COMPARISON OF THE ANXIETY LEVELS IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA AND THEIR WELL SIBLINGS USING THE CHILD DRAWING: HOSPITAL MANUAL"

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ABSTRACT

OBJECTIVES: The study aims to determine and compare the anxiety of children with acute lymphoblastic leukemia (ALL) and their well siblings based on Child drawing: Hospital manual and to identify factors associated with the level of anxiety.

METHODS: A prospective cross-sectional study was done in tertiary pediatric hospitals which included children aged five to eleven years old diagnosed with ALL and their well siblings.

RESULTS: A total of forty dyads of participants were studied. ALL patients presented higher anxiety scores than their siblings, but this was not statistically significant. There is a weak direct correlation between overall anxiety scores of ALL patients and their siblings (p = 0.017). There is insufficient evidence for an association between select clinical factors with anxiety scores. The linear regression model explained 49.77% in the variation of the anxiety scores but was not statistically significant.

CONCLUSIONS: There is a direct correlation between overall anxiety scores of ALL patients and their siblings. There is also a positive association with larger family size and child's response to sibling's illness. Larger families are likelier to have a healthier environment. The study also showed low to average anxiety levels among participants which may be related to quality of care and support given by the institution and inherent resiliency of the family.

RECOMMENDATIONS: Future research should aim to develop programs in partnership with families and other social support groups and explore the effectiveness of these interventions. Further studies should examine other possible cultural and psychodynamic factors prevalent in Filipino Family.

KEY WORDS: Anxiety, Siblings, Children, Chronic illness, Acute Lymphoblastic Leukemia, Child Drawing: Hospital Manual

INTRODUCTION

The burden of cancer cannot be underestimated. It is a major public health concern worldwide. Cancer is an enormous global health burden, toughing every region and socioeconomic groups. Today cancer accounts for about 1 in every 7 deaths worldwide more than HIV/AIDS, tuberculosis and malaria combined. More than 60% of cancer deaths occur in low- and middle-income countries, many of which lack the medical resources and health systems to support the disease burden. Moreover, the global cancer burden is growing at an alarming pace of about 21.6 million new cancer cases in 2030. It is foreseen that 13.0 million cancer deaths are expected to occur due to the growth and aging of the population.[1]

Acute Lymphoblastic leukemia (ALL) is a chronic disease. In the Philippines there is a growing number of young children diagnosed with life limiting illnesses. A 2016 survey conducted by the Philippine Cancer facts found that some 3,500 Filipino children are diagnosed with cancer yearly.[3] Children with chronic illnesses are required with repeated long-term visits to the hospitals. These children are at a greater risk of developing mental health or social adjustment problems, generally resulting in increase in levels of negative affect, higher rates of depression, suicidal behavior and distress.[4]

Siblings of children with cancer experience mental and social adjustment.[5] The disruption and turmoil created by these cancers reach beyond the diagnosed child to impact the entire family. Parents become highly distressed and their need to attend to the ill child at the hospital or at home may make them physically and emotionally unable to fully attend to the needs of their healthy children.[6] It is no surprise, then that siblings within these families are at risk

for emotional, behavioral, and academic problems. Given the level of disruption that childhood cancer causes for families, it is important to understand the consequences of these diseases for siblings and develop feasible interventions to reduce their distress and promote their adjustment.[7]

Determining the degree of anxiety of children with ALL and their sibling will give us an idea of its severity and help to find innovative ways for appropriate interventions that may help to address their psychosocial distress and foster their resilience and mental health.

This study intends to look at the level of anxiety of school-aged children with life limiting illnesses and their siblings using children's drawings, specifically, the Child Drawing: Hospital (CD:H) manual. It hypothesizes that children with ALL and their well siblings have significantly greater level of anxiety than the general population. There is very minimal research conducted specifically on the impact of a hospital-based program that addresses the psychosocial needs of pediatric chronically ill patients and their siblings. Moreover, this paper aims to help guide future policy maker to develop programs that will help reduce the burden of cancer for the family and siblings of children with cancer. This paper will help physicians accurately measure and monitor the degree of anxiety their children experience. This study hopes to add to existing knowledge on the literature on the significance of determining levels of anxiety in children with chronic illnesses as well as their siblings.

GENERAL OBJECTIVE

The general objective of this study is to determine and compare the anxiety level of children with Acute Lymphoblastic Leukemia and their well siblings based on Child Drawing: Hospital manual.

SPECIFIC OBJECTIVES

This study specifically aims:

1. To identify the factors associated with the level of anxiety of Children with Acute Lymphoblastic Leukemia and their well siblings in terms of socioeconomic characteristics, support systems, clinical status and duration of illness from the time of diagnosis.

2. To correlate level of anxiety of children with Acute Lymphoblastic Leukemia and

their well siblings with the following demographic features such as age, gender, education (private/public school), socioeconomic status; support systems, clinical status and duration of illness from the time of diagnosis.

METHODOLOGY

A prospective cross-sectional design was done among chronically ill patients with Acute Lymphoblastic Leukemia and their well siblings. The Child Drawing: Hospital manual by Clatworthy, Simon, and Tiedeman was used to assess the level of anxiety.[8]

Patient included in this study are children who were diagnosed with Acute Lymphoblastic Leukemia within six months or longer prior to the conduct of the study with no developmental delays or concerns; the child is between 5-11 years old and able to follow instructions; seeking medical consult at the Hematology-Oncology center out-patient unit and private clinic of Hema-oncology specialist of different institutions; the child participates voluntarily; and with informed consent by the parents and assent by the child as deemed necessary.

Siblings of children with ALL with no illness and developmental concerns or delays; aged 5-11 years old; able to follow instructions; participates voluntarily; and informed consent was given by the parents and assent was, likewise, given by older children.

The study was conducted at the out-patient department of Cancer and Hematology Center of the Philippine Children's Medical Center (PCMC) and private clinics of Hema-oncology specialist of different institutions.

Study Procedure

The research protocol was submitted and approved by PCMC IRB-EC prior to study implementation. Research eventuation was conducted among members of the research team. An informed consent was obtained from parents and guardians and assent from children ages 7-11 years old. Parents or guardians of eligible subjects were fully informed of the nature of the study, and, the process of data gathering. A checklist of inclusion and exclusion criteria was also accomplished. Primary information which include age, gender, socioeconomic status and the duration of illness from the time of diagnosis were obtained by the investigator.

The study was conducted in a quiet room free from any distractions and medical procedures. Two instruments were used for the study; the Sociodemographic Questionnaire and

the Child Drawing: Hospital manual. The index patient and the corresponding sibling were subjected to the sociodemographic Questionnaire and Child Drawing: Hospital manual (CD:H).

The CD:H, developed by Clatworthy, Simon, and Tiedeman, was used to measure the participants' level of anxiety. This instrument was specifically made as a means of measuring the emotional status of the hospitalized school-aged child. It was designed to assess hospitalized children's anxiety from the child's point of view. Specifically it was developed as a means to produce an instrument that is nonthreatening to children; with an element of fun; appropriate to the child developmental level; easily administered; and scored with a scientifically sound mechanism. This manual contains three parts: Part A contains 14 items scored on a scale of 1 to 10, with 1 indicating the lowest level of anxiety and 10 the highest level; Part B is an eight items portion presumed to be pathological indices; and Part C is a gestalt rating that calls for an overall response by the scorer to the child's anxiety as expressed in the picture on a 1 to 10 scale. A score of 11 indicates coping or low anxiety, whereas a score of 10 indicates disturbance or high anxiety.[23]

The instrument consisted of an 8.5 x 11-inche blank white sheet of paper and a box of eight crayons (red, purple, blue, green, yellow, orange, black, and brown). The child was asked to "draw a picture of a person in the hospital". The scoring of the tool is based on the theoretical foundations of drawings as a projective measure of children's states of anxiety.[23]

The child doing the drawing was asked to sit on a table of an appropriate height. The researcher then handed the piece of paper to the child at an angle for the child to determine the placement of the drawing on the paper. A box of crayons was opened exposing all of the colors available. The crayons were the only tool allowed to make the drawing (e.g., no pencils were used).

The child was instructed as follows: "Please draw a picture of a person in the hospital." The person administering the CD: H observed the child to be sure that the child was able to attend to the task. In the event that the child becomes distracted, the directions were again repeated, and the child was encouraged to participate. Some children asked questions when they were unsure of themselves; when they were suspicious of the situation; or when compulsiveness, neatness, or concreteness interfered with the task of completion. These questions were responded to either with the original instructions or with clarifications that were congruent with the given instructions and have not influenced the child to respond in one

way or the other. The children prompted not to add parts or color to the drawing. As the child had indicated verbally or by gesture that he or she is finished, the drawing and crayons were collected. No time limit was given. The drawings were labeled on the backside of the paper with the child's age, gender and birth date.

The drawings of the children were scored using the CD:H manual, by three raters. The first rater has a doctor's degree in Counseling Psychology, is a Certified Counseling and Developmental Psychologist from the Psychological Association of the Philippines and is likewise a Certified Child Life Specialist from the Child Life Council, USA. The second rater has a master's degree in Family Life and Child Development, with years of experience as a child life specialist. The third rater is the Executive Director of Kythe Foundation Inc., with a master's degree in psychology and a Certified Child Life Specialist.

The third rater was consulted if the first two raters were unable to determine the score. Inter-rater reliability was determined using Spearman's correlation.

The Children's drawings were interpreted using the CD:H manual, which has acceptable validity and reliability. Using the manual, the drawing is scored in three parts and includes a total score depicting the child's level of anxiety and was analyzed by a Psychologist.

Part A contained 14 items and was scored on a scale of 1 to 10, with 1 indicating the lowest level of anxiety and 10 the highest level. These items were 1. Person: Position; 2.Action; 3. Length of Person; 4. Width of Person; 5. Facial Expression; 6. Eyes; 7. Size of Person to Environment; 8. Color: Predominance; 9. Color: Number Used; 10. Use of Paper; 11. Placement; 12. Strokes: Quality; 13. Hospital Equipment; and 14. Developmental Level.

Part B was scored by giving additional points for the presence of any of eight items presumed to be pathological indices. These items included: 1. Omission: 1 Part; 2. Exaggeration of a Part; 3. Deemphasis of a Part; 4. Distortion; 5. Omission: 2 or more parts; 6. Transparency; 7. Mixed Profile; and 8. Shading.[26]

Part C was a gestalt rating that called for an overall response by the scorer to the child's anxiety as expressed in the picture on a 1 to 10 scale. A score of 11 indicates coping or low anxiety, whereas a score of 10 indicates disturbance or high anxiety.

A total score was obtained by adding the scores of the three sections, with the range of possible total scores from 15 to 290, with higher

numbers indicating more anxiety. Table 1 shows the range of Child Drawing: Hospital manual scores and its corresponding qualitative description on the level of anxiety. Data were checked for completeness, accuracy and consistency. The score of the drawings was encoded and analyzed.

Descriptive statistics was used to summarize the clinical characteristics of the patients. Frequency and proportion was used for nominal variables. Median and range was used for ordinal variables. Mean and SD for interval/ratio variables. Paired sample t-test and Wilcoxon Signed Ranks test was used to compare item and scale scores. All valid data was included in the analysis. Spearman's correlation coefficient was used to determine the correlation between the patient's and sibling's anxiety scores. Simple and multiple linear regression analyses were performed, after checking that it meant for statistical assumptions required for these analyses. Missing variables were neither replaced nor estimated. Null hypotheses were rejected at 0.05 α-level of significance. STATA 15.0 was used for data analysis.

Ethical Considerations

The protocol of this study adhered to the ethical principles set out in relevant guidelines, including the Declaration of Helsinki, WHO guidelines, International Conference on Harmonization-Good Clinical Practice, and National Ethics Guidelines for Health Research. The study protocol was submitted and approved by the Institutional Review Board- Ethics Committee.

RESULTS

A total of 40 dyads of children with ALL and their siblings was included in this study. Our patients' socio-demographic profile is presented in Table 1. Majority, eighty eight percent of ALL fathers were employed. In comparison, 75% of ALL, mother were unemployed. The percent of the patients have a monthly per capita income equal to 140% (C3). Forty five percent of the family resides in the National Capital Region.

Table 1. Sociodemographic Profile of Parents of Leukemia Patients and their Siblings

	Frequency (%); Mean ± SD; Median (Range)
Father's occupation	
Employed	35 (87.50)
Unemployed	2 (5)
Don't know	2 (5)
Deceased	1 (2.50)
Mother's occupation	
Employed	10 (25)
Unemployed	30 (75)
Socioeconomic status	
C1	0
C2	1 (2.50)
C3	29 (72.50)
Indigent	0
Pay	10 (25)
Region	
NCR	18 (45)
Region 1	1 (2.50)
Region 3	8 (20)
Region 4A	11 (27.50)
Region 5	1 (2.50)
Region 6	1 (2.50)
Transferred place of residence	4 (10)

The ALL patients had a mean age of 7.65 ± 1.94 years. Sixty five percent of ALL were male. The siblings had a mean age of 8.4 ± 1.89 years. Majority, 60% were female (Table 2).

As seen in table 3, thirty five percent of Leukemia patients are second born, 30% were first born and 17.5% were third born. In comparison, the well siblings of ALL patient were second born (40%), 38% were first born and 7.50% were third born.

Table 2. Age, Sex and Birth Order of Leukemia Patients and their Siblings

	Patients (n=40)	Siblings (n=40)
	Frequency (%); Mean ± SD; Median (Range)	
Age (years)	7.65 ± 1.94	8.4 ± 1.89
Sex		
Male	26(65)	16 (40)
Female	14(35)	24 (60)
Birth ordinal position		
1	12(30)	15 (37.5)
2	14(35)	16 (40)
3	7(17.50)	3 (7.50)
4	3(7.50)	4 (10)
5	2(5)	1 (2.5)
6	2(5)	1 (2.5)

There were twenty three percent each of ALL B-cell and ALL standard included in the study. Twenty three percent of the study subjects were in maintenance phase of treatment and three percent were being monitored (Table 3).

Table 3. Diagnosis and clinical status of 40 leukemia patients

Time since diagnosis (months)	28 (6 – 109)
Diagnosis	
ALL	20 (50)
ALL B-cell	9 (22.50)
ALL isolated CNS	1 (2.50)
ALL Standard	9 (22.50)
ALL T-cell	1 (2.50)
Clinical status	
ALL 4th cycle	1 (2.50)
ALL Bone Marrow relapsed	1 (2.50)
ALL chemo	2 (5)
ALL Maintenance	23 (57.50)
ALL consolidation	1 (2.50)
ALL induction	2 (5)
ALL intensification	1 (2.50)
ALL Monitoring	3 (7.50)
ALL Relapsed	2 (5)
ALL Off-chemo	2 (5)
ALL MSK	2 (5)

Comparative analysis of the 14 items in Child Drawing: Hospital manual part A showed that the number of color used was significantly higher among ALL patients (P Value 0.029). The other item showed insufficient evidence to demonstrate a difference in scores between ALL patients and their well siblings (Table 4).

Table 4. Comparative Analysis of Child Drawing: Hospital Manual Part A of 40 dyads of Leukemia Patients and their Siblings

	Patients (n=40)	Siblings (n=40)	P value
	Median (Range)		
Person position	2 (1 – 10)	2 (1 – 10)	0.567
Action	5 (1 – 10)	5 (1 – 10)	0.724
Length of person*	3 (1 – 10)	3 (1 – 10)	0.090
Width of person	7 (1 – 10)	6 (1 – 10)	0.383
Facial expression	4.5 (1 – 10)	4 (1 – 10)	0.552
Eyes	7 (1 – 10)	7 (1 – 10)	0.378
Size of person to environment	2.5 (1 – 9)	1 (1 – 10)	0.291
Color predominance	6 (1 – 10)	8 (1 – 10)	0.548
Color number used	3 (1 – 10)	2 (1 – 10)	**0.029**
Use of paper	2 (1 – 9)	1.5 (1 – 9)	0.287
Placement	1 (1 – 8)	1 (1 – 10)	0.371
Stroke quality	3 (1 – 7)	3 (1 – 7)	0.474
Hospital equipment	3 (1 – 10)	3 (1 – 6)	0.161
Developmental level	5 (2 – 10)	5 (1 – 10)	0.502

Statistical test used: Wilcoxon Sign Rank Test

Comparative analysis of Child drawing: Hospital manual Part B score between ALL patients and their siblings showed no significant difference (P Value >0.05). However, it was noted that shading, omission of 2 or more parts, omission of one body part, and exaggeration are observed in both ALL patients and their siblings (Table 5).

Table 5. Child Drawing: Hospital Manual Part B Scores of 40 dyads of Leukemia Patients and their Siblings

	Patients (n=40)	Siblings (n=40)	P value
	Median* (Range), [number of children]		
Omission: 1 part	5 [n=12]	5 [n=13]	-
Exaggeration of a part	5 [n= 8]	5 [n=10]	-
De-emphasis of a part	5 [n=5]	5 [n=1]	-
Distortion	10 (5 – 10) [n=7]	10 [n=2]	-
Omission: 2 or more parts	10, [n=20]	10 [n=	-
Transparency	0	0	-
Mixed profile	10 [n=1]	0	-
Shading	10 [n=35]	10 [n=35]	-

Comparative analysis of child's drawing: Hospital manual Part C showed no significant difference.

Table 6 outline the overall anxiety scores based on the Child Drawing: Hospital Manual. ALL patients have a mean score higher than the well siblings in all part of the manual. However, the result is not significantly different between the two groups with P value of 0.062.

Table 6. Overall Anxiety Scores based on the Child Drawing: Hospital Manual of 40 dyads of Leukemia patients and their Siblings

	Patients (n=40)	Siblings (n=40)	P value
	Frequency (%); Mean ± SD; Median (Range)		
Part A (highest possible score is 140)	62.68 ± 18.53	57.68 ± 17.26	0.137[‡]
Part B (additional scores for pathologic items)	18.75 ± 6.86	16.5 ± 5.80	0.068[‡]
Part C (Gestalt, overall responses of scorer to the child's anxiety; highest possible score is 10)	5.83 ± 1.71	5.18 ± 2.06	0.084[‡]
Overall score	87.25 ± 22.19	79.35 ± 21.11	0.062[‡]
Interpretation			0.115[ᵭ]
Very low	0	0	
Low	18 (45)	26 (65)	
Average	21 (52.50)	14 (35)	
Above average	1 (2.50)	0	
Very high	0	0	

Statistical tests used: ‡ - Paired sample t test; ᵭ - Fisher's exact test

Statistical analysis was done to determine any association of ALL patient's anxiety score with selected clinical factors. Simple linear regression analysis showed insufficient evidence to demonstrate an association between select clinical factors (Table 7).

Table 7. Simple Linear Regression of Patient's Anxiety Score and Select Clinical Factors (n = 40)

	Crude Beta coefficient	95% Confidence Interval	P-value
Age	0.650	-2.96 – 4.26	0.718
Time diagnosis (months)	0.096	-0.21 – 0.41	0.532
Sex (Female)	-0.933	-15.79 – 13.92	0.899
Birth ordinal position			
1	(reference)	-	-
2	0.452	-17.36 – 18.27	0.959
3	-7.476	-29.01 – 14.06	0.485
4	-4.333	-33.56 – 24.9	0.765
5	-27.8333	-62.42 – 6.75	0.111
6	15.667	-18.92 – 50.25	0.364
Father's occupation			
Employed	(reference)	-	-
Unemployed	18.414	-15.24 – 52.07	0.274
Mother's occupation			
Employed	(reference)	-	-
Unemployed	-6.333	-22.82 – 10.15	0.442
Socioeconomic status			
C2	-41.7	-87.18 – 3.78	0.071
C3	-12.98	-28.88 – 2.92	0.107
Pay	(reference)	-	-
Region			
NCR	(reference)	-	-
Region 1	2.333	-44.07 – 48.74	0.919
Region 3	13.083	-6.11 – 32.28	0.175
Region 4A	3.970	-13.31 – 21.26	0.644
Region 5	-23.667	-70.07 – 22.74	0.307
Region 6	-23.667	-70.07 – 22.74	0.307
Transferred place of residence	-14.167	-37.69 – 9.36	0.230
Sibling's Total anxiety score	0.297	-0.35 – 0.63	0.078

Multiple linear regression showed insufficient evidence to demonstrate an association between ALL patient anxiety score and select clinical factors with anxiety scores. However, compared to first born, those who were born fifth have associated lower anxiety score. The model explained 50.28% in the variation of the anxiety scores, but was not statistically significant (p = 0.586)

Analysis of siblings' anxiety score and selected clinical factors was determined through simple linear regression. There is insufficient evidence to demonstrate an association between select clinical factors with anxiety scores (P value >0.05) (Table 8).

Table 8. Simple Linear Regression of Sibling's Anxiety Score and Select Clinical Factors (n = 40)

	Crude Beta coefficient	95% Confidence Interval	P-value
Sibling's Age	-2.527	-6.21 – 1.15	0.173
Sibling's sex (Female)	-2.899	-16.63 – 10.83	0.671
Birth ordinal position			
1	(reference)	-	-
2	3.857	-13.31 – 21.03	0.651
3	-9.214	-29.97 – 11.54	0.373
4	-14.17	-42.34 – 14.0	0.314
5	-1	-34.33 – 32.33	-.952
6	-15.5	-48.83 – 17.83	0.351
Father's occupation			
Employed	(reference)	-	-
Unemployed	-9.857	-41.1 - 21.38	0.526
Mother's occupation			
Employed	(reference)	-	-
Unemployed	4.333	-11.41 – 20.08	0.581
Socioeconomic status			
C2	-27.3	-71.84 – 17.24	0.222
C3	-10.02	-25.6 – 5.55	0.200
Pay	(reference)	-	-
Region			
NCR	(reference)	-	-
Region 1	34.278	-8.72 – 77.28	0.114
Region 3	13.903	-3.88 – 31.69	0.121
Region 4A	-0.995	-17.01 – 15.02	0.900
Region 5	-20.722	-63.72 – 22.28	0.334
Region 6	-8.722	-51.72 – 34.28	0.683
Transferred place of residence	9.611	-12.99 – 34.21	0.395
Patient's total anxiety score	0.268	-0.03 – 0.57	0.078

Analysis was performed to determine any association between siblings' anxiety score and selected clinical factors. The result showed insufficient evidence to demonstrate an association between select clinical factors with anxiety scores. The model explained 49.77% in the variation of the anxiety scores, but was not statistically significant (p = 0.508).

DISCUSSION

Sibling relationships are intense, complex and of infinite variety. It is widely accepted that siblings contribute enormously to family life. Unfortunately, children as siblings have largely been overlooked in most family health research in favor of the mother-child dyad. The resultant lack of understanding of the world of siblings becomes especially problematic when health professionals attempt to deliver true family-centered care to families with a chronically ill or disabled child.[27] Bank and Kahn highlighted the importance of the sibling relationship by asserting that siblings spent much more time together than any other family subsystem and that they are striking empathic with one another.[28]

This study compared the level of anxiety of children with ALL versus their well siblings using the Child Drawing: Hospital Manual. The result shows that on the average, ALL patients present higher scores than their well siblings. This however, were not statistically significant. Childhood chronic illness has long been thought to have a negative impact on the psychological functioning and behavior of the ill child that compared with healthy peers.[29]

Childhood chronic illness, affect not only the sick child but all the family members.[30] Coddington, in a survey of life events as etiology factors in childhood disease, found that sibling illness ranked as among the most stressful.[31] In several studies they concluded that these siblings were a "population at risk to experience psychological difficulties". [27,32,33] Similarly, the results of our study shows that there is a direct correlation between the overall anxiety scores of the ALL patients and their siblings. This means that the higher the score of the patients, the higher it is as well for the sibling, and vice versa. This is parallel to the result of the study done by Minuchin *et al* which showed that siblings usually share a common environment as well as their parents' attention.[34] The study also showed that siblings serve an important functions as socializers to one another, forming cohesive groups and reciprocating behavior on one another. In a study by Spinetta and Deasy-Spinetta, they concluded that siblings live through the experience with the same intensity as the patient.[35]

It was noted in this study that a lower anxiety level of ALL patient who were born fifth compared to those who were born first. This in relation to the family size wherein previous studies have shown that larger families is likely to have a healthier family environment as the burden of care is dispersed among several children.[35,36,37]

Studies have shown that anxiety levels are significantly affected by factors such as socioeconomic status, transfer of residence, educational attainment of the parents and the patients.[27,37,38] Farber suggested that a child's general life opportunities and social mobility are affected by having a chronically ill sibling.[38] Cairns et al., noted that the financial stress of having a child with cancer, may deprived parents and siblings to fulfill their basic needs as well as the luxuries of life.[39] They also suggested that the long-term needs of siblings may be slighted as parents focus on the draining tasks of the present. Moreover, it is interesting to note that a child's health problem may directly influence where the family will live. Families often move to be closer to treatment center or to find a better climate for the sick child.[40] Moving involves both financial and psychological stress that clearly affects healthy siblings.[31] However, this is not congruent in this study it showed that there is no significant correlations to selected clinical factors in relation to level of anxiety of children with ALL and their well siblings.

CONCLUSION

The Family is the primary social support system for children; however, childhood cancer disrupts family pattern and may interfere substantially with the family-based support that healthy siblings typically receive.[41] Parents of children with cancer report difficulty in attending to the needs of both their sick and healthy children.[5,12,13, 14]

This study showed there is a direct correlation between the overall anxiety scores of the ALL patients and their siblings. This means that the higher the score of the patients, the higher it is as well for the sibling, and vice versa. Moreover there is a positive association with larger family size and the child's response to a sibling's illness. The larger families is likely to have a healthier environment mainly because the burden of care is dispersed among several children.[35,36, 42]

The study also showed low to average anxiety levels among the participants which may be related to the quality of care and support given by the institution and inherent resiliency of the families included in the study.

LIMITATIONS OF CURRENT RESEARCH

It is recommended that a bigger sample be considered. We did not have a comparison group so we cannot determine if the absolute levels of anxiety experience by the siblings is significant compared to other general population. Furthermore, since we do not have longitudinal data, we cannot determine if patterns in amount of anxiety level as the disease condition progresses. Thus, future research may confirm a longitudinal relationship between social support and better functioning for siblings of children with cancer. Lastly, we did not present variation in our finding as a function of age or gender and other selected clinical factors, despite our sample size. These are important questions that may help guide future intervention or prevention programs to help support siblings of children with cancer.

Future research should aim to develop programs and pilot test in partnerships with families and other social support groups. Future research should explore the effectiveness of these interventions to assist the siblings of children with chronic illness. Future researchers should investigate further the impact of disease factors on psychological functioning of siblings. Further exploratory studies can be conducted in the future to examine other possible cultural and psychodynamics prevalent in the Filipino Family.

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