

Research Article

Immune System, Emotional Problems and Stress in Children and Adolescents with Cancer in a Focused Sample in Cochabamba, Bolivia

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Abstract

Objective: The objective of this study was to identify as affection, the immune system, emotional problems and stress in the development of different types of cancer in children and adolescents who usually attend to the Manuel Ascencio Villarroel Children's Hospital in Cochabamba region (Bolivia). **Methodology:** Cross-sectional study in a focused sample, was carried out in January and February 2016 in children and adolescents who usually attend to the Manuel Ascencio Villarroel Children's Hospital from 1 to 15 years of age (n = 45) in Cochabamba region (Bolivia). The parents and / or guardians of the participants were surveyed with questions from the background, a descriptive and analytical study was carried out. **Results:** They had two or more signs and symptoms of (low immunity) that the immune system was weakened 86.67%. They were affected habitually by virus and flu 51.11%, they had muscular pain and constant joints 44.44%, they had watery eyes and running nose 35.55%, they had persistent headache 40%, they tired a lot and fatigued in spite of rest 35.56%, they were regularly ill 31.11%, they were delayed in the recovery of diseases 28.88%, they exhibited a fixed disease pattern 28.88%, they struggled with the disease interminably 24.44%. They had 2 or more warning signs, symptoms and physical changes in stress 79.26%. Especially, headache and stomachache 53.33%, eating disorders 51.11%, they felt distressed 48.89%, they were too sensitive 46.67%, they felt tired 44.44%, sweaty hands 22, 22%. They had one or more emotional problems poorly managed, for loss, failure or trauma 60.0%, they felt frequently: anxious 40%, depressed or anxious 37.78%, exhausted 33.33%, sense fear or loneliness 22.22%, furious 20%, with extreme anxiety 15.56% and nervous 15.56%. **Conclusion:** This study determined for the development of cancer suffered by children and adolescents influenced both emotional problems poorly managed, as stress and especially a weakened immune system, as a result of psychosomatic disorders that exposed them to develop cancer.

Keywords: children, teenagers, Bolivia, cancer, immunity, stress, emotion

Introduction

Cancer occurs on the whole world. It has become one of the chronic diseases with the greatest impact on health and one of the leading causes of morbidity and mortality. Although medical science is trying to reduce the incidence of this condition trying to find the therapy and drugs to treat this evil. According to the International Union Against Cancer (IUAC), statistics indicate that every year more than 160,000 children are diagnosed with cancer in the world. 80% of childhood patients live in process developing countries [1].

Currently, a survival rate of oncological children of

around 60 and 85% was achieved. In the year 2000, one in every 900 young people (20-29 years old) was a cancer survivor during their childhood-adolescence. In 2010, it is estimated that 1 out of every 250 young people between 20 and 29 years old is a survivor of childhood cancer [2].

According to data from the National Cancer Registry of the Ministry of Health of Bolivia, in 2011 there were 192 cases of children with cancer, in 2012 there was an increase to 223 cases and for 2013 there was a slight increase to 327 infants in treatment, which represents 12 percent annual growth [3].

According to data from the Ministry of Health in Bolivia, the most common cases of childhood cancer are: Leukemia in 46%, lymphomas 11%, retinoblastoma 10%, rhabdomyosarcoma 6%, cancer of the central nervous system 8.4% and other varieties 15 % [4].

According to the statistics department of the Manuel Ascencio Villarroel Children's Hospital, in 2015, 1014 children and adolescents (aged 2 months to 15 years of age) were treated with different types of cancer, of which they had, 785 leukemia acute lymphoblastic, 41 hodgkin's disease, unspecified, 27 malignant tumor of the kidney, except the renal pelvis and 161 other types of cancer. According to these data, cancer in children and adolescents increased very considerably.

It is a little known how influence the immune status, emotional problems and stress in the development of cancer in children and young adolescents in the Plurinational State of Bolivia. With respect to these factors, in the United States, researchers and physicians at the end of the twentieth century realized that people with very weak immune systems, or nonexistent, had a higher risk of developing cancer than the average person. Since then, researchers have realized that patients with immune cells present in their tumors have a better prognosis than patients without them [5]. A good part of the body's defense against cancer is carried out directly by the cells, rather than by the antibodies circulating in the blood. For example, the presence of tumor antigens on cancer cells can activate certain white blood cells (lymphocytes and to a much lesser degree, monocytes), which perform an immunological surveillance looking for the cancer cells and destroying them [6].

Biochemists and physiologists describe that stress in its first stage can manifest in the form of tachycardia, hypertension, increased cholesterol, hyperglycemia, diuresis, increase-decrease in temperature, dry mouth, inhibition of the immune system, etc. [7]. So there are symptoms of stress very visible in children, such as suffering from stomach pains and headaches, again and again, as if they were chronic. Show more angry, irritable or explosive, but there are others who are withdrawn and are distracted and depressed. They have problems and eating disorders. Many times they do not want to eat, and in others cases they eat but they feel discomfort in their stomachs. Present difficulties to fall asleep [8]. These symptoms occur because in a chronic stress hormones are released that activate the growth and development of cancer. When we are stressed, we release cortisol and adrenaline that stimulate the release of inflammatory substances, to the sympathetic nervous system and block the NK (natural killer), thus favoring the appearance of cancer [9].

The psychologists, they described; that emotions alter attention, increase certain behaviors of the individual's responses, and activate associative networks relevant to

memory [10], that emotional problems have a tendency to develop a state of discontent, depression, stress, physical symptoms or fears associated with personal or school problems [11], stress is a feeling of physical or emotional tension that can come from any situation or thought that makes one feel frustrated, furious or nervous [12]. They also argue that psychological factors contribute to the initiation or exacerbation of a physical illness, which are called psychosomatic or psychophysiological alterations [13].

Considering the aforementioned aspects, in this study it has been proposed to identify as affect, the immune system, emotional problems and stress in the development of different types of cancer in children and adolescents who usually attend to the Manuel Ascencio Villarroel children's Hospital in Cochabamba region (Bolivia). Therefore, in order to fulfill this objective, a survey of the antecedents of the signs and symptoms that children and adolescents had before their diagnosis of cancer was made. This survey was done to the parents or guardians of a focused sample of children and adolescents with cancer.

Patients and Methodology

A cross-sectional study in a focused sample was conducted between January and February 2016 in Cochabamba, Bolivia, focused on a personalized descriptive survey, which was validated by researchers and psychologists from "Mayor of San Simón University", who valued the antecedents of the emotional state; warning signs, symptoms and physical changes in stress and the signs and symptoms of the immune status of 45 children and adolescents with cancer aged 1 to 15 years of age who regularly attend to the Manuel Asencio Villarroel children's hospital. The study was carried out in accordance with the guidelines established by the Declaration of Helsinki, the participation was voluntary without receiving financial incentives and the informed consent was subrogated and answered by the parents or legal guardians, the procedures were approved by the bioethics committee of the Faculty of Medicine of the Mayor of San Simón University. The variables collected were recorded confidentially and a descriptive statistical analysis of the data was carried out using the SPSS program.

Results

In Table 1, it can be seen they had two or more signs and symptoms of (low immunity) that the immune system was weakened 86.67%. They were usually affected by, virus and influenza 51,11, they had constant muscular pain and joints 44,44%, they had watery eyes and running nose 35,55%, they had persistent headache 40%, they got tired very much and fatigued in spite of rest 35.56%, they were regularly ill 31.11%, they had delay in the recovery of diseases 28.88%, they exhibited a fixed pattern of

disease 28.88%, they fought endlessly with the disease 24.44%.

In Table 2, it can be observed they had 2 or more warning signs, symptoms and physical changes in stress 79.26%. Especially, headache and stomachache 53.33%, eating disorders 51.11%, felt distressed 48.89%, were too sensitive 46.67%, felt 44.44% tired, had nightmares 37.77

%, 33.33% were distracted or thoughtful, 31.11% were worried, their hands were sweating 22.22%.

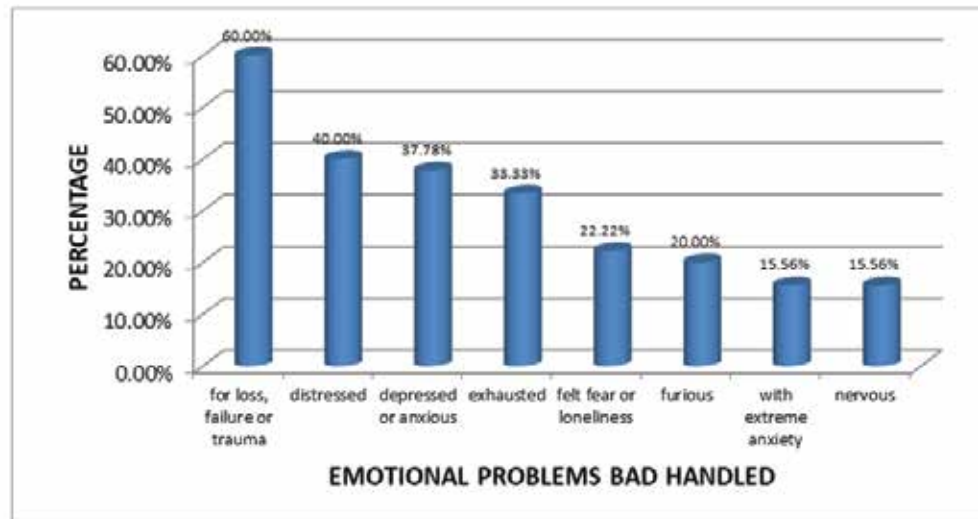
In graph 1, it can be seen they had one or more emotional problems badly handled, for loss, failure or trauma 60.0%, they felt frequently: distressed 40%, depressed or anxious 37.78%, exhausted 33.33% , felt fear or loneliness 22.22%, furious 20%, with extreme anxiety 15.56%, nervous 15.56%.

Table 1. Signs and symptoms of low immunity

Signs and symptoms	%
Two or more signs and symptoms The immune system was weakened	86,67 %
Weakened by viruses and flu	51,11 %
Muscle pain and constant joints	44,44 %
Tearful eyes and running nose	33,55 %
Persistent headache	40,00 %
Tiredness and fatigue despite rest	35,56 %
They were sick regularly	31,11 %
Delay in recovery from diseases	28,88 %
Fixed disease pattern	28,88 %
Fight with the disease	24,44 %

Table 2. Warning signs, symptoms and physical changes in stress

Signs and symptoms	%
Two or more warning signs, symptoms and physical changes in stress	79,26 %
Headache and stomach	53,33 %
Eating disorders	51,11 %
Anguish	48,89 %
Too sensitive	46,67 %
Fatigue	44,44 %
Nightmares	37,77 %
Distracted or thoughtful	33,33 %
Concerned	31,11 %
Sweating in the hands	22,22 %

Graph1. Emotional problems bad handled.

Conclusion

This study determined for the development of cancer suffered by children and adolescents, both poorly managed emotional problems and as stress and especially a weakened immune system, as a result of psychosomatic disorders that exposed them to develop cancer.

Discussion

Although in the Manuel Ascencio Villarreal Children's Hospital, in 2015, 1014 children and adolescents with different types of cancer were cared for, approximately 50 patients usually attend their treatments and controls of which in this cross-sectional study it manages to apply the survey to 45 children and adolescents. It would be interesting and more complete to perform another study with more of these patients in question.

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