironically, it is this same tradition that has also been the target of considerable and ongoing criticism.

The ability for nursing research to adequately and accurately reflect the traditional teachings of Phenomenological inquiry is a continuing debate frequently cited within the literature.\(^{(30, 145-151)}\) The foremost criticism is in reference to the absence of reporting either in part or full to the philosophical underpinnings of the research; the research methodology – the core philosophical concepts that inform the choice of research methods and analysis.\(^{(150)}\) This oversight may extend from a variety of reasons of which a lack of formal education in philosophy and exposure to research methods other than clinical trials are the most dominant.

Notable critics such as Crotty, Draucker, and Paley some of whom are nursing researchers themselves, have been stalwart in their censure; essentially concerned that Nursing is ‘doing Phenomenology without knowing Phenomenology’ p695.\(^{(152)}\) Contributing to this mismatch is the original treatise of the esteemed philosophers. The writings of Husserl and Heidegger are reputed to be of a language that is esoteric in nature and therefore daunting and exclusive.\(^{(153)}\) Noted to be difficult to interpret as a result of the complexities of the German language, Heidegger himself has a reputation of composing text that was not only exceedingly technical but reflected terms that he himself invented in an attempt to explain a concept.\(^{(153)}\)

Consequently, despite the effort of many prominent authors, direct translatability has either been misconstrued or has not been possible.\(^{(153)}\) Detailed critique on nursing phenomenology involves the ‘misinterpreting and misusing of methodology and methods’; ‘betraying the fundamental tenets of phenomenology and of misconstruing the key concepts’ p695.\(^{(152)}\) As seen in other forms of qualitative research, properly acknowledging the origin of the Phenomenology being utilized may be absent or not clearly described.\(^{(154)}\) Similarly, correctly aligning the terminology, interpretive method
and highlighting the existential elements, principles, and ideas within the philosophy to the chosen research methodology itself, is imperative. Absence of such fundamentals not only undermines the essence of the research but hinders the ability to critically appraise and evaluate the research effort.

That said, if Phenomenology as indicated is such a complex research methodology why do nurses persist to use it, let alone embrace it? I suspect a naive kinship to the reference of the term the ‘lived’ experience is what entices nurse clinicians to this philosophy. Since the pioneering days of Florence Nightingale to the challenge of today’s highly specialized, technology driven and equipment centric domains of everyday care, what remains at the fundamental core of nursing is ‘the patient experience’ and integral to that, the concept of ‘caring’. Reciprocal and responsive in nature, caring is the recognition of the shared human condition. A philosophy which speaks to a nurse researcher’s empathy for human emotions such as joy, hope and pain which transcends the nurse-patient relationship and is shared as part of the ‘caring’ relationship is a readily chosen philosophy to help guide and generate new knowledge for the discipline of Nursing.\(^{(155)}\)

Nurses are not, nor do they profess to be, philosophers. For the novice researcher or reader the aforementioned deficiencies, mismatch errors and omissions could lead to confusion and minimize what can be an illuminative form of inquiry. Acknowledging that there are notable nursing studies and informative writings, it is this author’s contention that there is significant ambiguity and lack of guidance existing within the literature both in primary research, narrative journal articles, and research textbooks, of which the latter surprisingly reflect only a brief and oversimplified explanation of Phenomenology. Even accomplished nurse researchers such as Tina Koch who is well published on the topic of Phenomenology as a research methodology explains how when commencing her PhD many years ago in the United Kingdom she quickly altered her trajectory upon realization that using Colaizzi’s framework of analysis was more aligned to Husserl and therefore not congruent with that of Heideggerian and
Gadamerian principles.\textsuperscript{(156)} Koch, herself now an active voice in highlighting methodological inconsistencies in nursing phenomenology research, has joined the criticism of Benner’s studies. Focusing her critique on the author’s process of validation, Koch suggests that such claims are frequently inconsistent with the chosen philosophical stance. Koch proposes that Benner’s application of Hermeneutics is ambiguous, stating that Benner does not practice within one of the central principles of Heideggerian Hermeneutics, the ‘hermeneutic circle’.\textsuperscript{(150)}

**Epistemology vs. Ontology**

\textit{“There is no royal road in Phenomenology. [Experience] is essentially something that flows, and starting from the present moment we can swim after it, our gaze reflectively turned toward it, whilst the stretches we leave in our wake are lost to our perception.”}

_{Husserl p127}^{(33)}

The literal translation of Phenomenology originates from the Greek word \textit{phainomenon} meaning appearance or \textit{phaenesthai}: to show itself, to flare up, or to appear; \textit{Logos} meaning reason.\textsuperscript{(157)} According to Vivilaki\textsuperscript{(144)} this definition is limiting. Instead, Phenomenology derived from the words phenomenon and logos provide for humans, the ability to have mindful and logical interpretation of the phenomenon. Logos underlies the ability to think, articulate thoughts, and experience inner sensation and interpretation based on our experiences of the phenomenon; essentially enabling one to determine their own philosophy of life.\textsuperscript{(144)}

Historically, the philosophical origins of Phenomenology can be found as early as Plato’s ‘Allegory of the Cave’ through to the 18\textsuperscript{th} and 19\textsuperscript{th} centuries by way of German philosophers such as Immanuel Kant and Wilhelm Hegel. Kant, believed to be one of the first to use the term in a scientific context, described the concept of ‘phenomena’ as the appearance of things and ‘noumena’ as things themselves.\textsuperscript{(158)} Likewise, Hegel in his exploration of how knowledge came to be, viewed Phenomenology as ‘the study of
the path human consciousness takes to travel from ‘natural consciousness’ to ‘real knowledge’. It was also during this period in time that philosopher and psychologist Franz Brentano considered a forerunner of the phenomenological movement, reintroduced the principle of ‘Intentionality’. Inspired by the classics, such as Aristotle’s thesis on Consistent and Inconsistent logic, Brentano expounded upon the concept first attributed to the Scholastics of The Middle Ages. Later in years to come, Brentano himself would in turn influence a new generation of inquiring minds.

One such protégé was a young German student, Edmund Gustav Albrecht Husserl. Generally seen as the founder of modern Phenomenology, a dominant theme of Husserl’s philosophy was that in the search for the ultimate foundation of knowledge, one had to return to the ‘roots’ or “beginnings” Aspiring to a philosophy without presuppositions, Husserl advocated for the study of phenomena as they appeared to the consciousness. However, it was a tumultuous time in history. Knowledge was being contested by science. Husserl, initially schooled in the natural sciences, receiving a PhD in mathematics, was determined to make philosophy truly scientific. Driven by a motivation to revitalize philosophy’s credibility through instilling a rigorous process, Husserl in developing this philosophical ‘method’ would restore philosophy’s position in the eyes of natural scientists and reconnect them with deeper human concerns.

The starting place for Husserl’s method was ‘to the things’ – the phenomena itself and then to develop the theoretic constructs that explain the phenomena. Husserl took issue with the manner in which the scientific method (Positivism) was being used to study people’s reaction to external stimuli and not investigating human responses to their perception of the stimuli. In time, researchers in the human sciences would realize that there was a difference between “things known and the human knowledge of things” It was not as some believed, that human sciences were not scientific, but rather an additional dimension to what was being measured and observed – the subjective experience.
The ‘Lived experience’ or ‘Life world’ is the central thesis of Husserl’s Phenomenology. Portrayed as either a culmination of Cartesian tradition or representation of Cartesian dualism itself, Husserlian Phenomenology explores the way in which we as subjects ‘know’ objects and the underlying influence of our natural attitude.\(^{158, 162, 163}\) According to Husserl our ‘natural attitude’ is comprised of a complex constellation of our everyday, common sense thoughts.\(^{157, 158}\) However, Husserl warned that our natural attitude can conceal the ‘extraordinary in the ordinary’ thus masking the fundamental correlation between consciousness and its’ object.\(^{31, 152, 158}\) Husserl called this ability for the mind to be directed to objects as \textit{intentionality}.\(^{149, 151, 160}\) However, for intentionality to be realised, it must be done in conjunction with one of Husserl’s most notable and defining principles, \textit{Phenomenological Reduction (epoché)}.\(^{157, 158, 162}\) According to Husserl it is possible through the use of his method to suspend our natural attitude, which will then enable the witnessing of phenomena in the pure and unbiased form.\(^{152, 157}\) Husserl believed that this a-priori knowledge about the world exists beneath layers of our human experience and that the task at hand is to systematically peel away and separate the layers to reveal a richer understanding of the phenomena.\(^{150, 158, 162, 163}\)

This process of peeling away the layer of our natural attitude was described by Husserl as bracketing.\(^{150, 155, 158, 160}\) Never far from his empirical teachings, bracketing a reference to Husserl’s mathematical training where numbers are grouped and interpreted independently of each other, enables the subject not to doubt the existence of the object but to disconnect from it.\(^{157}\) Returning things to themselves and the essences that constitute the consciousness and perception of the human world is provided through rich description thus termed Husserl’s ‘descriptive or transcendental’ Phenomenology.\(^{158}\) Unique and distinct from naturalistic science, a researcher adopting Husserlian phenomenology utilizing these three interlocking concepts ‘stands outside the research process’ viewing from a distance objectively, the unfolding of the research process p473.\(^{162}\) How this is accomplished is an issue that many find untenable with some speculating that it cannot be done.\(^{144, 159, 162}\) Husserl
himself reportedly admitted to the unusualness of this stance but was tenacious in his belief that it was a viable and necessary pursuit if pure consciousness is free to discover its’ true meaning.\(^{(150)}\)

**Situating Heidegger**

“It is said that ‘Being’ is the most universal and emptiest of concepts. As such it resists every attempt at definition. Nor does this most universal and hence indefinable concept require any definition, for everyone uses it constantly and already understands what he means by it”

*Heidegger (H.2 p21)\(^{(164)}\)*

If it was Husserl’s assertion that ‘true’ knowledge can transcend human experience as revealed by phenomenological reduction, then Martin Heidegger’s beliefs were to the contrary. As a student, colleague, and friend, Heidegger was greatly influenced by Husserl; exchanging ideas and dialogue, it was inevitable that aspects of their philosophy would be shared. However, it was in the quest for knowledge-truth that their philosophical beliefs would be in direct opposition. Challenging Husserl, Heidegger claimed that a philosophy based purely on description in the absence of interpretation, is in actuality not possible.\(^{(145, 151, 163, 165)}\) Instead, Heidegger emphasized that meaning is attained through the understanding and interpretation of the human experience; bringing to the forefront our pre-suppositions, history and commitment to culture.\(^{(166)}\) Simplified by Rather, “understanding is grasping one’s own possibilities of being, within the context of the world in which one lives; understanding is a mode of being” p48.\(^{(166)}\)

Infusing the interpretive process into Phenomenology, Heidegger referred to this new phenomenology as ‘Hermeneutic’ phenomenology.\(^{(165)}\) Known as the ‘art of interpretation’ hermeneutics was used by the ancient Greeks as a means of
interpreting oral and written text. p34.\(^{(167)}\) It was Heidegger’s contention that rather than focus on experiential epistemology, what is essential in seeking understanding is to ask the fundamental primordial ontological question of what it means ‘to be’.\(^{(46)}\) A question that Heidegger felt had largely been either overlooked, taken as self-evident, purposely ignored, or misunderstood.\(^{(47, 168)}\) Difficult to articulate, Heidegger himself acknowledged that the concept of ‘Being’ is one that is not easily defined or understood.\(^{(168)}\)

“The indefinability of Being...demands that we look that question in the face” (H4.p23)\(^{(164)}\)

Expressed in Heidegger’s writing *Being and Time*\(^{(1, 164)}\) are two references in respect to the concept ‘to be’. According to Heidegger each represents a different idea, yet because of the nuances in translation of the German language, such ideas are often misconstrued and thus misused.\(^{(46)}\) The term *das Sein* in direct translation means ‘the to be’ however to reflect correct English grammar, it has been translated with capitalization to ‘Being’. Similarly, the term *das Seinde* refers to anything that has existence such a human being, an animal, an entity, thus it is represented as ‘being’.\(^{(46, 164, 167)}\) Heidegger characterizes the difference between Being and being as ontological and ontical.\(^{(169)}\) The ontological refers to the way in which ‘Being’ structures the world, while the ontical perspective is one of theory and science, viewing concrete beings as objects that exist within the world.\(^{(46, 170)}\)

Heidegger asserts that ‘Being’ is an integral part of our lives. Accessible at all times, it is the ability to be aware of one’s own ‘Being’ that Heidegger considered most significant.\(^{(46)}\) To differentiate from the anthropological concept of a human being and its corresponding subjective consciousness, Heidegger uses the term ‘*Dasein*’. Dasein signifies our most primordial mode of Being; an inquiry into the intelligibility of how we understand the world.\(^{(164)}\) Our *being-in the world* is not in reference of spatiality, but the world in a metaphysical sense.\(^{(46, 150, 171)}\)
‘Dasein, in its Being, has a relationship towards Being—a relationship which is itself one of Being. And this means further that there is some way in which Dasein understands itself in its Being, and that to some degree it does so explicitly...Understanding of Being is itself a definite characteristic of Dasein’s Being’ (H12,p32).\(^{(164)}\)

Rejecting Descartes supposition, Heidegger viewed being-in-the-world as a-priori, embodying the notion that subject and object are inseparable; that we as human beings are engaged in the ‘everydayness’ of our world.\(^{(46, 157, 165)}\) As Dasein we inhabit the routine of our everyday lives, our body, our mind and life events each accessible, but by human nature hidden in our un-conscious.\(^{(46, 166, 171)}\) This mode of involvement Heidegger calls ready-to-hand; the day to day events that encompass our individual lives almost, as if by habit.\(^{(47, 157, 171, 172)}\) An adolescent when entering his/her bathroom may automatically without thinking lock the door, an action that denotes the un-conscious need for privacy, possibly because of feelings of self-concept and body image. Horrocks\(^{(46)}\) argues that a crucial point for Heidegger is that people’s basic relation to their ready-to-hand world is not their thoughts and beliefs about it, but rather their behaviour and practical engagement with it. When these same events or happenings in our lives go awry such as an accident resulting in an injury or illness necessitating hospitalization, the meaning that was unnoticed, taken for granted, suddenly comes into the realm of our awareness, this mode is referred to as unready-to-hand.\(^{(46, 47, 171, 172)}\) Present-at-hand is described more in ontical or scientific terms.\(^{(46, 47, 172)}\) Detached and quantifiable, the present-at-hand mode is considered a theoretical world deriving from the practical ready-to-hand world. ‘We can only make sense of theory from the context of practice as it is impossible to make sense of practice from theory’ p240.\(^{(47)}\)

According to Heidegger, each of us are situated and constitute our world.\(^{(171)}\) Our ‘Being’ is a reflection of two terms ubiquitous with Heidegger’s hermeneutic
phenomenology, **historicality of understanding** and the **hermeneutic circle**. The ideas comprising each do not as such have a beginning and end, but rather are inextricably intertwined. Who we are, our ‘Being’ is determined by our personal history, life events, traditions, and background adding to and part of the culture in which we live, from birth to present - our historicality. We are self-interpreting beings. We have the capacity to reflect upon our existence and find meaning in it.

Our being-in-the-world and our interaction with the world is constant, ever changing, a co-constitution. Co-constitutionality implies a “indissoluble unity (person-world)” We are not only influenced by the world in which we live, but based on our historicality we turn we influence our world. This dynamic process is what Heidegger conceptualized as the hermeneutic circle. A metaphor denoting that understanding is not achieved through the linear conceptualization of knowledge, but by way of meaning and significance gained through the experience of ‘Being.’ The concept that ‘Being’ is ever-changing. Understanding is gained in each moment, based on the influence of each moment past and therefore like nature, is constantly and ever-evolving.

It is this awareness of our **historicality** that is termed our **fore-conceptions, pre-understanding or pre-suppositions**. Heidegger’s treatise departed from Husserl in the belief that meanings cannot be separated or made explicit through bracketing. According to Heidegger the researcher should reflect, acknowledge and embrace their pre-suppositions thus permitting the un-conscious influence of the interpretation and enhancement of the inquiry as the researcher becomes an active participant in the research process. Heidegger stated:

“Whenever something is interpreted as something, the interpretation will be essentially upon fore-having, fore-sight, and fore-conception. An interpretation is never
Temporality and Spatiality

“We are temporal beings in a temporal world” (177)

*Temporality* (time) and *spatiality* (space) are pivotal concepts in Heideggerian Phenomenology. Not to be confused with chronological time or *space* in the literal sense, it was Heidegger’s supposition that spatiality like temporality equated with a feeling of excitement or euphoria that one feels on their wedding day or at the birth of their first child— a sense of *being* in a particular space. Contrary to Husserl, Heidegger believed that humans are at all times immersed in their world; each experience having a mood or emotion - a context that in turn is influential on the experience and existence. Likewise, Dasein is relative to context and is never separate from mood or emotion therefore “regardless of the phenomena, the starting point is always the mood in which the experience is lived” p11. For humans, although we are unable to control the context in which the experience exists, we are able to derive meaning from the experience itself. For Heidegger *temporality* is central to being; knowledge and experience are gained on a continual interplay - each successively and dynamically influencing the other. Likewise, events in our lives are not exemplified merely by date and time but by the significance of the event itself and the meaning it has for us in our lives.

Subjectivity vs. Objectivity

“Phenomenology is based on a philosophy that espouses the idea that there is no single reality, and that each individual has his or her own reality. Reality is subjective,
and therefore experience is considered to be unique to the individual”

Mills (178)

Heidegger reasoned that the ontological question, that of ‘Being’ takes precedence over the epistemological question, that of ‘knowing’. That one cannot consciously separate themselves from their presuppositions; our historicality engrained in our unconscious is an integral part of our Being and thus our being-in-the world. Where a Husserliand question might ask “what is it like?” a Heideggerian research question would ask “explain what it means to be…” One question is aimed at description, the other aimed at understanding through meaning. (165)

In approaching phenomenology as a choice for research inquiry, the researcher faced with the opposing philosophical views of Husserlian and Heideggerian philosophies, must examine their own belief system in respect to epistemology and ontology thereby choosing which philosophical stance they wish to align with. The understanding that Heidegger’s desire was to transcend Cartesian tradition of subject versus object and rather than view human beings as being disengaged from their environment instead reveal that which is hidden, the heart of the human ‘lived’ experience. For Husserl, the lived experience involved uncovering the essence of the phenomenon whereas Heidegger’s approach was to uncover the ‘Being’ of the phenomenon. (46) It is this Heideggerian view that resonates with my own. The belief that we construct our own reality; events and happenings in our lives good or bad, affect us not only outwardly, but intrinsically as such experiences become a part of our ‘Being’ influencing and shaping who we are. Heidegger’s philosophy predicated on the fundamental concept of exposing meanings that we, as individuals cannot see for ourselves is why I as a novice researcher chose Hermeneutics. As previously mentioned, as a paediatric nurse having cared for children in both a generalist hospital and a hospital designed ‘specially’ for the care of children; knowledge gained from my systematic review coupled with and appreciation of architecture and design and having been a patient myself, are all
contributing knowledge and experiences that I feel I cannot disassociate from either consciously or through the un-conscious. Therefore, it is my intent to acknowledge and be forth coming with my pre-suppositions.

**Conclusion**

Nursing historically has conducted research, yet it is only in recent years encouraged by nursing academics, that nurse clinicians are beginning to more actively embrace traditional research methods and initiate publications to highlight clinical practice. Practice that for many years has impacted patient care but in essence has not been formally shared or recognized. Like Evidence-based Healthcare (EBHC), nursing curriculums need to not only include courses on research as a fundamental requirement underlying quality of care and patient outcomes, but the understanding of research and the concepts of EBHC must also be integrated and reinforced in every aspect of nursing education. In the meantime, if credibility in nursing conducting Phenomenology is to be achieved nurses must be cognizant and welcoming of the criticism. Educating oneself fully and/or seeking guidance from scholars well versed in Heideggerian or Husserlian philosophy can also assist in mitigating further misrepresentation. Central to staying true to the Phenomenology research process are two key questions: is the description of methodology used consistent with philosophical underpinnings and are the findings of the studies informed and enriched by the chosen philosophy? In this chapter I have attempted to address the foremost principles differentiating Heideggerian Hermeneutic Phenomenology from Husserlian Descriptive or Transcendental Phenomenology. Explaining why I have chosen Hermeneutics, the intent is now to contextualize the fundamental tenets of Heideggerian phenomenology and present my research integrating such principles in a coherent and cohesive manner.
Chapter Six: Research Method

‘If we knew what it was we were doing, it would not be called research, would it?’

Albert Einstein

Introduction

Although Gadamer, as a philosopher, states “there is no one standardized method identified for the methodology of hermeneutic phenomenological inquiry, rather it has been said that the method of hermeneutic phenomenology is that there is no method” as a clinical researcher a method is required. This chapter provides detail of the research design and method used to answer the question: what key aspects of the hospital built environment contribute to either a positive or negative hospital experience for adolescents.

Research Setting

Qatar - The country

Qatar is an Islamic country located on the Eastern side of the Arabian Peninsula. In comparison to its neighbouring countries, Qatar encompasses a very small land mass - 11,571 km² (4,467 square miles) similar in size to the country of Jamaica - 10,831 km² (4,182 square miles) and one-tenth the size of New Zealand - 262,000 km² (100,000 square miles). A peninsula, Qatar is surrounded on three sides by the Arabian (Persian) Gulf and borders to the south on the birthplace of Islam- the country of Saudi Arabia. Despite its' relatively small size, Qatar’s expansive oil and natural gas reserves provide the country with a Gross National Product (GNP) of 180 billion dollars per year or the equivalent of $105,000 per capita (2013) placing it number one on the Forbes list of the
‘world's richest countries’. Like its close neighbour the United Arabs Emirates, home of the world renowned city of Dubai, the citizens of Qatar enjoy a high standard of living. Naturalized Qatari citizens receive free education inclusive of university education both domestically and abroad, free healthcare, and generous salaries. The city of Doha is the capital and the predominant city in the country. As revealed in a 2010 census with figures updated in 2013, Qatar’s population is estimated to be approximately 1.9 million people; twenty percent are Qatari nationals with the remainder expatriates representing an international community who travel to Qatar and other neighbouring Gulf countries seeking employment and career advancement opportunities.

Access to health centres or hospitals is available to all who maintain a health card, purchased annually by expatriates for a fee of 100 Qatari Riyals (approximately AUS $28.00) or to those who have insurance provided by employers. In both of the previous scenarios, not all services are covered and depending on the extent of healthcare coverage, fees are incurred. Qatari nationals however have entitlement to fully subsidized government healthcare.

Participants location

Hamad Medical Corporation is the main healthcare provider in Doha, Qatar encompassing a total of seven specialty hospitals, inclusive of the National Centre for Cancer Research, a Paediatric Emergency Centre and a Women’s Hospital. There is no purpose built facility for Paediatric patients. At present, the primary tertiary-level healthcare provider for Paediatric inpatients is Hamad General Hospital. Hamad as it is commonly referred to, is a government funded generalist facility in Doha, Qatar. Hamad has a total capacity of 600 beds of which approximately 117 are allocated to paediatrics (14 years and under). These Paediatric beds are designated to a 23 bed Paediatric Intensive Care Unit and four paediatric inpatient units each of which average approximately 23 beds respectively. Since paediatrics at Hamad is defined as any child aged 0-14 years of age, children above the age of 14 are cared for on the adult units.
Even if a child is initially admitted to the paediatric floor at age 13 and while in hospital turns 14 years of age, he/she will be transferred to the adult unit.

**Paediatric Unit and Room Description**

The physical design or layout of each of the paediatric units is very similar. Following a race track design (rooms situated around a central nursing station) each unit has approximately 23 patient beds configured into eight private rooms and three common rooms, the latter comprising of five beds in each room.

A common room available at no cost to patients has a total five beds arranged with three beds on one side of the room and two beds on the other. One bedside table with drawers is located beside each bed along with an overbed table and a ceiling to floor curtain that can be pulled to provide privacy on all three sides (the headwall comprises the fourth side). The curtain made of a washable polyester fabric has a subtle generic design, thin blue, pale yellow and pale green stripes against an off-white background. Lighting is provided by way of a large overhead light with long (tube) fluorescent lights available above each bed. Space between the beds is minimal barely allowing for the placement of one (visitor) chair on either side.

A bathroom accessible and intended only for patient use is located in the centre of each room on the exterior wall. Public toilets available for visitors are located outside the unit in the main hospital corridor. The patient’s bathroom is divided into a dry area (sink and toilet at adult height) and a wet area (shower with curtain - no bath). Directly outside the bathroom, across from the entrance to the room, is an additional hand sink. Adjacent on both sides of the bathroom are large windows. Views available from each room depend on the direction each unit faces. The paediatric general medical or surgical units look out to either a solid wall of the adjacent building (approximately 20 feet away), to parking areas, or across to other buildings on the hospital grounds which are interspersed with spaces of greenery, flowers, and small trees. Only one television is present in each room, located high on a ceiling bracket so as not to interfere with the
curtain track. The television can be rotated but predominantly is seen facing the three beds and given its position mounted high off the ceiling, a child would need to arch their neck to visualize the screen. The programming which consists of six stations provides a limited variety of genres with the majority in Arabic and one or two offered in English. The availability of a remote control to adjust to station preferences and to control volume was not seen.

The private rooms eight in total are available with first priority and at no cost to Qatari nationals. Expatriates through a pre-defined Admission department process and based on availability, may request a private room for which an additional financial fee will be charged. Similar to above, the bathroom in the private room is of the same design complete with shower and a hand sink for use outside the bathroom. Instead of two windows, one large window is present within the room providing a direct view for the patient from their bed to the outside. The views however vary with most orientated to adjacent buildings as opposed to ‘green space’ or landscaping designed for hot desert climates (zero landscaping). The room itself is of a medium size. The walls are of a very pale yellow or off–white and depending on the time of day, the light cast creates an almost grey tone. In the paediatric unit whether in a common or single room, one small cartoon-like character of approximately 12-18 inches in height and width is present but is located behind the patient’s head on the headwall and therefore is not visible to the patient.

On the paediatric floors the ratio of male to female patients varies and depending on age, patients of the same gender can be roomed together. As the majority of admissions tend to be children of a very young age (e.g. infants and toddlers) this scenario is not uncommon. However, if in the rare circumstance two young adolescents of different gender were admitted e.g. 12-13 years of age or depending on their physical size possibly even younger children, they would not be placed together in the same room.
Participant Recruitment and Selection

This study utilized a purposeful approach to participant selection. Inclusion criteria included any adolescent aged 12-19 years of age who had been admitted to a healthcare facility in the last 12-24 months or were currently in hospital (inpatients) with a minimum length of stay of three to five days. The exclusion criteria included any patients who were acutely ill (i.e. all urgent and emergency admissions), had behavioural health (psychiatric medical) conditions or were on any medications which grossly altered mental cognitive abilities.

Twelve adolescents ranging in age 12-19 years of age were recruited into the study. Prior to commencing the study the Paediatric and Adult Medical Department Chairmen and Chief Nursing Officer were contacted by email requesting permission and assistance in identifying and accessing adolescents admitted to Hamad. Attached for their information was a copy the research proposal and Hamad ethics approval. With ethics and medical approval granted but unfamiliar with the physical layout of the
hospital and staff, a subsequent request was sought for a senior nurse to assist in orientating myself as sole research investigator to the paediatric and adult units and the hospital overall. It was on this orientation tour that I was introduced to the nursing manager of each unit wherein I briefly identified myself, explained the purpose and goal of the research project and asked for their assistance in identifying adolescent patients. Of the 14 units (paediatric and adult) visited, only five (two paediatric and three adult) were identified as potential admitting units for adolescent patients.

All the unit managers stressed that adolescents patients were few in number and once admitted they were often discharged quickly as they are keen to leave the hospital. Even the paediatric floors with a patient population of 0-14 years of age indicated it was rare to have the older children, stating that the majority of their patients were young children and infants. Similarly the adult floors concurred stating that the majority of young adults appeared to be aged 18 and above. Obtaining data from Hamad Hospital Corporation was difficult; available sources indicated that in year 2011 only 27 adolescents aged 14+1 to 19 years of age were admitted. This low number supports the challenge and subsequent frustration in attempts to locate participants that met the study inclusion criteria.

Efforts to recruit patients involved calling the identified nursing units every 2\textsuperscript{nd} to 3\textsuperscript{rd} day and making regular visits in person to the hospital as receiving phone calls or emails from hospital personnel understandably due to staff workload, proved unreliable. Each adolescent identified by nursing staff was screened by myself as primary investigator to ensure compliance with the defined inclusion and exclusion criteria. If all criteria were successfully met, permission from the primary physician or the ‘on call’ physician was obtained. Once received, the nursing staff alone or together with myself, would then obtain ‘initial’ permission from the patient and family prior to approaching and seeking formal verbal and written consent (post a detailed explanation of the research) from the patient to participate in the study. If the parent was not present and the patient was older than 14 years of age the study was
explained to the patient and consent was obtained from the patient and from the parent(s) the next time they were available. Once consent was received, a time convenient to the patient and family was arranged. Details of obtaining consent are discussed further in this chapter in the section entitled ‘ethical considerations’. Following six months recruitment a total of twelve (12) adolescents were interviewed. The demographic details are provided in Tables 4-8.

Table 4: Demographic Table - Study participants by Age

<table>
<thead>
<tr>
<th>Number of Patients</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>12-13 years</td>
</tr>
<tr>
<td>3</td>
<td>14-15 years</td>
</tr>
<tr>
<td>2</td>
<td>16-17 years</td>
</tr>
<tr>
<td>2</td>
<td>18-19 years</td>
</tr>
</tbody>
</table>

Table 5: Demographic Table - Study participants by Nationality and Language

<table>
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<th>Number of Patients</th>
<th>Nationality</th>
<th>Fluent in English</th>
<th>Arabic Translator Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Qatari National</td>
<td>2</td>
<td>For five participants a nurse, Qatari EBHC analyst or family member translated</td>
</tr>
<tr>
<td>1</td>
<td>Syrian</td>
<td>1</td>
<td>Family member assisted in translation</td>
</tr>
<tr>
<td>1</td>
<td>Pakistani/Qatari*</td>
<td>1</td>
<td>Family member assisted in</td>
</tr>
<tr>
<td>1</td>
<td>Sudanese/Qatari*</td>
<td>1</td>
<td>Family member assisted in</td>
</tr>
<tr>
<td>1</td>
<td>Egyptian/Qatari*</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Egyptian/Canadian*</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

* Denotes ethnicity and nationality of those born or having lived in Qatar for the majority of his/her life
Table 6: Demographic Table- Study participants by Gender

<table>
<thead>
<tr>
<th>Number of Patients</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Male</td>
</tr>
<tr>
<td>7</td>
<td>Female</td>
</tr>
</tbody>
</table>

Table 7: Demographic Table- Study participants by Length of Stay (LOS)

<table>
<thead>
<tr>
<th>Number of Patients</th>
<th>LOS (in days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3 days</td>
</tr>
<tr>
<td>3</td>
<td>4-5 days</td>
</tr>
<tr>
<td>7</td>
<td>6-10 days</td>
</tr>
<tr>
<td>2</td>
<td>≥ 10 days</td>
</tr>
</tbody>
</table>

Table 8: Demographic Table - Study participants by Admitting Diagnosis

<table>
<thead>
<tr>
<th>Number of Patients</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Surgical (Bariatric surgery/Appendicitis)</td>
</tr>
<tr>
<td>2</td>
<td>Trauma- Motor vehicle/Motorbike accident</td>
</tr>
<tr>
<td>4</td>
<td>Medical - GI/Bowel Investigation/ Liver Biopsy/Vomiting cause</td>
</tr>
<tr>
<td>3</td>
<td>Orthopaedic - Knee surgery/ Fractured leg-arm/Fractured foot</td>
</tr>
<tr>
<td>1</td>
<td>Renal Disease- Chronic Renal disease</td>
</tr>
</tbody>
</table>

The participants were not screened by age or gender but rather were identified by staff as possible study participants based on availability. Once notified, potential participants were screened by myself for successful entry into the study if in compliance to the study’s inclusion/exclusion criteria. Not included in the total number of selected study participants were four adolescent patients for the following reasons. One 15 year old female patient was excluded as she did not meet the inclusion criteria, presenting with history of Cerebral Palsy and a seizure disorder for which treatment involved
prescription of anticonvulsant medications. Two patients, one 14 year old boy and one 13 year old female, consented to interview but unfortunately both were discharged early or just prior to my arrival at the hospital. Obtaining contact by phone once patients were discharged proved unsuccessful; several emails to one of the adolescent’s father also met with unsuccessful results. The fourth patient, a 13 year old girl, was a member of the extended Royal family and her mother declined to participate in the study.

Ethical Considerations

Formal ethics approval was granted, without modification, from both the University of Adelaide and Hamad General Hospital, Doha Qatar. Prior to commencing data collection I also obtained ethics certification from both National Institute of Health (NIH) and the Collaborative Institute Training Initiative (CITI). In accordance with Hamad Medical Corporation Ethics Committee and policies, all patients less than 14 years of age are required to have parental consent. Those participants who are greater than 14 years of age do not require parental consent. Currently there is a paucity of research regarding what children and adolescents understand in respect to participating in research however a study by Reisch et al\(^{[180]}\) supports that adolescents aged 14 and above are as skilled as adults in understanding multiple viewpoints. That said, as participatory research is relatively new to the region and to avoid any future or potential problems, I chose as a courtesy to obtain consent from parents even in the latter case.

All consent forms were provided to the participants and their parents in English with Arabic translation. Arabic translation was generously provided by a senior Qatari Nursing Administrator at Hamad General Hospital. In addition, two female Qatari’s who are employed as Evidence-Based analysts at Sidra Medical and Research Centre reviewed and gave feedback on the Arabic translation. All of the above volunteers although not official translators by occupation, are fluent in both speaking and writing of Arabic and English.
The Participant plain language statement was provided to the parent for first line approval and then to the participant prior to consent. As part of the process of providing informed consent, a Participant plain language statement - terminology used by ethic committees to denote a document that explains in clear, simple language the overall research project and process, is given to the participant. Included in the plain language statement is the aim of the study, the participant’s expected level of commitment should they agree to participate, their right to stop the interview or withdraw from the study, and contact details of the researcher. Likewise, the opportunity to discuss, ask questions and receive reassurance regarding the right to withdraw from participating in the study at any time without any negative recourse is also reviewed. In respect to this particular study, the opportunity to have an Arabic translator available for all spoken interactions was offered and if requested, was provided. Contact details of the researcher were also highlighted to the participant should they at any time before, during or beyond completion of the interview wish to contact the researcher for any questions or to withdraw.

Data Collection -The Interview Process

Each interview was scheduled in collaboration with unit staff regarding the most convenient time for the patient and for staff. Cognizant of creating any imposition or undue stress, all efforts were made to schedule the interviews so as not to conflict with the traditionally ‘busy’ times within the culture of an inpatient unit (i.e. patient cares; physician rounds; mealtimes; scheduled patient tests, or shift change). Participants were also offered a choice of location for the interview either at their bedside or for more privacy a small room (usually the Nurse Manager’s office) located on the unit a short distance from their room and the central nursing station. Apart from one participant all chose to have their interviews conducted in their room at their bedside. To minimize disturbances, a sign was placed on the door in Arabic and English indicating ‘Interview in Progress’. Family members present were invited and encouraged to stay, and in all cases all family members did stay.
Following introductions, detailed discussion with the participant and family member(s) as to the description and purpose of the research and how they as participants would be involved, consent was sought and obtained from the participant and parent(s). To create an environment of ease and trust, the interview was commenced with brief informal conversational inquiries such as: How are you feeling? How long have you been in hospital? How did you come to be here? Who brought you to the hospital? Do your parents stay with you? Similarly, as the primary investigator and the only person conducting the interviews, to convey respect for religious beliefs, culture and in an attempt to be unobtrusive and minimize any perception of hierarchal authority, I dressed informally and modestly (long sleeves, high neckline and non-fitting pants). Hamad General Hospital did not provide any hospital identification to indicate formal approval of the research project therefore worn and made visible at all times was my own Sidra Medical and Research Centre employee photo identification and relevant research ‘approval’ documentation was available upon request.

In keeping with the methodological underpinnings of the research a focused but non-structured interview technique was used. Participants were asked to speak about their hospital experience for example- “Can you tell me what it is like for you to be in hospital?” Can you tell me how the environment you are in makes you feel – for example this room, the unit environment, the hospital environment as a whole? No pre-set questions guided the interview; instead interview probes were used for clarification purposes only. For example “you mentioned you don’t like the bathroom and it is dark can you tell me more about that?” This interview approach supports the relative hermeneutic phenomenological nature of the study as I as the researcher (interviewer) did not assume to know the important aspects of the experience and therefore did not design questions to be answered by participants in order to furnish/inform such beliefs.\(^{173, 181, 182}\)
Thematic Analysis Software

Each interview which was digitally recorded and coded, was approximately 30 minutes to one hour in length. In deciding among the many electronic programs available, I chose to utilize the Joanna Briggs Institute’s Thematic Analysis Program- TAP\textsuperscript{(183)} to assist in the management and thematic analysis of the textual illustrations derived from the interviews. Thematic analysis, the most common form of analysis in qualitative research goes beyond the initial or superficial review of words in a text. Instead it is a method that encourages the organisation and rich description of groupings of textual data. Designed as a multi-step process JBI- TAP involves entering text extracted from the interpretive method chosen for example verbatim statements from phenomenological interviews (Illustrations); identifying implicit and explicit ideas and commonalities in meanings, categorizing accordingly, and through thoughtful analysis and frequency of categories, overarching themes are identified. The findings are then presented in a graphic display enabling the reader to follow the logical progression and transition between the supporting illustrations and the resulting categories and identified summary themes.

Data Analysis: Interpreting the Phenomena-The Influence of Max van Manen

Despite the variation in methods there does exist a philosophical premise which calls upon the researcher to ‘return to the things themselves’ which Taylor believes “both unifies and governs all the various methods of hermeneutic phenomenological inquiry”\textsuperscript{p292}.\textsuperscript{(184)} Being a philosophy, Hermeneutic phenomenology does not provide the researcher with a clearly defined method. Instead, many researchers have found van Manen’s ‘six steps’ align closely with the central premise of the hermeneutic circle and as such it is frequently used as the method for research grounded in the ontology of hermeneutic phenomenology.
van Manen’s six steps provide a desirable structure for the purpose of research but more importantly provide the researcher a method of ‘entering into’ the hermeneutic circle – a dynamic, iterative process that arises out of the researcher’s relationship - reading and re-reading with a genuine intent and interest to learn, to understand, and to fully embrace the participant’s descriptions - their stories. Interpretive researchers have shown us that in listening closely to the participant’s responses both verbally and non-verbally and by clarifying and delving further into the ‘apparent’ interpretations it is possible to ‘uncover’ the ‘meaning making’ of the phenomena in question.

‘One’s body is one’s point of view upon the world. Man’s [sic] body is his natural access to the world. Sensation, sexuality, language, and speech are all expression of our existence, and all are constituted, concretely, in bodily reach toward the world.

(Merleau-Ponty 1962.p 79)\(^{(184)}\)

Transcriptions were analysed according to the thematic analysis described by van Manen’s framework.\(^{(179)}\) Using an iterative process, a repeated review of the transcriptions was conducted with conscious effort on the part of myself to submerge and engage fully with the illustrations in order to identify the implicit or essential themes of the experience, thus illuminating the meaning of the experience. Thematic statements (essentials) were then isolated. The six steps of analysis as described by van Manen are:

1. Turning to the nature of the lived experience.
2. Investigating experience as we live it rather than as we conceptualize it.
3. Reflecting on the essential themes which characterize the phenomena.
4. Describing the phenomena through the art of writing and rewriting.
5. Maintaining as strong and oriented relation to the phenomenon.
6. Balancing the research context by considering part and wholes.
In the paradigm of positivism, be it the gold standard - a randomized control trial, a cohort, case-controlled, or cross sectional study, each study design has a prescriptive well defined method and associated technique. It is these clearly defined methods or processes that must be respected, followed, and adhered to with detailed documentation provided if rigorous, quality research and in turn internal and external validity is to be achieved. In the Interpretive paradigm or Qualitative research these black and white delineations are not present; instead the shading is slightly grey. Seeking to define what is credible and/or trustworthy the critique of qualitative analysis has been a widely debated in nursing circles with no clear consensus reached for the last two plus decades.\(^{(185)}\) For some, the very nature and strength of Interpretive research that draws upon the philosophical underpinnings of Phenomenology lies in the spirit and honesty of the personal and professional integrity of the researcher.\(^{(179)}\) However, in a positivist dominant research field, healthcare researchers choosing to undertake Interpretive research are required to demonstrate ‘rigor’ in their analysis by providing a clear and transparent ‘decision trail’ of their analysis.\(^{(175, 181)}\) The ability to store information both in text, digital and other forms of media is a key ethical requirement. The quality of data analysis for this research was supported by utilizing Guba and Lincoln’s criteria of Credibility, Transferability and Dependability.\(^{(175)}\) Following criteria such as those described by Guba and Lincoln\(^{(186)}\) can only serve to demonstrate credible analysis and the subsequent generation of evidence recommendations as described by the Joanna Briggs Institute using the concepts of Feasibility, Appropriateness, Meaningfulness and Effectiveness.\(^{(142)}\)

**Credibility**

The acknowledgment of the researcher’s role in the ‘hermeneutic circle’ providing explanation of influences imparted in the conducting and interpretation of the research data is a form of self awareness considered by Guba & Lincoln to be essential.\(^{(181)}\) Similarly, the use of a journal/ field notes as demonstrated in this study- Chapter seven (individual participant interviews), provide the researcher with an historical account and thus the ability to assign context to the transcriptions. The field notes/ journal
entries enable the researcher to make detailed descriptions of their initial impressions and any other information that will contribute to the iterative process that occurs during their thematic analysis of the participants transcripts.\(181\) Credibility is also enhanced whenever the researcher returns first the transcripts and then the final analysis to the participants for their feedback. If the analysis ‘resonates’ with the participants then the credibility of the analysis is enhanced. Unfortunately, this step of analysis was not possible given the language barrier and lack of access to the participants post hospital discharge. Not all researchers using a hermeneutic phenomenological approach support this step of analysis. While some researchers agree that the return of the interpretation to the study participants can offer a means of validation of the researcher’s interpretation, others would consider this step to be redundant. The passage of time will result in another ‘layer’ being added to the participant’s experience thus a new interpretation of their experience is inevitable.\(187\)

**Transferability**

Providing the reader with an adequate description of the original context surrounding the data of the participants experience is critical in necessary affording the reader the ability to judge the ‘fittingness’ or transferability of the interpretations. As Sandelowski explains

\[
\text{“a study meets the criterion of fittingness when its findings can ‘fit’ into contexts outside the study situation and when its audience views its findings as meaningful and applicable in terms of their own experiences” p92}\]

\(181\)

**Dependability**

Dependability of Interpretive research findings lie in their ability to be authenticated via a process of auditing. Not unlike a financial audit, it essentially provides a fellow researcher or reader with a clear trail to the process of analysis as supported by verbatim illustrations from the original text.\(181\) Such sign posting ideally provided
throughout the process of analysis enables the reader to understand and follow the researcher’s choice of central themes and associated descriptions. While evaluating the research each reader will have a different interpretation based on their own ‘horizon’-history. However, their conclusions should not be contradictory if linkages presented are ‘dependable’ and therefore an inherent logic. \(^{(181, 184)}\)

**Conclusion**

This chapter provided the reader with a detailed account of the research method used and the process in which to ensure the ‘validity’ of the results - Credibility, Transferability and Dependability.
Chapter Seven: Research Findings - Interpreting the Phenomena

‘The intent of hermeneutics is to uncover invisible but shared practices and common meanings, and in so doing bridge the gap between what is familiar in our world and what is unfamiliar’

Gadamer 1976

Introduction

The central premise of Phenomenology is to gain insight into the human experience.\(^{(184)}\)

“As a methodology hermeneutical analysis guides the interpretation of the phenomenological written description, or text of human experience, in order to further unravel the meaning of this experience. Hermeneutical analysis of the phenomenological description thus seeks to explicate an understanding of human behaviours and actions over the initial impression of the text” p292 \(^{(184)}\)

This chapter presents as researcher my interpretation of the phenomena of interest: adolescents’ preference for built environments as revealed in their descriptions. As detailed in the previous chapter, the process of analysis is hermeneutical and therefore circular / iterative in nature. The following interpretation is presented in a manner that remains ‘transparent’ to the central elements at play (a constant dynamic relationship) in the hermeneutic circle of interpretation:
• The participant’s descriptions of their hospital experience
• The researcher’s history and preconceptions

Commencing with a sharing of my descriptions of the participants, these stories reveal to the reader my familiarity with each participant and their unique preferences. This ‘uniqueness’ is highlighted through the use of exemplars that point the reader to what/how each participant influenced my interpretation of their experience. Once each participant has been introduced, I then demonstrate the various levels of analysis (categories and shared themes). The credibility and trustworthiness of the interpretation is facilitated by the graphics/diagram from JBI TAP software that displays the ‘trail of interpretation’ each with exemplars from the original transcripts. The weaving of the researcher’s field-notes (reflective journal) throughout this presentation of the findings adds to the transparency of the process of interpretation and therefore its overall trustworthiness.

In constructing the participant’s stories the following passage from van Manen’s method of interpretation remained foremost in the mind of the researcher:

“No conceptual formulation or single statement can possibly capture the full mystery of this experience. So a phenomenological theme is much less a singular statement (concept of category such as decision, vow, or commitment) than a fuller description of the structure of lived experience. As such, a so called thematic phrase does not do justice to the fullness of the life of a phenomenon. A thematic phrase only serves to point at, to allude to, or hint [to] the remaining significance of the text as a whole” p92-93(179)
This statement by van Manen reiterates for myself the importance of not trying to find or speak about the ‘typical adolescent patient’; that people’s needs and resources within a hospital will also substantially differ.

The Individual Participant Interviews

**Participant #1  Aisha - 13 year old Female**

Aisha is a young 13 year old girl of Pakistani descent who, unlike her elder five siblings (three sisters and two brothers), was born and has lived her childhood years in Qatar. Admitted for Gastrointestinal (GI) investigation as a result of persistent symptoms of diarrhoea and vomiting, Aisha had been in hospital for the last seven days. When we first met Aisha was resting on top of her bed covers in the middle bed of the ‘common’ (shared) patient room. All remaining beds were occupied with much younger children—those of toddler or infant age.

Behind the closed curtains surrounding the bed, Aisha is dressed in white pyjamas displaying a colourful print of pink and brown teddy bears. As we chat, Aisha appears to understand and speak English well, although at times, it is difficult to assess as she is very shy and has periods of quiet. Soon joining us is Aisha’s elder sister Ream carrying some refreshments. Ream, 21 years old, is fluent in English describing her recent graduation in Respiratory Therapy from a local Canadian college and her subsequent employment as a Registered Respiratory therapist in the local hospital. Having explained the research study to Ream she calls and receives consent from her mother who will be in to visit later in the day. As there is considerable activity and noise in Aisha’s room with all beds occupied and families visiting, I suggest that it may be more comfortable and private to use the Nurse Manager’s office in close proximity at the end of the hallway. With everyone in agreement to relocate for the interview, Aisha puts on a purple housecoat and we make our way to the Nurse Manager’s office which is empty and quiet as it is late in the day—after regular business hours. The office itself is
quite small with just enough room for a desk, two bookshelves, a small white round table and a 2-3 chairs. Borrowing a chair from behind the HN desk we sit around the table, Aisha to my right and her sister to my left. Aisha puts her hands on the table and plays with her fingers. In an effort to ease any anxiety they may have we chat initially and I explain as with all interviews to follow, the interview process and reiterate that at any time should they feel uncomfortable or have any questions we can stop and take a break or end the interview. As the interview progressed, Aisha initially very shy of the process seemed to become more comfortable and require less encouragement and prompting from her sister to vocalize her thoughts. For example, Ream translated the initial question but Aisha began of her own accord with some assistance from Ream to detail responses in English directly to myself as interviewer. Listed below are the interviewer’s questions some of Aisha’s key responses. As her gastrointestinal symptoms were more acute when first admitted many of her initial comments were about the one bathroom located in the patient room:

The washroom (pause) I don’t like it (Line*A75)

Interviewer: Can you tell me more about the washroom, what it is that you don't like? (Line A76)

The (pause) water is leaking, where I was before (pause). I had to go a lot to pass my stool and the washroom was closed so I was waiting, a long time and it was not nice as my tummy hurt (Line A77)

Interviewer: If you had to wait was there somewhere else you could go? (Line A80)

Aisha: I was just waiting and pressing my tummy, all the visitors use the bathroom too (she pauses) so it is hard to find open to use sometimes (Line A81)
Sometimes there is no tissue (pause) sometimes there is no soap inside. Lighting is not bright so it is sometimes scary to go in by myself. (Line A91)

Comments regarding the patient room itself:

There is noise, babies crying and sometimes we can’t sleep because of all the noise (pause) or I just get to sleep and then the baby in the room starts to cry, looking down she fades off. (Line A35)

Privacy, there should be privacy. (Line A58)

**Participant #2  Munir - 12 year old Female**

Munir is a 12 year old girl of Sudanese descent who has lived most of her young life in Qatar. In hospital for 6 days thus far, she too is in a common room occupying the last bed adjacent to the doorway. Seemingly petite for her age, Munir sits cross legged on her bed wearing her own bright pink ‘fuzzy’ pyjamas. Pink, I later discover is her favourite colour. Present in cramped quarters occupying both sides of Munir’s bed, are her mother, grandmother and older sister. Like other participants interviewed, it is unclear how much English Munir understands or can speak as she often looks from me to her sister or to her mother, as if seeking understanding or assistance with translation. At times however Munir does directly answer my questions before awaiting translation from her sister, indicating that she understands more than she lets on but is possibly just nervous or shy. Shortly after beginning the interview, Munir's
elder brothers arrives and in the absence of her father and as the only and elder male present, the dynamic of the interview completely changes. In Arab culture the family structure is predominantly patriarchal. Respected for life experiences and wisdom a cultural value exists whereby parents, spouses, and older children, in descending order generally have greater decision-making power than other relatives.\footnote{188, 189} Appreciating this cultural dynamic as researcher I respectfully repeat the explanation of the research project and seek his consent. With the brother’s consent given, the translation without any words spoken seamlessly moves from the elder sister to the elder brother.

The curtains drawn around Munir’s bed provide a physical ‘privacy’ barrier. The room fully occupied with patients all younger than Munir include a six month old baby in the next bed. As a visitor and present for only for brief periods of time, I found the incessant crying overwhelming to the senses. Within this distracting environment an alternate location to conduct the interview was suggested, however the family preferred and requested the interview to be done at the patient’s bedside. In scanning the room for a small chair to borrow, I became aware that the immediate environment was creating more unease for me as a guest to the room than for the family. Possible rationale could be as a healthcare provider, my expectations for the setting in which care is provided are higher and/or the family having been acclimatized to the situation, have become immune to such noise. Also noticed on the floor next to the bed is a large black plastic bag which Munir’s mother explains contains some of both Munir and her belongings as there is no closet space provided. Additionally observed are many shoes inclusive of one pink pair of slippers under the bed, again, because of a lack of allocated space to store personal belongings. The bedside table is clustered with items ranging from The Holy Qur’an\footnote{*literally meaning ”the recitation”, is the central religious text of Islam which Muslims believe to be a revelation from God (Allah).} and a prayer rug to some toiletry items, an Arabic coffee urn, and a tray of sweets. The latter is an integral custom of Arab hospitality- the offering of coffee, dates or sweets to family and friends.
Located high on the wall behind Munir and therefore out of visual range, is a small faded plastic Disney character-Micky Mouse.

_When I was sick I like to be on my own (pause) but now I am better (pause) it would be nice to have someone to talk to my age (Line B15)_

_Munir states: there is not much to do (Line B33) Munir sister later adds no one brings anything, things might be available but no one has told us about it so we don't know (Line B 38)_

_I would also like to have a playroom to go to with toys and piano-musical instruments, computers and toys. (Line B123)_

**Interviewer: Do you have a window in your room at home? (Line B56)**

_Yes, she smiles Yeaaah (pause) I look out my window a lot. I have a big tree at home that is pretty. (Line B57)_

_Brother Translates: She is telling me that (pause) if all patients were like her the same age as her that would be nice especially as there is infants here and they are noisy (pause) hard to sleep at night. (Line B100)_

_Because everybody goes to this toilet, so there is no privacy. It's very dirty. They come during the day to clean but people it is a problem. (Line B66)_

_I am happy when my friends come, they can come any time. (Line B112) Munir’s brother adds that the family_
moves out when friends come to give them some space.

(Line B113)

Participant #3  Fadwa - 12 year old Female

Fadwa is a 12 year old Qatari girl who has been in hospital for four days for a tonsillectomy and adenoidectomy. Fadwa’s mother gives consent but as Fadwa is planned for discharge within the hour she is preoccupied conversing on her mobile phone, possibly making arrangements for home. Fadwa located in the first bed of the common room, appears restless and eager to go home as upon entering the room she is standing at the top of the bed resting her back against the wall. A drawing of small, multi-coloured butterflies is located high and lost in the expansiveness of the wall behind her. The curtains are drawn in an attempt to evoke some semblance of privacy which when done by all patients in a common room strikes me as claustrophobic and a barrier for nursing staff to conduct either casual or purposeful observation of their patients. At age twelve, Fadwa has short, black, dishevelled hair and appears petite for her age. Remnants of the egg she had at breakfast hints around one corner of her mouth. Still wearing her pink patterned ‘Miss Kitty’ pyjamas, Fadwa has an intravenous heparin lock in her left hand that her nurse says she will come back in a few minutes to remove. Fadwa does not speak English well nor does her mother so another nurse on the unit kindly offers to translate. The problem encountered approximately five minutes into the interview is that Fadwa’s nurse returns to remove her intravenous (IV) heparin lock. Appreciating that the family is eager to go home I gently ask if the nurse could delay the discharge for approximately one half hour to allow completion of the interview. Naive as to the challenges in conducting an interview, Fadwa’s nurse focused on expediting the discharge continues to remove the IV and as a result Fadwa’s attention wains as she becomes increasingly agitated as attempts to remove the tape begin. I again gently ask if this could be delayed a half hour but the nurse dismisses the request stating it won’t take long. The procedure is over in a few minutes but Fadwa is now upset and her attention is diverted elsewhere. With concerted effort I am able to
redirect and continue the interview and as Fadwa tells me about her PJ’s, the picture on the wall behind her, and her favourite things, a smile returns to her face. In packing up their belongings to go, I notice the mum has two very large plastic bags with clothing along with her handbag. The mother states she has five other children at home so she is eager to get home. She has not been able to sleep well while in hospital and feels exhausted. In retrospect although far from an ideal interview, the occurrence of multiple distractions in the wake of the staff’s eagerness to discharge the patient and the patient and family’s readiness to go home, does nonetheless reflect a frequently encountered reality in healthcare.

**Interviewer:** *Can you tell me about your stay here in hospital; I see that you are in a room with other young children?* (Line C9)

_Fadwa states (via translation), the room is noisy (pause) all the other kids are littler than me- some babies they cry a lot (pause) it makes it hard to sleep. Why do they put all the babies in the same room? (Line C10)_

_It’s okay, (referring to room colour) Fadwa states, it should be a brighter happier colour. (currently the room is a very pale shade of yellow) (Line C4)_

**Interviewer:** *If you could change anything about it what would it be?* (Line C5)

_I want the room to be pink (pause) and (she points) have butterflies on the wall like these (indicating the two butterflies high on the wall above her head) (Line C6)_
Participant #4  Nabeela - 13 year old Female

Nabeela, born in Syria, moved with her family to Qatar approximately four years ago. Suffering from persistent symptoms of vomiting and an unspecified fever, she has been in hospital for the last seven days on isolation precautions and therefore is unable to leave her room. Sitting beside Nabeela, her mother states she was initially in an ‘open room’ but that “was awful... only in the last fews days has Nabeela been in this room (indicating private) which has been much, much better”. A tall, lanky young girl with long sandy blonde hair pulled back into a ponytail as it was late afternoon, Nabella is wearing a pale pink patterned T-shirt with a beige light sweater wrapped around her and beige pants. Sitting on her bed above the covers, Nabeela holds herself-pulling her arms in close to her body and twists her hands together nervously as if trying to make herself appear smaller. Both Nabeela and her mother speak English. During the interview Nabeela consistently plays with her SMART phone (IPhone). The room itself in comparison to other patient rooms seems bare. Apart from a few personal items on the beside table, there is very few personal items in view. Nabeela's mother, sitting to her right in front of the large window, is seated in the fold down reclining chair which the Mother states is very uncomfortable and is not helping her back which is already painful. The television, as in other private rooms, is situated directly in front of the patient bed but approximately one foot from the ceiling resulting in the patient and visitors having to incline their head to watch it. Currently, neither Nabeela or her mother seem to be watching and the television, the volume set low possibly just to provide background noise. Some of the opinions expressed by Nabeela and her mother are listed below.

Referring to the picture on the wall of a toy train (kaboose) with a smiling face Nabeela states, The pictures on the wall are too young they are for babies (pause) I like flowers and butterflies (pause) yes (smiling) that would be nice to have. (Line D4)
Bigger rooms (pause) my mum stays overnight now (laughing) very good in this room other room (referring to the common room they were in earlier) was terrible - no room. (Line D34)

Religious programmes yes also would be good and The Holy Qur’an in the room if someone wants to have it. (Line D26)

There is no programs (pause) there should be every two days like you or anyone talk to ahhhh the children (pause) to raise their ahh feelings (pause) that this is all temporary and don’t be afraid that you are sick (pause) enshallah after 10 days you will be yanni okay. (Line D27)

Television I like movies, Disney channel or something - in English or Arabic doesn’t matter, education (pause) anything (Line D25)

I would maybe like to be in a room with someone same as me. (Line D21)

Stated very quietly, if I don’t want to be in here (referring to her room in the hospital) I’d like to go to gardens, somewhere with green and small flowers (pause) coffee places are also good and Cinnabon (a popular shop that sells popular cinnamon rolls). (Line D23)

You just get to sleep and they turn on the lights aaaaahhh (pause why not light on the head of the bed (pause) why the whole room? (Line D14)
At the end of interview as Nabeela’s mother and I were talking Nabeela’s phone rang and she says to her mother

*Mum, Nabeela says in an exasperated tone, shsssh
(pause) my phone (pause) Sophie is on the phone (pause)
be quiet I can’t hear her. Tilting her head slightly Nabeela
gives her mum a frustrated look. (Line D43)*

Talking on her phone which Nabeela had located beside her, she suddenly emerges from a quiet portrayal of a shy girl to a boisterous young lady telling her mother to be quiet so she can talk to her girlfriend. The change was such a dramatic contrast, it was noteworthy in its’ lasting impression.

**Participant #5  Abdullah - 13 year old Male**

Abdullah, an Egyptian boy, moved to Qatar when he was four years of age with his parents and two siblings - a younger sister aged two and older brother aged 15. Fluent in English, with his mother at his bedside, he kindly agrees to be interviewed on Friday afternoon, in Islam the most sacred day of the week. Abdullah has been in hospital for 11 days. He has a history of bowel disease, the details of which out of respect I did not ask nor did he or his mother volunteer only mentionng that he has been in hospital many times previously. Nursed in a common room, Abdullah occupies the the third bed in a row of three, with his bed nearest to the window and in close proximity to the bathroom. Only two other patients occupy the room with him a small toddler- a boy of about two years of age who has an intravenous line insitu and intravenous pump but appears content in his mother’s arms, and another boy who looked to be approximately eight years of age who was asleep. As the room was quiet at the time Abdullah was happy to be interviewed at his bedside. He explains he is about to be discharged in a few hours time hence he is dressed in his street clothes - light coloured pants and a T-shirt with slogans and photos of the Rio Madrid soccer team- (smiling) a gift he seem pleased to inform me was from his cousin who was recently on holiday in
Spain. During the interview Abdullah would occasionally look at me but usually before or when answering a question would seek eye contact with his mother. Abdullah’s mother, a rather large woman, looked cramped and uncomfortable forced to sit in the only available chair – needing to reposition herself several times within a period of 15 minutes. Other than a few words, she did not according to Abdullah speak English, so Abdullah would at times translate explaining to her the question or comments being made. The TV above, but slightly right of his bed, was on and with it being Friday, the Arabic station was broadcasting the Friday prayers from the large Mosque in Saudi Arabia. The audio volume was on low with Arabic subtitles displayed. Placed next to Abdullah on his bed was his smart phone and a laptop computer. Visible on the floor were approximately three bags that appeared to have belongings in them, and in view on the small bedside table were the quintessential Arabic ‘sweets’. The latter an Arabic tradition, the offering of dates and chocolates to visitors and staff alike to express their gratitude and appreciation. In true Arabic style such sweets are generally displayed on large ornately decorated trays or platters commerically designed and prepared. Arabs are very generous as it is tradition when offered, it would be considered impolite to decline.

*Interviewer: I notice you have the curtains drawn around your bed* (Line E3)

*Yes I really don’t want to look at everybody or for them to look at me.* (Line E4)

*His mother softly adds via translation, mention the toilet.* (Line E5)

*Abdullah states: It would be nice to have my own especially as I go a lot and sometimes it is busy and not always with kids in hospital. They have another down the hall but I really don’t like to go to that. Both are not that nice but (pause) okay.* (Line E6)
Interviewer: You mentioned that you like having the window and you are next to it? (Line E10)

Yeah, that is good, better than be in the middle bed like that (he points to the bed next to him). At least I can get to look out (pause) not much to look at but better than nothing (Line E11)

Interviewer: How do you find your room can you describe what it is like for you? (Line E15)

He moves his head and looks with his eyes indicating across the room and proceeds to say, well I don't really like to be in this room it is crowded. (Line E16)

I wouldn't mind so much others, but these (indicating the other patients in the room) are little and most of the time are crying or just loud and they are always up and moving around. (Line E17)

Abdullah translates what he has said to his mother and they have a small conversation. Abdullah then says, My mother says she doesn't like to sleep here (pause), it is very hard and she has a bad back and the noise at night makes it too hard. (Line E18)

Interviewer: Abdullah you have been in hospital 11 days- that is a fair while, can you describe to me who you pass the time, do you go outside very often? (Line E21)

No not really (pause) I have been out a few times when the noise gets a bit much and when lots of visitors are
here- then it is really crowded (pause) we have been down to the cafeteria which has better food that the hospital food but I am not able to eat much. We have gone outside a few times - there is some grass out front but other than that and the lobby which is nice, they fixed it up (pause). there is not many places to go so I mostly hang around up here. (Line E22)

Interviewer: What is that like for you, can you tell me more about that?
(LineE23)

It’s okay, my friends sometimes come but mostly we just talk on our phones. My cousins come to visit which is good. He looks at his T-shirt and tells me it was a gift from one of his cousins who recently went on a trip to Spain. (Line E24)

I have my computer so I watch movies and play games and I have headphones so I don’t have to hear all the noise, but then for my Mum I feel bad as she wants to talk with me. (Line E26)

There is the T.V. (he indicates where by looking up a the T.V. placed high on the ceiling) but the channels are pretty limited (pause) that is why it is good that I have my computer and my Dad brings in extra DVD’s for me. (Line E27)

Participant #6  Omar - 14 year old Male

Omar a young Qatari boy was admitted as a result of a motor vehicle accident. Whilst playing behind his house on his bike he was hit by a truck. As a result he has multiple
fractures of his arm, leg, and pelvis and has been in hospital for the last three weeks. Cared for in a private, spacious, room adjacent to the nursing desk, Omar is in traction and therefore is non-mobile. Appearing of appropriate height and weight for his age, Omar has dark short hair, is dressed in his own bright blue pyjamas and other than occasionally glancing at me offers little eye contact or conversation. His English is limited, therefore his mother who does speak English, translates on his behalf. The bedside table consists of a large array of personal items and traditional Arabic coffee and sweets. His mother dressed in a traditional black abaya sits next to the window beside his bed. However, it is quickly evident that Omar’s mother is unique, an avid believer in the importance of colour in the room setting, she has made every effort to personalize Omar’s room with bright orange bed pillows, a colourful duvet cover, and an orange and brown patterned carpet next to his bed. Very excited at my research she seeks confirmation by commenting:

It (referring to personal items Omar’s mother has brought from home) makes the room much more comfortable and more like home, she pauses, indicates with her hand to Omar, if like home, Omar will be happy and heal faster. (Line F44)

Interviewer: If you could have this room any colour you wanted what would it be? (Line F5)

Via translation offered by his mother: Orange is my favourite colour (pause) my room at home is orange. (Line F6)

So, (pause) same orange (pause) like my room at home. (Line F7) Omar’s mother comments that she thinks it is very important that the colours of the patient rooms should be changed. (Line F8)
I prefer my room at home (Line F9). If this room (referring to the hospital room) was more like my room at home that would make me feel better. (Line F10)

I also want to wear my own PJ's, not a gown. I don't like gowns, I want my pyjamas to be all one colour and bright. (Line F11)

The room, like many of the hospital rooms, is a non-descript pale yellow décor with minimal or no pictures on the walls. A medium, 20 inch television, is located high on the wall bracketed off the ceiling.

Mother states that Omar is very active normally so this is very hard for him to be in bed and not be able to move around” (Line F26) She adds a few seconds later, He just keeps saying that he is very bored. (Line F27) (Pause) not missing school at all - but missing his friends from school (pause).(Line F28)

Interviewer: Can Omar tell me more about how he deals with his boredom? (Line F25)

He is talking to them (friends) all the time on his phone. (Line F30)

He likes action games-play station but not available. (Line F31) He doesn’t want the games offered, he wants to choose his own or bring his own games from home-computer like an IPad etc would be good. (Line F32) Religious programming would be good, but again Mum says if he had his own TV he could choose. (Line F33)
Omar’s mother states, “It would be nice to have pictures on the wall and prayers for sick people.” (Line F46) Omar adds football players, cars, sports figures. (Line F47)

Omar’s mother describes an experience she had in a hospital in Switzerland, how they used to bring clowns to the patient rooms and when patients had their birthdays the staff would come in and celebrate. Additional comments included:

I’d like to have what I have seen on the plane and what I saw in Switzerland where (referring to the lounge chair) it pulls out as part of the bed. (Line F34)

Like that, there is also a small television for the child at his bedside. The child can make his own decisions and choose for himself and still have the regular size television for his parents. (Line F36)

Omar’s mother also commented that privacy was a problematic issue stating:

I don’t like the way the medical team can just walk in the room directly. There is no privacy, they just knock and walk in often they do not wait for an answer. It is not very nice and makes me very uncomfortable as we have no privacy. (Line F51)

Omar speaks to his mother in Arabic. Omar’s mother translates: “Omar says that the sound is okay it is not too noisy. (Line F52)

He says he doesn’t like it when they come to check up on him at night because they knock on the door and then just
turn on the room light. (Line F53) He adds, if he is not feeling well they come more often when he is better not as often. (Line F54)

For herself from a parent perspective his Mother spends most of the day with him sitting in the chair, but it is not comfortable, she states:

In Switzerland they had a bed that the Mum could sleep (pause) open for sleeping and table for dining meals and friends. (Line F45)

Participant #7  Issam - 14 year old Male

Issam is a young Qatari boy who fractured his arm and leg as the result of a motorbike accident; he has been in hospital for five days. Due to his age (14 years old) Issam has been admitted to the adult orthopaedic unit where he is being cared for in a private room on bedrest. His mother is present and speaks enough English to be understood therefore she translates for Issam whose English is limited. She tells me she only visits in the day time that she cannot stay at night as it is noisy and the chair provided is uncomfortable and so she comes in the early morning and leaves to go home late afternoon. In the evening other members of the family come in for a few hours- his father, brother and sister. Both his leg and arm have been cast so he has been told there is a good possibility to go home the next day which he is eagerly anticipating. Sitting beside Issam on his bedside table is a Sony laptop computer with his SMART phone next to him on his bed. Additionally on his bed are a pair of large headphones that he says he uses to listen to movies or play games. Issam is a polite, shy young man, with short dark hair and wire framed glasses. He is dressed in his own T-shirt and long shorts. He has a sock on one foot but because of the cast, not on the other. In the garbage bin next to his bed is food packaging from McDonalds - possibly the remnants of dinner the night before? Being an adult unit there is no décor aimed at paediatric
patients or even the older adolescent population, the rooms are the same regardless of age.

He has the TV and likes the action movies in Arabic (pause) and the sports channel (pause) football is his favourite. (Line G7)

He also likes the Internet, playstation, and having an IPad he says would be good (pause) very good. (Line G8)

The TV is good (pause) but maybe if put directly in front of him, not so high up. (Line G9)

As for the bathroom, he has no comments as he has not used, he has not been allowed to get up and move around. (Line G14)

The window to see out is nice and the light to come in is good. (Line G11)

**Participant #8  Ibrahim - 15 year old Male**

Ibrahim is a 15 year old Egyptian/Canadian boy who twisted and injured his knee while playing soccer at school. I meet Ibrahim the day after he had been admitted and therefore he was just awaiting news for the expected date of his surgery. With his mother at his side he is nursed in a common room, the last bed of three, but next to the window. As with most, the space around the bed was very 'tight'. He has two bedside tables both of which were full with flowers, a 'sweet' platter, and refreshments such as bottled water and soft drinks. Ibrahim lying down on top of his covers is wearing a T shirt and long shorts. His injured leg considerably oedematous in comparison to his right leg, was propped up on pillows. Both Ibrahim and his mother spoke fluent English. His mother describes to me how she got a call at home that
Ibrahim had hurt himself at school and was being taken to the hospital by ambulance for further examination. Ibrahim, was busy on his IPad. His mother also had an IPadAD on her lap. Despite only having been in hospital less than two days, Ibrahim’s mother in particular, was very excited about my research and appeared eager to be interviewed. Explaining the need to have participants in hospital for a minimum of three days we agreed for either Ibrahim or herself to contact me prior to discharge. On day four, approximately 36 hours after Ibrahim’s surgery and prior to discharge I returned to interview Ibrahim. His father, a man of quite large stature, was sitting across from the mother on the opposite side of the bed. His knees were rested up against the bed as there did not appear to be space to accommodate the chair that was perpendicular to the bed. A sample of their comments are as follows:

Looking at his mum Ibrahim then looks at me and says,
*well I don’t like being in a room with other people (pause)*
at least all these older people. *(Line H3)*
*Maybe it wouldn’t be so bad if they were more my age (paus) and not so many (pause) like one or two. But I’d also like to have my own room (pause) yeah that would be good too. (Line H4)*

*Ibrahim’s mother adds: We have drawn the curtains for some privacy but even with that you can hear all the goings on in the room (pause) and in a very soft voice she says it is not very nice these are adults in here (pause) why? (pause) With the noises and loudness of everything it is just not restful. (Line H5)*

*His mum adds, at least we are next to the window which seems to help. The light is nice and its good to be able to look out at the hospital grounds (they can see from this window the edge of the greenery from the front hospital*
entrance). You can watch some of the people coming and going' better than just staring at a wall. (Line H9)

In conversation regarding the toilet, not so great (pause) I would like to have my own (pause) sharing is a drag (pause) and other people (indicating with his head) their family and friends also use it too. (Line H11)

Yeah, its good my friends have been here a bit (pause). but its good to be able to just text or talk with them which I do alot. They have a TV- like one for the entire room (pause)so I just watch movies, read or play stuff on my computer, its way better (pause) looking at his IPad. (Line H18)

Sometimes (pause) we go down to the cafeteria and outside a bit. (Line H20 ) His mum adds, we had to ask as they don't really tell you or provide you with anything that lets you know where you can go. Also with most of the patients being older they don’t really provide or tell you of any activites for kids of Ibrahim’s age. (Line H21)

**Interviewer:** You mentioned activities for kids of Ibrahim’s age, Ibrahim have you seen or had a chance to talk with any other teenagers around? (Line H23)

No, I see a few kids in the cafeteria but I don't know if they are visitors or patients. (Line H24)

His mum says “at least with phones today you can leave your number at the desk and you can go for a walk
somewhere (pause) if the doctor needs you they can just call. You don't have to sit around waiting wondering when they are going to come. (Line H26)

Hmmm (pause) on and off (pause) at night it is sometimes hard because of the noise and then the nurses come in and turn all the lights on to check on people. Also if people get up to use the bathroom (pause) there is only one so that is loud. (Line H28)

My mum she wants to stay here with me at night and tried to the first night (pause) again looking at her (pause) but it was just too hard so now she goes home but comes back early in the morning before breakfast. (Line H30)

His mother states, Yes it was terrible trying to sleep-where there is not enough space. (Line H31)

His mother agrees, The hospital staff and care are good, they have been very nice but look at this space. It is so crowded. She indicates her chair which is wedged between the bed and the curtains pulled around the bed to obtain some semblance of privacy. I barely have room to move and there is no where other than this very small cupboard (she opens and shows me the the bedside table) to put any belongings, where does the rest go? (Line H34)

Participant #9  Dhalia - 16 year old Female

Dhalia is a 16 year old Qatari female admitted to hospital eight days ago for a fractured right foot which occurred when she tripped playing soccer at school. Dhalia speaks
fluent English as does her Mother who is present, so no need for a translator. Dhalia’s mother is sitting beside her and her grandmother joins us halfway through the interview. Both are dressed in traditional black abayas but their faces are uncovered. It is early afternoon when we speak. Dhalia is dressed in a long sleeved blue top and loose fitting patterned pyjama bottoms. She has long dark hair which she has pulled back into a loose ponytail. Admitted to a private room, overall Dhalia is happy with her room, for Dhalia with the majority of her comments centre around the issue of boredom. When discussing the types of activities she would like to do, she smiles mentioning activities such as watching TV, and being with her friends. Her mum interjects and suggests the need for religious programmes and educational issues for teens at which point Dhalia just stares ahead and then down at her covers but does not say anything. When her mum finishes she nods in agreement. I do not see a computer present in the room but beside Dhalia on her bed is her mobile smart phone.

Interviewer: You mention that you are bored, can you explain what would you like to do that would ease your boredom? (Line I8)

Via mother’s translation: She says she has her phone and WIFI (Line I9) (pause) but (pause) no one comes in and she doesn't have any activities. (Line I10)

She wants to get out of the hospital. (Line I11) She can go out but in the hospital there is nowhere to go, she walks in the hallway she doesn't know if there is somewhere for teenagers for her to go. (Line I12)

She would love to have an adolescent lounge where she could go and meet new girls, new friends or take her girlfriends when they come to visit instead of staying here in the room. (Line I23)
Interviewer: Can you describe what the lounge would look like?

(Line I27)

Dhalia’s mother states She has a TV and she is happy with the TV. (Line I28) Dhalia’s mother continues that she would like to see religious and educational lectures on the TV, our religion and health lectures. (Line I29)

Interviewer: Would the lounge be for girls and boys? (Line I30)

She quickly responds smiling, No (pause) of course only just for girls. (Line I31)

She likes to be by herself more comfortable and (pause) she has her phone so she talks with her girlfriends a lot. (Line I32)

Participant #10  Fatima - 17 year old Female

Fatima is a 17 year old Qatari adolescent who has been admitted for bariatric surgery. Agreeing to be interviewed, she has been in hospital for four days. Nursed in a private room awaiting discharge, her nurse informs me that Fatima speaks only a little English so the nurse offers to translate on her behalf. Fatima is a large girl but not extremely so - one I would characterise more as overweight than obese. Approximately 5’6” in height Fatima wears a moderate amount of makeup and has shoulder length hair which she has pulled back on either side into hair clips. She looks at me briefly when I enter and although she has agreed to be interviewed it is difficult to get Fatima to speak openly of her experience. Despite reassurance of confidentiality and review of the ethical parameters Fatima tends to give brief non-descriptive statements. Attempting to utilise techniques such as the use of silence to encourage a response or allow time for further elaboration seem ineffective, therefore some direct questions were asked. Overall content and appreciative of her care Fatima does admit to being bored. Next to
her on her bed is her IPhone which she plays with and touches as she speaks. Occasionally she looks to the television, the station set on an Arabic speaking soap opera most of which originate in either Egypt or Turkey. Unfortunately the interview did not last long with the majority of Fatima’s descriptions listed below.

Yes, the staff are good and nice, I like the hospital it is good. I like all the nurses and Doctors- they are all good. (Line J2)

I like the room- no problem. I don’t need anything else. (Line J4)

I slept a lot the first few days. (Line J6)

My family would be here but I slept a lot. I talk to them- sometimes on the phone or watch T.V. (Line J7)

I just stay in my room (pause) it is pretty boring. (Line J9)

Yes, my mum and family come throughout the day but my friends mostly come at night. We mostly sit here in the room as there really isn’t places to go with friends. (Line J11) The downstairs entrance is nice but sometimes busy with people coming and going especially at night. (Line J12)

Yes (pause) looking down and fiddling with the phone between her fingers she says, I can’t go anywhere without my phone. I have to talk with my family and friends everyday. (Line J14)
I like the window and being able to see out (pause) to watch people going by. (Line J18)

Participant #11  Ahmed - 18 year old Male

Ahmed is an 18 year old Qatari boy who had been admitted to the adult orthopaedic floor. Dune bashing in the northern desert of Saudi Arabia near Daharan, a few hours drive west of Qatar, both Ahmed and his older brother Abdullah (22 years of age) incurred severe injuries. Ahmed, who indured the worst, has multiple injuries inclusive of a fractured pelvis, shoulder, tibia and fibia. In hospital for the last six weeks he and his brother are cared for in adjacent private rooms. Although not privy to the medical details, his uncle explains that Ahmed is awaiting transfer to Germany for further surgery and treatment. His bed with an extensive traction apparatus has been moved closer to the wall adjacent to the hospital corridor, presumably to create more space for his numerous visitors. Accompanied this day by Fatima, an Evidence-Based analyst with whom I work, Fatima offered to translate as needed thus providing her opportunity to experience the collection of research data first-hand. The nurse explains to us that Ahmed and his family have consented to be interviewed, however when we enter the room on the far side sit his mother and his auntie and standing next to his bed directly in front, his uncle. A formidable figure both in stature (tall and solidly built) Ahmed’s uncle projects an authoritative tone. Immediately I feared that the uncle possibly being very traditional or extremely conservative in his religious views would be suspicious and unaccepting of a white, western, woman researcher interviewing his nephew. Whether I was wrong or it was the tempering presence of Fatima being a traditionally dressed, young Qatari woman, that a perception of ‘credibility’ was bestowed upon me. I could be trusted and thus was given if you like, a ‘favourable pass’. Fatima agreed and acknowledged that she too felt her presence helped tremendously with any suspicions the family may have had. I suspect, based on my experience in the Middle East, that Ahmed may have had to date limited if any exposure to western women especially those seeking to ask him questions, probing for
information. Dressed in a hospital gown, he had his bed covers pulled loosely with his Rt leg elevated in traction. Dark short hair and by all intense purposes a skinny, tall, boy, Ahmed barely looked my way or had any eye contact with me. Instead, he looked directly forward at the television diverting his gaze only occasionally to look either at Fatima or his uncle for the translation of the questions and answers. Fatima and I sat on Ahmed's left, next to his mother and auntie while his uncle remained standing a the foot of Ahmed's bed. Ahmed’s English language skills seemed lacking, thus all questions and responses were directed to his uncle in Arabic whose fluency of English seemed very good, only infrequently would he answer with a mix of both English and Arabic which Fatima would translate. The uncle despite his initial stern demeanour surprisingly was quite forthcoming in the interview and even smiled many times. Upon completion of the interview both the mother and the auntie offered Fatima and myself Arabic sweets and coffee which we kindly accepted.

Ahmed’s room was as described previously for a private room. The large window offered a view only to adjacent buildings however with Ahmed’s bed relocated against the wall the primary benefit received was the provision of natural light. The TV on displayed an action channel, for as Ahmed mentioned in his interview, he enjoys sport (football, and wrestling) as well as high action movies and games. The room was untidy with all manner of clutter on the bedside and overbed table, barely allowing the visibility of an IPad. Bedside Ahmed on his bed was his mobile smartphone.

It’s good that he at least has a private room as it is quiet so he can sleep (pause) it is also nice that he has a window although there is not much to see the light makes the room seem brighter and more cheery. (Line K4)

Because there is not much to do Ahmed seems to sleep a lot. (Line K6)
His mother speaks to his uncle in Arabic, stating there really isn't much room in here for visitors and the chairs themselves are not very comfortable. (Line K8)

His uncle indicates to the computer that is on his beside table, he says he plays a lot a games either on his computer or his gameboy. (Line K16)

The uncle grins, looks at Ahmed's mother and auntie and says (pause) I don't know what we would do if we didn't have WiFi for between his computer and his phone he would go crazy. (Line K19)

Translating for Ahmed, his uncle states, he watches a lot of TV. Yes (pause) he has been in his room for six weeks and cannot go anywhere, he tells us he is so bored. (Line K19)

Indicating what type of television he likes, Ahmed smiles Action (pause) I like action movies, and sports like car racing and what is it called (pause) wrestling. (Line K21)

Participant #12  Latifa - 19 year old Female

Latifa 19 years of age, was diagnosed with acute renal failure as a young child. Awaiting a kidney transplant, Latifa has endured many years of hemodialysis attending the renal dialysis clinic three times per week with each session lasting up to four hours. Recently Latifa has joined the hemodialysis team as a volunteer to provide support to newly diagnosed and long term renal patients. Currently admitted to the inpatient unit, Latifa requires revision of her hemodialysis shunt. Small in stature possibly as a result of her long time chronic illness, Latifa dark skinned, has medium long black hair and is dressed conservatively in a dark long sleeved top and skirt, her abaya present for when needed.
Fluent in English, Latifa is open and willing to discuss freely her time both as a patient and as a patient advocate. Accompanying her from the unit to the dialysis clinic she states “it is nice to go away from the unit, the clinic the staff they are also my friends” Latifa's family on occasion stay with her when she has treatment but as she has been through this many times over the years she explains she is comfortable with her independence and has a good rapport and friendship with the clinic staff having known them for several years. Both Latifa, her family and friends have become familiar with the 'hospital routine'. The clinic itself is very nice, recently renovated, the walls are predominantly a subtle dark powder blue hue with blue, green, white and pale yellow striped curtains that can be drawn around each bed space for privacy as needed. Overhead lights are available but during the day a large amount of natural light is provided by a bank of windows approximately 6 feet from the floor and 2-3 feet in height stretching along the wall behind each of the beds. The front desk has indirect under counter lighting and Wi-Fi is available. No artwork/photos, areas that offer diversional activities, or TV's can be seen but Latifa explains that the renovation is not complete, further work is still to be done. Child Life frequently utilised in such settings is not a well developed or recognised program in the Middle East however with increasing presence and influence from western staff chiefly in the healthcare sector, it may be a service to be offered in the near future.

*First things we need here especially in general not for myself (pause) some patients need extra support (pause) teenagers have to be available something so that they will not feel bored. She pauses, especially because they up to the first months they have to keep their arm straight. (Line L30)*

*Long pause, as a patient aaah you know I hope aaah to have a or something like this the doctors will come and explain to come and read about it. Education (pause)*
Internet or something no need for a dictation person to come and tell you for me for example I am dictated but for me I still like to search. (Line L32)

(Referring to the newly renovated Hemodialysis Unit), the colours before were only grey and white now at least we have other colours pink or something similar. You have to design with colours that keep the patients more happier, nothing that is as dark and cold. In hospital ummmm actually the clinic very good design but after renovation it become too much better. (Line L38)

For example the lobby now after renovation does not look so hospital-like. (Line L40)

Chairs are of special design for example the gift center and shops are all inside and not outside aaahh the graphic of the lights and all the lighting, coffee places so even if the patient is bored he can come down and sit down. If you are upstairs you will be bored you can come down and drink some coffees or you can see everybody going like this. (Line L42)

For me I would sit, aaaaah or on Wednesday I would be admitted for one week or more so I will not get bored. As I told you I would go out in the room, move in the hospital, I would go with my friends I know, so the time it is passing. (Line L51)
Actually for my friends we would go somewhere near to the hospital to a coffee place, she smiles (pause) too much. (Line L53)

Laughing Latifa says, yes my friends really like that (pause) or for example we will sit outside of the hospital next to the chairs like I told you we will go we could or would like to go, to some garden or something to be sitting somewhere outside of the hospital. (Line L56)

Yes sometimes my friends they go to Starbucks and take it and come back to my room or go the lobby down but really we don’t have special places around - green places, chairs everything.. Small gardens for the patients are nice (pause) and many times we actually suggest for these things. (Line L58)

Actually now for me before yes my mum she will come, my sisters will come, I will enjoy my time with television. After renovation I will go to contact with Internet so my time pass better than before, now after duty I will sleep. (Line L60)

I like single room cause sometimes you will be tired and you don't like interruptions and noise. (Line L83) I prefer to have only private. If you have common room you should have only have two bed room not four bed room. (Line L84)
Thematic Analysis #1

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<td>“When I was sick I like to be on my own but now that I am better it would be nice to have someone else” Munir (12 yrs) Line B15</td>
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<td>“She would love to have an adolescent lounge where she could go to meet new girls, new friends or take her girlfriends when they come to visit instead of staying here in the room” Dhalia (16yrs) Line I23</td>
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<td>Stated very quietly ”If I don’t want to be in here (the hospital) I’d like to go to Gardens, small flowers, coffee, coffee places, Cinnabon” Nabeela (13yrs) Line D23</td>
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<td>“She is saying that she would like to go outside-there is a nice park outside that she would like to go to see the trees and flowers. Not just to go to the canteen” Munir (14yrs) Line B115</td>
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<td>Sister translates “No, no one brings us anything” Sister adds “It might be available but no one has told us about it so we don’t know” Munir (14yrs) Line B35</td>
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<td>“She can go out but in the hospital there is nowhere to go she walks in the hallway she doesn’t know if there is somewhere for teenagers for her to go” (Mother translates for her daughter Dhalia (16yrs) Line I12</td>
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<td>“No one comes in and she doesn’t have any activities” Dhalia (16yrs) Line I10</td>
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<tr>
<td>The importance of physically engaging and stimulating environments that are age appropriate</td>
<td>Provision of Opportunities</td>
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<td>In consideration to both gender and culture adolescents need space designed both aesthetically and functionally; spaces that respect their individuality and developmental milestones.</td>
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Discussion: The importance of physically engaging and stimulating environments that are age appropriate

When seeking the provision of care be it a dental office, healthcare clinic, emergency or inpatient hospital, as adults but particularly as paediatric patients, we anticipate and expect the setting(s) to meet both our medical and psychosocial needs. For adolescents as described in the Transition of Care - chapter one, many find themselves in environments created either specifically for children or for adults. Instead, what is needed, are spaces that offer recognition of culture, gender, aesthetics and functionality while emanating a respect for individuality and developmental milestones. As Whitehouse suggests such creativity in design should also be underpinned with due consideration to the understanding that adults will commonly ask “what does the space look like?” while children are more inclined to inquire “what can I do here?”^139^ Congruent with the research literature examined within the Comprehensive Systematic Review (Chapter Four) and seemingly undeterred by hospital length of stay, is the resounding criticism voiced by adolescents within this study that overall, they are bored. Interestingly, such sentiments can also be heard in the international public sector. Featured on an American news program, a celebrity personality described the inspiration for founding a philanthropic project as a result of visiting various children’s hospitals across the United States and whilst there conducting an unofficial survey of parents. When parents were asked “what can we do for or offer the children and/or families – what do the children need most?” the overwhelmingly response was “if you could help the kids, they are just so bored.”^191^ Providing age appropriate support and intervention through the design of engaging and stimulating environments for children and adolescents is a challenging task that is not easily achieved as each age presents a variety of developmental risks.^68^ Receiving many accolades for construction and design, the recently built Children’s University Hospital of Pittsburgh (UPMC) in the United States is an example where success at
mitigating such risks can be successfully achieved. Guided by child and parent advisory groups, a key strategy operationalised in accordance with recognition of specific developmental needs is the provision of age appropriate interiors throughout the facility. One such feature are the separate age-specific playrooms offering interior decors and availability of diversional and educational activities dedicated to a variety of age categories (i.e. two-five years of age, six to ten years of age) with provision of activity/social areas for those upwards to the adolescent years.

For the twelve adolescents interviewed in the current study, analysis of the data identified common themes as displayed on the previous page - Thematic Analysis #1. Such themes in combination with those listed below, align with many of concerns raised via varied methodological study designs in the comprehensive systematic review.\(^{(192)}\)

**Presence of Windows:**

Most of the adolescent participants in the study expressed positive comments at the presence of, or desire for, a window.

*The window to see out is nice and the light to come in is good. Issam, (14 years of age) Line G11*

*Issam’s mum adds, at least we are next to the window which seems to help. The light is nice and its good to be able to look out at the hospital grounds (they can see from this window the edge of the greenery from the front hospital entrance). Line G12 You can watch some of the people ‘coming and going' better than just staring at a wall. Line G13*

*I like the window and being able to see out - to watch people going by. Fatima (17 years of age) Line J18*
As indicated by Day\(^{64}\) windows provide not only the availability of natural light often preferred over artificial illumination but bring joy and levity with the window itself offering a possible diversion. The ability to view natural settings, ‘people watch’ or observe children playing can divert a child’s attention and stimulate their imagination which in the case of a hospital setting, offers a means of distraction and escape.\(^{64, 193}\) Such desired and therapeutic effects may suggest why in Pelander’s study \(^{141}\) when children were asked to draw their ideal hospital, windows were a frequent and predominant feature.

Access to Natural Environments:

According to Korpela\(^{194}\) natural environments are important and offer a restorative experience by dissociating from ‘stressors’ - a sense of being in an entirely different world and by a feeling of ‘fascination’ and compatibility’ with the environment. Hospitals focused foremost on improving primary health outcomes, have begun to shift the paradigm to a broader view of the hospital experience - the consideration of quality of life and satisfaction for patient and families.\(^{131, 195}\) To date a paucity of evidence-based research exists and while more is needed, results from post-occupancy studies\(^{131, 139, 196, 197}\) illustrate a relationship between garden use, mood improvements, decreased stress and healthcare satisfaction. Such findings have generated renewed interest in the provision of gardens in healthcare facilities worldwide. An example of an organisation creating innovative ideas to elucidate such benefits from the natural environment is a proposed children’s hospital project in Dublin, Ireland.\(^{198}\) Intertwining an appreciation of age specific care with the predominance of the surrounding culture of the rural agricultural farming community, the schematic design reflects an integration of rooftop vegetable and flower gardens. The provision of such outdoor space offers diversionary activity; creates opportunity for social interactions and encourages adolescent independence and responsibility through the expectation that such gardens will be tended to by adolescent patients themselves during the course of their hospitalisation.
In the current study setting, the presence of purpose-built natural outdoor space(s) and gardens is limited. For outdoor areas that are available participant’s comments correspond with those of Sherman’s study\(^{(131)}\) that while outdoor areas are desirable they are frequently underutilised as a result of either limited or no knowledge of their existence and location, or a lack of opportunity for assistance if required in accessing such outdoor spaces.

*Yes sometimes my friends they go to Starbucks and take it and come back to my room or go the lobby down but really we don’t have special places around- green places, chairs everything (pause) small gardens for the patients are nice (pause) and many times we actually suggest for these things. Latifa (19 years of age) Line L58*

*Stated very quietly, If I don’t want to be in here (referring to her room in the hospital) I’d like to go to gardens, somewhere with green and small flowers (pause) coffee places are also good and Cinnabon (a popular shop that sells cinnamon rolls). Nabeela (13 years of age) Line D23*

**Access to Choice:**

The Society for Adolescent Medicine advocates that the care of adolescents should be provided on dedicated adolescent inpatient unit regardless of the healthcare facility being a generalist or paediatric hospital.\(^{(124)}\) Supported by publications such as Viner and Keane’s evidence-based guidelines\(^{(199)}\) and the World Health Organisation’s national quality standards for health service provision to adolescents,\(^{(48)}\) such recommendations are an essential requirement in the optimization of care for adolescent patients.\(^{(135)}\) The allocation of dedicated adolescent units in the United Kingdom as revealed in a 2004 national survey, ranged from 10-18% for children aged 12-19 years of age with suggested recommendations of 12.8 adolescent beds per 10,000 adolescents (of the
same age group) assuming an 80% occupancy rate.\textsuperscript{(24)} Although the prevalence of adolescent dedicated unit is estimated to be considerably higher in Australia and the United States, adolescent experts agree and data support that adolescent dedicated units lead to improved overall care and patient satisfaction.\textsuperscript{(17, 24, 138)}

In Australia, adolescent units are commonly seen supported by hospital data reporting in some areas adolescent admission rates greater than 30 percent.\textsuperscript{(200)} As advocated by Sawyer,\textsuperscript{(200)} Associate Professor at the Centre for Adolescent Health, Victoria, Australia, beyond the apparent age specific environmental benefits there are three primary arguments in favour of adolescent dedicated units. Foremost is that adolescents admitted with primary medical and surgical diagnoses can also present with underlying behavioural conditions that affect presentation and subsequent healthcare outcomes.\textsuperscript{(200)} The awareness, identification and screening for such co-morbidities although standard practice on adolescent units may not be commonplace in other medical settings and healthcare services. Secondly, with the common presentation of acute behavioural health conditions, adolescent specific units offer a “non-stigmatising, non-threatening setting” that promotes appropriate referral to hospital and community services for ongoing care and of particular importance, follow-up care p401.\textsuperscript{(200)} Lastly, in recognition of the impact that long term illness can have on an adolescent’s overall health and well-being and as a consequence family and peers, such specialty units in addition to medical care are adept at the identification, provision, and support for the broad range of developmental needs that may be required. Peer support identified in research as a principal need for hospitalised adolescents’ has recommended that adolescents should be accommodated with other individuals of similar age.\textsuperscript{(17, 26, 138)} Participants in the current study concurred with Miller’s research\textsuperscript{(138)} whereby all adolescents admitted to common room particularly because of high unrelenting noise, desired to be in a private room. However in contrast to Miller’s study, it was the younger female adolescents that indicated that having a roommate of the same age and gender would be comforting adding not when acutely ill but once their condition had improved having a roommate of the same age to talk to
would be nice. In view of such comments it would be ideal if pediatric units could offer where possible a choice to patients between a selection of both private and semi-private rooms.

When I was sick I like to be on my own (pause) but now I am better (pause) it would be nice to have someone to talk to my age. Munir (12 years of age) Line B15

I would maybe like to be in a room with someone same as me. Nabeela (13 years of age) Line D21

Well I don't like being in a room with other people (pause) at least all these older people. Maybe it wouldn't be so bad if they were more my age (pause) and not so many like one or two. But I’d also like to have my own room (pause) yeah that would be good too. Ibrahim, (15 years old) Line H3 and H4

I wouldn't mind so much others, but these (indicating the other patients in the room) are little and most of the time are crying or just loud and they are always up and moving around. Abdullah (13 years old) Line E17

In Qatar, while specific data on adolescent admission rates are unavailable, 2010 Statistics\(^{203}\) revealed the adolescent population of Qatari nationals at approximately 62,000. In view of the rapid economic expansion and the subsequent influx of expatriate workforce inclusive of their families, the projected population growth is expected to result in a substantial need for increased access to paediatric facilities.

Healthcare facilities usually planned with the best of intentions often do not consider dedicated adolescent inpatient units. The World Health Organisation reports that one
in every five persons in the world is an adolescent with the current generation having reached 1.2 billion adolescents globally.\(^{48}\) It is additionally estimated that annually 1.7 million adolescents lose their lives through either accidents, suicide, violence, pregnancy related complications and other illnesses that are either treatable or preventable.\(^{48}\) Despite such statistics it is the consideration by many that adolescents are the healthiest of the population range and therefore with current economic financial constraints, consideration to overall paediatric volumes, low comparative adolescent admission rates, and high demand for beds, the result regrettably is a lack of administrative support for adolescent dedicated units.\(^{202}\) However, if the consideration is reducing anxiety, promoting well-being and increasing satisfaction for adolescents and their families, this study like other studies\(^{24, 25, 138}\) confirm an indicated preference for adolescents to be cared for and have access to adolescent dedicated rooms, units, and spaces for socialization.

*Dhalia’s mother states: She can go out, but in the hospital there is nowhere to go, she walks in the hallway she doesn’t know if there is somewhere for teenagers like her to go? (16 years of age) Line I119

She would love to have an adolescent lounge where she could go and meet new girls, new friends or take her girlfriends when they come to visit instead of staying here in the room. Line I23

*Yes, my mum and family come throughout the day but my friends mostly come at night. We mostly sit here in the room as there really aren’t places to go with friends. Fatima (17 years old) Line J11
Thematic Analysis #2

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<tr>
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<td>“Privacy, there should be privacy” Aisha, (13 yrs) Line A58</td>
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<tr>
<td>The desire for Privacy and Personalisation of Space</td>
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<td>“If my family comes to see me I want better privacy” Aisha (13 yrs) Line A64</td>
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<td>Children obtain a sense of comfort, security &amp; identity making the</td>
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<td>“I don’t like the way the medical team can just walk in the room directly. There is no privacy, they</td>
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<td>space ‘their own’</td>
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<td>just knock and walk in often they do not wait for an answer. It is not very nice and makes me very</td>
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<td>uncomfortable as we have no privacy” Omar (14yrs) Line F51</td>
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<td>“He wants to wear his own PJ’s, not a gown. I don’t like gowns; I want my pyjamas to be all one</td>
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<td>colour and bright” Omar (14yrs) Line F56</td>
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<td>“He says if the room at the hospital is more like his room at home it will make him feel better’</td>
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<td>Omar (14yrs) Line F10</td>
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<td>“Miss Kitty (pause) yes my mummy brought them from home for me. They are nice and soft and fuzzy</td>
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<td>and warm I wear them at home too” Fadwa (12yrs) Line C8</td>
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<td>“The washroom (pause) water is leaking, when I was before (pause) I had to go a lot to pass my</td>
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<td>stool and the washroom was closed so I was waiting a long time and it was not nice as my tummy</td>
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<td>hurt” Aisha (13 yrs) Line A77</td>
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<td>“Because everybody goes to this toilet, so there is no privacy. It’s very dirty. They come during</td>
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<td>the day to clean but with people it is a problem” Munir (12 yrs.) Line B66</td>
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<td>“Sometimes there is no tissue (pause) sometimes there is no soap inside. Lighting is not bright so</td>
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<td>it is sometimes scary to go in by myself” Aisha (13 yrs) Line A91</td>
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The ability to produce and modulate space according to their condition, disposition and need for privacy or socialization.
Discussion: The Desire for Privacy and Personalisation of Space

Psychologist Abraham Maslow in his 1954 book *Motivation and Personality*\(^{203}\) theorized that human development takes place in a series of successive stages, fundamental of which are a human’s biological and physiological needs. Known as Maslow’s ‘hierarchy of needs’ the concept was based on the premise that a person’s basic essentials for air, water, food, shelter and elimination - accessibility to toilet and bathing facilities, must be met in order to progress to higher levels of psychological and sociological needs.\(^{203}\) Highlighted as an issue by each study participant admitted to a ‘common’ hospital room, the importance of such an essential cannot be underestimated nor minimised. Participants’ verbalized the inadequacy of bathroom facilities as an ongoing source of stress and anxiety. ‘Common room’ scenarios described the presence of one bathroom allocated to five patients and the frequent, unauthorized usage by family members and visitors resulting in limited accessibility and availability of toilet facilities for patients. The need for elimination and by extension, the need for privacy, is of central concern to adolescents as body image and issues related to, can and often are viewed as a source of embarrassment and sensitivity.\(^{18, 26}\)

As poignantly expressed by Aisha:

*I had to go a lot to pass my stool and the washroom was closed so I was waiting, a long time and it was not nice-my tummy hurt.* Line A77

*Because everybody goes to this toilet, so there is no privacy. It’s very dirty. They come during the day to clean but with people it is a problem.* Line B66

Aisha’s inability to have access to toilet facilities resulted in not only in physical discomfort but emotional discomfort in the form of anxiety for fear of embarrassment
she would have an ‘accident’. Similarly, the location and design of the bathroom space also made a significant impression with patient’s voicing concerns such as:

*Lighting is not bright so it is sometimes scary to go in by myself. Aisha (13 years old) LineA91*

*It would be nice to have my own (toilet) especially as I go a lot and sometimes it is busy and not always with kids in hospital. They have another down the hall (pause) but I really don’t like to go to that (pause) both are not that nice (pause) but okay. Abdullah (13 years old) LineE6*

Such comments are congruent with Hutton’s study\(^{(18)}\) where participants stated they did not like to have to “walk down a corridor to the end of the ward to use a bathroom” indicating they felt embarrassed and scrutinized as such an action “was advertising their intent to go to the toilet” p.540.\(^{(18)}\)

The concept of privacy can be affected not only through the provision of purpose-built ‘functional’ space but also in regards to how space itself functions. For example, participants voiced concerns that their ‘personal space’ had been compromised in situations where healthcare staff did not acknowledge or respect their sense of personal space and would intrude unannounced into a participant’s room.

*I don’t like the way the medical team can just walk in the room directly. There is no privacy, they just knock and walk in often they do not wait for an answer. It is not very nice and makes me very uncomfortable as we have no privacy. Omar (14 years old) Line F51*

In the Arab and Islamic world such actions are culturally inappropriate for as explained by Al-Shahri\(^{(204)}\) modesty is a core value expressed by both genders. According to Islamic teachings, it is disrespectful to patients and their families to enter a patient’s
room without receiving permission to do so.\(^{(204)}\) Such direct entry into a room could be mitigated by design - a small hallway or alcove prior to entry into the room, obscuring direct visualisation of the patient’s bed provides the patient with a few moments of concealment in which to have the opportunity to ‘collect’ oneself prior to any visitor entry.

In the case of common rooms, privacy through the creation of demarcated spaces is provided by the pulling of curtains around the bed. Limited not only to visiting hours where the concern for patients is primarily the availability of privacy when receiving of visitors of both genders, but rather such a strategy is commonly viewed throughout the day as an attempt at some semblance of privacy which ironically also serves to minimalize and create a claustrophobic feel to the space.\(^{(204)}\)

*Investigator: I notice you have the curtains drawn around your bed* Line E3

*Yes I really don't want to look at everybody or for them to look at me. Abullah (13 years old)* Line E4

In addition to the desire for privacy what was exemplified in both in participant’s comments and as a recurring theme in the investigator’s field notes was the frequency of participants striving to attain a sense of ‘normalcy’, control, self-expression and comfort through the personalisation of their ‘own’ hospitalised space. Whether through the donning of their own pyjamas or street clothes during the day, to personalised bedding each often reflecting their favourite colour, such choices seem intent to capture the safety and security that is felt within the sanctuary and comfort of their ‘own’ bedroom and home.
**Investigator:** I like your pink PJ’s too who is that on them? Line C7

_Miss Kitty, rubbing her hands on the front of her pyjamas she says, yes my mummy brought them from home for me. They are nice (pause) soft and fuzzy (pause) and (pause) warm- I wear them at home too Fadwa (12 years old) (Line C8)_

As indicated in research conducted by Hutton and Gillies\(^{26, 205}\) adolescents identify their bedroom as a place that offers peace, solitude and privacy to engage in quiet activities without intrusion. Omar’s mother summarised it best when she said:

_It makes the room much more comfortable and more like home. She pauses and indicates with her hand to Omar, if like home; Omar will be happy and heal faster. Omar (14 years old) Line F50_

All comments accentuate the overarching desire of the adolescent’s need for privacy; a privacy which at varying degrees is provided in the home setting, but can be desperately lacking in the hospital setting.
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<td>Access to Care</td>
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<td>“She says she doesn’t like to sleep here... it is very hard and she has a bad back and the noise at night makes it too hard” (Mother of Abdullah 13yrs. old) Line E18</td>
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<td>“there really isn’t much room in here for visitors and the chairs themselves are not very comfortable” (Mother of Ahmed 18yrs. old) Line K8</td>
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<td>Parental Comfort</td>
<td>His mother agrees “The hospital staff and care are good, they have been very nice but look at this space it is so crowded.” She indicates her chair which is wedged between the bed and the curtains pulled around the bed to obtain some semblance of privacy. “I barely have room to move and there is nowhere other than this very small cupboard (she opens and shows me the bedside table) to put any belongings where does the rest go?” (Mother of Ibrahim 15yrs. old) Line H34</td>
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<td>“My Mum she wants to stay here with me at night (pause)and tried to the first night” again looking at her (pause) “but it was just too hard so now she goes home but comes back early in the morning before breakfast” (Ibrahim 15yrs. old) Line H30</td>
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<td>“Yes it was terrible trying to sleep- where there is not enough space” (Mother of (Ibrahim - 15yrs. old) Line H31</td>
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<td>In Switzerland they had a bed that the mum could open for sleeping and table for dining meals and friends. Omar (14 yrs. old) Line F45</td>
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<td>Long pause “As a patient aaah you know I hope aaah the doctors will come and explain or have something to read about it (pause) education, internet or something and for me I still like to search” (Noor 19 yrs. old) Line L32</td>
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<td>“It’s good to be able to stay (pause)it is comforting to my son and then I also don’t miss anything (pause) talking to all the doctors and staff” (Mother of Abdullah -15 yrs. old) Line E30</td>
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The importance of sustaining opportunities for family engagement within the hospital environment:

Family’s time spent with their child is directly related to the level of physical comfort.
Discussion: The importance of sustaining opportunities for Family engagement within the hospital environment

A family’s time spent with their child can be directly related to the level of physical comfort provided.

It was noted that for ten of the twelve study participants who had family member(s) present, the primary caregiver was the mother. Keeping vigil at either a daughter or son’s bedside, the mother, as is common in Arab culture, would often be accompanied by members of the immediate and/or extended family with many visiting for long periods of time throughout the day. For each mother present at the time of the study interview, a comment was made regarding the family member’s comfort or lack thereof, as provided through space and/or furniture design and type. The space around the patient’s bed was seen as inadequate and ‘cramped’ whether it was experienced by one person or many family members and friends. Likewise, supporting furniture such as bedside tables had limited surface area to allow for the placement of patient or family member(s) necessities or for personalised items. Closet space for additional ‘change of’ clothes and shoes for either the patient and/or the primary caregiver was also non-existent necessitating many families to store shoes under the bed with clothing and other belongings stuffed in small suitcases or more frequently, plastic bags placed on the floor in the corner. Critical for parents was the comfort of both the visitor’s chairs and main (family) lounge chair, the latter converting to a reclining makeshift bed for the primary caregiver. Mothers who had back problems stated that this lack of comfort exacerbated their already problematic condition with consensus by all mothers that such discomfort was not conducive to rest or sleep. For some, this lack of comfort combined with the incessant noise and absence of privacy weighed heavily on their decision to depart for home in the late evening and return in the early morning. Informal discussions with families revealed that although mothers felt guilty for leaving, the benefits of returning in the morning refreshed and well rested enhanced their coping skills, enabling them to more effectively support their child and
the family as a whole as the stress incurred as the result of having a family member ill, impacts and disrupts daily life for all involved.

*My mum she wants to stay here with me at night (pause) and tried to the first night (pause) again looking at her (pause) but it was just too hard so now she goes home but comes back early in the morning before breakfast.*

*Ibrahim (15 years. old) Line H26*

In incorporating van Manen’s iterative process of review looking beyond the participant’s statements revealed a foremost concern which one mother alludes to in her comment:

*It’s good to be able to stay (pause) it is comforting to my son and then I also don’t miss anything (pause) talking to all the doctors and staff.*

*Mother of Abdullah 15 years. old) E30*

This statement reflects a model of care that is paramount in the world of healthcare; where advocacy in particular for the adolescent patient, is vital. Previously referred to as ‘Patient Centred Care’, the term ‘Patient - and - Family Centred Care’ is now more globally recognised giving opportunity to voices that were formerly silent. As the title implies, there is an appreciation that the adolescent patient is not a separate entity, but rather as stated by the Joint Commission\(^{(35)}\) and American of Paediatrics\(^{(33)}\) ‘Patient-and - Family Centred Care’ is based on the understanding “that the family is the child’s primary source of strength and support and that the child and family’s perspectives and information are together important in clinical decision making”\(^{p395}\(33\)

Historically, the family and healthcare team were often perceived by each other as competing forces.\(^{(68)}\) In today’s healthcare environment enhanced care is promoted through the encouragement and facilitation of opportunities to enrich relationships;
the provision for and optimisation of a two-way process of communication; recognition and placement of the parents as the critical conduit in determining and actively participating in the care path of their child. Strategies such as the adoption of open, flexible, non-restrictive visitation policies; the incorporation of comfortable resting/sleeping arrangements for parents ideally at the patient’s bedside or in close proximity to the unit and/or hospital 24 hours a day is for families comforting and beneficial. Such design initiatives provide parents a presence and therefore opportunity to engage in consistent communication between healthcare professionals essentially making them partners in care. The prospect of such bi-directional interaction additionally offers families a sense of control and influence over care and medical procedures thus reducing overall family stress.\(^\text{68}\) The successful integration of such endeavours can be reflected in concrete measurable outcomes such as length of stay and patient satisfaction survey results.\(^\text{68}\)

Design although vital, is not the only solution. Key to the success to an enduring Patient-and-Family Centered Care model requires a “systematic organisational change from top to bottom; requiring a focused vision, mission, value and cultural influence for each healthcare provider and the organisation as a whole” p24.\(^\text{206}\)
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<td>Disrupted sleep impacts one’s sense of control over the environment.</td>
<td>Cohort of children of similar age groups</td>
<td>“One of the patients was noisy they would go all the time loud then soft it was big problem and I could not sleep” (Nabeela 13 yrs. old) Line D12</td>
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<td>Reduction in noise has demonstrated physiological benefits for development, healing, convalescence and overall health and well-being.</td>
<td>Flexibility in consideration of staff routines</td>
<td>“Sometimes there is noise, sometimes people are talking” (Aisha 13yrs. old) Line A53</td>
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<td>The need to reduce and 'protect' patients from the detrimental effects of noxious stimuli.</td>
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<td>“So I told them put them in another room for aaah some are crying all the time” (Mother of Nabeela 13 yrs. old) Line D20</td>
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<td>“There is noise, babies crying and sometimes we can’t sleep because of all the noise(pause) or I just get to sleep and then the baby in the room starts to cry”(pause) she fades off (Aisha 13 yrs. old)</td>
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<td>Mother interjected saying “the pressure suffering from babies crying all the time and I know the feelings of the mother (pause) one mother stays here aaah 15 days 20 days her baby all the time suffering it is very, tiring” (Mother of Nabeela) Line D19</td>
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<td></td>
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<td>“She is telling me that (pause) if all patients were like her same age as her would be nice. As there is infants over here and they are noisy (pause)hard to sleep at night crying all the time” (Aisha 13 yrs old)</td>
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<td></td>
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<td>“Well (pause) I don't like being in a room with other people at least all these older people. Maybe it wouldn't be so bad if they were more my age(pause) and not so many like 1 or 2. But I’d also like to have my own room- yeah that would be good too” (Ibrahim 15 yrs. old) Line H3 &amp; H4</td>
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<td></td>
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<td>He doesn't like it when they come to check up on him at night because they knock on the door and then just turn on the room light. (Omar 14 yrs. old) Line F53</td>
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<td></td>
<td></td>
<td>“Sometimes they (the nurses) just walk in at night and turn all the lights on to check on people (Ibrahim 15 yrs. old) Line H28</td>
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<td></td>
<td></td>
<td>“You just get to sleep and they come in and turn on the light ahh why not the light at the head of the bed (pause) why the whole room?” (Nabeela 13 yrs. old) Line D15</td>
</tr>
</tbody>
</table>
Discussion: Disrupted sleep impacts one’s sense of control over the environment

‘Designing for our humanness is at the very core of the healing environment philosophy. Our humanness comprises the whole self; not just the physical body focused on by traditional medicine’

Barbara Huelat p75

We perceive the environment with all our senses. Sleep as an essential component of health, strongly influences our state of mind and quality of life. Research has shown that sleep deprivation is extremely detrimental to both one’s physical and psychological health.\(^{27, 207, 208}\) Sleep disturbances, as cited by study participants, is frequently considered memorable as a result of the negative aspect of their overall hospital experience.\(^{41, 209, 210}\)

Roger Ulrich in his theory of supportive design in healthcare settings contends that supportive design facilitates a patient’s ability to cope with the stress that may accompany illness. Ulrich’s theory suggests that most patients experience considerable stress in healthcare settings as the result of their illness, its’ repercussions and the nature of the physical environment. Therefore minimizing environmental stress equates directly to supporting the patient’s healing and overall sense of wellbeing.\(^{211, 212}\) Likewise, the sense of control over one’s physical and social surroundings by way of situation control, access to social support, and positive distractions within the environment as documented in research findings, has an influencing factor on reducing stress and promoting well-being.\(^{111}\) Patients have reported that having control over the ambient environment, inclusive of noise, is linked to patient satisfaction. Conversely, not having control has been associated with increased stress.\(^{41, 213}\)

Advancements in healthcare technology have negatively impacted the sensory environment resulting in noise being the dominant stressor in the contemporary
healthcare system setting. The hospital environment already burgeoning with unnecessary and relentless noise is further increased by the reverberation of noise from sound-reflecting surfaces. A relentless list, offenders include overhead paging systems, beepers, telephones, pneumatic tube system, staff/visitor voices and alarms on routine medical equipment and supplies. The reduction of such noise has demonstrated physiological benefits for development, healing, convalescence and overall health and well-being.\(^{195}\) The World Health Organisation has provided guidelines regarding the acceptable levels. For example, background noise in hospital patient rooms is advised to be maintained in the range of 35dB with nighttime peaks not to surpass 40dB. Guidelines notwithstanding, studies have shown that while ideal, such values may be unrealistic and challenging to achieve as frequently hospital background noise levels greatly exceed such ranges.\(^{195}\) It is therefore not surprising that the participant data in this study, particularly those cared for in the ‘common room’, revealed the chief cause of complaint as ‘patient noise’. Research literature to date unequivocally agrees that noise is exacerbated in multi-bedded rooms versus the single patient room.\(^{76, 195, 214, 215}\) In Couper et al’s 1994 study the noise levels of a multi-bed bays in a children’s hospital were noted to be of such a unacceptable range that consideration to abolishing all open bay rooms was recommended.\(^{216}\)

In the current study, adolescents cared for on the Paediatric units found the incessant crying of young toddlers and babies to be anxiety provoking. Whilst adolescents cared for on the adult floors, complained of noise from older or elderly adults as a result of coughing, snoring, yelling, and patient/visitor talking was perceived as anxiety provoking. Such complaints as demonstrated below are also consistent with findings underlying Battrick\(^{217}\), Clift \(^{27}\) and Viner’s\(^{24, 25}\) studies where noise was especially troublesome at night as sleep needed for healing, was constantly disrupted.

"Every night they (the babies) would scream, they were forever waking me up screaming and crying (pause). I didn't get that much sleep (pause). I felt physically
exhausted (pause) I got my sleep during the day because it was quieter. (Male, 15 years old) p202

In Clift’s study (27) adolescents had described instances when babies were next to them for several days and as a result they had to go to bed earlier; had sleep disturbances; felt isolated, bored and unhappy.

Example of current study findings:

There is noise, babies crying and sometimes we can’t sleep because of all the noise (pause) or I just get to sleep and then the baby in the room starts to cry (pause) she fades off. Aisha (13 yrs. old) Line A35

Similarly, sleep was also disturbed as a consequence of nurses conducting routine evening and night observational rounds. Regular clinical rounds, a necessity for patient safety, should be carried out discreetly with minimal to no impact or intrusion to patients. Instead, study data revealed staff turning on overhead or bright bedside lights, waking patients up for medication administration and other non-urgent routine tasks which should only serve as examples of what not to do. Likewise, parents also found the hospital noise oppressive with some opting not to stay overnight with their children; instead seeking comfort and a good night’s sleep at home enabled parents to provide physical and emotional support in the coping process.

In all scenarios, regardless of the causative factor(s), noise clearly served to evoke stress and dissatisfaction in all participants as well as their family members. For adolescent patients and their families such experiences lend support in favour to at minimum the cohorting of children of similar age groups while ideally recognition and importance of adolescent specific units should be considered a standard. At no time should adolescents be cared for on adult units.
## Thematic Analysis #5

<table>
<thead>
<tr>
<th>Themes</th>
<th>Category</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of Audio Visual Distractions</td>
<td></td>
<td>“Yeah, it’s good my friends have been here a bit (pause) but it’s good to be able to just text or talk with them which I do a lot” (Ibrahim 15 yrs. old) Line H18</td>
</tr>
<tr>
<td>Access to Peer Group:</td>
<td></td>
<td>“Not missing school at all - but missing his friends from school “(Omar 14 yrs. old) Line F28</td>
</tr>
<tr>
<td>The ‘World of Connectivity’; the sense of normality amidst chaos.</td>
<td></td>
<td>Her phone rang and all of a sudden she came out of her shell and told her mother to be quiet, it struck me how dramatic the changes she was like a totally new person. (Interviewer’s observation of Nabeela 13 yrs. old) Line D43</td>
</tr>
<tr>
<td>Transcending the built environment connectivity and access to the ‘Virtual World’ offers respite and escapism from illness and the monotony of hospitalization.</td>
<td></td>
<td>“She likes MBC3, cartoons, Disney channels can be in either Arabic or English but she prefer English because she wants to improve her English” (Munir 12 yrs. old) Line B110</td>
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<tr>
<td>Provision of Audio Visual Distractions</td>
<td></td>
<td>“Actually yes my mum she will come, my sisters will come, I will enjoy my time with television. After renovation I will go to contact with internet so my time pass better than before. Now after duty will sleep” (Noor 19 yrs. old) Line L60</td>
</tr>
<tr>
<td>Provision of Audio Visual Distractions</td>
<td></td>
<td>“I have my computer so I watch movies and play games and I have headphones so I don’t have to hear all the noise, but then for my mum I feel bad as she wants to talk with me?” (Abdullah 13 yrs. old) Line E26</td>
</tr>
<tr>
<td>Provision of Audio Visual Distractions</td>
<td></td>
<td>His uncle “he plays a lot a games either on his computer or his Gameboy” The uncle grins and says “I don’t know what we would do if we didn’t have Wi-Fi for between his computer and his phone he would go crazy” (Ahmed 18 yrs. old) Line E16</td>
</tr>
</tbody>
</table>
Discussion: The ‘World of Connectivity’; the sense of normality amidst chaos

Transcending the built environment connectivity and access to the ‘Virtual World’ offers respite and escapism from illness and the monotony of hospitalization.

Innovations provided by way of the ‘world wide web’ have dramatically impacted the manner in which we conduct our everyday life; how we live, work, communicate, teach learn and play. Influenced in one form or another by integrated technology, adolescents as a demographic, have become the dominant users of entertainment technology, in the use of the Internet and social media.\(^{(218)}\)

In a 2007 research study\(^{(141)}\) children in their drawings of an ideal hospital predominantly featured a video and television set. This stimulated the question: what does the child see as more valuable - entertainment activities or the presence of, or interaction with, family and friends? As researcher of the current study and observation as a paediatric nurse, I suspect that it is not a question of choosing between the two, but rather that entertainment serves as an additional element of conversation when together (i.e. sharing music, websites, and movies) and a necessary means of distraction and comfort for the adolescent when parents are absent.

In the present study, the adolescent voice mirrors that of former research\(^{(19, 68, 209, 219)}\) in their strong preference for entertainment activities. While some parents indicated preference for their children to have access to religious (i.e. The Holy Qur’an) and educational programming, Arab boys often verbalised strong preference for television programing or media games that involved high action drama or sports such as wrestling and car racing, while girls indicated preference for movies inclusive of the Disney channel. In either case, what most strongly was indicated was that adolescent participants wanted the ability to have choice- to control individually when, where and what programing they desired to view.
In conducting the research interviews, as investigator what I was consciously aware of was the participant and family preoccupation or dependency on modern day devices of technology such as mobile phones and IPads. However, it was upon completion of my interview with Nabeela, a young 13 year old Syrian girl that my ‘ah hah’ moment was realised. Whilst thanking and chatting with Nabeela’s mother, Nabeela’s mobile phone, present beside her on the bed, rang. She answered it but what proceeded was as transformational for her as it was for myself as researcher. Nabeela who was polite, soft spoken and somewhat shy during the interview dramatically became boisterous and vivaciously expressive both verbally and non-verbally. Having previously been reclined with arms and legs straight and held close to her body, she leaned forward, crossed her legs and was motioning her arm. Utilizing van Manen’s analysis and revisiting the participant’s transcripts and field notes as an iterative process my epiphany was complete.

Ahmed’s uncle grins, looks at Ahmed's mother and auntie and says, (pause) I don’t know what we would do if we didn't have WiFi for between his computer and his phone he would go crazy. Ahmed, (18 years of age) Line K19

Yes (pause) looking down and fiddling with the phone between her fingers she says (pause) I can’t go anywhere without my phone. I have to talk with my family and friends everyday. Fatima (17 years of age) Line J11

Unlike the research in 2007, where televisions’ and mini video players and newly discovered digital music was the popular choice, in 2013 the new age of technology is here in every dimension of our life. It has become so engrained in the fabric of our daily routine that it appears as in Heidegger’s ‘ready-to-hand’ to have become almost unnoticeable in its’ ‘commonplace’ presence - a natural extension of communication and ability to connect/engage with our everyday world.
Conclusion

This chapter introduced the reader to the twelve research participants: Aisha, Munir, Fadwa, Zainah, Abdullah, Omar, Issam, Ibrahim, Dhalia, Fatima, Ahmed and Latifa with an analysis of their experience. A total of four themes were identified and descriptions of each were discussed.

1. The importance of physically engaging and stimulating environments that are age appropriate
2. The desire for privacy and personalisation of space
3. The importance of sustaining opportunities for family engagement within the a. hospital environment
4. The ‘World of Connectivity’; the sense of normality amidst chaos
Chapter Eight: Bringing it All Together

“It is good to have an end to journey toward; but it is the journey that matters, in the end.”

Ernest Hemingway

Introduction

This thesis has presented two distinct phases of research:

1. Phase One: A comprehensive systematic review which examined the existing research on paediatric hospital environments and their ability to impact anxiety in children. The results of that inquiry identified a gap in the care of adolescents which established the underlying premise and formation of the second phase of research.

2. Phase Two: A Hermeneutic Inquiry into ‘The Adolescent’s Hospital Experience and their Preference for Hospital Design’.

In this, the final chapter, the focus will be on presenting the findings from the Phase Two primary research as depicted in a Model for the Environment of Care. Careful consideration of the limitations of the Study plus implications for practice and research will also be discussed.

Model for the Environment of Care: Insights and Implications

Children’s hospitals are unique places where young, dynamic and spirited individuals are challenged to meet unexpected and, in some cases, life threatening illness. The importance of the environment in which healing takes place cannot be underestimated, yet healthcare facilities have struggled to keep pace with design standards being recommended for optimal healing. Traditionally, the emphasis on
designing healthcare settings has and continues to be focused on one priority - the functional delivery of quality healthcare. Excellence in patient care; patient safety and efficient work flows translate not only into vital cost savings but each is a foremost priority of healthcare professionals and an expectation of the end user - the patient. Today, as demonstrated by evidence-based research, patient outcomes can be both positively and negatively influenced by the healthcare environment thus imposing considerable responsibility on healthcare architects. This onus of responsibility is referred to by some in the architectural world as the “holy grail of healthcare design”. The result is a shifting paradigm. A renewed emphasis grounded in the understanding that by embracing thoughtful design of age appropriate and psychologically supportive healthcare environments a symbiotic relationship can be achieved enhancing both the provision of safe, quality care, as well as the experience and satisfaction of the care provided.

In the current study the belief that hospitalization is a stressful, frightening, isolating and for many, even a ‘boring’ experience is duly emphasised. Tempered by the adolescents’ own unique insight, they themselves became the experts and healers as they voiced their predelictions for hospital design. Identified preferences which despite geographic location, culture, and religion are congruent with those highlighted in previous international research: access to adolescent dedicated spaces; engaging social and outdoor ‘green’ space; private rooms; use of colour; importance of private bathroom; viewing windows and personalisation of space. The shared need articulated in this and research of a similar nature is that of having choice: the ability for each individual to have control and to choose for themselves what they desire and deem appropriate.

Of particular significance is how technology impacts the adolescent patient’s experience – irrespective of gender and culture. Technology has become a pervasive and therefore fundamental avenue for the adolescent to engage with and source information about their surrounding environment. In particular, the Internet is their
main source of information, communication and entertainment. All the participants in this study have never known a world without the Internet. To be placed into an environment that does not support this access can prove to be a psychologically and emotionally challenging experience. Growing up in a multimedia and multicommunication environment, today's adolescents have been given various appellations spanning from the “net-generation”, the “millennium generation,” to “digital natives”.[220] Immersed in navigating the information, communication technologies (ICT) with ease and expertise, adolescents create and use digital spaces for social interaction, identity expression, media production and consumption.[218, 220] Arguably at the forefront of the consumer market, adolescents are constantly pushing the boundaries in their desire for more advanced and faster technology.[220, 221]

“Simply put, the argument is that the has created a new generation of young people who possess sophisticated knowledge and skills in information technologies that express values which support learning by experience and the creation of a culture in a digital space, and that they have particular learning and social preferences”[220]

In Chapter Three, the theories and issues related to adolescent development were reviewed. Adolescence, a period characterized by rapid developmental and psychosocial changes is a time of unparalleled transition. Although parents continue to influence behaviours and decisions, adolescents begin to evolve from their traditional role in the family to one of impending independence; interacting less with their parents, while peer relationships expand and assume greater importance.[49, 50, 220]

In the majority of interviews conducted and as documented in study field notes, the accessibility and influence of information and communication technologies was ever close at hand. The use and even dependency on mobile phones, laptop and tablet computers enables the adolescent in this digital age to have their peers accessible and
virtually present ‘on demand’ in a sense reconfiguring the traditional ‘visiting hours’. It seems no matter what the label: ‘Computer culture’ or ‘Cyber culture’, on invitation the digital world has not only impacted but penetrated our lives’ to such an extent that networking activities both on and offline have become commonplace - an essential that we cannot and do not wish to be far from, or even without.\(^{220}\)

The following four diagrams depict a visual representation of adolescent preferences for hospital design. Commencing as a conceptual diagram (Figure 3) represented are the relevant dimensions of the architectural physical environment, interior design and ambient features as identified by the adolescents themselves in the phenomenological interviews. Evolving through stages of an Interdependant Model (Figure 4 & 5) it is through the Internet and World Wide Web that the various modes of digital technology act as a conduit enabling a seamless transition (Figure 6) of bi-directional communication and relationships between the adolescent, their peers, their family and their environment. Traditional modes of communication, although not obsolete yet, have certainly and are continually being redefined.
Figure 3. Relevant Dimensions: A Conceptual Representation
Figure 4. An Integrated Model

Figure 5. Integrated Model displaying the *fluidity* between concepts
The priorities for the care environment exist on three levels:

1. Relationships: Access to peer groups and the security and comfort of family presence, in particular the mother, who in this inquiry for all participants was the primary caregiver.

2. The patient’s immediate world: the functional and aesthetic environment
3. The role of digital technology and media: Transforming the environment it is taking on new importance. Providing both a diversional distraction in the form of entertainment and a dynamic and seamless means of communication between the patient’s support system - friends and family and the healthcare environment. According to Reich\textsuperscript{(223)} communication with peers is the most popular use of technology amongst adolescents.

Limitations of the Study

Healthcare professionals as a collective are concerned and strive to understand and meet the needs of their patients and their families. Many of the respective disciplines within healthcare emphasize the power of communication offering education and encouraging effective communication techniques: active listening, observation of verbal and non-verbal cues and a variety of interview techniques such as the use of closed and open ended questions. However in Phenomenology, the style of interviewing, an initial unstructured open ended question with follow up prompts based on participant’s responses, is unique and one not commonly used in Nursing or healthcare in general. Likewise, caution must be exercised with each follow up question not to introduce any undue bias thus influencing the participant’s reply. For example questions should be framed as “You mentioned the room was scary can you tell me more about that?” as opposed to “What was it about the room that you didn’t like and that made it scary?” As researcher my lack of experience and comfort with the interview technique was captured in field notes written directly after each interview. Ever conscious to remain true to the philosophical underpinnings of the methodology, transcriptions reveal my personal feelings of unease and concern regarding the perceived unnaturalness in conducting the interview and as a result concern regarding any ramifications that may be incurred on the findings. Based on the literature, it is reassuring to learn that even well-heeled researchers and the Master himself-
Heidegger struggled at one point in time; as reported by Crotty, Heidegger apologised for his “awkwardness and inelegance of expression”\(^{147}\). I did however experience with each subsequent interview an increased level of comfort with the interview technique and as a result, my confidence also increased.

The sample population of the study - adolescents also provided a challenge. Not unexpected, efforts to encourage adolescents to be forthcoming even in general ‘light’ conversation let alone an in-depth interview of their hospital experience, can and in this instance certainly did prove to be a challenge. In almost every instance be it the initial introductory conversation to ‘break the ice’ or the phenomenological interview itself, all information retrieved was a result of a direct question or encouraging prompt as opposed to individuals conversing freely in response to an unstructured question. In the case of the latter, prompting particularly with adolescents was in an effort to guide the adolescent to reveal as much detail as possible thus exposing a deeper meaning. Adding to the complexity of the communication is the influential role that language and culture can play particularly when one or both is different from that of the researcher.

In preparing the ground work for the research study proposal, information obtained from speaking with local Qatari indicated that the majority of Qatari youths speak English and therefore minimal problems should be encountered in respect to language barriers. However, this was not the reality encountered. Of the seven Qatari youths approached for interview, only two spoke English, and although not fluently it was enough to demonstrate understanding and conduct a conversation. The remaining adolescents spoke little to no English or their English was such that they felt more comfortable speaking in Arabic and therefore had their family members translate or had requested a translator. For one interview, due to time constraints, the patient was about to be discharged, and therefore a nurse on the unit who spoke Arabic kindly offered to translate. However for the remaining interviews, a young female Qatari colleague, an Evidence-based trainee generously agreed to translate as needed; interestingly, having her presence when approaching the Qatari families and making introductions made for quite a different dynamic. In Arab culture the opportunity to
participate in research is still a relatively unchartered territory; therefore being approached by a researcher who is in addition a ‘Westerner’ and a woman, can be received with utmost hesitancy and suspicion. However, both Fatima and I felt in discussion following the interview that her presence - a young Qatari woman in traditional dress (black abaya and hijab) immediately appeared to make the family more at ease, less suspicious and more willing to be involved. For myself as the researcher I certainly felt it provided me with credibility and possibly even respect from the families that in acknowledging an appreciation for their culture I had included on my team, a Qatari.

Lastly, the lack of familiarity with the hospital organisation and healthcare staff although not an obstacle in completing the study, certainly proved to be a disadvantage. Having conducted a previous study in a hospital in which I was employed, the comparison was striking. Knowledge of an organisation, it’s physical layout, admission policies, data, and an established rapport with healthcare staff does in this researcher’s view lend itself to a smoother, more time efficient, effective, and satisfying experience.

**Implications for Practice**

Heidegger explains that part of ‘being’ in the world is to have a relationship with ourselves; to consider what is important to us as part of our being. Humans as self-interpreting beings express preferences often based on influences of family, culture, history, communication patterns, and individual personality traits. The identified themes emerging from this analysis highlight that adolescents want to be recognized for who they are; not as ‘small’ adults or ‘large’ children, but as individuals in a transitory period of their life, frequently struggling to define their own personal identity. Adolescents want the opportunity to express themselves; not to have someone express it for them.
First and foremost adolescents desire to be cared for in age-appropriate environments inclusive of social spaces. Translated, the ideal is for care to be provided on a dedicated adolescent unit. Such provisional spaces enable adolescents to seek support or disassociate as needed from the healthcare environment and their illness by connecting with their peers via social media or face to face. When planning for an adolescent unit, evidence-based design advocates the predominence of private rooms, however offering patients a choice between private or semi-private rooms is preferable. Additionally, how spaces speak to patients and families will require careful consideration of the structural, interior design and ambient features: social spaces - indoor or outdoor (‘green’ space); use of colour; accessibility to a private bathroom; viewing window(s); and comfortable sleeping arrangements for family. Using space creatively and functionally- accommodating for efficiency of care workflows while at the same time enabling the patient and their family to personalise space to meet their needs.

The utilization of technology has the potential to transform healthcare needs and therefore should be a foremost priority when planning healthcare facilities. Advances such as the integration of medical equipment to enable the bidirectional streaming of physiological patient data and the advent of Radio frequency identification (RFID) although not commonplace is demonstrating an impact on patient safety. Similarly, with the demand for faster, more efficient and seamless communication and information the transition from a paper-based medical record to an electronic medical record is a journey many healthcare organisations are undertaking. From the perspective of the adolescent, the electronic medical record and by extension a hospital portal facilitates and prioritises communication – an avenue to express and access information and adolescent patient and family preferences from both an inpatient and outpatient perspective.

Boston Children’s Hospital, one of the leading paediatric hospitals in the United States offers an innovative programme whereby technology is making a difference for
adolescents who have undergone organ transplantation - an idea which Boston Children’s says is just the beginning. Titled ‘Boston Children’s Teen Take Charge’ (224) the programme matches adolescents love for gaming with the challenge of helping adolescents prepare for life post transplant. Through the identification of personal barriers, strategies are incorporated to assist adolescents to adapt and adhere to strict medication regimes and behaviour changes required. Through a leaderboard, adolescent patients can track their game scores and compare against those of other transplant patients.

Likewise, novel and illuminated in this inquiry is the integral role that information, communication technologies (ICT) offer. Phenomenological interviews and field notes have demonstrated that adolescents are on a continual basis engaged and dependent on technology devices for purposes of maintaining communication with peers and family; provision of distraction by way of entertainment and as an ‘outlet’ to cope with anxiety and/or boredom related to hospitalisation. Superseded by the ‘Virtual world’ the adolescent is limited only by his own abilities. As technology advances and becomes more accessible and thus cost effective, information regarding participant preferences may have a more discreet use. For example, instead of research-based preferences denoted as in this current inquiry: a room blue in colour; photographs reflecting nature and television and other media having a finite but diverse selection of programmes, information regarding preferences incorporated through the use of technology will be at their fingertips - they will have the opportunity to choose and make the selection.

One might think that these are lofty ideas, but such options already exist. Although not mainstream and therefore very expensive, privacy can be provided via ‘Smart glass’ that with the touch of a switch can change glass from clear to opaque; traditional toys are complimented by interactive walls that come ‘alive’ with the touch of a child’s hand creating dynamic colours, sounds and shapes; ceiling and wall panels in patient rooms and operating theatres display a selection of nature scenes (i.e. the solar system, beach
or forest) and life-size and life-like glass wall panels project images whereby the glass panel becomes the easel and the ‘digital’ images such as a child can be projected to tell a story by painting on the glass. The result is memorizing - so engrossed is the individual watching that the passage of time and reason for being there is for both children and adult, almost forgotten. Diagnostic Imaging areas such a Computerized Tomography (CT scan) and Magnetic Resonance imaging (MRI) through commercialised ventures such as General Electric have transformed and disguised by way of themes (i.e. Space and Nature) imaging areas transforming the experience into one that is less daunting, fearful and anxiety provoking.

High-tech, patient-focused rooms provide a less intimidating, more engaging experience, while supporting quality and safe delivery of care for hospital staff. This unique framework facilitates the patient and family experience. Appreciating that such strategies require extensive financial resources, corporate sponsorship and ongoing philanthropic opportunities can significantly offset costs while promoting consumer satisfaction and enhancing hospital image. Creating hospitals that are therapeutic and humanistic is an essential. To have a clear vision of the patient and family outcomes desired and the possibilities of what is attainable are limited only by one’s imagination and the resources both creatively and financially. For the experiences of the adult are simply the recollections of the adolescent experiences.

**Implications for Research**

At the commencement of this thesis it was discussed that the research question: ‘The Adolescent’s hospital experience: Preferences for environmental design’ was derived from a comprehensive systematic review that identified a gap in adolescent care. The challenge impinging on myself as the researcher was twofold: 1) To demonstrate to the reader that a topic relating to the hospital environment for adolescents’ is not only viable but that the experience of hospitalisation is directly influenced by the environment and thus influences and impacts patient outcomes and 2) To choose a research methodology for a topic of inquiry that as previously stated due to the
practicality in attempting to manipulate and control the various design features does not easily lend itself to cause and effect studies. Choosing to ground this research study in Heideggerian Hermeneutic Phenomenology has identified four major themes:

- The importance of physically engaging and stimulating environments that are age appropriate
- The desire for privacy and personalisation of space
- The importance of sustaining opportunities for family engagement within the hospital environment
- The ‘World of Connectivity’; the sense of normality amidst chaos

Such findings have opened up the space for future research that answers questions such as:

1. How and what types of technology can best be integrated into the healthcare environment to increase access to care and promote the opportunity for adolescent patients to have increased control and choice in their care and the environment in which the care is provided?
2. The effectiveness of Avatars and their use in orientating the adolescent patient to the hospital environment
3. What systems and processes promote choice in hospital environments for the adolescent patient?

Research relating to healthcare environments whether for the neonatal, paediatric, adult, or aged care population have to date been the result of either descriptive or observational study designs such as ethnography, phenomenology, descriptive studies or action research. However that in itself can create a challenge for although only a paucity of research exists, when considering the building or renovation of an existing space, considerable if not exorbitant, financial cost is frequently incurred. It is for this reason that such decisions are often made by government officials or hospital administrators who historically are motivated by ‘bottom line’ thinking – cost versus benefit ratio.
Historically, healthcare administrators, providers, architects and designers have often drawn upon and utilised their own experiences rather than sought the views and preferences of the end user. Such individuals predominantly more knowledgeable and thus more confident with experimental research may be more likely to incorporate findings into practice if the result of quantitative research. In view of the difficulty in conducting research on this topic and the perceived lack of confidence in interpretive research, it is this author’s contention that conducting quantitative research although for healthcare desirable, may not be successful. Instead complementing interpretive research with end user and family advisory committees at the initiation, duration, completion and future use of any paediatric building or renovation project may serve to be more effective. Adding to the research findings a further impact could be measured through the implementation of Quality Improvement initiatives. Incorporating the quality cycle such as a FOCUS-PDCA approach in addition to the tracking and follow up of patient and family satisfaction survey results may serve to have more influence with those who are the key decision makers.

Conclusion

As I continue to work and experience first hand the healthcare setting I am reminded of Ahmed and envisage the possibilities of what healthcare environments could offer for he and patients like him – fellow, young paediatric, and adolescent patients in the global community. Ahmed, who at 17 years of age, his experience as a recipient of healthcare services since birth, has left such an indelible impression that utilising the platform of a high school project, he has culminated his passion endeavouring to highlight the issues and improve healthcare environments for all adolescents. Healthcare environments that de-stress rather than distress. Ahmed’s story serves as notice to all healthcare providers. For health professionals, the hospital built environment is a place of work, one in which we quickly become all too familiar with, even immune to. A place where efficiency, work flows and the functional delivery of care is too often the priority. Yet, for the adolescent the experience of hospitalisation
and the environment of care has the ability not only to affect care and care outcomes, but create lasting impressions. Findings in this study cannot be regarded as representative of all adolescents or even those living in the Middle East and therefore are not generalizable. Instead, the intent of this study was to contribute to and enhance our understanding of the richness and complexity of the experience being investigated, in this case ‘Adolescent preferences for hospital design’.
Appendices:

Appendix I: Search Strategy

Sample search of Core Concepts to identify Keywords and MeSH terms

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<th>Core Concepts</th>
<th>Medline</th>
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<tbody>
<tr>
<td>Design</td>
<td>Environment Design</td>
<td>Environment Design</td>
</tr>
<tr>
<td></td>
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<td>color therapy</td>
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<tr>
<td>Green Space</td>
<td>N/A MeSH</td>
<td>keyword in CINAHL matches concept</td>
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<tr>
<td>Landscape</td>
<td>Architectural Accessibility</td>
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<td>Floors and Floor coverings</td>
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</tr>
<tr>
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<td>Location Directories and Signs</td>
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</tr>
<tr>
<td>Nature</td>
<td>Nature</td>
<td>Nature</td>
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<td>Healing Gardens</td>
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<td>Distraction Therapy</td>
<td>Milieu Therapy</td>
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<td>Healthcare settings</td>
<td>Health Facilities</td>
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<td>Inpatient areas</td>
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<td>Dental Facilities</td>
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<td>Intensive Care Units</td>
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<td>Clinics</td>
<td>Ambulatory Care Facilities</td>
<td>Outpatient services</td>
</tr>
<tr>
<td>Paediatrics</td>
<td>Enter in age limits (1 to 18 years of age)</td>
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</tr>
</tbody>
</table>

**Sources and search strategy used to locate Studies**

**FINALISED SEARCH STRATEGY**

1) Hospital Design and Construction (MeSH)
2) Facility Design and Construction (MeSH)
3) Interior Design and Furnishings (MeSH)
4) Environment Design (MeSH)
5) Noise (MeSH)
6) Lighting (MeSH)
7) Location Directories and Signs (MeSH)
8) Floors and Floorcoverings (MeSH)
9) Color Therapy (MeSH)
10) Nature (MeSH)
11) “healing spaces” (keyword)
12) 1-11 (OR)
13) Attitude to Health (MeSH)
14) “patient attitudes” (keyword)
15) Anxiety (MeSH)
16) Fear (MeSH)
17) Panic (MeSH)
18) Behavior (MeSH)
19) Child Psychology (MeSH)
20) Adolescent Psychology (MeSH)
21) 13-20 (OR)
22) Health Facility Environment (MeSH)
23) Dental Facilities (MeSH)
24) Intensive Care Units, Paediatric (MeSH)
25) Hospitals, Paediatric (MeSH)
26) “paediatric clinics” (keyword)
27) 20-26 (OR)
28) 12 AND 21 AND 27

Limits: Age group, 0-18 years, publication date, January 1, 1980-July 1, 2010, language, English

Example search strategy

MEDLINE

#1) Search ((((((("Hospital Design and Construction"[Mesh] OR "Facility Design and Construction"[Mesh]) OR "Interior Design and Furnishings"[Mesh]) OR "Environment Design"[Mesh]) OR "Noise"[Mesh]) OR "Lighting"[Mesh]) OR "Location Directories and Signs"[Mesh]) OR "Floors and Floorcoverings"[Mesh]) OR "Color Therapy"[Mesh]) OR "Nature"[Mesh] 47778

#2) Search "healing spaces" 6

#3) #1 OR #2 47780

#4) Search (((("Attitude to Health"[Mesh] OR "Anxiety"[Mesh]) OR "Fear"[Mesh]) OR "Panic"[Mesh]) OR "Behavior"[Mesh]) OR "Child Psychology"[Mesh]) OR "Adolescent Psychology"[Mesh] 1145048
#5) Search "patient attitudes" 500

#6) #4 OR #5 1145196

#7) Search (("Health Facility Environment"[Mesh] OR "Dental Facilities"[Mesh]) OR "Intensive Care Units, Paediatric"[Mesh]) OR "Hospitals, Paediatric"[Mesh] 29442

#8) Search "paediatric clinics" 426

#9) #7 OR #8 29849

#10) #3 AND #6 AND #9 407

#11) Search #3 AND #6 AND #9 Limits: Humans, English, All Child: 0-18 years, Publication Date from 1980/01 to 2010/07 66

Age limit: all studies retrieved with subjects less than one year of age were excluded.

CINAHL

S1 (MH "Hospital Design and Construction") OR (MH "Facility Design and Construction+") OR "environment design" OR (MH "Interior Design and Furnishings+") OR (MH "Noise") OR (MH "Lighting") OR "location directories and signs" OR (MH "Floors and Floorcoverings") OR (MH "Color Therapy") OR "nature" OR "healing spaces" (33442)

S2 (MH "Attitude to Health+") OR (MH "Patient Attitudes") OR (MH "Anxiety+") OR (MH "Fear+") OR "panic" OR (MH "Behavior+") OR (MH "Child Psychology") OR (MH "Adolescent Psychology") (395680)

S3 (MH "Health Facility Environment") OR (MH "Dental Facilities+") OR (MH "Intensive Care Units, Paediatric+") OR (MH "Hospitals, Paediatric") OR "paediatric clinics" (14637)
S4  ((MH "Health Facility Environment") OR (MH "Dental Facilities+") OR (MH "Intensive Care Units, Paediatric+") OR (MH "Hospitals, Paediatric") OR "paediatric clinics") and (S1 and S2 and S3) (218)

S5  ((MH "Health Facility Environment") OR (MH "Dental Facilities+") OR (MH "Intensive Care Units, Paediatric+") OR (MH "Hospitals, Paediatric") OR "paediatric clinics") and (S1 and S2 and S3) Limiters - Published Date from: 19890101-20101231

Narrow by Subject Age: - Child, Preschool: 2-5 years Narrow by Subject Age: - Infant: 1-23 months Narrow by Subject Age: - Adolescent: 13-18 years Narrow by Subject Age: - Child: 6-12 years (44)

Note: Dates searched in CINAHL were from January 1, 1989 to December 31, 2010 due to the inception of the database and the inability to specify July 1, 2010.
Cochrane Library

"hospital design and construction":ti,ab,kw or "facility design and construction":ti,ab,kw or "interior design and furnishings":ti,ab,kw or "environment design":ti,ab,kw or (noise):ti,ab,kw

(lightning):ti,ab,kw or "location directories and signs":ti,ab,kw or "floors and floorcoverings":ti,ab,kw or "color therapy":ti,ab,kw or (nature):ti,ab,kw

"healing spaces":ti,ab,kw

(#1 OR #2 OR #3) 11570

"attitude to health":ti,ab,kw or "patient attitudes":ti,ab,kw or (anxiety):ti,ab,kw or (fear):ti,ab,kw or (panic):ti,ab,kw

(behavior):ti,ab,kw or "child psychology":ti,ab,kw or "adolescent psychology":ti,ab,kw

(#5 OR #6) 41804

"health facility environment":ti,ab,kw or "dental facilities":ti,ab,kw or "paediatric intensive care unit":ti,ab,kw or "paediatric hospital":ti,ab,kw or "paediatric clinic":ti,ab,kw

(#4 AND #7 AND #8) 12

Note: Wildcards were not needed as variant spellings (i.e. colour and color) retrieved the exact same number of results.
### Appendix II: Example of JBI MASTARI Critical appraisal instrument

**Descriptive / Case Series Studies**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Primary</th>
<th>Secondary</th>
<th>Yes</th>
<th>No</th>
<th>Unclear</th>
</tr>
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<tbody>
<tr>
<td>1) There is congruity between the stated philosophical perspective and the research methodology.</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) There is congruity between the research methodology and the research question or objectives.</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) There is congruity between the research methodology and the methods used to collect data.</td>
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<td>Yes</td>
<td></td>
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<tr>
<td>4) There is congruity between the research methodology and the representation and analysis of data.</td>
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<td>Yes</td>
<td></td>
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</tr>
<tr>
<td>5) There is congruity between the research methodology and the interpretation of results.</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>6) There is a statement locating the researcher culturally or theoretically.</td>
<td>No</td>
<td>No</td>
<td></td>
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<tr>
<td>7) The influence of the researcher on the research, and vice-versa, is addressed.</td>
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<td>Unclear</td>
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<tr>
<td>8) Paediatric patients, and their voices, are adequately represented.</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>9) The research is ethical according to current criteria or, for recent studies, there is evidence of ethical approval by an appropriate body.</td>
<td>Yes</td>
<td>Yes</td>
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</table>
### Example of JBI QARI Critical appraisal instrument

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<th>No</th>
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<tr>
<td>1) There is congruity between the stated philosophical perspective and</td>
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<td>Yes</td>
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<tr>
<td>the research methodology.</td>
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</tr>
<tr>
<td>2) There is congruity between the research methodology and the research</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>question or objectives.</td>
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<td></td>
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<tr>
<td>3) There is congruity between the research methodology and the methods</td>
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<td>Yes</td>
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<tr>
<td>used to collect data.</td>
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<tr>
<td>4) There is congruity between the research methodology and the</td>
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<td>Yes</td>
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<tr>
<td>representation and analysis of data.</td>
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<tr>
<td>5) There is congruity between the research methodology and the</td>
<td>Yes</td>
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<tr>
<td>interpretation of results.</td>
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<tr>
<td>6) There is a statement locating the researcher culturally or</td>
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<td>theoretically.</td>
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</tr>
<tr>
<td>7) The influence of the researcher on the research, and vice-versa, is</td>
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<td>Unclear</td>
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<td>addressed.</td>
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<td></td>
</tr>
<tr>
<td>8) Paediatric patients, and their voices, are adequately</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
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<tr>
<td>represented.</td>
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<tr>
<td>9) The research is ethical according to current criteria or, for recent</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>studies, there is evidence of ethical approval by an appropriate body.</td>
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<td></td>
<td></td>
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<tr>
<td>10) Conclusions drawn in the research report do appear to flow from the</td>
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<td>Yes</td>
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<tr>
<td>analysis, or interpretation, of the data.</td>
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Appendix III: Example of JBI MASTARI Data extraction instrument
Example of JBI QARI Data extraction instrument
### Appendix IV: Summary of included studies – MASTARI

<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Country</th>
<th>Study Type</th>
<th>Paediatric patients</th>
<th>Intervention(s) or Phenomena of Interest</th>
<th>Outcomes Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eisen</td>
<td>2008</td>
<td>USA</td>
<td>Descriptive 3 phase multi method approach</td>
<td>n=78 ages 5-17yrs</td>
<td>What type of art is the most effective in reducing stress in paediatrics?</td>
<td>Pre and post exposure PedsQL™PFM tool and measurement of physiological parameters (BP, RR) All four age groups 66% preferred representational nature art No significant gender difference in art preferences between male &amp; female age groups, except in the 14-17 age group, nature image was preferred by a greater number of males vs. females ( df = 5, P = 0.023 )</td>
</tr>
<tr>
<td>Eisert</td>
<td>1988</td>
<td>USA</td>
<td>Observational Observations structured questions to staff following observations</td>
<td>n=53 ages 2-13yrs n=20 Pre-Intervention observation (mean age 9.8) n=31 Post-Intervention Observation (mean age 8.8yrs)</td>
<td>A play structure designed to facilitate symbolic play compared to Play space with toys, available</td>
<td>Play and non-play Statistically significant results: Total play behaviour: 57% vs. 30% ( P&lt;.01 ) Total non-play: 43% vs. 70% ( P&lt;.001 ) Symbolic play: 18% vs. 3% ( P&lt;.01 ) Play structure itself had an effect on play</td>
</tr>
</tbody>
</table>
| **Miller**\(^{(138)}\) | Descriptive Survey | n=95 ages 12-21yrs n=39 ages of 12-17yrs | Room preferences of adolescents:
Single occupancy Room with 1 pt Room with 2 or more pts | Reported for Total sample:
Single occupancy: 38%
Room with 1 pt: 40%
Room with 2 pts or more: 26%
Ages (12-14yrs)
Single occupancy: 25%
Room with 1 pt: 44%
Room with 2 pts or more: 33%
Ages (15-17yrs)
Single occupancy: 44%
Room with 1 pt: 33%
Room with 2 pts or more: 20%
Note: When analysed by gender, females were significantly more likely than males to prefer to room alone
[53% vs. 28% (\(\chi^2 = 5.34; p < 0.05\))]. |
<p>| <strong>Park</strong>(^{(83)}) | Case Controlled-Simulation method | n= 153 ages 7-11 yrs 60 Healthy school children: Females-31 Males- 29 | To investigate the value of colour as a component of a healing environment for paediatric | Colour preferences between healthy children &amp; those children in the paediatric inpatient &amp; outpatient areas showed group |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Setting</th>
<th>Sample</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sherman</strong>&lt;sup&gt;(131)&lt;/sup&gt; 2005 USA</td>
<td>Descriptive Observational Non-Randomised</td>
<td>Phase One: Behavioural observation n=1400 (only 4% paediatric patients) Phase Two: Present functioning pilot data n= 20 (only 4 - 18% paediatric pts)</td>
<td>Effect of 3 designs of healing gardens on patient, visitors and staff.</td>
<td>Present functioning (PedsQL&lt;sup&gt;TM&lt;/sup&gt; PFM) Usage patterns: Significant difference in garden usage patterns between groups (p&lt;.001) Children engaged in significantly more active activities, playing, interacting with garden features Patient data not reported separately</td>
</tr>
<tr>
<td><strong>Viner</strong>&lt;sup&gt;(24)&lt;/sup&gt; 2007 USA</td>
<td>Descriptive Secondary analysis of a UK Postal survey questionnaire</td>
<td>n=8071 ages 12-17yrs equally divided between males and females</td>
<td>Ward types adolescent, child and adult were compared to determine if a unit specifically designed for the adolescent</td>
<td>Dedicated adolescent wards improve aspects of quality of care particularly older adolescents as compared to being cared for on a</td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Participants</td>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>--------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Whitehouse (139) 2001 USA</td>
<td>Non-Randomised</td>
<td>Descriptive Surveys and semi-structured interviews and questionnaires</td>
<td>Overall 200 persons observed n=20 12 male 10 female children/adolescent only 16 were pts</td>
<td>Ability of gardens to reduce stress &amp; increase consumer satisfaction</td>
</tr>
</tbody>
</table>

| | | | Results indicate that healthy children and hospitalised ill children have different needs for a hospital garden. Specific physical features of the garden that helped them to relax & most favoured by children: fountain with running water; features (i.e. dinosaur, windmill, shadow wall, animal tiles; flowers & trees, being outdoors); bright colours. The vast majority of healthy children (visitors) would like 'more things to do' in the garden (i.e. active or manipulative play). |

<p>| | | | Paediatric or Adult ward. |</p>
<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Country</th>
<th>Study Type</th>
<th>Paediatric patients</th>
<th>Intervention(s) or Phenomena of Interest</th>
<th>Outcomes Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adams</strong> (137)</td>
<td>2010</td>
<td>Canada</td>
<td>Observational</td>
<td>n=35 inpatients n=45 outpatients ages 5-18yrs</td>
<td>To examine children’s views regarding a hospital environment (Atrium). How children perceive and respond emotionally to space and how they use space.</td>
<td>NB to understand Pt experience in hospital settings—not only for medical but non-medical spaces. Need to recognize Architects expertise in making meaningful hospital</td>
</tr>
<tr>
<td><strong>Boyd</strong> (52)</td>
<td>1998</td>
<td>Canada</td>
<td>Interpretive Grounded Theory</td>
<td>n=6 ages 10-13yrs</td>
<td>Children’s perceptions of stress and coping strategies of chronically ill school-aged children</td>
<td>It is theorized that chronically ill children who are repeatedly hospitalised become adept at identifying &amp; implementing a repertoire of behavioural and cognitive coping strategies. Behavioural distractions (distractions in or as part of the built environment) and seeking social support were mentioned by all of the paediatric patients as coping strategies. Recommends for a</td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>Methodology</td>
<td>Sample Size</td>
<td>Context</td>
<td>Findings</td>
<td></td>
</tr>
<tr>
<td>-------</td>
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<td>-------------</td>
<td>-------------</td>
<td>---------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Clift (27) 2007 UK</td>
<td>Descriptive</td>
<td>Semi-structured interviews</td>
<td>n=6, ages 11-15yrs</td>
<td>Adolescents experiences of Emergency admission to children’s wards</td>
<td>Results showed adolescents experience more positive experiences than research has previously indicated. Highlighted was the need for separate space for adolescents with age appropriate diversional activities, school facilities, family zone to enable parents to stay.</td>
<td></td>
</tr>
<tr>
<td>Coad (82) 2008 UK</td>
<td>Descriptive</td>
<td>Initial advisory group n=12, Phase One: n=30+ (10 with disabilities), Total n=40, ages 3-18yrs</td>
<td>Children’s preferences on colour and thematic design</td>
<td>Results were combined and reported as one. Most popular colour, blue-green. Themes with sea, nature and animals preferred. Simple artwork textures such as metal, glitter or shine and patterns; stars and striped materials.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gibson (135) 2009 New Zealand</td>
<td>Descriptive</td>
<td>Conjoint Analysis</td>
<td>n=29, ages 12-22yrs (mean age 15.5yrs), 19 male, 10 female</td>
<td>To determine what factors adolescents find important in inpatient hospital facilities and if adolescents have firm views re: their needs and should be consulted. Adolescent preferences elicited to options</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>No indication of how many were over the age of 18 but average age 15.5 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>conjoint analysis is a suitable tool and attributes given:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Location:</td>
<td>Adolescent bay adjacent to paediatric ward</td>
<td></td>
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</tr>
<tr>
<td>Recreation Facilities:</td>
<td>common/sitting room shared with whole ward</td>
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<td></td>
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<tr>
<td>Kitchen Facilities:</td>
<td>Unsupervised to make hot/cold drinks</td>
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<td>Cell Phone Usage:</td>
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<tr>
<td>Bathroom Facilities:</td>
<td>Adolescent friendly, mirrors shaving points and locks on the doors</td>
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</tbody>
</table>

| **Hutton**<sup>(18)</sup> | Interpretive Individual Drawings Interviews Convenience sample |
| | n=7 ages 13-18yrs 4 females 3 males |
| | Discusses the consumer perspective of adolescents patients in hospital environments |
| | In order to maintain privacy and independence Patients clearly defined and described the need for private space and shared space. Need for privacy when in pt room/bathroom, grooming or using the telephone. |

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| **Hutton**<sup>(17)</sup>  
2007  
Australia | Interpretive Ethnography  
Formal and Informal interviews | n=17  
ages 13-18yrs | To explore how a purpose built adolescent ward was used by adolescents and nurses | It is essential that adolescent’s opinions are valued and incorporated into the setting where they are to be nursed. Findings reflected that the built environment of the adolescent ward is set to support the practice of pt care not necessarily adolescent pt care- that being a pt takes precedence over being adolescent |
|---|---|---|---|---|
| **Mulhall**<sup>(133)</sup>  
2003  
UK | Interpretive  
Convenience sample | n= 10 (pts)  
ages 13-20yrs | How physical layout and facilities shaped experience of the adolescents and their families(one of six categories to emerge) | Themes:  
Small size of unit viewed positively. Need for privacy varied over time. Sense of home atmosphere reduced anxiety and promoted normality. |
| **Pelander**<sup>(141)</sup>  
2007  
Finland | Descriptive  
Drawings  
Content Analysis | n= 40  
ages 4-6 yrs  
ages 7-11 yrs (mean age 7yrs)  
35 drawings | To describe the elements of quality in children’s drawings of an ‘ideal’ hospital and gain an understanding of the perceptions children have of hospitalisation. | Children’s drawings highlighted expectations in the three main areas:  
**Built environment:**  
large block- like building or small homelike house; lots of windows, trees, playgrounds, colourful curtains and flowers |
| **Runeson**<sup>134</sup>  
2002  
Sweden | **Descriptive Observational** | n=21  
ages 5mos-16yrs  
(mean age 6.1 yrs)  
(2 pts <1 year old)  
All male | **To observe children’s needs during hospitalisation - body language/verbal expressions when interacting with parents and staff.** | **Rooms:** Entertainment (TV, video, toys, books), furnishings and food.  
**People:** Parents and nurses frequently people shown.  
Author noted limitation of study d/t subjective component involved in the drawing task and only one drawing done. Additionally noted is the question, are children capable of drawing an ‘ideal’ hospital that goes beyond their current experience? | **Children’s need varied in intensity according to situation presented; six categories identified. For threatening situations categories that relate to environment; need for what is familiar, to have control and parents family close by.** |
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Country</th>
<th>Methodology</th>
<th>Sample Size</th>
<th>Sample Characteristics</th>
<th>Description</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmela (7) 2010 Finland</td>
<td>Interpretive Phenomenology</td>
<td>Semi-structured interviews/pictures</td>
<td>n=89 ages 4-6yrs girls- 48 boys- 41 Kindergarten (49) &amp; (40) from two Paediatric surgical &amp; Neurology wards in a University hospital</td>
<td>To describe how 4-6 year olds cope with their fears associated with hospitalisation and how they explain their experiences.</td>
<td>Both healthy and sick children could express methods of coping with hospital-related fears, a fact that is probably not sufficiently exploited. The significance of pleasure through play, positive images, presence of parents and ‘security’ of child’s own toys all aided in the ability of children to cope with hospital-related fears.</td>
<td></td>
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</tr>
<tr>
<td>Tivorsak (19) 2004 USA</td>
<td>Descriptive Observational</td>
<td>n=54 ages 11-14yrs</td>
<td>Describes adolescent’s preferences regarding the milieu of Dr’s offices and waiting rooms.</td>
<td>Two major themes emerged: 1) Make interior design of offices less childish, more teen oriented &amp; more home-like. 2) Enhance waiting experience by providing interesting teen diversions, artwork reflects realistic images; hide intimidating medical equipment and supplies, use of neutral colours.</td>
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</tbody>
</table>
Appendix V - Excluded Studies:

   Reason for Exclusion: Did not meet population inclusion criteria; focus on parent views

   Reason for Exclusion: Did not meet inclusion criteria

   Reason for Exclusion: Did not meet inclusion criteria conference proceeding not research study

   Reason for Exclusion: Did not meet inclusion criteria

   Reason for Exclusion: Unable to retrieve article

   Reason for Exclusion: Did not meet participant criterion for eligibility-adult patients.

   Reason for Exclusion: Did not meet inclusion criteria

   Reason for Exclusion: Did not meet inclusion criteria

   Reason for Exclusion: Did not meet inclusion criteria

   Reason for Exclusion: Unable to retrieve article

**Reason for Exclusion:** Information duplicated 2005 study which is included

Hutton JD, Richardson LD. Healthscapes- The role of the facility and physical environment on consumer attitudes satisfaction, quality assessments and behaviors. Health Care Manage Rev. 1995; 20(2):48-61

**Reason for Exclusion:** Did not meet inclusion criteria


**Reason for Exclusion:** Did not meet inclusion criteria


**Reason for Exclusion:** Did not meet inclusion criteria


**Reason for Exclusion:** Did not meet inclusion criteria


**Reason for Exclusion:** Did not meet inclusion criteria


**Reason for Exclusion:** Did not meet inclusion criteria


**Reason for Exclusion:** Did not meet inclusion criteria. Adolescents were included in age grouping (16-35yrs) with only 4 in such group


**Reason for Exclusion:** Did not meet inclusion criteria
  
  **Reason for Exclusion:** Did not meet inclusion criteria, assessed effect of noise created by children on ER physicians

  
  **Reason for Exclusion:** Does not meet inclusion criteria

  
  **Reason for Exclusion:** Does not meet inclusion criteria, nurses and students

  
  **Reason for Exclusion:** Not available in English

  
  **Reason for Exclusion:** Did not meet inclusion criteria

  
  **Reason for Exclusion:** Did not meet inclusion criteria

  
  **Reason for Exclusion:** Did not meet population inclusion criteria-Development of QOL inventory

  
  **Reason for Exclusion:** Study results included in later 2007 study which was included in review.

Wolf Bordonaro GP. Art therapy with hospitalised paediatric patients: Florida State University College of Visual Arts and Dance; 2003.
  
  **Reason for Exclusion:** Did not meet inclusion criteria, addressed art therapy as an activity rather than design feature

  
  **Reason for Exclusion:** Did not meet outcome measures criteria for eligibility
References:

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