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Not Enough to Go Around: Statistical Analysis of Staffing of Child Life Programs

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Abstract

Child life programs are gaining popularity and support in pediatric care as the field grows. However, healthcare is growing rapidly and child life programs are struggling to advocate for their place within pediatric care despite the fact that the American Academy of Pediatrics defines child life as a necessity. This study seeks to answer the question: How does the level of pediatric care offered by a hospital affect the staffing of child life programs? The sample (N=154) hospital programs in this study offer varying levels of pediatric care. The independent variable is the level of pediatric care offered by hospitals, the dependent variables includes seven different staffing reports, and the control variables include demographics regarding bed size and percent budgets. Statistical analysis (ANOVA and ANCOVA) determined there is a statistically significant relationship between the level of pediatric care and staffing of child life programs. This relationship is impacted by the number of pediatric beds in a hospital. Future research should explore the relationship between adequate child life staffing and hospital revenue enhancement. This research is needed to show whether or not enhanced hospital revenue is due to an increased census, which could be a result of customer satisfaction from properly staffing child life programs.

Understaffed and Underestimated

With more than 400 programs in North America alone, child life programs have become a necessary service in most hospitals specializing in pediatric care or adult hospitals that also offer specialized pediatric services (Committee on Hospital Care (CHC) & Child Life Council (CLC), 2014). The American Academy of Pediatrics not only highly recommends child life services but supports their presence in “pediatric units, ambulatory clinics, emergency departments (EDs), hospice and palliative care programs, camps for children with chronic illness, rehabilitation settings, and some dental and physician offices” (CHC & CLC, 2014, p. 1471).

Founded in 1965 at Boston Children’s Hospital, child life was not a certified profession until the examination process was required in 1998. Since then, the field has continuously evolved as a profession. Today, in order for a child life specialist to be certified they have a number of academic and professional requirements including successful passing of a standardized certification exam. With these credentials, certified child life specialists (CCLS) are experts in child development, and “their goals are to help children become more comfortable by addressing fears, clearing up common misconceptions about medical procedures and hospitalization, and preparing the child for hospital procedures in an age-appropriate manner” (Kaddoura, Cormier, & Leduc, 2013).

Existing research has found that child life programs, including services and interventions, provide psychological benefits to patients, increases in quality of care and customer service, and costs savings to hospitals (Kaddoura, Cormier, & Leduc, 2013; CHC & CLC, 2014). However, child life is a relatively new field with minimum academic research. Currently the Child Life Council, which is the national governing professional organization, has a research task force that is seeking to incentivize, encourage, and support child life specialists conducting academic research in order to increase the quality of evidenced-based practice. With the exception of the original program guidelines laid out by the founders of the profession (Child Life Council, 2006), there is no published research examining the relationship between child life programs and administration, specifically the staffing patterns of programs across varying levels of pediatric care. With healthcare reform cutting budgets and adding constraints, family and social service professionals – including child life specialists - are continuously advocating for not only their place as a member of the healthcare team but also for program development and growth. This study seeks to explore how hospitals staff child life programs across varying levels of pediatric care.

Child life programs are primarily found in hospitals that provide specialized pediatric services or are specifically children's hospitals. Most of these children's hospitals are classified as not-for-profit hospitals (Delliframe, 2006). Not-for-profit hospitals are affected by countless standards and strict regulations of health care. The Affordable Care Act of 2010 attempted to reform the way America provides health care, placing more strain and financial burdens on hospitals to increase quality of care while simultaneously decreasing the costs of care. The American Academy of Pediatrics stated, "Child life services contribute to an organization's efforts to meet the standards of the Joint Commission on Accreditation of Healthcare Organizations" (CHC & CLC, 2006, p.1760). The problem lies within the fact that healthcare is rapidly evolving in structure and focus. How can child life programs adapt in order to evolve along with healthcare while still providing quality services and decreasing costs of care?

The purpose of this study is to (1) add academic research to the field of child life, (2) determine relationship between level of pediatric care and staffing allocation and (3) provide evidenced based research which child life professionals can use to advocate for program growth. This study seeks to answer the question: How does the level of pediatric care offered by a hospital affect the staffing of child life programs?

Literature Review

In the United States, there are three primary levels of pediatric care offered by hospitals. These hospitals strive to provide quality care in order to compete with other hospitals and consistently measure up to the increasing standards imposed on each facility by the Joint Commission in relation to pediatric care. According to Bennyworth, Bennett, and Carroll (2015), “Hospitals provide varying levels of pediatric care including general hospitals without designated pediatric rooms, a dedicated pediatric unit/floor, a designated pediatric hospital within a larger adults system, and a complete freestanding pediatric hospital” (p.1). This study will analyze the last three levels of pediatric care.

Pediatric Care

Approximately 1.8 million children are hospitalized annually (Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken, 2014). “In 1900, 30.4% of all deaths occurred among children younger than five years of age;” however, as pediatric care developed over the century, “in 1997, that percentage was only 1.4%” (Stang & Arvind, 2006). Furthermore, as medical care advanced, there are now many diseases (i.e. congenital heart defects, cystic fibrosis, and leukemia) that were once fatal; now, not only are they treatable but many children survive into adulthood (Stang & Arvind, 2006). These medical advancements have shaped the way that pediatric care is provided. More medical care provided is preventative and much is done on an outpatient basis.

This shifts the patient demographics of the inpatients to more children with chronic conditions that require ongoing specialized care. Stang and Arvind (2006) stated:

> The health care needs of children with chronic conditions are particularly complex and expensive. Children with chronic conditions require more health services, use more compensatory devices and prescription medications, and consume a wide array of nonmedical and community services, including occupational and physical therapy, home health and respite care (p.502).

The first children's hospital in the United States, The Children's Hospital of Philadelphia, opened in 1855 in Philadelphia, Pennsylvania (Stang & Arvind, 2006). Nearly 150 years later, there were approximately forty-five freestanding children's hospital and each one was a not-for-profit hospital (Dellifraine, 2006). Today (2015) there has been an increase in freestanding children's hospitals, with less than ten of them being for profit freestanding children's hospitals (Hospital Corporation of America, 2015).

There are three different types of traditional pediatric care facilities: (1) general adult acute care hospitals with a designated pediatric unit, (2) children's hospitals within a larger adult acute care hospital, and (3) freestanding children's hospitals (Cimiotti, Barton, Chavanu Gorman, Sloane & Aiken, 2014). These children's hospitals require a higher level of medical care as well an interdisciplinary team that works together in order to provide care for the whole child and the family.

Specialized care for children. The children who are hospitalized today may have a shorter length of stay, but "require more intense and sophisticated care for their chronic and/or complicated illnesses" (Committee on Hospital Care, 1994, p.850). Accordingly, the Committee on Hospital Care (1994) asserts there are six recommendations that have been recognized as necessary for an increase in quality of care for the special needs of children in hospitals:

> Age-and size-appropriate furniture, toilet facilities, recreational areas, and diversional activities; unit design to allow for constant supervision and observation of patients…; developmentally appropriate safety programs both in facilities and procedures; separate areas for parents/family to gather for rest; specially trained staff familiar with the unique and constantly evolving physiology, development, and psychology of infants, children, and youth; and increased numbers of staff to provide care for patients who are not independent or self-sufficient (p.850).

To attain these recommendations and increase the quality of specialized pediatric care to meet the needs of this unique population is costly and expensive. "Only the most prosperous or well-funded facilities might be able to attempt to provide all the care needed to all children and families who would benefit" (Child Life Council, 2006, p.15). In a study by Miller, Elixhauser, and Zhan (2003), a data set of 3.8 million discharges for hospitalized children from birth to 18 years old was analyzed using multivariate logistic regression and the Patient Safety Indicator Algorithm. It was found compared to hospitalized adults, hospitalized children are at a higher risk for patient safety events. The inability to provide the costly recommendations and the increased safety risks "have significant associations with increased length of stay, in-hospital mortality, and total charges" (p.1363). These concerns add to the demand for high quality and specialized care for hospitalized children.

Staffing in hospitals. Health care, by definition is a service to the public. "The effective delivery of a service such as healthcare depends critically on the people providing care and the physical assets these workers use" (Stock, McDermott & McDermott, 2014, p.14). Aside from facilities and technology, human resources are important to predicting organizational performance. Two investments in human resources that were determined to predict better performance of various dimensions of quality performance include staffing levels and higher salaries. These investments in human resources also were not reported to be associated with higher costs for the hospital (Stock, McDermott & McDermott, 2014).

Staffing is a very important, and yet, tedious job in any organization or business, let alone a specialized children's hospital. The Committee on Hospital Care (1994) acknowledged, "The unit personnel's knowledge, skills, judgment, and commitment ultimately determine the efficacy and quality of patient care. The number, types, levels of training and experience, and work schedules of the personnel assigned to a pediatric unit affect the productivity of the unit" (p.850).

In the past decades, efforts have been made to implement staffing ratios in hospitals across the country in order to decrease current staff to patient ratios. California was the first state to legislate and enforce mandatory staff to patient ratios within a hospital setting (Chapman et al., 2009). Chapman et al. (2009) conducted an evaluative study to research hospitals' responses to the mandated staffing ratios. Twenty hospitals including for-profit, not-for-profit, and public were contacted, and twelve agreed to participate in the study. Researchers conducted semi-structured interviews with key hospital administrators.

"California hospitals faced minimum nurse staffing ratio requirements during a decade that saw several other regulator and reimbursement changes" (Chapman et al., 2009). Results of the study indicated that one of the greatest challenges in implementation of the mandated ratios was the phrase "at all times," meaning that the minimum staffing ratios must be met at all times including meals and breaks. While the mandated ratios were created with the best intentions, the implementation phase brought many issues for hospital administration such as financial strains and difficulty finding nurses to hire. The study also found that benefits to staffing ratios included decrease in nurse burnout and increase of staffing in hospitals where the ratios were very poor prior to state mandated ratios.

Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken (2014) conducted a study that examined nearly 4,000 pediatric nurses in 498 hospitals across four different states. This study analyzed three primary levels of pediatric care. Staffing characteristics were measured by the mean number of patients cared for by staff on last shift, educational attainment, gender, age, years experience as a staff in current hospital, and years experience on current unit.

Using the Practice Environment Scale of the Nursing Work Index, Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken (2014) found that “nurses workloads were significantly lower in freestanding children’s hospitals” compared to the workloads of nurses in children’s hospitals within a larger adult acute care hospital or general acute care adult hospital with a designate pediatric unit (Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken, 2014, p.27).

Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken (2014) found resources more commonly associated with higher quality of care were more likely to be found at a freestanding children’s hospital than other hospitals. The study also found children’s hospitals within a larger adult hospital and general acute care hospitals with a pediatric units reported inadequate staffing and resources for registered nurses in comparison to freestanding children’s hospitals. These differences were attributed to a lower level of pediatric care provided even though they serviced the same demographics of children (Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken, 2014). Furthermore, the American Academy of Pediatrics addresses staffing allocation, stating that it is influenced by the “patient’s age and mobility, the patient population on the unit, and the institution’s needs” (CHC & CLC, 2006).

Child Life Programs

The field of child life, while relatively new to independent academic research, has slowly but firmly established its place in children's hospitals and other pediatric facilities around the world. The American Academy of Pediatrics re-evaluated their policy statement on child life services in 2014 and expanded explanations on the irreplaceable addition child life specialists have in pediatric care. The American Academy of Pediatrics stated, "The provision of child life services is a quality benchmark of an integrated patient- and family-centered health care system, a recommended component of medical education, and an indicator of excellence in pediatric care" (CHC & CLC, 2014, p. 1472). Not only has the American Academy of Pediatrics and many other hospitals deemed child life services necessary, the state of New Jersey requires the services of a certified child life specialist in pediatric intensive care units in its hospital licensing standards (CHC & CLC, 2006).

Due to the fact that child life is primarily a clinical field and graduate programs are only now becoming more established, little research exists analyzing how child life programs should be structured, staffed, and funded in the evolving world of healthcare. In fact, according to the Child Life Council's academic program directory there are only twenty-two graduate programs in the United States that have a child life focused option (Child Life Council, 2015).

History of child life programs. The history of psychosocial care of hospitalized children and subsequently child life programs is summarized by the Child Life Council (2006) in its text *Guidelines for the development of child life programs in healthcare settings*. Psychosocial care refers to including psychological factors as well as social factors in regards to the impact of healthcare on an individual. Back in the early 1900s, when children were admitted to the hospital, they were separated from their parents. It was believed that visitation of families created stress and traumatized the children. “With little family contact and rare opportunities for play in the hospital, children languished” (Child Life Council, 2006, p.2).

It was not until after World War II that the emotional needs of children were considered and visiting times for family were lengthened. In 1955 Emma Plank, also known as the founder of the child life profession, created “a program to address the social, emotional and educational needs of hospitalized children… and served as director for the Child Life and Education Division until 1972” (Child Life Council, n.d.). Furthermore, the majority of child life programs developed in the 1970s and 1980s in the post war era. Early on, most programs referred to staff as “play ladies,” but the term “child life” was coined to describe the role of the program beyond play (Child Life Council, 2006). In 1975, there were only 170 child life programs and in 1990, there were already 308 programs (Snow & Triebenbacher, 1996). Child life academic programs increased in enrollment by 31% from 1988 and 1992 (Snow & Triebenbacher, 1996), and the certification process was implemented in 1986-1987 when more than 300 individuals became officially certified (Brazelton & Thompson, 1988). In 2015, the number of registered programs under the Child Life Council totaled over 400 child life programs with nearly 5,000 certified child life specialist working in the United States and internationally (Child Life Certifying Committee, 2015).

Qualifications of a certified child life specialist. The child life profession has evolved over the years, and the Child Life Council constantly pursing ways to develop the profession. As of 2015, in order to become a certified child life specialist, individuals must successfully fulfill a list of specific academic and professional requirements:

> The credentials of a certified child life specialist include the minimum of a bachelor’s degree in child life, child development, human development, or a closely related field; the

> successful accomplishment of a 480- to 600-hour child life internship under the supervision of a certified child life specialist; and the satisfactory completion of the standardized certification examination (CHC & CLC, 2014, p.1758).

While currently, an individual can become a certified child life specialist by obtaining a bachelor's degree that is related to child life, by 2022 all certification candidates must hold a masters degree in child life or a related masters degree with a specific emphasis in child life (Task Force 2022, 2015). Along with these credentials, child life specialists should also have an in depth understanding of children and families of all ages, excellent communication skills, experience in working with diverse families, and proficient teamwork skills (CHC & CLC, 2014).

The child life profession is extremely competitive. Acceptance into a child life internship often requires high academic GPA, a minimum of one hundred volunteer hours in a hospital setting under the supervision of an experienced certified child life specialist, a one hundred hour practicum supervised by a certified child life specialist, and several rounds of interviews (The Children's Hospital of Philadelphia, 2015; Yale-New Haven Hospital, 2015). Following an offer and acceptance to a child life internship, child life students almost always have to move across a state or across the country for the internship and move again for a job offer. To say that child life specialists are dedicated to the profession would be an understatement of the effort it takes just to become a certified child life specialist. Once certified, child life specialists are also required to acquire a minimum of fifty professional development units every five years in order to maintain certification (Child Life Certifying Committee, 2015).

Staffing of child life programs. It is nearly impossible for a single child life specialist, working in a busy children's hospital of any pediatric level, to have a meaningful intervention with each child on a given unit (Child Life Council, 2006). In 1990, Brown and Slinkard conducted a study and found that the average CCLS to patient ratio ranged from 1:5 to 1:180 (Child Life Council, 2006). This range of a ratio is massive. Originally, the American Academy of Pediatrics suggested that each unit should have at least one child life specialist for any less than twenty-four beds and one and a half child life specialists for thirty or greater beds (Committee on Hospital Care, 1994). In the latest statement released by the American Academy of Pediatrics, a staffing ratio of one to every fifteen to twenty patients is recommended for inpatient settings such as the general pediatric unit (CHC & CLC, 2014). When structuring a child life program, the staff to patient ratio is just as important as the mission, vision, and goals of the department (Child Life Council, 2006). Staffing ratios should be considered based on age and development of patients, diagnosis and acuity of patients, presence of caregivers, isolation, inpatient or outpatient setting, responsibility of other staff and volunteers, need for weekend/night coverage (Child Life Council, 2006). The Child Life Council (2006) stated:

> While establishing programming objectives and staffing, it is important to realize that having one person responsible to either a very large area or simultaneously to several different settings, cannot possibly mean that each child in that setting is getting adequate care, but rather that either children in each setting will get adequate care or many children will receive token care (p.15).

Along with physicians and nursing, child life specialists are considered necessary members of the healthcare team in order to provide well-rounded and complete care for hospitalized children (Committee on Hospital Care, 1994). In the *Guidelines for the development of child life programs in healthcare settings,* the Child Life Council laid out the foundation of how to construct a child life program. In order to determine the most effective way to design a child life program, the first thing to establish is which unit of the hospital could most benefit from child life. The second thing is to define the patient demographics of the patients on the unit (Child Life Council, 2006). Typically child life specialists are assigned to a particular unit or outpatient area in the hospital (i.e. pediatric intensive care unit or the hematology/oncology clinic). Coverage can include a certified child life specialist along with a child life assistant. Responsibilities of the child life assistant are non clinical and may include facilitating activities in the playroom, managing outpatient play area, or providing one-on-one play activities to patients on isolation (Child Life Council, 2006).

Minimum staffing coverage includes weekdays during business hours, but this can hinder staff's ability to adequately understand the complete role of a certified child life specialist as a member of the healthcare team. Ideally, weekend, holidays, and staggering shifts increase the availability of the child life program as a resource to the medical staff and patients. In outpatient areas such as the oncology/hematology clinic, rotating schedules may work to benefit staff in order that patients who come regularly see the same child life specialist each time they come in. For inpatient units, it is crucial to have a consistent child life specialist on the unit in order to build relationships with patients and staff (Child Life Council, 2006). PRN child life specialists are also beneficial to the staff. The Child Life Council stated, "The PRN position is an example of best practices that many programs have incorporated… Child life would be wise to follow this nursing practice" (Child Life Council, 2006, p.38). PRN child life positions ensure that there is always adequate coverage throughout the hospital.

The Child Life Council stated in its *Standards of clinical practice* that the "annual operating budget for services includes funds for staff salaries, benefits and staff development, administrative costs, equipment, and supplies" (Child Life Council, 2001, p.11). The American

Academy of Pediatrics recommends a ratio of one certified child life specialist (CCLS) to fifteen to twenty inpatients (CHC & CLC, 2006). If the average bed size of a free standing children's hospital is 124 beds, then on average pediatric facilities should employee at least 8.5 CCLSs (Dellifraine, 2006).

In a Child Life Council publication from 2005, a survey conducted by Brown and Slinkard in 1990 is cited regarding funding for child life services. Brown and Slinkard (1990) "indicated that more than 87 percent of child life program budget dollars comes from the operating budget of a hospital, with the remainder coming from other sources such as grants, endowments, donations, auxiliary organizations, and telethons" (Thompson, 2009, p.215). Thompson (2009) noted that program budgets were only fully funded when given financial resources from outside sources. While eighty-seven percent is a large majority of a program budget, the survey also found that only twenty-seven percent of child life programs were fully funded by hospital funds. In *The handbook of child life: A guide for pediatric psychosocial care*, Thompson (2009) asserts that if a hospital provides a sufficient amount of hospital budget for a child life program it is because there is a strong support for child life in the hospital.

Services commonly offered by child life programs. There are three categories of care under which the services and duties of a CCLS fall: direct, indirect, and non-direct. Direct care includes "working with patients and families, charting about patients interactions, [and] nursing report" (Child Life Council, 2006, p.38). Indirect care includes "patient specific activities such as care meetings, in-services given or attended, supervision of interns, and staff meetings" (Child Life Council, 2006, p.38). Non-direct care includes "environmental design meetings, policy development, community education events, media relations and marketing activities" (Child Life Council, 2006, p.38).

The American Academy of Pediatrics divides the direct services of child life specialists into four categories of interventions: therapeutic value of play, psychological preparation, pain management and coping strategies, and family support (CHC & CLC, 2014). Child life specialists are able to provide adaptable services to meet the diverse developmental and psychosocial needs of hospitalized children and their families. Because of child life services, "the children spent less time on initial pain-management narcotics, the length of stay was slightly reduced, and parents were more satisfied" (CHC & CLC, 2014, p.1760).

Child life specialists strive to provide services to all children regardless of race, gender, family, and ability to pay for services (Child Life Certifying Committee, 2012). There is no research regarding indirect and non-direct services provided by child life specialists. Child life programs are understaffed and have additional indirect and non-direct obligations that require time and attention outside of direct patient care services. On top of providing services to the patients at a high staff to patient ratio, child life specialists must also teach and supervise interns and students, coordinate and supervise volunteers, manage donations, clean toys and play areas, organize and plan special events (i.e. holidays), escort and schedule special visitors (i.e. sports teams), and monitor activity rooms, along with a variety of other responsibilities.

Methodology

Variables

This study utilizes the Child Life Council's program directory database located on the website that is accessible only to members in good standing (i.e. paid annual dues). There are 439 total child life programs registered by the Child Life Council according to the program directory database (Child Life Council, 2016). These programs include those geographically located throughout Canada and the United States. Each data entry was transferred to an excel spreadsheet where it was narrowed down based on availability of information for each program. Four phases of exclusion were conducted to select the programs for this study. The first phase eliminated any child life program that was not located in the United States. The second phase eliminated programs if they were designated as community-based programs (i.e. hospices, rehabilitation centers, etc.). This is because the Child Life Council program directory contains all child life programs, not just those in hospitals. The third phase began with only child life programs in hospitals. In this phase, programs were removed if they did not provide any demographic information at all (i.e. primarily bed size information). The fourth and final phase eliminated programs if they did not have complete data regarding number of beds, budgetary percentages, and staffing numbers. A remaining total of 154 child life programs (or 35% of the total programs) were included in this study.

These 154 programs represent hospitals from thirty-nine of the fifty states as well as the District of Columbia. States whose programs were eliminated based on incomplete or lack of available data include Alaska, Idaho, Maine, Mississippi, New Mexico, North Dakota, Rhode Island, Vermont, and West Virginia. States that did not have a registered child life program at all include Wyoming and Montana.

Out of the 154 hospital programs included in this study, fifty seven are free standing children's hospitals, sixty-seven are children's hospitals within a larger adult hospitals, and thirty are adult acute care hospitals that offer pediatric services.

In this study, the independent variable is the level of pediatric care. In the first phase of statistical analysis the independent variable is divided into two levels of pediatric care (freestanding children's hospitals and other). In the second phase of statistical analysis the independent variable is divided into three levels of pediatric care: freestanding children's hospitals, children's hospitals within a larger hospital, and adult hospitals with designated pediatric units (Cimiotti, Barton, Chavanu Gorman, Sloane, & Aiken, 2014).

The dependent variables include: (1) total number of child life program staff, (2) number of child life specialists, (3) number of child life assistants, (4) number of other child life program staff, (5) number of full time employee [FTE] child life specialist positions, (6) number of FTE child life assistant positions, and (7) number of other FTE child life program positions. Child life assistants include individuals who have similar qualifications or training to that of a certified child life specialists, but are not certified by the Child Life Council. Other child life program staff might include professionals such as certified music therapists, certified therapeutic recreational specialists, and/or certified teachers.

The control variables in this study include (1) total number of beds, (2) total number of pediatric beds, (3) percentage of pediatric beds. The total number of beds is defined as the total number of adult, youth, and infant beds available in the hospital. The total number of pediatric beds is defined as the total number of youth and infant beds available in the hospital. The percent of pediatric beds was manually calculated by dividing the total number of beds by the product of the total number of pediatric beds and one hundred.

The data was formatted into an Excel spreadsheet that was exported into SPSS in order to complete statistical analyses. Each variable is considered nominal with the exception of the independent variable (level of pediatric care), which is ordinal. The independent variable was coded differently for two separate phases of statistical analysis. The first phase coded "freestanding children's hospitals" as one (1) and "other" (includes both children's hospitals within a larger hospital and adult acute care hospital with a designated pediatric unit) as two (2). In the second phase the independent variable was coded as follows: "freestanding children's hospitals" (1), "children's hospitals within a larger adult hospital" (2), and "adult acute care hospital with a designated pediatric unit" (3).

Statistics Methods

Various statistical analyses were used on all data. SPSS, statistical programming software, was used to conduct statistical tests. The different statistical tests used in this study include: frequency statistics, means comparison, independent samples t-test, one-way analysis of variance (ANOVA), and analysis of covariance (ANCOVA). The tests were run in two phases. The first phase included two levels of pediatric care for the independent variable while the second phase divided the independent variable into three levels of pediatric care as described earlier in the methodology. Descriptive frequencies statistics and comparative means were run during the first phase in order to better understand the data set. Each set of statistical results was summarized in a table. Then an independent samples t-test was conducted to test the null hypothesis. Following, the researcher determined that greater results might be found by dividing the independent variable into three measures before running further tests.

During this second phase of statistical analysis using three levels of pediatric care as the independent variable, descriptive frequencies were run and placed in tables to summarize the demographics of the hospital data. The next test run was sample means test to provide a basic understanding of the averages of each dependent variable across the three levels of pediatric care.

A one-way ANOVA was used to compare the means of the each variable and test the relationship between the levels of pediatric care and the staffing patterns of child life programs. Following ANOVA results, ANCOVA was conducted to include appropriate covariates while comparing the means. When the covariates are included in the ANCOVA, it makes it possible to control for their influence in the relationship between the independent variable and dependent variable.

Results

Phase one of statistical analysis began with descriptive frequencies to gain a wider understanding of the hospitals (N=154) involved in this study.

Table 1

Division of Hospitals across Two Levels of Pediatric Care

2 Levels of Care	Number of Hospitals	Percent of Total
Freestanding Children's Hospitals	57	37
Other (Pediatric Hospital with a larger adult hospital and Adult Hospital with Pediatric Services)	97	63
Total	154	100

As seen in Table 1, the 154 total hospitals in this study are divided into two levels of pediatric care (freestanding children's hospitals and other). Out of the 154 hospitals, fifty-seven (37%) are freestanding children's hospitals and ninety-seven (63%) are labeled "other," which consists of either children's hospitals within a larger hospital or adult hospitals that offer pediatric services.

Table 2

Averages of Control Variables across Two Levels of Pediatric Care

2 Levels of Care	Number of Total Beds	Number of Pediatric Beds	Percent of Pediatric Beds	Percentage of Child Life Program Budget that comes from the Hospital Operating Budget	Percentage of Child Life Program Staff Salaries that comes from Hospital Operating Budget
Freestanding Children's Hospitals	272.05	218.89	94.67	78.32	91.38
Other	577.53	100.93	20.90	73.95	88.47
Total	464.46	144.60	48.20	75.57	89.55

Table 2 begins by reporting the averages of the control variables used in this study across the two levels of pediatric care. For freestanding children's hospitals, the mean for total beds is 272.05, number of pediatric beds is 218.89, and percent of pediatric beds is 94.67. For freestanding children's hospitals, the mean for percentage of child life program budget that comes from hospital operating budget is 78.32%. The mean for percentage of child life program staff salaries that comes from hospital operating budget is 91.38%. The "other" category includes both children's hospitals within a larger hospital and adult hospitals with a designated pediatric unit. For "other," the mean for total beds is 577.53 while the mean for number of pediatric beds is 100.93.

Table 3

Averages of Dependent Variables across Two Levels of Pediatric Care

2 Levels of Pediatric Care	Total Child Life Program Staff	Number of Child Life Specialists	Number of Child Life Assistants	Number of Other Child Life Program Staff	Number of Child Life Specialists FTE Positions	Number of Child Life Assistant FTE Positions	Number of Other Child Life Program Staff FTE Positions
Freestanding Children's Hospitals	22.25	16.67	2.28	3.74	13.11	1.72	2.67
Other	8.63	6.75	0.73	1.15	5.34	0.38	0.68
Total	13.67	10.42	1.31	2.11	8.21	0.88	1.42

The averages of each dependent variable can be found in Table 3. The average total child life program staff for freestanding children's hospitals is 22.25 and in other hospitals it is only 8.63. The average number of child life specialists for freestanding children's hospitals is 16.67 and in other hospitals it is only 6.75. The average number of child life assistants in freestanding children's hospitals is only 2.28 and less than one (0.73) for other hospitals. The average number of other child life program staff is 3.74 in freestanding children's hospitals while in other hospitals the average is only 1.15. The average number of child life specialists FTE positions is 13.10 for freestanding children's hospitals and 5.34 in other hospitals. The average number of child life assistant FTE positions is 1.72 in freestanding children's hospitals and 0.38 in other hospitals. Finally, the average number of other child life program staff FTE positions is 2.67 and 0.68 in other hospitals.

Table 4

Ranges and Averages of Pediatric Beds Compared to Staff

2 Levels of Pediatric Care		Number of Pediatric Beds	Number of Child Life Specialists FTE Positions
Freestanding children's hospitals	Mean	218.98	13.11
	Standard Deviation	133.15	13.83
	Minimum	30.0	0.00
	Maximum	559.00	85.00
Other	Mean	100.94	5.34
	Standard Deviation	56.84	3.79
	Minimum	28.00	0.00
	Maximum	328.00	18.00

Ranges, standard deviations, and averages of the number of pediatric beds and number of child life specialists FTE positions are summarized in Table 4. For freestanding children's hospitals, the average number of pediatric beds is 218.98 and the average number of child life specialists is 13.11. This creates an average ratio of one child life specialist to every 16.70 pediatric beds. The minimum ratio for freestanding children's hospitals is zero child life specialists to thirty pediatric beds and the maximum ratio is 6.58 pediatric beds to every one child life specialist. For other children's hospitals, the average number of pediatric beds is 100.94 and the average number of child life specialists FTE positions is 5.34. This creates an average ratio of one child life specialist to every 18.90 pediatric beds. The minimum ratio for other hospitals is zero child life specialists to twenty-eight pediatric beds, and the maximum ratio is 18.22 pediatric beds for every one child life specialist.

After running frequency statistics and comparative means, two hypotheses were created. The research hypothesis (H_1) states there is a relationship between staffing and the different levels of pediatric care. The null hypothesis (H_0) states there is not a relationship between staffing and the different levels of care. In order to tests these hypotheses an independent samples tests was conducted, which includes Levene’s Test for equality of variances.

Table 5

Levene’s Test for Equality of Variances

		Levene’s Test for Equality of Variances	
		F	Sig.
Total Child Life Program Staff	Equal variances assumed Equal variances not assumed	25.90	0.00
Number of Child Life Specialists	Equal variances assumed Equal variances not assumed	36.77	0.00
Number of Child Life Assistants	Equal variances assumed Equal variances not assumed	35.81	0.00
Number of Other Child Life Program Staff	Equal variances assumed Equal variances not assumed	10.92	0.001
Number of FTE Child Life Specialists	Equal variances assumed Equal variances not assumed	29.88	0.00
Number of Child Life Assistant FTE Positions	Equal variances assumed Equal variances not assumed	59.71	0.00
Number of Other Child Life Program FTE Position	Equal variances assumed Equal variances not assumed	14.04	0.00

In the Levene’s Test for Equality of Variances found in Table 5, the null hypothesis asserts the two sample variances or levels of pediatric care are equal. The research hypothesis asserts the two sample variances are not equal. The results indicate for each dependent variable (N=154), the significance is $p<0.05$. This result suggests that the probability that the two sample variances are equal is extremely low, so it should be assumed that the sample variances are not equal.

Table 6

Independent Samples Test

		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Total Child Life Program Staff	Equal variances assumed	5.237	152	0.00	13.62	2.60	8.48	18.75
	Equal variances not assumed	4.20	62.22	0.00	13.62	3.24	7.14	20.10
Number of Child Life Specialists	Equal variances assumed	5.66	152	0.00	9.91	1.75	6.45	13.38
	Equal variances not assumed	4.53	61.99	0.00	9.91	2.19	5.54	14.29
Number of Child Life Assistants	Equal variances assumed	4.29	152	0.00	1.55	0.36	0.84	2.26
	Equal variances not assumed	3.69	74.34	0.00	1.55	0.42	0.72	2.38
Number of Other Child Life Program Staff	Equal variances assumed	2.93	152	0.004	2.58	0.88	0.84	4.32
	Equal variances not assumed	2.32	60.58	0.024	2.58	1.11	0.36	4.81
Number of Child Life Specialists FTE Positions	Equal variances assumed	5.22	152	0.00	7.77	1.49	4.82	10.71
	Equal variances not assumed	4.15	60.97	0.00	7.77	1.87	4.02	11.51
Number of Child Life Assistant FTE Positions	Equal variances assumed	4.89	152	0.00	1.34	0.27	0.80	1.88
	Equal variances not assumed	3.97	64.16	0.00	1.34	0.34	0.67	2.01
Number of Other Child Life Program Staff FTE Positions	Equal variances assumed	3.22	152	0.002	1.99	0.62	0.77	3.20
	Equal variances not assumed	2.56	60.91	0.013	1.99	0.78	0.44	3.54

Due to the Levene's test significance ($p<0.05$), the interpretation of the independent samples t-test should be conducted using the "equal variances not assumed" row. Using the sig. (2-tailed) column for each dependent variable, the null hypothesis can be rejected because the p-value is less than the assumed alpha ($p<0.05$). (H_0: there is not a relationship between staffing practices between the different levels of care.). Therefore, while the research hypothesis cannot be confirmed with this test alone, there is a potential of a statistically significant relationship between the independent variable (levels of pediatric care) and each dependent variable (staffing).

Rejecting the null hypothesis leads to the second phase of statistical analyses using three levels of pediatric care for the independent variable. Descriptive frequency statistics and comparative means were conducted and summarized in the following tables.

Table 7

Number of Hospitals within each Level of Pediatric Care

3 Levels of Pediatric Care	Number of Hospitals	Percent of Total
Freestanding Children's Hospitals	57	37
Children's Hospital in a larger adult hospital	67	43.5
Adult Hospital with Pediatric Services	30	19.5
Total	154	100

As noted in Table 7, out of the 154 hospitals, fifty-seven (37%) are freestanding children's hospitals (n=57), sixty-seven (43.5%) are pediatric hospitals within a larger adult hospital (n=67), and thirty (19.5%) are adult hospitals that offer pediatric services (n=30).

Table 8

Averages of Control Variables across Three Levels of Pediatric Care

3 Levels of Pediatric Care	Number of Total Beds	Number of Pediatric Beds	Percent of Pediatric Beds	Percentage of Child Life Program Budget from Hospital Operating Budget	Percentage of Child Life Program Staff Salaries from Hospital Operating Budget
Freestanding Children's Hospitals	272.05	218.89	94.67	78.32	91.38
Children's Hospital in a larger adult hospital	607.88	120.07	24.56	74.60	88.13
Adult Hospital with Pediatric Services	509.73	58.20	12.71	72.52	89.23
Total	464.46	144.60	48.20	75.57	89.55

The averages for the five control variables are summarized in Table 8. For freestanding children's hospitals, the average for total beds is 272.05, average number of pediatric beds is 218.89, and average for percent of pediatric beds is 94.67. The average for the percentage of child life program budget that comes from hospital operating budget is 78.32%, while the average for the percentage of child life program staff salaries that comes from hospital operating budget is 91.38%.

For children's hospitals within a larger hospital, the average for total beds is 607.88, average of pediatric beds is 120.07, and average percent of pediatric beds is 24.56%. The average for the percentage of child life program budget that comes from hospital operating budget is 74.60%, while the average for the percentage of child life program staff salaries that comes from hospital operating budget is 88.13%.

For adult hospitals with a designated pediatric unit, the average for total beds is 509.73, average number of pediatric beds is 58.20, and average percent of pediatric beds is 12.71%. The average for the percentage of child life program budget that comes from hospital operating budget is 72.52%, while the average for the percentage of child life program staff salaries that comes from hospital operating budget is 89.23%.

Table 9

Averages of Dependent Variables across Three Levels of Pediatric Care

3 Levels of Pediatric Care	Total Child Life Program Staff	Number of Child Life Specialists	Number of Child Life Assistants	Number of Other Child Life Program Staff	Number of Child Life Specialists FTE Positions	Number of Child Life Assistant FTE Positions	Number of Other Child Life Program Staff FTE Positions
Freestanding Children’s Hospitals	22.25	16.67	2.28	3.74	13.11	1.72	2.67
Children’s Hospital in a larger adult hospital	10.79	8.36	0.96	1.55	6.57	0.51	0.88
Adult Hospital with Pediatric Services	3.80	3.17	0.23	0.27	2.60	0.10	0.23
Total	13.67	10.42	1.31	2.11	8.21	0.88	1.42

As summarized in Table 9, the staffing averages for freestanding children’s hospitals are as follows: total program staff is 22.25, number of child life specialists is 16.67, number of child life assistants is 2.28, number of other child life program staff is 3.74, number of child life specialists FTE positions is 13.10, number of child life assistants FTE is 1.72, and number of other child life program staff FTE positions is 2.67.

The staffing averages for children’s hospitals within a larger adult hospitals are as follows: total program staff is 10.79 number of child life specialists is 8.36, number of child life assistants is 0.96, number of other child life program staff is 1.55, number of child life specialists FTE positions is 6.57, number of child life assistants FTE is 0.51, and number of other child life program staff FTE positions is 0.88.

The staffing averages for adult hospitals with a designated pediatric unit are as follows: total program staff is 3.80 number of child life specialists is 3.17, number of child life assistants is 0.23, number of other child life program staff is 0.27, number of child life specialists FTE positions is 2.60, number of child life assistants FTE is 0.10, and number of other child life program staff FTE positions is 0.23.

Table 10

Ranges and Averages of Pediatric Beds Compared to Staff

3 Levels of Pediatric Care		Number of Pediatric Beds	Number of Child Life Specialists FTE Positions
Freestanding Children's Hospitals	Mean	218.89	13.11
	Minimum	30.00	0.00
	Maximum	559.00	85.00
Children's Hospital with a larger adult hospital	Mean	120.07	6.57
	Minimum	29.00	0.00
	Maximum	328.00	18.00
Adult Hospital with Pediatric Services	Mean	58.20	2.60
	Minimum	28.00	1.00
	Maximum	109.00	6.00
Total	Mean	144.60	8.21
	Minimum	28.00	0.00
	Maximum	559.00	85.00

Ranges, averages of the number of pediatric beds and number of child life specialists FTE positions are summarized in Table 10. In this phase of statistical analysis, freestanding children's hospitals (N=57) on average had 218.9 pediatrics beds with a minimum of thirty and a maximum of 559. The freestanding children's hospitals also have on average 13.11 full time child life specialist positions with a minimum of zero and a maximum of eighty-five. This means that on average freestanding children's hospitals have staffing ratios of one child life specialists for every 16.70 pediatric beds.

Children's hospitals within a larger hospital (N=67) on average have 120.07 pediatrics beds with a minimum of 29 and a maximum of 328. The children's hospitals within a larger hospital have on average 6.57 full time child life specialist positions with a minimum of zero and a maximum of eighteen. The average staffing ratio is one child life specialist to every 18.28 pediatric beds. The minimum staffing ratio is zero child life specialists to twenty-nine pediatric beds, while the maximum staffing ratio is one child life specialist to every 18.22 pediatric beds.

Adult hospitals with a designated pediatric unit (N=30) on average had 58.20 pediatric beds with a minimum of twenty-eight pediatric beds and a maximum of 109 pediatric beds. Adult hospitals with a designated pediatric unit had on average 2.60 full time child life specialist positions with a minimum of one and a maximum of six. The average staffing ratio is 22.38 pediatric beds to every one child life specialist. The minimum staffing ratio is one child life specialists to every twenty-eight pediatric beds, while the maximum staffing ratio is one child life specialists to every 18.17 pediatric beds. It is important to note in Table 10 the average ratio of full time child life specialist staff to total pediatric beds increases as you decrease the level of pediatric care offered by a hospital.

Looking at these demographics of the hospitals included in the study and because the null hypothesis was rejected in the independent sample t-test (H_0: there is not a relationship between staffing practices between the different levels of care.), one-way ANOVA tests were run on each dependent variable to determine whether there is a statistical relationship between the level of pediatric care and staffing in child life programs (Field, 2016).

Table 11

Tests of Between-Subjects Effects (Dependent Variable: Total Child Life Program Staff)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	7669.67	2	3834.84	16.14	0.000
Intercept	20621.38	1	20621.38	86.77	0.000
Levels_3	7669.67	2	3834.84	16.14	0.000
Error	35884.44	151	237.65		
Total	72327.00	154			
Corrected Total	43554.11	153			
a. R Squared - .176 (Adjusted R Squared = .165)					

The one-way ANOVA was conducted to test the relationship and statistical significance between the independent (levels of pediatric care) and the dependent variable (total child life program staff). Table 11 shows the relationship between the independent variable and the total child life program staff was found to be statistically significant ($F=16.14$; $df=2$; $p< 0.05$). These results call for further testing because ANOVA does not include control variables. ANCOVA was then run on the dependent variable (total child life program staff) in order to include related covariates.

Table 12

Tests of Between-Subjects Effects (Dependent Variable: Total Child Life Program Staff)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	27100.26	5	5420.05	48.75	0.000
Intercept	11.052	1	11.05	0.099	0.753
Number of Beds	45.29	1	45.29	0.407	0.524
Number of Peds Beds	13732.371	1	13732.37	123.52	0.000
Percent of Peds Beds	57.94	1	57.94	0.521	0.471
3 Levels of Care	5.33	2	2.66	0.024	0.976
Error	16453.85	148	111.18		
Total	72327.00	154			
Corrected Total	43554.11	153			
a. R Squared = .622 (Adjusted R Squared = .609)					

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the total child life program staff (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 12 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds ($F=123.52$; $df=1$; $p<0.05$).

Table 13

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Specialists FTE Positions)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2490.912	2	1245.46	15.99	0.000
Intercept	7538.63	1	7538.63	96.76	0.000
Levels_3	2490.91	2	1245.46	15.99	0.000
Error	11765.02	151	77.91		
Total	24647.00	154			
Corrected Total	14255.93	153			

a. R Squared = .175 (Adjusted R Squared = .164)

The ANOVA was conducted to test statistical significance between the independent (levels of pediatric care) and the dependent variable (number of child life specialists FTE positions). Table 13 shows the relationship between the independent variable and the number of child life specialists FTE positions was found to be statistically significant ($F=15.99$; $df=2$; $p< 0.05$). These results call for further testing. ANCOVA was then run on the dependent variable (number of child life specialists FTE positions) in order to include related covariates.

Table 14

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Specialists FTE Positions)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7867.93	5	1573.59	36.46	0.000
Intercept	1.27	1	1.27	0.029	0.864
Number of Beds	3.61	1	3.61	0.084	0.773
Number of Peds Beds	3713.53	1	3713.54	86.04	0.000
Percent of Peds Beds	33.65	1	33.65	0.780	0.379
3 Levels of Care	31.51	2	15.76	0.365	0.695
Error	6387.99	148	43.16		
Total	24647.00	154			
Corrected Total	14255.93	153			
a. R Squared = .552 (Adjusted R Squared = .537)					

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the number of child life specialists FTE positions (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 14 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds ($F=86.04$; $df=1$; $p<0.05$).

Table 15

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Assistants)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	96.92	2	48.46	10.46	0.000
Intercept	182.91	1	182.91	39.47	0.000
Levels_3	96.92	2	48.46	10.46	0.000
Error	699.74	151	4.63		
Total	1059.00	154			
Corrected Total	796.66	153			
a. R Squared = .122 (Adjusted R Squared = .110)					

The ANOVA was conducted to test statistical significance between the independent (levels of pediatric care) and the dependent variable (number of child life assistants). Table 15 shows the relationship between the independent variable and the number of child life assistants was found to be statistically significant (F=10.46; df=2; p< 0.05). These results call for further testing. ANCOVA was then run on the dependent variable (number of child life assistants) in order to include related covariates.

Table 16

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Assistants)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	350.28	5	70.06	23.23	0.000
Intercept	4.67	1	4.67	1.55	0.215
Number of Beds	0.684	1	0.684	0.227	0.635
Number of Peds Beds	168.56	1	168.56	55.89	0.000
Percent of Peds Beds	1.37	1	1.37	0.456	0.501
3 Levels of Care	4.73	2	2.37	0.785	0.458
Error	446.37	148	3.02		
Total	1059.00	154			
Corrected Total	796.66	153			

a. R Squared = .440 (Adjusted R Squared = .421)

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the number of child life assistants (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 16 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds (F=55.89; df=1; p<0.05).

Table 17

Tests of Between-Subjects Effects (Dependent Variable: Number of Other Child Life Program Staff)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	273.64	2	136.82	4.91	0.009
Intercept	469.08	1	469.08	16.84	0.000
Levels_3	273.64	2	136.82	4.91	0.009
Error	4205.49	151	27.85		
Total	5165.00	154			
Corrected Total	4479.12	153			
a. R Squared = .061(Adjusted R Squared = .049)					

The ANOVA was conducted to test statistical significance between the independent (levels of pediatric care) and the dependent variable (number of other child life program staff). Table 17 shows the relationship between the independent variable and the number of other child life program staff was found to be statistically significant (F=4.91; df=2; p< 0.05). These results call for further testing. ANCOVA was then run on the dependent variable (number of other child life program staff) in order to include related covariates.

Table 18

Tests of Between-Subjects Effects (Dependent Variable: Number of Other Child Life Program Staff)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1420.23	5	284.05	13.743	0.000
Intercept	18.49	1	18.49	0.895	0.346
Number of Beds	5.24	1	5.42	0.254	0.615
Number of Peds Beds	812.05	1	812.05	39.29	0.000
Percent of Peds Beds	0.038	1	0.038	0.002	0.966
3 Levels of Care	15.50	2	7.75	0.375	0.688
Error	3058.90	148	20.67		
Total	5165.00	154			
Corrected Total	4479.12	153			
a. R Squared = .317 (Adjusted R Squared = .294)					

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the number of other child life program staff (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 18 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds ($F=39.29$; $df=1$; $p<0.05$).

Table 19

Tests of Between-Subjects Effects (Dependent Variable: Number of Other Child Life Program Staff FTE Positions)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	150.32	2	75.16	5.50	0.005
Intercept	217.21	1	217.21	15.90	0.000
Levels_3	150.32	2	75.16	5.50	0.005
Error	2063.01	151	13.66		
Total	2522.00	154			
Corrected Total	2213.40	153			

a. R Squared = .068(Adjusted R Squared = .056)

The ANOVA was conducted to test statistical significance between the independent (levels of pediatric care) and the dependent variable (number of other child life program staff FTE positions). Table 19 shows the relationship between the independent variable and the number of other child life program staff FTE positions was found to be statistically significant ($F=5.50$; $df=2$; $p< 0.05$). These results call for further testing. ANCOVA was then run on the dependent variable (number of other child life program staff FTE positions) in order to include related covariates.

Table 20

Tests of Between-Subjects Effects (Dependent Variable: Number of Other Child Life Program Staff FTE Positions)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	696.41	5	139.28	13.59	0.000
Intercept	1.65	1	1.65	0.161	0.689
Number of Beds	8.18	1	8.18	0.798	0.373
Number of Peds Beds	419.31	1	419.31	40.91	0.000
Percent of Peds Beds	4.37	1	4.37	0.427	0.515
3 Levels of Care	3.88	2	1.94	0.189	0.828
Error	1517.00	148	148	10.25	
Total	2522.00	154			
Corrected Total	2213.40	153			
a. R Squared = .315 (Adjusted R Squared = .291)					

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the number of other child life program staff FTE positions (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 20 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds ($F=40.91$; $df=1$; $p<0.05$).

Table 21

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Specialists)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	4087.33	2	2043.66	19.03	0.000
Intercept	12077.99	1	12077.99	112.47	0.000
Levels_3	4087.33	2	2043.66	19.03	0.000
Error	16216.23	151	107.39		
Total	37031.00	154			
Corrected Total	20303.57	153			
a. R Squared = .201 (Adjusted R Squared = .191)					

The ANOVA was conducted to test statistical significance between the independent (levels of pediatric care) and the dependent variable (number of child life specialists). Table 21 shows the relationship between the independent variable and the number of child life specialists was found to be statistically significant (F=19.03; df=2; p< 0.05). These results call for further testing. ANCOVA was then run on the dependent variable (number of child life specialists) in order to include related covariates.

Table 22

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Specialists)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13176.65	5	2635.33	54.73	0.000
Intercept	1.99	1	1.99	0.041	0.839
Number of Beds	8.89	1	8.89	0.185	0.668
Number of Peds Beds	6323.39	1	6323.39	131.31	0.000
Percent of Peds Beds	65.88	1	65.88	1.37	0.244
3 Levels of Care	51.74	2	25.868	0.537	0.586
Error	7126.92	148	48.16		
Total	37031.00	154			
Corrected Total	20303.57	153			
a. R Squared = .649 (Adjusted R Squared = .637)					

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the number child life specialists (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 22 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds (F=40.91; df=1; p<0.05).

Table 23

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Assistant FTE Positions)

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	67.70	2	33.85	12.62	0.000
Intercept	82.27	1	82.27	30.68	0.000
Levels_3	67.70	2	33.85	12.62	0.000
Error	404.96	151	2.68		
Total	591.00	154			
Corrected Total	472.66	153			
a. R Squared = .143 (Adjusted R Squared = .132)					

The ANOVA was conducted to test statistical significance between the independent (levels of pediatric care) and the dependent variable (number of child life assistant FTE positions). Table 23 shows the relationship between the independent variable and the number of child life assistant FTE positions was found to be statistically significant (F=12.62; df=2; p< 0.05). These results call for further testing. ANCOVA was then run on the dependent variable (number of child life assistant FTE positions) in order to include related covariates.

Table 24

Tests of Between-Subjects Effects (Dependent Variable: Number of Child Life Assistant FTE Positions)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	217.89	5	43.58	25.32	0.000
Intercept	0.825	1	0.825	0.479	0.490
Number of Beds	1.10	1	1.10	0.641	0.425
Number of Peds Beds	110.00	1	110.00	63.90	0.000
Percent of Peds Beds	0.322	1	0.322	0.187	0.666
3 Levels of Care	1.064	2	0.532	0.309	0.735
Error	254.76	148	1.72		
Total	591.00	154			
Corrected Total	472.66	153			
a. R Squared = .461 (Adjusted R Squared = .443)					

A one-way ANCOVA was conducted to determine whether or not there was a statistically significant difference between the three different levels of pediatric care (independent variable) on the number child life assistant FTE positions (dependent variable) controlling for total number of beds, total number of pediatric beds, and percent of pediatric beds (covariates). Table 24 shows the relationship is only considered to be statistically significant at Number of Pediatric Beds ($F=40.91$; $df=1$; $p<0.05$).

Discussion

Gaining a better understanding of how hospitals currently staff child life programs is an important component to advocating for program growth and development across all levels of pediatric care.

One hot topic issue in the field of child life today is funding for program growth and employee compensation that reflect the increasing qualifications for child life specialist. This study shows that while on average in freestanding children's hospitals 91% of child life program staff salaries comes from the hospital operating budget, but only 78% of child life program budgets comes from the hospital operating budget. The averages are even lower for "other" pediatric care hospitals with 74% of the child life program budget coming from the hospital operating budget. This gap in funding availability must be made up for in creative ways such as grants, foundations, or donations.

The next result of importance to look at is the average staffing ratios within each level of pediatric care. This study found that for freestanding children's hospitals the average staff to patient ratio was approximately one child life specialist to every sixteen pediatric beds, while for children's hospitals within a larger hospital it was one child life specialist to every eighteen pediatric beds, and for adult acute care hospitals with a designated pediatric unit the ratio was one child life specialist to twenty-two beds. In short, as the level of pediatric care provided by a hospital increased the patient to staff ratio decreased. This data reveals as the focus of patient care trends toward pediatrics the staff-to-patient ratio is more favorable for the children.

Two of the three staffing ratios (freestanding children's hospitals and children's hospitals within a larger adult hospital) appear to closely align with the American Academy of Pediatrics recommended 1:15-20 staff-to-patient ratio. The staffing However, in this study, the variable "number of pediatric beds" reported by each hospital primarily included inpatient beds, and there is no way to determine which hospitals included other services provided to pediatric patients. It is important to note that this number may or may not take into consideration outpatient services provided by a hospital (i.e. day surgery, radiology, oncology clinic, and emergency department). This creates an issue when discussing staff-to-patient ratios because while the hospitals appear to have an appropriate ratio, the number of pediatric beds did not take into consideration these other areas of the hospitals where child life specialists may provide services for children.

Another factor these staff-to-patient ratios do not take into consideration is the hospital's census report, which would report pediatric admissions, discharges, and the number of beds full at any given time. For example, while a hospital may have 100 pediatric beds, only seventy-five of them may be full. If this is consistent over a period of time, administrators may budget according to their beds full instead of beds available. For instance, administration may only allocate four staff positions for an average of seventy-five filled beds instead of five or six staff positions to cover all 100 pediatric beds.

On average, adult hospitals with designated pediatric units have only three child life specialists and some have as few as one. While it may be easy to argue that these hospitals do not maintain a consistent census of pediatric patients to serve, the services provided by child life programs reach beyond the inpatient pediatric unit. For example, child life specialists have been found beneficial in units such as labor and delivery, adult intensive care units, and emergency departments. According to a study that surveyed administrators of large children's hospitals, child life programs were commonly found in pediatric inpatient units, but "underutilized in most pediatric emergency departments" (Krebel, Clayton, & Graham, 1996, 13). Sutter & Reid's (2012) research, *How do we talk to the children? Child life consultation to support the children of seriously ill adult inpatients,* supports the presence of child life programs in adult intensive care services for children of ill adult patients. Administrators of adult hospitals with designated pediatric units should not let census variability drive insufficient child life staffing and can rectify this with a broader appreciation of child life contributions to the hospital as a whole.

The root of the issue comes down to education on the services provided by child life programs and money to pay the child life specialists. At the time of this study, no research has been published regarding the potential or logistics of making child life a billable service. The potential of program growth could be exponential if child life became a billable service for hospitals. This is an area for future research that should be explored.

The independent samples t-test showed a statistically significant relationship between the level of pediatric care and the staffing of child life programs ($p<0.05$) meaning that staffing was related to the level of pediatric care provided by a hospital. ANOVA also showed a statistically significant relationship between level of pediatric care and staffing; however, there were potentially other variables that might impact the relationship between staffing and level of pediatric care (i.e. number of total beds, number of pediatric beds, percent of pediatric beds).

After accounting for the covariates using ANCOVA, each dependent variable only was statistically significant with the independent variable at number of pediatric beds. This outcome is most likely due to the fact that administration takes into consideration how many pediatric beds the hospital has when planning and budgeting for the staffing of child life programs without considering services provided in outpatient areas such as emergency department, day surgery, and radiology. The total number of beds in the hospital (adult plus pediatric) would not be a factor in determining the staffing of child life programs especially because it has only been fairly recent that child life specialist have begun to provide services in the adult units of the hospital (i.e. adult intensive care unit).

As in any study, limitations exist. One major limitation in this study is that there is no way to guarantee how current the Child Life Council's online program database information is regarding program existence, information, and demographics. This is due to the fact that the responsibility to update each hospital profile is left to the individual program director to ensure the hospital profile is correct and stays current when new hospitals are created or hospital mergers occur.

Another constraint with this study is that it is limited to the program information provided on the directory by program directors or staff. If the program director self reported incorrectly or left out fragments of information, then the data would be tainted. As the Child Life Council continues to pursue ways to improve the efficiency of the Council and build research for the field, the program database will desperately need to be updated in order to reflect growth in programs.

Conclusion

Child life programs, while still seemingly new to the umbrella field of healthcare, are in no way strangers to pediatrics. Highly recommended by the American Academy of Pediatrics, child life programs are not far away from being mandated in many if not all pediatric hospitals and units across the country. Research is continuously proving the benefits of child life programs to patients and hospitals alike including psychological and financial (Kaddoura, Cormier, & Leduc, 2013; CHC & CLC, 2014), but more research is needed in regards to program structure, staffing, and billing in order to build strategic plans for program growth.

But the question is raised: What are the implications for hospital administrators or child life program directors? The cost of healthcare is skyrocketing for not only patients, but also hospitals. The swelling demand on hospitals to increase quality of care while keeping costs low creates a major dilemma for hospital administration. Hospital administrators would be wise to invest in growth of child life programs and encourage program directors to create a strategic plan to maximize staffing and presence of child life specialists on all appropriate units in hospitals providing pediatric services.

Program growth is always idealistic and hopeful for any type of program whether it is a start up charity or a government agency. Unfortunately with the rising costs of healthcare, services not considered billable are often at the bottom of the priority list for program growth and development unless hospital staff has been diligent to prove their worth within their own individual hospital. When staff advocate for program growth within their hospital, administration is more likely to buy into supporting the growth. Furthermore, there is a major opportunity for future research to explore the relationship between adequate child life staffing and hospital revenue enhancement.

This research might potentially show whether or not enhanced hospital revenue is due to an increased census, which could be a result of customer satisfaction from properly staffing child life programs.

Until child life programs can overcome this resistance to program growth, child life specialists will continue to be understaffed and troubled by the fact that there are more hospitalized children who need child life services than child life specialists to provide those services. And when you factor in the level of pediatric care, adult acute care hospitals with designated pediatric units are more in need of program growth than those in freestanding children's hospitals.

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