

Does Chemotherapy Impact the Health Conditions of Pediatric Cancer Patients After Treatment?

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Introduction

The information being studied in this proposal analyzes the effects of cancer treatment on the quality of life in pediatric patients. Chemotherapy is a medication that is widely used by pediatric cancer patients in order to rid the body of cancer. Although chemotherapy is effective in doing so, the question arises if the consequences of the toxic chemicals entering the body are significant enough to affect the quality of life. It is important to look at the adverse effects of chemotherapy in pediatric patients so they can become aware of what to expect post-treatment and care. Because chemotherapy is such a potent medication, it tends to attack both healthy and unhealthy cells.

By conducting this research readers will be able to see the connection between chemotherapy and the quality of life that individuals will have post-cancer treatment. We will look into the specific conditions that arise and the probability of certain conditions occurring with the specific chemotherapy that was offered. Drawing a correlation between certain after-treatment conditions and the type of chemotherapy used will help provide individuals with an understanding of how treatment affects life in remission. In this study, prior pediatric cancer patients or participants will be asked to provide the type of chemotherapy they received and the medical complications they have encountered because of their cancer treatment. Data will be collected and recorded to see if any patterns arise. Conducting research in this way will allow readers to visually see the patterns of how treatment affects the quality of life. Doing this will create a pattern for other researchers to use to see the effects of the life-saving drug.

Literature Review

Current research suggests that there are impacts on quality of life as a result to cancer treatment but are not specific in the types of ways this impacts one's total overall health.

Chemotherapy as research shows has long lasting implications to the human body both physically and mentally post treatment. The literature that has been published explores these outcomes and suggests that there is problem that lies in the treatment options available for pediatric cancer survivors as it effects their quality of life.

Chemotherapy produces long term effects of various systems in the body ranging from the central nervous system to dental status of the patient. According to Patricia Duffner (2006), chemotherapy is toxic to the central nervous system, in particular to the neural progenitor cells and oligodendrocytes that can cause neurological issues as well as effect intelligence (Duffner 2006). While the chemotherapy is being pumped into the child's body to kill the cancer cells, it is also killing important brain pathogens that effect intelligence. This has been studied and the data is now beginning to show that interlingual disablits post cancer treatment might be a result to the specific type of treatment that the patient had endured. In a study conducted that studied dental abnormalities in children treated for Wilms Tumor, a type of aggressive kidney cancer, many of the patients that endured the chemotherapy protocol reported giving apparent microdontia, excessive caried, root stunting, hypodontia, and enamel hypoplasia, almost 50% of the population evaluated presented with one of these conditions (Marec-Berard et al. 2005). From looking into this literature, it is apparent that there are wide ranges of complex condition that can arise as chemotherapy runs rampid though an individual to kill the cancer cells.

When a child endures harsh treatment like chemotherapy there are long term effects. Although survival rates for pediatric cancer are around 65% living with the ling term effects of cognitive, physical, and behavior alteration significantly effect quality of life. As a pediatric cancer patient is receiving this medication their body has not fully developed, therefore as a result to this many aspects of development can be stunted, impaired, or altered. According to

article that discusses the long-term effects of pediatric cancer the article states, “These [effects of treatment] are now recognized to be associated with a range of physical late effects, including problems associated with growth and endocrine function, sensory function, fertility, liver, cardiac, and kidney damage. Recognition of these physical late effects raises the issue of related problems in psychological, educational, and behavioral functioning” (Eiser,1998). Living with the psychological impacts of cancer treatment followed by this long list of ailments that can occur is something that is detrimental to development.

Implications to development of children can effect the individual as it enters adolescent and adulthood. In a study conducted by Copeland et al (1996) it states that chemotherapy has a long-term neuropsychological effect of patients receiving chemotherapy before puberty. As a result of the medication effecting the brain, with no sex differences, though various assessment and academic tests IQ’s were proven to be less than those who did not recived chemotherapy prior to puberty. According to Iyer et al (2015), in a study following ALL survivors similar to the previous study, there were significant standard deviations amount IQ in ALL survivors who underwent chemotherapy and presented with other neurocognitive domains and needed intervention and assistance with learning. These studies how the effect that chemotherapy has on development and IQ and how the effects a pediatric cancers life post treatment as they begin to learn.

Not only does chemotherapy effect aspects like development it can also affect the long-term immune system of an individual. Immunosuppressive effects of long-term combination chemotherapy of children in remission have been investigated to determine the quality of life after treatment. Because of the hemagglutination inhibition and the neuraminidase inhibition as a neurological response to the treatment children presents with transformations of the lymphocytes

research can suggest there is evidence to suggest that chemotherapy influences lowering immune systems (Borella 1971). As the evidence is being displayed, we are seeing various different types of effects. There is a range of effects. According to Boman et al (2010), in a study conducted in Sweden regarding childhood cancer survivors there were effects of childhood cancer on educational attainment, with employment, education, and income. With effects to these things, we are beginning to see how lives of cancer survivors are affected as a whole.

Alongside the various complications talked about, a major complication that many survivors will face is physical late treatment related complications. Follow up care among cancer survivors is something that is very important in order to assess complication, avoid risk behaviors, education, screening, early detection, prevention, and many more benefits. According to Signorelli et al (2017), “Three in every four survivors experience a late effect of their cancer treatment, 37% of which may be life threatening. However, early intervention may reduce morbidity due to late effects” (Signorelli et al 2017). With follow-up care these late effects can be caught early. According to the Bhatia (2005) the goal of cancer survivorship is to decrease the morbidity to conditions relating to cancer treatment. Educating healthcare providers of late effects is also important for the follow up of pediatric cancer survivors as there are many different conditions that need to be looked at. Issues such as hearing loss, nerve damage, heart condition, and secondary cancers are all physical issues that may occur in survivorship (Fardell et al 2021). The health-related quality of life, or HRQL, is important to manage in survivorship and improving resilience through the survivorship. Overall, the literature that has been disturbed on this topic supports that there are complications towards health as a result to pediatric cancer treatment.

The literature that presented is strong but vague. Some of the methods that were observed are not specific to how chemotherapy would exactly affect pediatric cancer survivors, there are gaps in this specific research. Quality of life was addressed but long-term studies have not been conducted/results posted. As pediatric cancer has limited treatment options effects have common patterns along long-term survivorship as a result. Many of these studies only had small populations, whereas studying a larger population would have given more clear trends in issues.

Statement of Problem Section

Currently research lacks what might life look like for a pediatric cancer survivor. Research does not specify that treatment just stops once the cancer is gone, but in reality, the follow up and medical conditions that can occur tend to be lifelong. This is something that is often not addresses. By clearly addressing what life looks like post treatment not only does it raise awareness it also educated others and researchers on how the treatment effects quality of life.

I believe in order to address this gap in the findings it is important to create a survey. By widening the population of who you can address to see how cancer treatment has impacted individuals you are able to get a sense of the various ways it does. With the population informed consent of what is asking must be given. With the sociometric model, a well-established and effective method, the data can be analyzed and applied.

With the observation of this study and from the data that is collected the problem can be addressed head on. By conducting research in this topic, it can assist in research for treatment trials, preventative trail care, screening trials, palliative care trials for end-of-life care, natural history studies that are important in research development, and overall just broaden the

understanding of oncology and how it relates to pediatrics. These methods help develop research as there is currently limited research that addresses the idea that chemotherapy impacts quality of life of pediatric cancer survivors.

Purpose

The purpose of this study is to determine the effects of chemotherapy on quality of life through pediatric cancer survivors. After months of grueling chemotherapy that is harsh to a child's system in our literature review, we learnt that there are effects identified throughout research that state there are effects. By gaining an understanding on who it effects, there re hopes to further the development of treatment options for children fighting cancer as it leaves such a toll on their body's now.

In my study identifying the patters between secondary conditions related to cancer treatment options in those who recived chemotherapy as a child and the conditions they develop into their survivorship is at upmost importance. By identifying, and allowing induvial to recall their own experiences, one will be able to see how chemotherapy effects the quality of life. If research could be extended as a result to the study, then quality of life due to chemotherapy can be improved.

Subjects & Sampling

In this study those who have experienced childhood cancer and have had their quality of life impacted as a result to the chemotherapy used are at best use for this study. Specifically, individuals who recived chemotherapy as a result to cancer treatment prior to puberty. The subjects of this study will be informed and will consent to the sampling questions prior to survey.

The subject's requirement to participate is individuals who underwent cancer treatment under the age of 18. Males and females are welcome to participate. All ethnicity's will be able to

participate but this study will be limited to the United States. Single, married, employed, unemployed individuals are all able to participate. By allowing the sampling to be large, the narrow population of pediatric cancer survivors can be analyzed.

Because of the wide population being studied, this is a great study to investigate the specific factors that impact quality of life. As cancer survivors endure lifelong anxieties due to the unknowns of how the treatment used to kill the cancer cells during diagnosis might affect them. By participating in this study not only will researchers be able to gather information to develop new cancer fighting drugs, but individuals will also be able to see what others have endured as a result to their treatment as well as help others identify issues they might be having, and finally make a list of precautions illness that could affect them.

To access the population for this study and to reach a wide range of individuals in the populations many different environments will be used. For example, promoting the study through health care centers and professionals to see who is available and willing to participate. As well as public spaces where this community might meet. Support groups, social media, and public settings will also be used. By doing this the large population can be reached.

Data Collection

In this study data will be collected through a survey. The personal administrative surveys will be a mix of a questionnaire and short answers. By creating surveys common trends will be grouped together to analyze the patterns that are formed among individuals and the repercussions to chemotherapy that they face. While the survey is being done, research will also be studied in comparison to identify the trends in research that have already been developed.

I tend to use the survey and questionnaire as a way to reach as many individuals as possible. Although childhood cancer is one of the leading cause of death among children a small

population of individuals actually ensure a pediatric cancer diagnosis. Since the 1980s only 4 cancer fighting drugs specifically for pediatric cancer have been developed. As a result to this lack of development in the research and technologies to fight childhood cancer, children are forced to receive the chemotherapy that is intended to adult use. Because of this children endure higher levels of toxins in their body, harsher effects, more secondary cancers, and a decreased quality of life therefore. With reaching such a large population everyone can voice their experiences and share what has affected them in hopes of helping others.

With the questionnaire individuals will also be able to access the study more easily. In this 10–20-minute survey composed of both short answer and multiple choice individuals do not have to travel, set aside large amounts of time, and have to speak with someone one on one. This survey can be accessed on all devices from the comfort of one's home, office, or library. Being this accessible and convenient is important to the study. This also helps reliability and validity as you can ensure no bias is being used, all samples are being offered the same questions, and everyone has access to the same survey in the same setting. By doing this the results become more accurate and individuals are more willing to participate as it does not take too much time away from them. That is why the quantitative measures are important.

This data can and will be collected in a 2 month period of time to allow participants the time to complete at their convenience. No specific time of the year. Logically allowing the participants time to reflect on their quality of life at their convenience is at up most importance in the study. Because of the survey being online, in the time frame we ask the survey is completed thoughtfully and honestly. All environments will be suitable to this study as long as have access to online.

Data Analyses

In this study quantitative data will be collected. Since this study produces results through a questionnaire the results will be quantitative. Quantitative results cannot be produced in this study. By gathering the results via survey, you can group together the results and create common trends of study. For example, if many individuals have heart conditions and hearing loss you can follow the trends of the issues that arise post cancer treatment in pediatric use. Age and type of cancer will also be analyzed, these are both quantitative factors. Age is not qualitative therefore cannot be looked at this way. As a result, one can form statistical outputs to the probability of an event occurring. For example in the population, the amount of individuals who have a specific illness occur due to treatment prior to puberty that has affected their quality of life. Using the statistics can help researchers inform others on what can happen post treatment and how one might develop new treatments to improve quality of life as a result.

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