THE BARRIERS OF PHYSICAL ACTIVITY PROGRAMS WITHIN A SOUTHERN CALIFORNIA PEDIATRIC HOSPITAL

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COMMITTEE MEMBERSHIP

THESIS: THE BARRIERS OF PHYSICAL ACTIVITY PROGRAMS WITHIN A SOUTHERN CALIFORNIA PEDIATRIC HOSPITAL

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The primary objective of this study was to explore and analyze the challenges hindering the successful implementation of physical activity programs designed for patients in a pediatric hospital situated in Southern California. To achieve this, a qualitative case study approach was adopted, involving extensive investigation and analysis. The study focused on gathering in-depth insights into the barriers affecting the execution of physical activity programs. This involved conducting surveys and semi-structured interviews with a nurse and two child life specialists closely involved in patient care. Through these methods, data was systematically collected to highlight systemic, program-level, and interpersonal barriers obstructing the effective implementation of physical activity initiatives. The research specifically aimed to identify and categorize these barriers, examining their nuances and interconnections. The identified barriers were then rigorously compared with existing literature to establish similarities, differences, and potential implications. The findings of this investigation not only shed light on the multifaceted nature of barriers encountered but also provided valuable insights for overcoming these challenges. Based on these insights, the study proposed practical recommendations tailored to address the identified barriers and facilitate the successful establishment of a physical activity program in a pediatric hospital in Southern California. These recommendations were formulated considering the unique context and intricacies involved in pediatric care within the region.
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CHAPTER ONE

Introduction

The advantages of engaging in physical activity for individuals diagnosed with chronic illnesses are thoroughly documented and substantiated by a wealth of extensive research studies (Conn et al., 2008). One such study by Ouyang et al. (2019) suggests that group-based physical activity programs reduce physical and psychological symptoms of pediatric patients with cancer. Physical activity can also benefit those with non-cancer-related diagnoses. Studies by Hansen et al. (2017) and Jacobsen et al. (2016) have demonstrated its positive effects on patients with cardiovascular diseases. Similarly, research by Biddle and Asare (2011) and Sharma et al. (2006) underscores the benefits of physical activity on mental health. Despite the acknowledgment of these benefits, many individuals diagnosed with chronic illnesses continue to lead sedentary lifestyles (Conn et al., 2008). Having physical activity programs within hospitals for patients to participate in could potentially help patients engage in physical activity. Through this study, participants provided insight to the current opportunities for patients to engage in physical activity, potential barriers to implementing a physical activity program, and possible ways to navigate or mitigate those barriers. This chapter discusses the problems within existing research, the purpose of the study, the research questions, the significance of the study, and the limitations and delimitations found within the study.

This qualitative case study allowed for a deeper understanding about the barriers of implementing physical activity programs within a southern California pediatric hospital. A nurse and two child life specialists were surveyed and interviewed to collect data on systemic barriers, program level barriers, and interpersonal barriers present for physical activity programs. Through the data collected, the researcher was able to compare the addressed barriers to those in existing
literature, identify the barriers as systemic barriers, program level barriers, and interpersonal barriers, and determine strategies to potentially overcome the barriers. Systemic barriers are barriers that involve challenges at a larger scale involving the hospital or hospital policies. This can involve barriers including lack of funding and no space for a program to be held. Program level barriers are barriers that stem from the program itself. Some examples can include time and setting of programming, lack of individualization, lack of staffing, and exclusivity. Lastly, interpersonal barriers are barriers that interfere with program implementation on an individual scale. This can include examples like individual knowledge and education and lack of experience or exposure. Some barriers may overlap into multiple categories (i.e., an addressed barrier could be both interpersonal and program specific).

**Problem Statement**

The existing literature emphasizes the numerous advantages of physical activity for all individuals, including those with chronic illnesses. Nevertheless, individuals with chronic conditions often do not engage in physical activity. For instance, despite recommendations by the American Council of Exercise for children and adolescents with cancer to engage in similar levels of physical activity as their healthy counterparts, only approximately 10% of pediatric cancer patients in China meet these guidelines (Ouyang et al., 2019). Fatigue and physical discomfort have been identified as obstacles to physical activity for cancer patients (Midtgaard et al., 2009), and patients with chronic kidney disease also tend to reduce their physical activity (Cupisti et al., 2014). The consequences of reduced physical activity can include declines in cardiovascular and musculoskeletal fitness, disease progression, reduced quality of life, and an increased risk of death.
Despite the need for patients to engage in physical activity, hospitals often do not provide opportunities for them to do so, leading patients to seek physical activity opportunities elsewhere. This may be due to various barriers such as fear, lack of education, organizational challenges, and financial constraints (IJsbrandy et al., 2019). Some other challenges pediatric hospitals face can include the need for individualization (Oorschot et al., 2020) and having knowledgeable staff to run the program effectively (IJsbrandy et al., 2020). While hospital-based physical activity programs have been implemented in other parts of the world, there is a lack of literature on comparable programs in the United States, highlighting the need for more accessible opportunities for patients to engage in physical activity.

Pediatric hospitals, catering primarily to patients aged 18 and younger, are the focus of this study (HRSA.gov, 2022). It's worth noting that, except for programs exclusively for overweight or obese patients, the literature referenced primarily discusses initiatives outside of California. In California, some pediatric hospitals offer physical activity programs, but these are restricted to patients classified as overweight or obese, excluding other patients who could benefit from such services. Recognizing the rise in sedentary lifestyles among individuals with chronic illnesses and the lack of available opportunities, this study sought to identify the barriers to physical activity programs within pediatric hospitals in southern California.

**Purpose of Study**

The purpose of this investigation was to develop a thorough understanding of the barriers hindering the successful implementation of physical activity programs for patients in a pediatric hospital located in southern California. The barriers were analyzed at the systemic, program-level, and interpersonal levels. Despite the widespread availability of physical activity programs in hospitals, they were infrequently carried out in pediatric hospitals in southern California. This
study sought to understand why this difference exists and see how it compares to obstacles found in earlier studies. Some of these barriers in existing research include lack of individualization of programming, lack of knowledge among patients and families, differing opinions among healthcare professionals, financial burdens, inconvenience of time and setting, and exclusive criteria. The ultimate objective was to identify effective methods for tackling and overcoming these challenges during the implementation of physical activity programs. This knowledge can contribute to improving the healthcare of pediatric patients in southern California by providing healthcare professionals with this information to effectively implement a physical activity program.

**Research Questions**

Proposed Research Questions

*What are the barriers to the implementation of a physical activity program in a southern California pediatric hospital?*

*Are the identified barriers to implementing a physical activity program: systemic barriers, program level barriers, or interpersonal barriers?*

*How can the barriers of implementing a physical activity program be navigated or mitigated?*

**Significance of Study**

There is literature discussing the many benefits to patients of pediatric hospitals who participate in physical activity. However, many pediatric hospitals do not offer opportunities for patients to engage in physical activity. The significance of this study lies in investigating the interpersonal, program-level, and systemic barriers faced by healthcare professionals.
This study also investigated the identified barriers with the intent of determining if these are interpersonal barriers from healthcare professionals, program level barriers or systemic barriers within the pediatric hospital. This distinction was made through the analysis of the data collected and the emergence of common themes across the data.

Through this investigation, the barriers that have been identified in the existing literature were compared to the barriers identified within a southern California pediatric hospital. Through the identification and acknowledgement of these barriers, the healthcare professionals creating and leading these programs can be better equipped to mitigate or prevent many of these barriers by creating more effective, individualized programs.

Overall, this study has the potential to benefit many different people. It has the opportunity to benefit hospital staff and people implementing a physical activity program within a pediatric hospital through the awareness of common barriers and possible ways to navigate or mitigate them. It also can benefit patients and families through the support and advocacy to implement a physical activity program within a pediatric hospital. The study can lead to discussions by policy makers, programming directors, and health care professionals in terms of deepening the understanding of the potential barriers that could surface when implementing a physical activity program. Additionally, these discussions could serve to mitigate or prevent these challenges from occurring. It also helps to establish a framework for a more effective and individualized program.

**Limitations**

Research limitations can be defined as weaknesses within the study that are outside of the researcher’s control (Jansen, 2022). There were several potential limitations to this study. This was a qualitative study where information was gathered through surveys and semi-structured...
interviews of healthcare professionals that all work at the same pediatric hospital. These healthcare professionals include a nurse and two child life specialists. Biases could have been present, and the information gathered could be difficult to verify as it may be subjective. To help mitigate this limitation, data was collected from two data sets. These included surveys and semi-structured interviews. Gathering information through surveys and interviews had the potential to be a limitation as there is no way to verify if a participant is being completely honest, showing bias and disclosing as much information as possible.

An additional research constraint resulted from the requirement of a gatekeeper to facilitate participant recruitment. Given the hospital-based context of this study, the recruitment process relied on the cooperation of several gatekeepers, including a colleague with hospital connections and department heads from the nursing, physical therapy, occupational therapy, and child life specialist departments. These department head gatekeepers were provided with information via email to aid in participant recruitment and played a pivotal role in this process. Regrettably, despite outreach efforts, the department head responsible for the physical and occupational therapy department did not respond to the researcher's emails, thereby impeding the inclusion of physical therapists and occupational therapists in this study.

The lack of physical and occupational therapists participating in this study was an additional limitation. Physical therapists and occupational therapists play a major role in movement and ambulation for patients at the pediatric hospital. The inability to gather their input on the views of physical activity, potential barriers when implementing a program, and possible solutions to the addressed barriers from these therapists, impacted the findings of this study as their valuable input was not able to be considered.
Delimitations

Research delimitations are defined as choices a researcher makes in relation to the scope of the research (Jansen, 2022). There were four types of healthcare professionals that were recruited to be participants in this study: nurses, physical therapists, occupational therapists, and child life specialists. These four types of healthcare professionals were specifically chosen because of their role within the hospital. Nurses are healthcare professionals who are consistently involved in a patient’s time at the hospital. They are the ones taking patients' vitals, helping them eat or drink if necessary, checking in on them, and more. Physical therapists and occupational therapists are healthcare professionals who are involved in physical activity. They are watching how the child moves in both gross and fine motor patterns. Also, physical therapists and occupational therapists tend to work closely with adapted physical education teachers in school settings. This could reflect in the hospital setting as well. Child life specialists help make a child’s time more enjoyable and more “kid-friendly”, they could be incorporating some physical activity in their time with patients. Additionally, all four types of these healthcare professionals also have good communication with patients and families, so their input can be included as well.

Having all healthcare professionals working for the same pediatric hospital was another delimitation for this study. Although gathering data from multiple hospitals would have helped to generalize data throughout southern California, focusing on one hospital allowed for a deeper understanding of the hospital’s values and views on physical activity. Through this study, healthcare professionals were surveyed and interviewed providing insight into their personal beliefs and the hospital’s views on physical activity. This study could serve as a point of departure for future studies where information can be gathered from multiple settings. Another way this can be a delimitation is through the identifier of a “southern California pediatric
hospital”. There are limited pediatric hospitals in southern California, so using that identifier can cause speculation on which hospital the participants work at.

**Conceptual and Operational Definitions**

**Aerobic Exercise:** A type of exercise that increases your heart rate.

**Anxiety:** An emotion felt when a person has worried thoughts, feelings of tension, and experience a physical change (i.e., rise in blood pressure) usually associated with something occurring in the future (American Psychological Association, 2022).

**Barriers to Physical Activity:** Addressed challenges that interfere with an individual participating in physical activity.

**Case Study:** A type of research method in which data is collected in a descriptive manner on a single phenomenon (Merriam, 1988, p. 21)

**Child Life Specialist:** Healthcare professionals who make a patient’s time in the hospital more “kid friendly” making their experience less stressful and scary. These individuals also support patients and families through advocating for them and using different ways to help a patient better understand something.

**Pediatric Hospital:** Also referred to as a children’s hospital, A hospital that provides healthcare services from birth to usually 18 years old.

**Chronic Illness:** Typically, when someone experiences symptoms for at least a year that limit daily living activities and require ongoing medical attention (CDC, 2022).

**Depression:** A psychiatric medical illness that has a negative impact on how you act, how you think, and how you feel (American Psychiatry Association, 2020). Usually associated with negative emotions like sadness and loss of interest.
**Gatekeeper:** a person who controls research access and makes the final decision as to whether to allow the researcher access to undertake the research

**Healthcare Professionals:** Individuals whose occupations are to maintain humans’ health through various forms of medical care.

**Individualized Programs:** A plan or program that is created to specially meet a person’s unique needs.

**Motivation:** Desire to do something that could be driven intrinsically or extrinsically

**Neuromuscular Diseases:** A medical illness that affects the nerves and muscles in our body that impacts muscle function (Mayo Clinic, 2022).

**Occupational Therapist:** Someone who works with individuals on everyday activities like writing, eating, buttoning, and putting on shoes (Finlan, 2020).

**Phenomenology:** Studying the experiences and thoughts of individuals from a first-person point of view (Smith, 2013).

**Physical Therapist:** Health care professionals that are movement experts who help individuals’ quality of life through exercise, hands-on-care, and patient education (American Physical Therapy Association, 2022).

**Qualitative Research:** A type of research that explores topics through gathering data from participants’ behaviors, beliefs, and experiences (Tenny et al., 2022).

**Quality of Life:** A concept that involves comparing and conceptualizing the positive and negative areas of life (CDC, 2018).

**Self-Esteem:** Confidence and respect for one’s own worth or abilities

**Socializing:** The act of interacting with others.
**Supported Ambulation:** Moving with assistance of equipment or another person for additional support.

**Triangulation:** A method used in qualitative research where data is gathered in multiple ways to check information and establish validity.

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CHLA</td>
<td>Children’s Hospital of Los Angeles</td>
</tr>
<tr>
<td>CKD</td>
<td>Chronic Kidney Disease</td>
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<tr>
<td>CITI</td>
<td>Collaborative Institutional Training Initiative</td>
</tr>
<tr>
<td>EXPERT</td>
<td>Exercise Prescription in Everyday Practice and Rehabilitative Training</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>IRB</td>
<td>Institutional Review Board</td>
</tr>
<tr>
<td>NMD</td>
<td>Neuromuscular Disease</td>
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<tr>
<td>QOL</td>
<td>Quality of Life</td>
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CHAPTER TWO

Review of Literature

The benefits of physical activity for patients at pediatric hospitals have been addressed through existing literature mentioned throughout this chapter. Pediatric hospitals worldwide have recognized the benefits for their patients. For example, in the Netherlands, 17% of cancer treatment facilities have physical activity programs (IJsbrandy et al., 2019). However, researchers have discovered that while the programs are created to better support the patients, there is a lack of consistency and implementation (IJsbrandy et al., 2020). Although there is not much existing research on physical activity programs within pediatric hospitals and the implementation of the programs, this review of literature addresses what has been uncovered.

This chapter will identify the advantages of physical activity, its connection to chronic diseases (Oorschot et al., 2020), the obstacles physical activity programs face (IJsbrandy et al., 2020), and strategies for starting such programs (Konstantinidou et al., 2002). This information stems from existing literature related to the topic of physical activity programs within a hospital setting.

The Benefits of Physical Activity

Physical activity can be defined as “any bodily movement produced by skeletal muscles that results in energy expenditure” (Caspersen et al., 1985). Physical activity can occur during leisure activities, work responsibilities, or when transporting from one place to another (World Health Organization, 2022). For this particular study, we focused on physical activity that occurs in leisure and recreational activities. Physical activity helps improve general well-being and overall quality of life (Oorschot et al., 2020). Engaging in physical activity is important and ignoring this reality can affect daily life functions (Oorschot et al., 2020). Daily life functions are
activities an individual completes independently to take care of oneself and/or accomplish tasks (Edemekong et al., 2022). Additionally, psychological benefits are realized when engaging in physical activity (Mason & Holt, 2012). For example, physical activity can increase an individual’s self-confidence, emotional awareness, and motivation through the social component of physical activity (Ouyang et al., 2019). Physical activity also increases sensory feedback to the brain and increases sleep efficiency (Ouyang et al., 2019). Moreover, physical activity can especially benefit individuals who have been diagnosed with chronic illnesses, such as cancer, kidney disease, cardiovascular disease, and neuromuscular disease.

**Chronic Disease and Physical Activity**

The Centers of Disease Control and Prevention defines chronic diseases as medical conditions that require ongoing medical attention and/or affect daily living activities (2022). Chronic diseases typically last at least one year and can be caused by tobacco use, poor nutrition, physical inactivity, and excessive alcohol use (CDC, 2022). These diseases usually worsen over time and typically cannot be cured (National Cancer Institute, n.d.). On a broad scale, physical activity can be beneficial for children diagnosed with chronic diseases as it helps to alleviate physical symptoms and psychological effects of condition and treatments (Ouyang et al., 2019), improves overall quality of life (Masajtis-Zagajewska et al., 2019), and reduces chance of mortality (Friedenreich et al., 2016). These benefits address the need for physical activity programs within pediatric hospitals and why there is a desire to understand the potential barriers for implementing a program. To further address the need for individuals with chronic diseases to engage in physical activity, an overview of physical activity and specific chronic diseases will be
discussed. These chronic illnesses include cancer, kidney-related diseases, cardiovascular diseases, neuromuscular diseases, and mental illnesses.

**Individuals Diagnosed with Cancer.** There is a strong presence of inactivity among patients during cancer treatment as well as post-treatment. Midtgård et al. (2009) reported that barriers to cancer patients participating in physical activity could be due to fatigue (74% of participants) and physical discomfort (45% of participants) despite the majority of patients being aware of the importance of physical activity. However, Ouyang et al. (2019), reported that participating in group-based physical activity programs help to alleviate the physical and psychological side effects of treatment including fatigue and nausea and lowers the mortality rate of pediatric patients with cancer. Other studies have reported that engaging in high levels of physical activity is associated with a lower risk of cancer recurring. One such study by Friedenreich et al. (2016) describes exercise like a medicine, and that through understanding the cancer’s biology, one could prescribe exercise with different doses, timing, and scheduling. Depending on the amount of physical activity, the chances of cancer recurring can be reduced by 20-60% (van de Wiel et al., 2018). This reduction could help patients save thousands of dollars in long-term health care (van de Wiel et al., 2018). Exercise is a way to help reduce side effects, mortality, and costly health care (Friedenreich et al., 2016).

Engaging in physical activity also helps improve cancer patients’ cardiovascular function and musculoskeletal fitness (Ouyang et al., 2019). Fiuza-Luces et al. (2017), conducted a study with pediatric oncology patients and discovered that patients who participated in the in-hospital exercise program increased muscle strength while undergoing chemotherapy, while patients who did not participate in the in-hospital exercise program showed a decrease in muscle strength. It
also helps lessen the negative emotions associated with many of the side effects, such as hair loss and skin changes, which often are the result of different cancer treatments (Ouyang et al., 2019).

The findings of Ouyang et al. (2019) attribute the decrease of emotions with the social aspect of physical activity because individuals are interacting and engaging with individuals who are experiencing similar challenges. These benefits have been recognized by the *American Council on Exercise* as they recommend the same amount of physical activity for children and adolescents with cancer as for healthy children and adolescents (Ouyang et al., 2019).

Unfortunately, in China, approximately only 10% of pediatric patients diagnosed with cancer meet these physical activity guidelines (Ouyang et al., 2019).

**Individuals Diagnosed with Kidney-Related Diseases.** It is widely known that physical activity helps prevent and treat obesity, diabetes, and insulin resistance. However, a reduction in physical activity is seen in patients diagnosed with chronic kidney disease (CKD) even though obesity, diabetes, and insulin resistance are symptoms and side effects that lead to the onset and/or progression of CKD (Cupisti et al., 2014). Physical activity is crucial for patients at all stages of kidney disease, as inactivity may result in weakening of musculoskeletal fitness, decreasing physical capacity, and death (Masajtis-Zagajewska et al., 2019). Among the benefits of participating in physical activity that are specific to chronic kidney diseases include better blood pressure, serum lipids, insulin sensitivity, and inflammation and a lower risk of metabolic syndrome (Masajtis-Zagajewska et al., 2019). Cupisti et al. (2014) concluded that participation in physical activity prevents the loss of lean body mass, while improving overall quality of life.

Physical activity is also important for individuals with chronic kidney disease and/or those who have undergone a kidney transplant. This is the case because these individuals are
more at risk for cardiovascular diseases (Masajtis-Zagajewska et al., 2019). In a study about patients with cancer by Friedenreich et al. (2016), and corroborated by Heiwe and Jacobson (2011), it was reported that when prescribing exercise to patients with CKD, dose and timing should be considered when attempting to achieve a specific outcome. When considering the timing of physical activity for patients going through dialysis treatments, Konstantinidou et al. (2002) determined that it is more beneficial for an individual to participate in physical activity on non-dialysis days.

**Individuals Diagnosed with Cardiovascular Diseases.** When it comes to cardiovascular health, the benefits of physical activity are well known. Ganzit and Stefanini (2012) reported that “physical activity is undoubtedly associated with a reduced incidence of hypertension.” (p. 23). They go on to report that aerobic physical activity also reduces blood pressure, lowers cholesterol levels, and other cardiovascular diseases. This is consistent with the general physical activity recommendations presented in Vanhees et al. (2012)’s conclusion that increased physical activity decreases the chances of developing cardiovascular diseases.

The 2007 European guidelines recommended that people should participate in moderate physical activity for 30 - 45 minutes, four to five days a week to prevent cardiovascular diseases (Graham et al., 2007). Hansen et al. (2017) used the Exercise Prescription in Everyday Practice and Rehabilitative Training (EXPERT) tool which defined diagnostic criteria for an individual's specific cardiovascular diseases and set goals accordingly. Using that information, the tool designed and prescribed an exercise training program. The researchers created the EXPERT tool which designs individualized exercise programs for those with cardiovascular diseases, allowing them to experience the benefits of physical activity in a safe way.
Ganzit and Stefanini (2012) also reported on the idea of individualizing exercise programming for patients with cardiovascular diseases. Their research acknowledges the benefits of physical activity, but also strongly recommends that physicians design and suggest levels and amounts of activity that is safe for each patient. Jacobsen et al. (2016) implemented a home-based physical activity program facilitated through Zoom. They concluded that patients who participated in this program had improvements in their overall quality of life. This includes the child’s physical function, school function, and psychosocial function (Masajtis-Zagajewska et al., 2019).

**Individuals Diagnosed with Neuromuscular Diseases.** People who are diagnosed with neuromuscular diseases (NMD) are challenged with symptoms that often lead to an inactive lifestyle. These symptoms include muscle fatigue, poor endurance capacity, and pain (Oorschot et al., 2020). The Oorschot et al. (2020) study included participants with NMD caused by inactivity. Unfortunately, there were no results reported in the study indicating whether this physical activity program was beneficial for those with NMD. However, it did address the importance of an individualized program to address the individual’s different fitness levels (Oorschot et al., 2020).

Di Stefano et al. (2020) examined the increase of inactivity due to the COVID-19 pandemic in patients with NMD. The consequences of inactivity addressed the importance for people with NMD to stay active to slow the progression of the disease. Unfortunately, they found that the sedentary lifestyles adopted during quarantine had a negative impact on individuals with NMD (Di Stefano et al., 2020). Anziska and Sternberg (2013) discussed some exercise training approaches for patients with NMD. One approach included exercises targeting specific muscle
groups rather than overall aerobic training or strength training. This approach allows for the
exercise to be more individualized as it focuses on a patient’s specific weaknesses due to their
NMD (Anzika & Sternberg, 2013). Other approaches include balance and proprioceptive training
and low impact exercise including aquatic therapy and supported ambulation (Anzika &
Sternberg, 2013).

**Individuals Diagnosed with Mental Illnesses.** Physical activity is often linked to an
improvement of cognitive functioning, academic achievement, and social interactions (Biddle &
Asare, 2011). Recognizing the benefits that physical activity has on mental health is of
paramount importance as physical activity programs can be valuable to those with severe mental
illnesses and those with other illnesses and diseases that also suffer from mental health
challenges.

Ahn and Fedewa (2011) completed a comprehensive review of literature identifying an
increase in physical activity levels with the reduction of depression, anxiety, and other mental
illnesses. Subsequently, Biddle et al., (2019) conducted an updated review on the causal
association of physical activity across three mental health outcomes: depression; self-esteem; and
cognitive functioning. It was determined that causal association exists for cognitive functioning,
research partially supports the causal association for depression, however, there is not enough
information to determine the causal association for self-esteem (Biddle et al., 2019). From a
physiological perspective, McGregor (2021) described what happens in the brain when one
participates in physical activity. It was noted that while exercise is not a direct solution to stress,
it does decrease the number of stress receptors in the hippocampus part of the brain (McGregor,
Another way exercise impacts the brain is by releasing endorphins. This release allows for people to experience a peaceful, more relaxed feeling after working out (McGregor, 2021). This can be associated with the decrease of anxiety or depression one may feel after participating in physical activity. Although the benefits of physical activity have been acknowledged when it comes to mental health, Rebar and Taylor (2017) acknowledge that there is more to helping mental health than just participating in physical activity. Other notable factors for individuals with mental health issues include demographics and access to physical activity, previous experiences with physical activity, and current emotional and motivational states (Rebar & Taylor, 2017).

With the stated benefits of individuals diagnosed with chronic illnesses participating in physical activity, it is beneficial to look at what physical activity opportunities are available within a hospital setting.

*The Prevalence of Physical Activity Programs in Hospital Settings*

Physical activity programs have been prevalent in some hospital settings, as health care professionals have realized the need for such programs and the benefits they afford. IJsbrandy et al. (2020) supports this argument stating that while healthcare professionals acknowledge there is a need for these programs, there is a consistent lack of implementation. IJsbrandy et al. (2019) reported that only 17% of cancer treatment facilities in the Netherlands have physical activity programs. Among the current programs, many are general and fail to meet the needs of the individual patients with specific medical conditions, which often discourages participation.
(IJsbrandy et al., 2019). Conversely, some research has modestly addressed the need for individualized programs in order to be successful (Oorschot et al., 2020). Physical activity programs currently in place in the Dutch health care system are offered by rehabilitation physicians within hospitals or clinics or by other professionals outside of the hospital (IJsbrandy et al., 2020). These other professionals can include, but are not limited to, sports-medicine physicians and sports trainers (IJsbrandy et al., 2020).

Through addressing what current physical activity programs look like in hospital settings, there is a strong desire for more consistent implementation of physical activity programs in hospitals throughout the world. Understanding the benefits of physical activity will further support this argument and allow for a greater understanding of the purposes of physical activity programs within a hospital. Although there is a great need for physical activity programming within hospitals with many benefits, there are some challenges when implementing a physical activity program.

**Barriers When Implementing Programs**

There are various barriers identified throughout literature addressing the barriers of program implementation. The following are identified as barriers on public health program implementation, barriers on implementing physical activity programs outside of the hospital setting, and barriers on implementing physical activity programs in the hospital setting.

**Barriers When Implementing Public Health Programs.** Public health focuses on various areas when it comes to individual’s health and wellness. According to the *California Department of Public Health website*, there are programs available for infectious diseases, food
and drug safety, tobacco control, nutrition education and obesity prevention, family health, emergency preparedness and more.

**Table 1**

*Typology of Barriers Addressed in Literature when Implementing Public Health Programs*

<table>
<thead>
<tr>
<th>Interpersonal Barriers</th>
<th>Program-level Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lack of knowledge and/or experience (Nantsupawat et al., 2020; Sidamo et al., 2021)</td>
<td>- Available resources and facilities (Maqbool &amp; Khan, 2020; Sidamo et al., 2021)</td>
</tr>
<tr>
<td>- Personal views or priorities (Légaré et al., 2008; Nantsupawat et al., 2020; Sidamo et al., 2021)</td>
<td>- Need for culturally competent programs (Nantsupawat et al., 2020)</td>
</tr>
<tr>
<td></td>
<td>- Difficulty in collaboration and communication among healthcare professionals (Légaré et al., 2008)</td>
</tr>
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<td></td>
<td>- Cost effectiveness (Richardson 2012; Sidamo et al., 2021)</td>
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<table>
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<tr>
<th>Societal Barriers</th>
<th>Systemic Barriers</th>
</tr>
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<tbody>
<tr>
<td>- Community involvement and influence in public health program/policy (Maqbool &amp; Khan, 2020; Richardson 2012; Sidamo et al., 2021)</td>
<td>- Administrative commitment and support (Maqbool &amp; Khan, 2020)</td>
</tr>
<tr>
<td>- Need for culturally competent programs (Nantsupawat et al., 2020)</td>
<td>- Communication and media (Maqbool &amp; Khan, 2020; Sidamo et al., 2021)</td>
</tr>
<tr>
<td>- Cultural and religious norms (Sidamo et al., 2021)</td>
<td>- Government policies (Maqbool &amp; Khan, 2020)</td>
</tr>
<tr>
<td></td>
<td>- Lack of time (Légaré et al., 2008; Nantsupawat et al., 2020; Richardson 2012)</td>
</tr>
<tr>
<td></td>
<td>- Lack of quality assessment tools (Nantsupawat et al., 2020)</td>
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Sidamo et al. (2021) and Maqbool and Khan (2020) both explored the implementation barriers for COVID-19 prevention and control. Sidamo et al. (2021) identified barriers on three levels: personal, institutional, and societal. Each of the barriers also revolved around one of the
identified themes: accessibility, acceptability, availability, contact and use, and effective implementation (Sidamo et al., 2021). Maqbool and Khan (2020) identified ten barriers on the implementation of public health and social measures to prevent COVID-19 ranging from community involvement, administrative commitment and support, available resources and facilities, communication and media, and government policies.

Nantsupawat et al. (2020) and Légaré et al. (2008) discuss barriers identified by healthcare professionals for varying public health programs. Nantsupawat et al. (2020) discusses nurses’ identified barriers on health literacy program implementation. The results determined that there was a lack of knowledge on health literacy, a lack of time for health literacy training, and health literacy being viewed as less of a priority compared to other issues (Nantsupawat et al., 2020). It was also mentioned that there is a lack of quality health literacy assessment tools available as well as assessments and screening taking up too much time (Nantsupawat et al., 2020). The final barrier mentioned involved the challenges of implementing a culturally competent program for patients of minority groups and/or that use different languages (Nantsupawat et al., 2020). Légaré et al. (2008) discovered that many healthcare professionals identified time constraints as a prominent barrier when implementing a shared-care model. Another barrier identified was the difficulty in collaboration and differences in opinions for patient care (Légaré et al., 2008). These barriers are similar to the barriers identified by healthcare professionals regarding physical activity programs within the hospital setting (IJsbrandy et al., 2019).

Richardson (2012) addresses barriers to investing in public health on a more general level. Although there are benefits to investing in public health (Munro, 2012), there are still
barriers present in public health programming. Some of these barriers include cost effectiveness, the belief that prevention can end up costing more than treatment long term, time and availability for interventions, and the influence of community as professionals recognized that evidence is not the only contribution to policy (Richardson, 2012).

**Barriers When Implementing Physical Activity Programs Outside of the Hospital**

**Setting.** Although the benefits of physical activity are widely known (Troiano et al., 1995), there are still barriers present in the implementation of physical activity programs and/or the participation in physical activity programs.

**Table 2**

*Typology of Barriers Addressed in Literature when Implementing Physical Activity Programs*

<table>
<thead>
<tr>
<th>Interpersonal Barriers</th>
<th>Societal Barriers</th>
<th>Systemic Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Self-conscious, low self-esteem (Robbins et al., 2003)</td>
<td>· Peer pressure (Jenkinson &amp; Benson, 2010)</td>
<td>· Access to facilities and suitable teaching spaces (Jenkinson &amp; Benson, 2010)</td>
</tr>
<tr>
<td>· Lack of motivation and/or energy (Jenkinson &amp; Benson, 2010; Robbins et al., 2003; Tergerson &amp; King, 2002)</td>
<td></td>
<td>· Access to necessary equipment (Jenkinson &amp; Benson, 2010)</td>
</tr>
<tr>
<td>· Lack of time (Robbins et al., 2003; Tergerson &amp; King, 2002)</td>
<td></td>
<td>· Cost and accessibility (Jenkinson &amp; Benson, 2010)</td>
</tr>
<tr>
<td>· Prioritizing other tasks and obligations (Robbins et al., 2003; Tergerson &amp; King, 2002)</td>
<td></td>
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</table>
Robbins et al. (2003) identified emerging barriers among adolescent girls in the participation of physical activity. The following were identified barriers: feelings of self-consciousness and low self-esteem, lack of motivation, lack of time, and prioritizing other tasks or obligations (Robbins et al., 2003). Expanding on Robbins et al. (2003), Tergerson and King (2002) compared the barriers of physical activity in male and female adolescents. Similar to the identified barriers in Robbins et al. (2003), both male and female adolescents stated that the top three reasons they were not able to exercise were not having the time, prioritizing other tasks, and being too tired (Tergerson & King, 2002).

Jenkinson and Benson (2010) conducted a study on the barriers of physical education and physical activity in secondary schools. They found that access to facilities, suitable teaching spaces, and equipment were the top barriers when surveying physical education teachers and department heads. These findings also complement the findings of studies focusing on the primary school setting (Barroso et al., 2005; DeCorby et al., 2005; Dwyer et al., 2003; Morgan & Hansen, 2008). Some additional barriers mentioned include the cost and accessibility of physical activity programs provided by the schools, low student engagement due to lack of interest and motivation and/or peer pressure (Jenkinson & Benson, 2010). The low levels of student interest, motivation, and energy correlate with the findings of Robbins et al. (2003) and Tergerson and King (2002).

**Barriers When Implementing Physical Activity Programs in the Hospital Setting.** From the literature mentioned above, it has been determined that there are many benefits to physical activity for everyone. However, when it comes to patients in a pediatric hospital, they often do not have access to physical activity programs.
IJsbrandy et al. (2019) identified these barriers in six domains using Grol and Flottorp’s theoretical models. These domains included physical activity programs, patients, healthcare professionals, social setting, organization, and law and governance. The barriers identified throughout the study fall into at least one of the domains when implementing physical activity programs.

**Table 3**

*Typology of Barriers Addressed in Literature when Implementing Physical Activity Programs in the Hospital Setting*

<table>
<thead>
<tr>
<th>Physical Activity Programs</th>
<th>Patients</th>
<th>Healthcare Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Need for individualization</td>
<td>· Unaffordable for some patients</td>
<td>· Lack of knowledge and skills regarding physical activity programs</td>
</tr>
<tr>
<td>· Lack of evidence on the effects of program</td>
<td>· Patients’ lack of knowledge about their own health and the healthcare system</td>
<td>· Lack of time/Extra work necessary for screening and referring patients in a shared-care model</td>
</tr>
<tr>
<td>· Determining goals of program</td>
<td>· Lack of time to participate in program</td>
<td>· Different views and opinions on participating in physical activity</td>
</tr>
<tr>
<td>· Exclusivity of programs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Setting</th>
<th>Organization</th>
<th>Law and Governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Concerned about the negative influence of patients’ social network and communities</td>
<td>· Concerns regarding the shared-care model</td>
<td>· Uncertain on insurance coverage of program</td>
</tr>
<tr>
<td></td>
<td>· Insufficient communication and collaboration among healthcare professionals</td>
<td></td>
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</tbody>
</table>
One barrier that was mentioned was how the programs are not individualized. A lack of individualization can lead to higher dropout rates from the program (Oorschot et al., 2020). The lack of individualization could be linked to another barrier that healthcare professionals do not have the knowledge and skills for a physical activity program and/or do not commit to making it successful (IJsbrandy et al., 2020).

In the Oorschot et al. (2020) study, healthcare professionals only received one day of training about aerobic exercise, training principles, and testing material. This is simply not enough time to learn how to properly create and facilitate a physical activity program. Due to the lack of knowledge and skills, the result is often a shortage of qualified people who can lead the program allowing not as many patients to be able to participate (IJsbrandy et al., 2019). Not only are healthcare professionals lacking qualified information, but they lack guidance in terms of how to help their patients find the right program (IJsbrandy et al., 2019). In interviews from the IJsbrandy et al. (2019) study, patients stated that even when they knew physical activity was important, they didn’t receive the proper success from their healthcare professionals for a referral.

The uncertainty in insurance coverage of the program is another barrier that may occur. Patients and their families are already paying for so much that they may not have the financial resources to participate in additional programs (IJsbrandy et al., 2019). In the Netherlands, patients need to be diagnosed with psychological or social problems as well to participate in the physical activity programs located in rehabilitation hospitals or clinics (IJsbrandy et al., 2020). Not only do patients need an additional diagnosis, but it is yet another out of pocket expense (IJsbrandy et al., 2020).
Another barrier is that patients or their parents or guardians may not have the expertise to see the benefits of physical activity, and instead may fear that it will make their health worse because of their conditions (IJsbrandy et al., 2020). Ross et al. (2018) addresses that many patients complained and had limited motivation to engage in physical activity. Additionally, they were often too afraid of injuring themselves. This could stem from the patients and their families’ lack of education about physical activity. They are often unaware of the benefits that can outweigh the risks from participating in physical activity. Takken et al. (2009) also addresses parental views toward physical activity. After conducting interviews from parents of child cancer survivors, many parents stated how their children were more vulnerable. This resulted in them restricting their childhood daily activities. These views can also be aligned with cultural or religious beliefs as well. For example, Ouyang et al. (2019) suggested that some Chinese cultural views may cause people to believe that physical activity may waste yang-qi in the body and worsen the patient’s condition; therefore, they suggest that rest helps to restore balance of yin-yang and the flow of qi. They believe that this balance and flow helps with immunity and prevents metastasis, the spread of cancer cells (Ouyang et al., 2019). There also tends to be inconsistencies and lack of communication among primary and secondary health care professionals. IJsbrandy et al. (2020) provided a quote from one of the interviews with a healthcare professional that demonstrated the lack of communication and the inconsistencies. The healthcare professional was explaining how they do not know what to do when a patient asks them if they are able to play sports again, the healthcare professional responds by saying one thing that unknowingly disagrees with the other healthcare professional.
Additionally, the inaccessibility and inconvenience of timing and setting are a barrier. Between different treatments and appointments and the dependency on family members for transportation, it may be difficult for patients to make physical activity programs when set at a certain place and time (Jacobsen et al., 2016). There are many benefits when participating in a physical activity program, so it is important to make sure it is easily accessible (IJsbrandy et al., 2019). This is consistent in the research findings of Konstantinidou et al. (2002). Although it was determined that physical activity was most effective during non-dialysis days, patients preferred to participate in physical activity on dialysis days as they were already at the hospital receiving treatment (Konstantinidou et al., 2002). Along with accessibility, it is important that the programs are inclusive. Some programs have exclusive criteria as to who can participate. For example, at the Children’s Hospital of Los Angeles, only children who are overweight and obese can participate (Kids n fitness©, 2015). That precludes many other patients who could experience the benefits that physical activity could bring to their individual situations.

Overall, the identified barriers work to allow for a more strategic approach when creating a physical activity program within a hospital setting.

Creating Physical Activity Programs in Hospital Settings

When creating a physical activity program, it is important that the patients, families, and healthcare professionals are all educated about the benefits that physical activity can have on the patients’ conditions (Ouyang et al., 2019). Providing more education about physical activity and patients’ levels of physical activity will improve as they are reassured in the safety and the benefits of the program (Ouyang et al., 2019). The importance of individualization within the program has been addressed across many studies. What has been consistently reported in these
studies is that participants prefer a choice of what skills or activities and whether it is in an individual or group setting (IJsbrandy et al., 2019).

Participants appreciate programs more when they feel that their individual needs are being met (IJsbrandy et al., 2019). Also, within the program, it is important to create a social environment that makes everyone comfortable and feel welcomed. In IJsbrandy et al. (2019)’s study, patients stated that they enjoyed their program involving people with cancer because they felt more comfortable with people in similar situations. It was also recommended that the program be easily accessible to reach the targeted populations. Some participants prefer coming to the hospital for physical programs; however, others prefer to stay away from the hospital when they aren’t receiving treatment or going to appointments (IJsbrandy et al., 2019). Jacobsen et al. (2016) provided a web-based program that was easily accessible to participants because they could do it at home on their own timing. However, when doing a web-based physical activity program, it is important to still find ways to incorporate the social aspects as those are found to be valued and beneficial as well.

Conclusion

The benefits of physical activity programs for patients with chronic health diseases are realized by healthcare professionals. Moreover, the need for physical activity programs inside pediatric hospitals is also apparent. There is a very low prevalence of physical activity programs in pediatric hospitals around the world, but even fewer of these programs exist in the United States. After identifying many potential barriers and challenges that could be affecting physical activity programs within pediatric hospitals, the following research questions have been identified:
What are the barriers to the implementation of a physical activity program in a southern California pediatric hospital?

Are the identified barriers to implementing a physical activity program: systemic barriers, program level barriers, and interpersonal barriers?

How can the barriers of implementing a physical activity program be navigated or mitigated?

The information from this chapter expressed the need for physical activity programs in a hospital-based setting and addressed the gap in existing literature with limited programs and studies taking place in the United States, nonetheless southern California. This information also allowed the data collected to be compared with what has already been addressed by existing literature.
CHAPTER THREE

Methodology

This chapter discusses the methodology behind the study. It also discusses how the study was designed, the participants and setting of the study, how recruitment of the participants occurred, the data collection methods and how they were implemented to collect the data, and the data analysis process. Quality control and strategies for ethical concerns are also addressed.

Study Design

The purpose of this study was to gain a deeper understanding of the existing systemic barriers, program level barriers, and interpersonal barriers of implementing physical activity programs for patients within a southern California pediatric hospital. With one exception, the research suggests that most physical activity programs housed within hospitals exist outside of southern California. The one exception being the program at the Children’s Hospital of Los Angeles. The goal of this study was to identify the barriers to the implementation of a hospital based physical activity program in southern California compared to the barriers identified elsewhere. Identifying these barriers can lead to discussions related to how to prevent or overcome them.

Since this study demonstrates a focus on depth, rather than breadth of information, a qualitative approach was adopted (Patton, 2015). Patton notes that qualitative research is the best research method for identifying feelings, values, attitudes, and perceptions. Given the exploratory nature of the research questions, a case-study design using qualitative methods of data collection was employed. Merriam (1998) defines a case study as “an intensive, holistic description and analysis of a single instance, phenomenon, or social unit” (p. 21). For this study, the defined case was a southern California pediatric hospital.
Crowe et al., (2011) identifies four stages for planning when conducting a case study. (1) Defining the case. This stage stems from the created research question(s) that are driven from the existing literature surrounding the topic. Each case has a pre-determined boundary which illuminates a particular group, organization, or geographical location (Yin, 2009). For this study, the defined case was the Southern California Pediatric Hospital. (2) Selecting the case(s). This stage involves choosing the group of individuals, organization, processes, etc. that will allow for data to be gathered in relation to the research questions (Stake, 1995). In this study, healthcare professionals from the same pediatric hospital shared information regarding barriers of physical activity programs within their hospital. (3) Collecting the data. Data can be collected through various methods. For qualitative research, it is recommended that multiple methods are used to support the findings and increase the validity (Crowe et al., 2011). Data collection methods included two data sources: a survey and interview transcripts. (4) Analyzing, interpreting, and reporting case studies. After the data was collected, they were analyzed and interpreted to discover the findings. The plan for data analysis is addressed later in this chapter.

A phenomenological framework was employed to discover the structure and essence of experiences contributing to the systemic barriers, program level barriers, and interpersonal barriers experienced by the health care professionals that participated in this study. Moustakas (1994) suggests that phenomenological research methods are particularly suited to uncovering meanings that people assign to their own individual experiences. Creswell and Miller (2000) further suggest that people attain this knowledge by sensing their world and then giving meaning to these senses through interactions and discussions.
Participants and Setting

Participants included healthcare professionals from the Southern California Pediatric Hospital. The healthcare professionals specifically targeted were nurses, physical therapists, occupational therapists, and child life specialists. These healthcare professionals were targeted as they each provide opportunities to be physically active. Nurses spend a lot of time with patients and their families as well as doctors which can allow for insight beyond just the participants’ views. Occupational therapists and physical therapists work on developing and progressing motor skills which are important for physical activity. Lastly, child life specialists work to create a more “kid-friendly” environment inside the hospital for patients, which can involve physical activity. Each of the participants are employed by the same southern California pediatric hospital. Participation in this study was not limited by gender, sexuality, age, race, or ethnicity. Participants include nurses, physical therapists, occupational therapists, and child life specialists.

A purposive, volunteer-based technique was used to obtain the sample followed by the snowball method in an effort to get more participants. These techniques were appropriate because a large sample size was not needed, and certain types of healthcare professionals are being targeted. This sampling technique is also cost-effective and time effective (Jordan, 2021). Some disadvantages of this sampling technique can include a lack of representation as only specific healthcare professionals are involved and difficulty eliminating biases as this sample was chosen for a specific reason (Jordan, 2021). Overall, this sampling technique is beneficial as certain types of healthcare professionals were being targeted and was a feasible option for the purposes of this study.
Recruitment

Recruitment began through a colleague (gatekeeper) who has connections with healthcare professionals who work for the hospital. This individual was provided information about the study and the plan for disseminating the results. Next, a list of emails for the heads of the nurse department, physical therapy department, occupational therapy department, and child life department was requested to begin the recruitment process. When emailing the three department heads, a written description about the study and the plan for disseminating the results was included to be relayed to the rest of the departments. This afforded potential participants the opportunity to make an informed decision about whether to participate in the study. Potential participants were made aware that confidentiality will be kept during this study. Pseudonyms were used for the participants’ names and the hospital name. The desired sample size was eight healthcare professionals. This would consist of two nurses, two physical therapists, two occupational therapists, and two child life specialists. If participants agreed to participate in the study, they signed a form providing consent to participate in the study. The first two nurses, physical therapists, occupational therapists, and child life specialists that agreed to participating in the study were included.

To get more participants, the snowball method was also used for recruitment to help get the word out. Individuals who participated in the study were asked to mention the study to colleagues at the hospital to find other healthcare professionals to participate. There were no additional participants from the snowball method, so ultimately the sample became a convenience sample taking in the healthcare professionals that were interested. The convenience sample could have led to some recruitment biases as the healthcare professionals who reached
out to participate in the study may have a strong passion for the study topic and research questions.

After the recruitment process ended, there were a total of 3 participants: one nurse and two child life specialists. Nichole is an ICU nurse at the Southern California Pediatric Hospital and has worked at the hospital for the last three years, as answered in her survey responses. In her interview, she mentioned that she became a nurse because she comes from a family of nurses. She knew she wanted to be a pediatric nurse after doing her pediatric clinical rotation in nursing school when she realized how much she enjoyed the environment and working with kids. Stacy is a child life specialist and has been a child life specialist for 20 years per her survey responses. To become a child life specialist, she completed her bachelor’s degree, a 600-hour child life internship, and passed a certification exam. Stacy’s role as a child life specialist is unique because she serves as the educator for the child life department and is no longer in a patient care role which was also disclosed in the survey. Tonja was the final participant in this study. She is also a child life specialist working with patients all throughout the hospital. Tonja has been a child life specialist for two years but has only been working at the Southern California Pediatric Hospital for a little over one year. In Tonja’s interview she expressed how she enjoys working at this hospital because of the environment, staff, and the value they have on patient and staff care.

**Data Collection Tools**

To construct a rich and comprehensive narrative, two sets of data pertaining to the barriers to implementing physical activity programs in a southern California pediatric hospital were collected. These data sources included a survey and a semi-structured interview. (1) First, a survey was distributed to each participant. The survey included demographic and background
information and introductory questions regarding physical activity (Appendix B). Once completed, the surveys were collected and analyzed to provide additional pertinent information about the participants in the investigation. (2) Next, one-on-one semi-structured interviews (Appendix C) were conducted with each participant via Zoom. Zoom is an online video calling software that also records the meeting for transcription purposes as well.

Surveys allowed the researcher to obtain surface level information prior to meeting the participants for an interview. As suggested by Kelley et al. (2003), surveys were used to gain insight from the participants at a specific time. Semi-structured interviews allowed the researcher to gather data of the healthcare professionals’ perspectives at a deeper level through additional probing questions based on participants’ responses (Harvey, 2012-23). Additional questions were asked for clarification and elaboration.

Through interviews, the researcher was also able to establish trust and rapport through communication in recruitment, survey distribution, and scheduling interviews in hopes to receive some more personal and stronger feelings and beliefs. Through interviews, the researcher observes the participant's body language, facial expressions, and tone of voice (Gratton & Jones, 2009). With the interview being semi-structured, it allowed for the interview guide to be a little more flexible and more like a dialogue. A semi-structured interview adapts questions to fit the direction of the interviewees' responses (Austin & Sutton, 2014). The semi-structured interview still holds some control, to keep the interviewer and interviewee on topic.

Instrument Design: Survey & Interview Guide

The survey and interview guide were designed through a nine-step process. The first steps included identifying the research question and goals and objectives, identifying the participants, and considering the personal and cultural constraints of the participant group. Next,
the interview schedule was designed. After the participants were recruited and consent was obtained, the surveys were sent out to the participants. The survey consisted of both open-ended and closed-ended questions that provided insight into the interview questions. These survey questions were self-designed and created to gather background and demographic information to lead into the interview questions. The survey included 15 questions and was sent out using Qualtrics via email. Qualtrics is an online survey platform used to create and distribute surveys. After the surveys were collected, the individual interviews were scheduled.

Next, the interviews were conducted. The questions were designed to seek answers to the existence of any barriers to the implementation of physical activity programs within their hospital and to acknowledge any barriers that may exist. These questions were analyzed through a thematic analysis, which involves the process of examining data sets to identify, analyze, and report repeated patterns (Braun and Clarke, 2006). The interview started with simple questions and progressed to more comprehensive questions. The questions were grouped by similar topics. The semi-structured interview allowed for elaboration probes to gain a more in-depth response from an interviewee about a particular point (Gratton & Jones, 2009). The interview included ten foundational questions in the interview guide and included additional probing questions for a deeper understanding. It is important to note, that based on the initial information gathered from the surveys, the interview questions were slightly modified to obtain additional pertinent information.

**Data Collection Procedures**

The survey was sent out to each of the participants via email using Qualtrics. The email consisted of a statement reminding the participants that all information will be kept confidential and will be protected in a locked filing cabinet at the researcher’s residence, what participants
can expect from the survey, the instructions for completing the survey, and next steps leading up to the interview, as well as a reminder that they can end their participation at any time and for any reason. All emails were sent to participants at the same time, and all participants had two weeks to complete the survey. If participants did not complete the survey within the first week, a follow up email was sent to the participant reminding them to complete the survey.

The interviews were conducted via Zoom. The participants were reminded that the interview will be audio-recorded for data collection purposes as noted in the consent form (Appendix A). They also were reminded that pseudonyms will be used for their names and the name of the hospital to protect their identity. The interview guide was used to facilitate dialogue and questions. The interviews lasted about 20 minutes for each participant. All recorded data was stored in a locked filing cabinet at the researcher’s residence that only the principal investigator has access to.

**Data Analysis**

After the surveys were completed, they were exported into a spreadsheet. From the spreadsheet, the next step was to identify common themes among the survey responses. After the data were analyzed, the analyses were sent back to the participants (member check) to ensure that their answers were interpreted correctly.

After each interview took place, the data was transcribed verbatim. Following the creation of the transcript, it was sent back to the participant (member check) to ensure their perspectives were accurately recorded and transcribed. The data was then analyzed through a three-level coding process. Through the first reading of a transcription, a large amount of data was labeled with preliminary notes (Saldana, 2016). Through each of the following readings, the data became more focused, and information was grouped into common themes among all the
transcriptions (Saldana, 2016). Each theme was assigned its own color and was used to identify parts of the transcription related to that theme. The data was coded to saturation, meaning that the data was becoming repetitive, thereby enabling the researcher to identify pertinent themes. This was achieved through coding each data source until no new themes or information arose. Data saturation ensures credibility, validity, and reliability (Fusch & Ness, 2015).

After data analysis was completed, all data was grouped into common themes. The themes became apparent through similar ideas or responses among the three participants. These themes provided information related to the research questions and allowed for the researcher to draw conclusions based on the evidence received. It was anticipated that the information gathered through surveys and interviews support the participants’ responses and actions in the other data collection methods.

**Quality Control**

It is important to acknowledge that there was room for researcher biases as this topic is of interest to the researcher and that the researcher has been involved with organizations that interact with pediatric hospitals. Although there is a personal passion surrounding this topic, it can be a way to further commitment and motivation throughout the investigation (Stiles, 1993). However, the researcher has employed strategies in place to ensure quality control of the study. The main strategy used to ensure quality control was to phrase questions in a way that encouraged participants to talk about their personal views and experiences keeping the focus off the researcher.

Quality control refers to the strategies put in place by the researcher to ensure quality and accuracy of the data being collected. Lincoln & Guba (1985) discuss that trustworthiness can be established through credibility, dependability, confirmability, transferability, and authenticity.
One strategy was using multiple data collection methods. The methods through which data was gathered in this case study included surveys and recorded semi-structured interviews. Through each of these data collection methods, the researcher gained a deeper understanding of the participants’ perspectives. Throughout the study, it was important to build trust and rapport with participants. This allowed for participants to be more willing to open up as well as having a better understanding of one another. Another strategy was coding data to saturation during data analysis. This ensures that all information gathered has been reviewed and coded until no new information or themes can be taken from it (Fusch & Ness, 2015).

Another strategy to ensure quality and accuracy of data was through member checks. Participants will be asked to review survey responses and interview transcripts. This allowed for participants to check for inconsistencies or misunderstandings. Some additional strategies to support quality control and establish trustworthiness included engaging in a reflexive practice (e.g. analysis journal) and maintaining a clear and detailed audit trail documenting the entire research process.

**Ethical Concerns & Strategies**

There are some potential ethical concerns in this study. The main concern was that there were human subjects participating in this research. Healthcare professionals were surveyed and interviewed to understand their perceptions of the barriers of physical activity programs within their hospital and to identify any program level and structural policy barriers that make the development of physical activity programs within their hospital possible. The survey and interview involved the identification of any structural policy barriers of their workplace, which holds the potential for financial harm. Depending on what was said, it could risk their career or cause conflicts in the workplace. The three participants also took time out of their day to
participate in this study potentially causing stress or emotional harm. To help with this, the researcher allowed participants to choose a time that worked best for them for the interviews and rescheduled if necessary. There also was a disclosure of participant information because the interviews are voice recorded. However, all audio recordings from the transcript were stored on a hard drive and filed in a locked cabinet at the researcher’s residence. A strategy to help mitigate these ethical concerns was that CITI training was completed. The CITI training program educates researchers in various settings about ethics, compliance, and safety to cultivate integrity in their studies. IRB approval was obtained before starting the recruitment process. The hospital’s research board was also asked if approval needed to be obtained prior to the start of the study. There were informed consent forms from each of the participants before starting the data collection. These forms provided assurance that the participants fully acknowledge the purpose of the study and understand how the results shall be disseminated.

Pseudonyms were used for the health care participants’ names as well as for the pediatric hospital to protect their identity, and data was also aggregated where possible. All data collected was stored in a locked filing cabinet at the researcher’s residence and accessible only to the principal investigator. All data will be destroyed after five years of the study being completed for publication purposes.

Summary

A qualitative research design involving an evaluative case study was conducted. The data were gathered through surveys and semi-structured interviews of healthcare professionals who work for the same pediatric hospital. There were three healthcare professionals who participated in this study, consisting of one nurse and two child life specialists. All data were collected and analyzed into common emerging themes among all data sources. The quality of data was ensured
through multiple data methods and member checks. All participants provided consent prior to the start of data collection and were protected through confidentiality, the use of pseudonyms, and keeping all data stored in a locked filing cabinet at the researcher’s residence. IRB approval was obtained prior to starting recruitment.
CHAPTER FOUR

Results

The study involved the perspectives of three healthcare professionals. Tonja and Stacy, who are child life specialists, and Nichole, a nurse. They completed a survey on Qualtrics and participated in a semi-structured interview conducted via Zoom. The survey covered demographic and background information (refer to Appendix B), while the interview focused on physical activity and programming (refer to Appendix B). The survey responses and interview transcriptions were analyzed and coded until common themes were identified. These themes encompassed healthcare professionals' knowledge and expertise, collaboration with peers, views on physical activity, facilities and hospital units, individualization, and education. The study also identified barriers, which were further categorized as interpersonal, program level, or systemic. A set of potential solutions were proposed to navigate or mitigate these barriers.

Knowledge and Expertise of Healthcare Professionals

The knowledge and expertise of healthcare professionals can lead to and/or influence interpersonal barriers when implementing a physical activity program. Healthcare professionals go through years of education to get to their position to work in the medical field. Throughout that education, they begin to develop personal philosophies on how they approach their professional practice. This was shown through Tonja’s interview response on her views on the importance of physical activity, “…you know, coming from a child's development standpoint, like, play and movement are essential to the children developing.” Similarly, Nichole shared her personal philosophies when it comes encouraging patients to engage in physical activity stating, “A body in motion stays in motion. And I think that’s a really true statement” in her survey and
referred back to that response during her interview. Along with Stacy commenting in her interview that physical activity is “… important for healing, but also just for kids being kids.”

Overall, the knowledge and expertise that the healthcare professionals have flows into the scope of their practice. Stacy mentioned in the interview how her and the child life department view physical activity as important (possibly more important than the hospital as a whole) “… because [I] think we have that understanding of like, how important it is for their development…” Tonja briefly talked about different specialists in her interview that encourage movement within their practice. For example, “we have like different specialists who like do like, you know, music therapy to encourage movement.” Nichole also mentioned in her interview the differences in views depending on the type of healthcare professional.

…but I think, um, like, especially when the physical therapists, they’re always kind of one step ahead of us. And that’s good, because that’s your specialty. But sometimes, you know, maybe it’s not the right time and they’re kind of intervening a little bit too early. But I think to always have it in the back of their mind to, to, you know, get patients moving as soon as they can is, is a good goal to have.

She continued to mention that due to the extended amount of time nurses spend with their patients, they can serve as an advocate for them.

…Yeah, I think as nurses, we’re kind of the patient’s best advocate, um aside from parents. And, you know, in the ICU, we see really sick patients. And I think, I think sometimes it just might be too much for that patient. And you know, that the physical therapists, they’re not there with them for 12 hours. So they don’t really know, you know, how sick the patients is, or what kind of medications they’re on and all those kinds of things.
Nichole also stated in her interview that “... every doctor has a different opinion.” With having a large hospital filled with staff with various backgrounds and expertise, a multidisciplinary approach can be beneficial to best support patients allowing healthcare professionals to collaborate and share views and ideas.

Nichole’s responses on healthcare professionals’ scope of practice and the differing opinions among healthcare professionals alludes to an interpersonal barrier. She emphasized the potential conflict among healthcare professionals throughout her interview when it comes to their views on physical activity. A way to help mitigate this barrier would be through a multidisciplinary approach allowing healthcare professionals to collaborate with one another.

**Collaboration with Other Healthcare Professionals**

Collaborating with a team of healthcare professionals can be key to best supporting the many patients a hospital sees. Southern California Pediatrics Hospital understands the importance of collaborating as Nichole discussed following the statement from above. “So it’s just kind of like collaborating with them and putting our heads together to decide like what’s best for the patient at this time.” She mentioned working closely with physical and occupational therapists in her survey response. In the interview, she continued to describe a collaboration strategy they use in the ICU,

Yeah, I mean um, another thing I wanted to add to is we do with every patient in the ICU every day. We have um morning rounds, and all different specialties come at that time for that one patient to like, everybody gets to say their piece and um say what they think is best for the patient and kind of go with like a multidisciplinary approach which is really cool.
In her interview, Stacy also mentioned a multidisciplinary approach being useful when commenting on what it would take for a physical activity program to be successful.

    Yeah, I mean, I think it would definitely take like a multidisciplinary approach. So you would have to, you know, have a team of people that were like committed to improving that.

She gave an example of how herself as a child life specialist would collaborate with the physical therapists to get equipment into patients’ rooms if they are in isolation.

    Healthcare professionals should be collaborating with one another relaying information and ideas. The views on physical activity could be a collaborative topic among the healthcare professional team to share their expertise and knowledge as it relates to physical activity. This would help to mitigate the interpersonal barriers of differing opinions among healthcare professionals when it comes to physical activity.

**Views on Physical Activity**

    Overall, physical activity was viewed as important on both a hospital level and a personal level. The following disclosed the hospital views and the personal views towards physical activity mentioned by the participants.

    **Hospital Views.** The views that the hospital has towards physical activity is crucial as it helps to determine policies, facilities, and programs. The hospital’s views towards physical activity can lead to potential systemic barriers when implementing a physical activity program. All three participants agree that the hospital views physical activity as important. However, the extent of how important varied. When asked about the hospital views toward physical activity, Stacy stated the following in her interview:
Yeah, um I mean, I would say that they view it as important. I think, *sighs* you know, I think probably a lot of the focus here is really put on just getting kids better and getting them home, So it’s probably not as important as it should be. But um I mean, I still think that it’s important. I think people want the kids active, want them up and walking and doing things.

With the hospital having higher priorities when it comes to patients’ health, it can be difficult to get hospital administrators and policy makers to get on board with implementing a physical activity program. Because of this, the hospital’s views on physical activity can be seen as a systemic barrier. Tonja also touched on the priorities of patients engaging in physical activity in her interview. She mentioned that “patients who aren't here very long, you know, that might not be a focus, but like, a patient who's here for months, like, that's really important…”

Nichole also elaborated, in her interview, on the hospital’s views toward physical activity,

Um, I think the, like hospital wide I mean, our goal is to get kids up and moving as soon as possible, even if they’re not fully um recovered from their illness or injuries. I think we’re always working to get them moving. Even when we have patients that are like, sedated and intubated on ventilators. We still have physical therapists that come to the bedside and are moving their legs or their arms, just anything little to get them moving is better than nothing.

Both Stacy and Nichole talk in their interviews about how the hospital staff want patients moving as soon as possible. Although they both mention the importance, their perspectives on the hospital’s view differ based on their departments and scope of practice. Stacy discusses how physical activity could be more important to her and the rest of the child life department because
they understand the role it plays in their development. Whereas, Nichole, a nurse in the ICU emphasizes the importance of movement over engaging in physical activity.

Tonja elaborated on the hospital's view on physical activity by sharing some opportunities the hospital allows for patients to participate in to move around and be active. In the survey, she gave a few examples including scavenger hunts and yoga broadcasted through Sunshine Studios. She further elaborated on some examples on opportunities in her interview,

Um I think I mean from my eyes, what I see is the hospital views physical activity as important um as far as like having spaces for patients to walk, you know, really encouraging ambulation and movement throughout their hospitalization as the patient can tolerate is really encouraged . . . Um one of our child life specialists, like did a yoga presentation, encourage patients to, you know, move and get their bodies going. Elaborating on the different facilities and opportunities the hospital has for patients to move around and engage in activity emphasizes the value of physical activity.

**Personal Views.** Similar to the hospital’s view on physical activity, all three participants agreed that they personally view physical activity as important. These personal views of the participants can have the potential to influence interpersonal barriers when implementing a physical activity program. Stacy continued to reflect on the varying levels of importance between her and the hospital, in her interview stating that,

Yeah, I mean, I think that my views are that uh physical activity is really just important for healing, but also just for kids being kids. So I would say it’s probably more important to me or our department than the hospital as a whole. Um because I think we have that understanding of like, how important it is for their development um and just even being outside as well.
Stacy’s statement on her view of physical activity can go along with Ouyang et al., 2019 that physical activity can be beneficial for children diagnosed with chronic diseases as it helps to alleviate physical symptoms and psychological effects of condition and treatments. Tonja also elaborated on her personal views, in her interview, on physical activity through a child life lens and providing some examples of what she does with patients.

Yeah, yeah, I feel like I share the same views. I think, you know, coming from a child’s development standpoint, like, play and movement are essential to the children developing. So um I always encourage time out of the room, whether that’s like to go to a play room session or down to any of our facilities that we have on campus. Um because that is an important part. And you know, a typically developing child is moving all throughout their house or all the park to school and like, constantly exploring their environment so encouraging that kind of thing here is really important too.

Having both Stacy and Tonja provide their personal views on physical activity for patients through their child life lens allows a deeper understanding behind some of the programs and activities they facilitate at the hospital discussed later in this chapter. It also demonstrates the influence child life specialists can have on patients engaging in movement opportunities and physical activity.

In comparison, Nichole also agrees that physical activity is important as she commented that, “a body in motion stays in motion” in both her survey and interview. Although she doesn’t elaborate much further on her personal views and experiences alluding to the specifics of her role in the ICU, her statement does align with Di Stefano et al. (2020) where the importance for people with NMD to stay active was highlighted to slow the progression of the disease. The personal views of healthcare professionals can influence interpersonal barriers when
implementing a physical activity program. To effectively implement a program, you need to have staff who advocate for physical activity participation and encourage patients to engage in physical activity.

As the participants elaborated on the views of physical activity and the various opportunities available at the hospital, the facilities and differences among hospital units were frequently mentioned demonstrating the effect they have on opportunities for physical activity.

**Facilities and Hospital Units**

Available space and facilities can be a determining factor on the ability to engage in physical activity becoming a barrier on a program and systemic level. The Southern California Pediatrics Hospital provides many opportunities for patients to get out of their rooms and explore, play, and move around. In her interview, Nichole commented on a few facilities that are on the hospital campus for patients to go to.

They also have, we have Sunshine Studios, which is really cool. It's like a little, it's a pretty much like a radio station that some celebrities actually goes to every once in a while. But kids are able to get up and go down there if they're, if they're able to be off the monitors and stuff. And we have little like, we have Zen Garden, there's a bunch of stuff that patients can get up in and go to if they can.

Tonja also talked about Sunshine Studios in her survey responses and further elaborated on what they do in her interview to provide some physical activity opportunities that were broadcasted through the studio to the patients’ rooms.

Um, one of our child life specialists, like did a yoga presentation, encourage patients to, you know, move and get their bodies going…so we broadcasted it through our studio, and like, let patients know that it was happening and encourage them to join up to it and
you know modify how they can do it, you know, if they have limitations, but um yeah, I think that it probably reached a lot of patients that way.

Tonja also discussed in her interview bringing patients to the play rooms to encourage them to get out of their hospital rooms. Stacy also described in her interview many different rooms, spaces, and attractions for patients while at the hospital, elaborating on Sunshine Studios, play rooms, and more.

Um, they can come into the playroom. So sometimes we use that as a motivation to get up and walking is having them come to the playroom…if they can be out on the floor, they're usually able to come down if they feel good enough to our second floor, and that's kind of our family floor. And they're able to walk around and see we have Sunshine studios, our in house radio station, we have cheetah chat, um which is a show every day at 1:30, we have a movie theater, and we have the gift shop and Starbucks. So they like to come and just walk around and like see what we have down here. And we have a little bit of an outdoor space. Um I wouldn't call it a playground, it's just kind of an open space that has um some benches and some I don't know, like bikes and balls and different um things that they can go outside and play.

Through describing the different facilities at the hospital, the healthcare professionals were able to express the varying opportunities for patients to be out of their rooms and move around. Although the hospital houses many different attractions and opportunities for patients and families, having a space or room to allow patients to engage in physical activity or participate in a physical activity program can be a challenge. In her interview, Stacy identified space as a barrier stating, “Um, I think space is always kind of an issue, just trying to decide like, where you're going to have an event or class or whatever it is. Um because yeah, we're just
always kind of tight on space here.” She brought up space being a challenge again a few minutes later expressing the need for it.

… it would be really nice if we had more dedicated space um for kids to just be able to move. So I would, I would want like a bigger outdoor space, or even a bigger indoor space, where we could have different activities and classes and events and things.

This barrier of not having enough space for patients to engage in physical activity is a program level barrier and a systemic level barrier. Unfortunately, Stacy expressed how they are limited by space available. Not having a large enough space to move and be active limits the amount of patients that can be reached or the amount of activity for patients to engage in. However, through having physical activity opportunities throughout specific hospital units may allow for patients to engage in physical activity without the need of an extra space.

When describing opportunities for physical activity, oftentimes, the healthcare professionals broke it down through the specific unit. Stacy and Tonja, the child life specialists, work with patients all around the hospital and with different needs, so they were able to talk about some differences among each floor. Whereas, Nichole is an ICU nurse and only has exposure to what happens on her specific floor. Stacy, in her interview, discussed an opportunity for the adolescent and young adult oncology patients.

…um for our AYA patients, which is our adolescent and young adult oncology patients, they do have something called “rock the halls”, which encourages them to get up and moving so they can turn it like they can record how many laps they do on the floor, and then turn that in for gift cards or little prizes.

Tonja also mentioned “rock the halls” in her interview along with other opportunities available emphasizing how it may vary by floor or hospital unit.
Yeah, so I know, it gets kind of varies like, by the floor. Um so for like our surgical unit, I know the specialists on that unit um does like a scavenger hunt for patients to encourage ambulation after surgery, which is often very scary and hard for our patients um so that's like a way to motivate them, there's like different levels, and there are like different prizes by doing those movements, those or finding their scavengers … our like oncology patients, they encourage um ambulation by like, a program called rock the halls, which um gives patients like gift cards for laps walked mostly for our older population … She further went on to explain how it could vary by floor depending “on the needs of the patients”. Nichole was able to provide her perspective as an ICU nurse and what she experiences in her specific unit as she stated the following in her interview,

Hmm. *slight pause* I think it's kind of hard because in my unit, we, they do a lot more of that kind of stuff on like um, med surg floors, and when they kind of stepped down from the ICU, because in my unit, our goal is just to really get them moving, whether it be moving their legs while they're in bed, or even just getting out of bed is a big thing for some patients.

Nichole also talked in her interview about how different doctors could have different opinions on patients engaging in physical activity based on the unit they work in or patients they see.

… every doctor has a different opinion. And some doctors might want to promote physical activity early on, in treating a patient and some doctors would be more conservative when it comes to physical activity, especially in the unit that I work on.

The facilities at the hospital and the opportunities available to patients allow for the patients to move around and get out of their rooms while catering to their individual needs.
**Individualization**

Focusing on physical activity in a hospital setting showcases the importance of needing to cater to each person’s individual needs based on their condition or diagnosis. A lack of individualization can be viewed as a program level barrier. Both Nichole and Tonja identified the need of individualizing physical activity opportunities as a potential barrier when it comes to starting a physical activity program. Tonja expressed the importance by talking about the wide variety of patients the hospital serves first in her survey responses and then elaborating further in her interview.

Um, I think potential barriers are, you know, we have a wide variety of patients. So um making a program that can be like easily tailored to all our populations, whether that's like, patients with developmental delays or, you know, patients that have movement issues, or, you know, patients that are here for long term versus short term like, it would have to either like, I don't know, be like patient specific or unit specific …

She also expressed individualization being a way to help physical activity programs be successful in a hospital setting emphasizing its importance. Stacy also mentioned reaching the various needs of patients when talking about opportunities the hospital has for patients to engage in physical activity. She said in her interview, “... it does depend on kind of their situation, and if they're in isolation, or kind of what their physical limitations are…” This also reflects her survey response of “it depends on the patients and their condition” when asked if she believes physical activity is important for her patients.

Not only does individualizing physical activity involve meeting the needs of patients based on their condition or diagnosis, but it could also involve ways to motivate the patients to be active. Tonja discussed, in her interview, the importance of motivating patients when asked
how a physical activity program could be successful, saying that, “... um I think making it motivating to our patients, because, you know, a lot of them are sick and not feeling good…” Stacy continued to mention the importance of making it motivating as she talked about times when participation was low for other programs or events the child life department has put on.

Individualizing activities to meet the needs of patients was addressed as a program level barrier, a way to help a program be successful, and when describing the opportunities the hospital currently has in place.

_Education_

For a physical activity program to be successful in a hospital setting to be successful, there are many different forms of education that need to take place. These forms of education would be educating the people leading or promoting physical activity, educating other healthcare professionals, and educating patients and families. Through educating personnel in multiple areas, it is possible to mitigate or navigate interpersonal and program level barriers.

The people leading or promoting physical activity programs would have to be knowledgeable of how to guide patients through physical activity to ensure safety and effectiveness. Nichole mentioned in her interview that “physical and occupational therapy department would kind of um be the ones that would have to promote that.” This area of education can also reflect back to the knowledge and expertise that healthcare professionals have within their practice. This addressed barrier is viewed as an interpersonal and program level barrier because of the necessity to have staff to run the program effectively. Tonja expressed in her interview that whoever leads the program would have “to make sure that [individualization] happens um would be important.” The staff leading this program would need to have the knowledge to execute the program effectively.
Not only is it important to have educated staff to lead the programs, but also to educate other healthcare professionals, patients, and families of the benefits of physical activity. In her interview, Stacy commented that “doing some education with staff and then with parents and families about the importance of [physical activity].” Similarly, Tonja and Nichole touched on the importance of educating patients and families about the benefits to get people to want to participate in the program in their interview responses. Nichole stated a way for a physical activity program to be successful is to “... go around to each unit and educate everybody on what their goal is, and how it would help patients and really get people on board.”

All three participants emphasized in their interviews the importance of patients, families, and healthcare professionals being educated on the benefits of physical activity in order for a program to be successful. This alludes to a lack of education hindering the effectiveness of a program.

**Barriers and Potential Solutions**

The healthcare professionals identified various barriers that may arise when implementing a physical activity program in a hospital setting. These barriers can be classified as interpersonal, program level, or systemic. Interpersonal barriers can be defined as barriers that interfere with program implementation on an individual scale. Program level barriers are barriers that stem from the program itself. Lastly, systemic barriers are barriers that involve challenges at a larger scale involving the hospital or hospital policies. Some identified barriers are classified in multiple categories.
Table 4

Typology of Barriers Identified by Healthcare Professionals in Interviews

<table>
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<th>Interpersonal Barriers</th>
<th>Program Level Barriers</th>
<th>Systemic Barriers</th>
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<td>• Differing opinions among healthcare professionals</td>
<td>• Individualization of programming</td>
<td>• Hospital priorities</td>
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<td>• Healthcare professionals wanting to do something extra</td>
<td>• Available space</td>
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<td></td>
<td>• Staff to run the program effectively</td>
<td>• Available space</td>
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<td>• Lack of education on benefits of physical activity for patients</td>
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**Interpersonal Barriers.** The interpersonal barriers identified in this study include the differing opinions among healthcare professionals and finding healthcare professionals that would want to add another responsibility in their already busy schedules. Finding people who want to lead and promote a physical activity program and the differing opinions among healthcare professionals can be challenging to navigate when implementing a physical activity program. However, a potential solution to mitigate these barriers could be through education of healthcare professionals, patients, and families. Stacy, Nichole, and Tonja all expressed in their interview responses how education can be a tool for success when implementing a physical activity program. Nichole stated, in her interview, that educating “everybody on what their goal is, and how it would help patients” can “really get people on board.”

**Program Level Barriers.** The identified program level barriers include the importance of individualizing programming, available space to host a program, having staff to run the program effectively, and lack of education on the benefits of physical activity for patients. With the identified program level barriers, there were some potential solutions addressed. Individualizing programming will help to reach the needs of the patients and can keep them...
engaged and motivated to want to participate. Educating staff, patients, and families helps to get the word out and share the benefits physical activity can have for the patients. Having a multidisciplinary approach is another tool that can help staff individualize programming by collaborating with various professionals.

**Systemic Barriers.** The addressed systemic barriers include the hospital priorities when it comes to patients, pause on activities due to COVID, and the lack of available space. With these identified systemic barriers, there was only one possible solution that can address the hospital priorities which is education. Continuing to educate staff, patients, and families can allow for a deeper understanding physical activity can have for patients at the hospital.

**Summary**

After conducting a thorough analysis of the collected data, six significant themes emerged. The first theme that came to light was the importance placed on the knowledge and expertise of healthcare professionals. Participants emphasized the need for healthcare providers to have in-depth understanding of physical activity and its benefits to effectively implement a program.

Collaboration emerged as another key theme in the data. Participants emphasized the importance of working together with other healthcare professionals, such as physical therapists and nutritionists, to create a comprehensive and integrated approach to physical activity. The collaborative, multidisciplinary approach among healthcare professionals can be beneficial throughout the healthcare industry to ensure a well-rounded approach in patient care.

Views on physical activity also surfaced as a notable theme. Participants shared their opinions on the importance of physical activity in promoting overall health and well-being. This continued to emphasize the importance of physical activity for patients with chronic illnesses because of the benefits they can receive.
Facilities and hospital units were another theme that emerged from the data. Participants discussed the challenges and opportunities associated with implementing a physical activity program within healthcare settings. They examined the availability and accessibility of exercise equipment, as well as the design and layout of hospital units to facilitate physical activity. This may continue to be a barrier throughout the healthcare industry; therefore, it is important to have strategies in place to continue to reach patients when space is limited.

The theme of individualization was also apparent in the data. Participants highlighted the importance of tailoring physical activity programs to meet the individual needs and preferences of patients. They emphasized the need for personalized approaches that consider factors such as age, physical abilities, and medical conditions mirroring existing research.

Education emerged as the final theme. Participants stressed the importance of providing education and information to both healthcare professionals and patients. They discussed the need for training programs that equip healthcare providers with the necessary knowledge and skills to implement effective physical activity programs. They also emphasized the importance of educating patients on the benefits of physical activity and how to incorporate it into their daily lives.

In addition to these themes, the study identified various barriers to implementing physical activity programs. These barriers were classified into three categories: interpersonal, program level, and systemic. Interpersonal barriers included factors such as lack of support from healthcare professionals or differing opinions among healthcare professionals. Program level barriers encompassed issues such as limited resources, available space, lack of individualization, and patients and families lack of knowledge on the benefits of physical activity. Systemic barriers referred to hospital priorities and changes of programming due to the pandemic.
Interestingly, participants also provided potential solutions and strategies to overcome these barriers. They suggested interventions such as implementing education and awareness campaigns, establishing multidisciplinary teams, and advocating for policy changes.

The implications of these findings are vast and will be discussed further in the next chapter. They shed light on the challenges and opportunities in implementing physical activity programs within healthcare settings and provide valuable insights for healthcare professionals, policymakers, and researchers.
The purpose of this study was to identify local barriers to implementing a physical activity program and compare them to barriers found in existing literature. The study also aimed to determine if there were differences in barriers within southern California and identify the most common systematic, program level, and interpersonal barriers. Additionally, the study aimed to acknowledge these barriers to aid in preventing or overcoming them. The survey and interviews of three healthcare professionals from a pediatric hospital in southern California revealed several barriers, including differing opinions among healthcare professionals, difficulty finding qualified staff to lead the program, lack of individualization in programming, limited space, inadequate education on the benefits of physical activity, conflicting hospital priorities, and COVID-19-related disruptions. This chapter will discuss the implications, limitations, future research possibilities, and recommendations stemming from these findings.

**Implications**

The study identified several barriers in implementing a physical activity program in a southern California pediatric hospital. These barriers were compared to those identified in existing literature, and it was found that they were consistent on a global level. This suggests that the barriers identified are not just local but are common challenges faced in hospital settings worldwide.

One key implication of the study is the importance of collaboration and communication among healthcare professionals. This was identified in this current study through the emphasis on collaborating with other healthcare professionals and incorporating a multidisciplinary approach. Having a multidisciplinary approach, can help limit the differing opinions among
healthcare professionals which was a barrier addressed in this study. Differing opinions among professionals can lead to confusion and misinformation for patients and their families. IJsbrandy et al. (2020) also addressed this as a barrier when providing a quote from a healthcare professional that demonstrated the lack of communication and the inconsistencies. The healthcare professional was explaining how they do not know what to do when a patient asks them if they are able to play sports again, the healthcare professional responds by saying one thing that unknowingly disagrees with the other healthcare professional. It is crucial for healthcare professionals to work together as a team and adopt a multidisciplinary approach to provide the best possible care and support for patients. By sharing knowledge and expertise, healthcare professionals can learn from each other and develop effective strategies for implementing physical activity programs.

Another important implication is the need for qualified and motivated staff to lead and promote physical activity programs. The study found that finding staff with the necessary skills and knowledge was a significant barrier. It was brought up in an interview that it would be challenging to find someone who would be able to take on this role on top of their existing responsibilities. IJsbrandy et al., 2020, expresses the lack of knowledge and skills healthcare professionals have for a physical activity program and/or do not commit to making it successful. To address this issue, it is recommended that this hospital invests in staff education and training to ensure they have the resources and expertise to lead successful programs. Additionally, hiring additional staff from outside the hospital may be considered, although financial constraints may be a challenge.

The lack of individualization in physical activity programs was identified as a barrier that can affect the effectiveness of the program. Each patient has unique needs and requirements, and it is important to tailor programs to accommodate these individual differences. The importance
of individualizing programming for patients was emphasized throughout the study as each patient has their own unique needs and limitations. Oorschot et al., 2020 addressed the importance of an individualized program to address the individual’s different fitness levels when describing physical activity programming for individuals with neuromuscular diseases. This is not only important for individuals with NMD, but for any patient or individual participating in physical activity. Individualization of programming also addresses finding ways to motivate and engage patients to participate in physical activity. Between treatments, medication, medical conditions, and all the other challenges patients face, finding ways to entice patients to participate is essential. By providing personalized programs, patients can receive the appropriate level of care and engage more effectively in physical activity. This can be achieved through educating instructors and collaborating with other healthcare professionals to gain insights into individual cases.

The availability of space was also identified as a barrier in implementing physical activity programs. This southern California pediatric hospital has limited space, and this can impact the capacity, inclusivity, and types of activities that can be offered. This barrier aligns with Jenkinson and Benson (2010) who found that access to facilities, suitable teaching spaces, and equipment were the top barriers when surveying physical education teachers and department heads. Although Jenkinson and Benson (2010) focused on physical activity programs in a school setting, it still shows how space and facilities are essential to the effectiveness of a physical activity program. To address this barrier, this hospital can explore alternative ways to reach patients, such as virtual programs or utilizing existing spaces creatively. While this may not replicate the social component of group activities, it can still provide patients with opportunities to engage in physical activity.
The lack of education on the benefits of physical activity for patients, families, and healthcare professionals was found to be a significant barrier. Patients and families may have limited motivation or fear of injury due to their lack of knowledge. It is important to provide education on the benefits of physical activity to encourage participation and address concerns. In the study, Nichole recommended having possibly physical therapists and occupational therapists provided resources to families advocating for the participation in physical activity. Ross et al. (2018) and Takken et al. (2009) address the effect that a lack of education can have for patients and families. Many patients complained and had limited motivation to engage in physical activity. Additionally, they were often too afraid of injuring themselves (Ross et al., 2018). Similarly, after conducting interviews from parents of child cancer survivors, many parents stated how their children were more vulnerable. This resulted in them restricting their childhood daily activities (Takken et al., 2009). The emphasis of educating patients, families, and other healthcare professionals in existing literature, as well as discussed in this study, showcases the importance of providing education opportunities about the benefits physical activity can have. This can be achieved through informative sessions, resources, and collaboration with healthcare professionals across different disciplines.

The priorities and views of the hospital towards physical activity can greatly impact the implementation of programs. If this hospital does not prioritize physical activity, it is unlikely that necessary resources and efforts will be allocated to implement programs effectively. It is essential to advocate for the importance of physical activity and highlight the potential long-term benefits for patients. In this particular study, it was acknowledged that the hospital views physical activity as important, but ultimately, they wanted to get the patients home. Although
this barrier was not explicitly stated in the existing research, it can be an extension of the differing opinions among healthcare professionals as addressed in IJsbrandy et al. (2020).

The COVID-19 pandemic has also presented a unique barrier for physical activity programs in this hospital. From the interview with Stacy, she described programming opportunities for patients that occurred pre-pandemic. Unfortunately, these programs have yet to resume. Di Stefano et al. (2020) examined the increase of inactivity due to the COVID-19 pandemic in patients with NMD. Although Di Stefano et al. (2020) does not discuss pause of physical activity programming due to COVID-19, it does allude to the overall decrease of physical activity during the COVID-19 pandemic. It is crucial to find alternative ways to continue providing physical activity programs, such as virtual platforms or resource distribution, to ensure patients can still engage in physical activity despite restrictions.

Each of the identified barriers from this study have been previously identified or alluded to in existing literature. However, there are previously identified barriers from existing literature that were not identified in this study. Those barriers include lack of funding and insurance coverage (IJsbrandy et al., 2019), inaccessibility or the inconvenience of time and setting (Jacobsen et al., 2016), and exclusive criteria (Kids n fitness©, 2015).

**Research Limitations**

One limitation of this study is the small sample size of three healthcare professionals from the same hospital. To gain a more comprehensive understanding of the barriers, it would have been beneficial to include a wider range of healthcare professionals from this pediatric hospital. However, due to time constraints, it was not possible to recruit a larger sample. Future studies should aim to include a more diverse sample to enhance the reliability and validity of the findings. It would be beneficial for future research to potentially include different departments to
obtain a broader perspective on the barriers of implementing a physical activity program within a pediatric hospital.

Another limitation is the absence of data triangulation. The study relied solely on surveys and interviews with healthcare professionals and did not include field observations. This limited the ability to validate the findings through different data collection methods. Including field observations or additional data collections would allow cross verification from more than two sources ensuring data quality. Future research should prioritize data triangulation to ensure the rigor and validity of the study.

**Future Research**

To further enhance the understanding of barriers to implementing physical activity programs in hospital settings, future research should include a wider range of healthcare professionals, patients, and parents/guardians of patients. Including professionals from various disciplines, such as physical therapists, occupational therapists, music therapy specialists, and nutritionists, can provide more comprehensive insights into the challenges faced. Additionally, involving participants from multiple hospitals within the same region can offer valuable comparisons and identify common trends or unique differences.

Further research is also recommended to investigate the potential long-term benefits of physical activity programs in pediatric hospitals. By examining patient outcomes, such as physical health, mental well-being, and overall quality of life, researchers can highlight the positive impact of these programs and advocate for their implementation on a larger scale.

**Recommendations**

Based on the findings and implications of this study, the following recommendations are proposed for implementing a physical activity program in a southern California pediatric hospital.
Foster Collaboration and Communication Among Healthcare Professionals. It is crucial for healthcare professionals to work together as a team and adopt a multidisciplinary approach to provide the best possible care and support for patients. Encourage regular meetings and knowledge sharing sessions to promote effective communication and consensus on physical activity programming.

Invest In Staff Education and Training. To address the challenge of finding qualified and motivated staff, the hospital should invest in staff education and training. Provide opportunities for healthcare professionals to enhance their knowledge and skills in physical activity programming. This can be done through workshops, conferences, online courses, and collaboration with external experts.

Individualize Physical Activity Programs. Tailor physical activity programs to the unique needs and requirements of each patient. This includes considering their fitness levels, medical conditions, and personal preferences. Educate instructors and collaborate with other healthcare professionals to gain insights into individual cases and design personalized programs. The education and collaboration can be done through professional development opportunities (i.e., workshops, conferences, online courses) and communication through a multidisciplinary team of healthcare professionals.

Explore Alternative Ways to Utilize Space. Due to limited space in the hospital, it is important to explore alternative ways to reach patients. Consider virtual programs, outdoor activities, or utilizing existing spaces creatively to accommodate physical activity programs. Ensure that these alternatives are inclusive and provide opportunities for all patients to participate. It would be beneficial to use resources that the hospital already utilizes. For example, this specific hospital used their in-house radio station for broadcasting a yoga program.
Provide Education on The Benefits of Physical Activity. Educate patients, families, and healthcare professionals on the benefits of physical activity to encourage participation and address concerns. Develop informative sessions, resources, and collaborations with different healthcare professionals to enhance knowledge and promote the importance of physical activity. These information sessions can be done in person or virtually to support accessibility for patients and families. Brochures, infographics, and social media could also be used to relay information to patients and families.

Advocate For the Prioritization of Physical Activity. Highlight the importance of physical activity and advocate for its prioritization within the hospital. Engage hospital administrators, policymakers, and other stakeholders to allocate necessary resources and efforts to implement effective physical activity programs. Showcasing the potential long-term benefits for patients can help in garnering support. This can be done through pulling from existing research, conducting new research, and gathering information supporting patients with chronic illnesses engaging in physical activity.

Find Alternative Methods to Ensure Program Continuity During Disruptions. Develop strategies to continue providing physical activity programs during unexpected disruptions, such as the COVID-19 pandemic. Utilize virtual platforms, distribute resources, and adapt program delivery to ensure patients can still engage in physical activity despite restrictions.

More research is needed to address the absence of physical activity programming in pediatric hospitals, particularly in the United States. Conducting surveys and interviews, as done in this study, can provide valuable insights into the necessity of physical activity programs. By identifying barriers and finding ways to overcome them, it becomes possible to effectively
implement physical activity programs in pediatric hospitals. Further recommendations for future research include:

**Include A More Diverse Sample of Participants.** Future research should aim to include a wider range of healthcare professionals, patients, and parents/guardians of patients. Involving professionals from various disciplines and multiple hospitals within the same region can provide more comprehensive insights into the barriers and challenges faced in implementing physical activity programs.

**Triangulate Data Collection Methods.** To enhance the rigor and validity of findings, future research should prioritize data triangulation. This can be achieved by combining surveys, interviews, field observations, and other relevant data collection methods to validate the barriers identified.

**Investigate Long-Term Benefits of Physical Activity Programs.** Conduct further research to examine the potential long-term benefits of physical activity programs in pediatric hospitals. Evaluate patient outcomes, such as physical health, mental well-being, and overall quality of life, to highlight the positive impact of these programs and advocate for their implementation on a larger scale.

By implementing these recommendations and conducting further research, pediatric hospitals in southern California can overcome barriers and successfully implement physical activity programs that support the health and well-being of their patients.
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APPENDIX A

INFORMED CONSENT

You are being invited to participate in a research study, which the Cal Poly Pomona Institutional Review Board (IRB) has reviewed and approved for conduct by the investigator named below under protocol IRB 23-40. This form is designed to provide you - as a research participant - with information about this study. The investigator will describe this study to you and answer any of your questions. You are entitled to an Experimental Research Subject’s Bill of Rights and a copy of this form. If you have any questions about your rights as a subject or participant, complaints about the informed consent process of this research study or experience an adverse event (something goes wrong), please contact the Research Compliance Office within Cal Poly Pomona’s Office of Research at 909.869.4215. More information is available at the IRB website, http://www.cpp.edu/~research/irb/index.shtml

Research Title: The Barriers of Physical Activity Programs Within a southern California Pediatric Hospital

Primary Investigator: Jessica Carlton
Email: jlsnyder@cpp.edu

Voluntary Status: You have met the requirements for enrollment as a volunteer in a research study conducted by the researcher named above and are invited to participate in this study. Before making your decision, you should know what the study is about, the possible risks and benefits of participating in this study, and what will be requested from you as a participant. The researcher will discuss with you the details and will provide this consent form to read. You may also decide to discuss it with your family and/or friends. Some of the language may be difficult to understand. If this is the case, please consult the researcher for clarification. If you agree to participate, you will be asked to sign this form. Your participation is voluntary, and you may withdraw at any time without penalty and there will be no loss of any benefits to which you are entitled.

Purpose: In my graduate program at Cal Poly Pomona, I am looking to discover the perceived barriers that may exist in implementing physical activity programs within a southern California pediatric hospital. I am interested in learning more about why pediatric hospitals do not have physical activity programs for their patients or what can make existing physical activity programs more effective.

Procedures: Data collection will take place in three phases. The first will include a 15-question survey. The survey will include demographic and background information on you, your career, and physical activity. The second will be an interview via Zoom estimated between 20 and 30 minutes. This interview will include questions attempting to uncover your values on physical activity, what physical activity opportunities are currently available to patients, and potential or existing barriers of physical activity programs. After the raw data has been collected, all names will be removed. All parties will be assigned a pseudonym. Only the pseudonym will be left as an identifier to protect your identity. A pseudonym will also be given to the hospital for confidentiality reasons.
Commitment and Compensation: Your total participation in the study will involve one survey and an interview which will last approximately 20-30 minutes. You will not receive financial compensation for participation in the study.

Possible Risks and Benefits: It is expected that participation in this study will provide you with no more than minimal risk or discomfort, which means that you should not experience any more difficulty than what may be typical. However, there is always the chance of an unexpected risk. The foreseeable risks in this study include possible conflict in the workplace as there will be survey and interview questions about your place of work involving potential or foreseen barriers involving physical activity and the implementation of physical activity programs.

If you feel uncomfortable or distressed, please tell the researcher and she will ask you whether you wish to continue. You can withdraw from the study at any time without penalty. You may also choose to not respond to certain interview questions or survey questions.

You will not receive any direct benefits from participating in this study. However, your participation is intended to add to the knowledge about physical activity programs within pediatric hospitals and how they can be implemented or improved to benefit patients. It may also benefit other people with similar concerns.

Confidentiality and Consent: The investigator involved with the study will not reveal the personal information which they collect about you. Any information that is obtained in connection with this study -- and that can be identified with you -- will remain private and will be disclosed only with your permission or as required by law. Your identity will be kept strictly confidential by removing your name and all identifiers. Once the study is completed, all data materials will be destroyed after five years. Please understand that the results, in either an anonymous or a summarized format, may be published or presented at conferences.

New Information: During this study, investigators may discover information that could be important to you. You will be notified as soon as possible when such information becomes available.

Consent: I consent to participating in the study. I understand that my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without penalty. I have received a copy of this consent form for my records.

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<thead>
<tr>
<th>Printed name of participant</th>
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<tr>
<td>Printed name of primary investigator</td>
<td>Signature</td>
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APPENDIX B

Survey

Question 1. Name

Question 2. Are you a...
- Nurse
- Physical Therapist
- Occupational Therapist
- Child Life Specialist

Question 3. Do you work within a specific department or with a specific demographic of patients?

Question 4. How long have you been a nurse, physical therapist, occupational therapist, or child life specialist?

Question 5. What did your education/training look like to become a nurse, physical therapist, occupational therapist, or child life specialist?

Question 6. How long have you been working at CHOC?
Question 7. Is engaging in physical activity important to you?

- Yes
- No

Question 8. Explain your answer above.

- [ ]

Question 9. Do you believe it is important for your patients to be physically active?

- Yes
- No
- It depends on the patients and their condition

Question 10. Explain your answer above.

- [ ]
Question 11. Does your hospital currently provide physical activity opportunities for patients?
   - Yes
   - No
   - Not Sure

Question 12. If you answered yes, what do those opportunities look like?

   

Question 13. Do you encourage patients to be physically active?
   - Yes
   - No

Question 14. Explain your answer above.

   

Question 15. Do you provide and/or facilitate opportunities for patients to be physically active?
   - Yes
   - No
   - I don't believe it fits my job description

Question 16. Explain your answer above.

   

Question 17. What training and experience do you have in regards to creating or facilitating a physical activity program?
APPENDIX C

Proposed Interview Guide

Section 1: Background Information

1. What inspired you to become a ______________________?

2. Why did you decide to work for this hospital?

Section 2: Physical Activity

1. What are the hospital’s views on physical activity for the patients?

2. Do you share those same views?
   a. Why?

Section 3: Physical Activity Programming

1. What opportunities for physical activity does the hospital provide for patients?

2. Does the hospital have a physical activity program for patients to participate in?
   a. If yes, what does that look like?
   b. If no, why not?

3. What are potential barriers in the way of having a physical activity program?

4. What does/would it take for a physical activity program to be successful at your hospital?

Section 4: Closing Questions/Remarks

1. Do you have any additional questions or comments for me?
2. Thank you for your time!