Monteverde, Joaquin D. ***ASSESSING THE PREVALENCE OF PSYCHOSOCIAL DISTRESS AMONG PEDIATRIC AND ADOLESCENT PATIENTS WITH LEUKEMIA USING THE DISTRESS THERMOMETER TOOL, AN OBSERVATIONAL STUDY.***

Master of Science (Clinical Research Management), March 2023

Background:

A leukemia diagnosis causes psychosocial distress in a significant number of patients. When this psychosocial need goes unattended, it can negatively affect their course of treatment. To prevent this issue, the Distress Thermometer (DT) allows a quick and valid way for patients/parents to self-report distress on a scale of 0-10, including identification of the distress source.

Objective:

This study aims to describe the findings from a convenience sample of patients with leukemia that completed the DT screening from 2020-2022 to see if there is a difference association between demographic groups such as ethnicity (Hispanic vs. non-Hispanic), gender (Male vs. female), Leukemia type (ALL vs. AML), and age (0-5, 6-12, 13-18, 19-up).

Design/Methods:

Patients with leukemia who completed the DT at least once will participate in the study. Then the data will be analyzed using descriptive statistics and Chi-square. The first comparing method will use the suggested cut-off value for distress, where a score less than three indicates low or no distress and a score greater than 3 indicates significant distress.

The second method will look at distress levels in three categories: Low (0-3), Moderate (4-7), and High (8-10) across the demographic groups.

Results:

One hundred and thirteen patients meet the inclusion criteria with age ranges from 0 to 30 with an average age of 9.5. There was 56 Males (49.6%) and 57 (50.4%) were females; 47 Hispanic (41.6%) and 66 non-Hispanic (58.4%); 89 had ALL (78.8%) and 19 had AML (16.8%). 58 participants (51.33%) indicated low, 45 (39.82%) moderate, and 10 (8.85%) high distress levels. When using the three categories of distress, there was no significant association of distress with gender, Leukemia type, or age, except with ethnicity ($p=0.32$), which originated from the moderate category. When using the cut-off value of 3 of distress there was no significant association with any demographic group. The most selected sources of distress were: Worry and Anxiety (38, 36.5%), followed by boredom, apathy, or Irritability (37, 35.6%), and Fatigue (30, 28.8%) in third place.

Conclusion:

The DT is a helpful tool for distress screening in a pediatric oncology department. A significant portion of patients with leukemia experience distress. Despite not showing a significant difference across demographic groups, the statistics show there might be a significant association between moderate distress levels and ethnicity, whereas non-Hispanics show a higher prevalence over Hispanics. Future studies need to explore this further probable association.

ASSESSING THE PREVALENCE OF PSYCHOSOCIAL DISTRESS AMONG PEDIATRIC AND ADOLESCENT PATIENTS WITH LEUKEMIA USING THE DISTRESS THERMOMETER TOOL, AN OBSERVATIONAL STUDY

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A leukemia diagnosis causes psychosocial distress in a significant number of patients. When this psychosocial need goes unattended, it can negatively affect their course of treatment. To prevent this issue, the Distress Thermometer (DT) allows a quick and valid way for patients/parents to self-report distress on a scale of 0-10, including identification of the distress source. This study descriptively evaluates the differences in distress prevalence from different demographic factors such as ethnicity, gender, leukemia type, and age.

ASSESSING THE PREVALENCE OF PSYCHOSOCIAL DISTRESS AMONG PEDIATRIC AND ADOLESCENT PATIENTS WITH LEUKEMIA USING THE DISTRESS THERMOMETER TOOL, AN OBSERVATIONAL STUDY.

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I want to thank God for this opportunity and privilege to increase my understanding of science and the human nature. I would like to thank my family for their unconditional support during all these years. They encouraged and supported me even when I though my goals seemed unreachable. Thank to my friends and co-workers from my internship site and from the Med-Sci program for the support and guidance. Finally, I would like to thank each member of my committee: Dr. Bailey, Dr. Basha, Dr. Yurvati, and Dr. Mathew for the opportunity to be part of the CRM program. Special thanks to Dr. Mohamed, initial support for the development of this project.

I firmly believe that nothing happens by accident, and I am grateful to be here on this exact moment.

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CHAPTER I

INTRODUCTION

Over the last decades, the standard of care for leukemia treatment and other types of cancer has advanced considerably, raising the survival rates in patients (Cools, 2012). However, leukemia is the most prevalent type of cancer in children and teenagers, and unfortunately, still, hundreds of children die yearly from a leukemia diagnosis (Siegel, Miller, Fuchs, and Jemal, 2021). In addition, the severity of treatment and fear of possible death might cause significant distress in the lives of the patients and their families, leading to a higher mortality rate (Borrescio-Higa & Valdés, 2022).

Studies indicate that the lack of psychosocial support could negatively impact or interfere with the course of treatment and symptoms, decreasing the quality of life in the patient, which ultimately translates into a lower survival rate (Ebob-Anya & Bassah, 2022). Therefore, it is important to screen patients for psychosocial distress from earlier stages of leukemia diagnosis and refer them for appropriate support.

The following observational study describes the findings from a previously collected sample of children and teenage patients with leukemia using descriptive statistics and Chi-Square. This study aims to evaluate the distress prevalence across demographic factors, including the symptoms and problems associated with distress.

BACKGROUND

Leukemia is a type of cancer affecting the normal development of stem cells in the bone marrow. In most cases, it typically affects white blood cells. Depending on the onset and type of cell affected, it can be subdivided into acute or chronic. Leukemia is usually classified as lymphoblastic or myeloid leukemia, depending on the type of cell it primarily affects (Leukemia & Lymphoma Society, 2021).

New technology, treatments, medicines, and clinical trials over the last 50 years made possible a significant increase in survival rates from the 1960s (Cools, 2012). However, leukemia

is still the most prevalent type of cancer in children and adolescents in the U.S. Each year, nearly 4000 pediatric patients receive a leukemia diagnosis (American Cancer Society, 2021), and Hispanic children seems to be at higher risk for leukemia in recent years (Matasar et al., 2006).

In 2021, approximately 2900 Hispanic children from ages 0-14 were diagnosed with cancer in the U.S. from this reported number of cases, unfortunately, between 300-400 Hispanic children were expected to succumb to the disease of Leukemia (Leukemia & Lymphoma Society, 2021; American Cancer Society, 2021; Barrington et al., 2015). Although nowadays, the five-year survival rate is 85.5% (National Cancer Institute, 2022), receiving a leukemia diagnosis or any cancer diagnosis can cause a significant change in the everyday lifestyle of the patient and their families. In addition, financial constraints, fear of the unknown, and the treatment process could represent significant sources of distress for the patients and their families (Chodidjah & Kongvattananon, 2022).

The modernization and improvement of the cancer standard of care transitioned from exclusively focusing on treating physical and biological symptoms to a more holistic approach. The creation of the psycho-oncology specialty in the 1970s aimed to provide support and intervention to the psychological needs of oncology patients. (Akechi, 2018)

The National Comprehensive Cancer Network (NCCN) coined the term distress as a disturbing feeling from an emotional, physical, spiritual, or social origin that exacerbates the cancer symptoms or negatively affects how the patient copes with the disease. (National Comprehensive Cancer Network, 2010). When patients do not receive the appropriate psychosocial support, they are most likely to decrease their quality of life and subsequently negatively impact the survival rate (Ebob-Anya & Bassah, 2022; Howell & Olsen, 2011)

A study by Albrecht & Rosenzweig from 2014 indicates that pediatric and adolescent patients are at significant risk of experiencing high distress, and approximately 45% of patients with leukemia experience psychosocial distress (Albrecht & Rosenzweig, 2014). The aggressiveness of leukemia treatment could partly be responsible for this finding. Generally, the standard treatment for leukemia includes lumbar punctures, chemotherapy, radiation, bone marrow transplants, and frequent hospitalization; after treatment, when the patient is in a remission state, they may experience a constant fear of relapse or death. Studies show that

patients without psychosocial or monitoring support after treatment are at a greater risk of developing post-traumatic stress syndrome. (Howell & Olsen, 2011; Rodin et al., 2013)

In an effort to prevent this problem, in 1999, the NCCN created a fast and reliable distress screening tool called "the Distress Thermometer" (DT). The DT is a short, valid, and accurate survey where patients or the caretaker indicate their level of distress on a scale from 0-10 within the last week (See Appendix). Additionally, they can identify and select the cause of distress. The oncology team uses this information, then refers patients for more rigorous assessment and receives appropriate care and support. (National Comprehensive Cancer Network, 2010)

In Canada, psychosocial care has become so relevant that Canadian patients routinely receive a distress screening when they visit their providers; it is called the sixth vital sign (Howell & Olsen, 2011). In addition, in recent years, The American College of Surgeons has required all cancer centers across the U.S. to screen for psychosocial distress at least once during treatment to receive full accreditation. This initiative aims to reinforce holistic support for patients with cancer and provide psychosocial support when needed (National Comprehensive Cancer Network, 2010). Considering this information and after understanding the importance of psychosocial support in pediatric oncology, the following study focuses on and aims to evaluate the prevalence of distress in leukemia pediatric and adolescent patients who completed the distress thermometer screening tool at Cook Children's Medical Center from 2020 to 2022.

SIGNIFICANCE

Studies indicate that a significant number of patients with leukemia experience psychosocial distress (Lowry et al., 2018; Albrecht & Rosenzweig, 2014). Furthermore, the evidence suggests adverse effects of untreated distress could translate into a lower quality of life and could reduce the survival probabilities (Lazenby, Tan, Pasacreta, Ercolano & McCorkle, 2015).

When healthcare providers prioritize screening for psychosocial distress as early as possible, the patient receives a referral for psychosocial support. Literature indicates intervention reduces distress levels in pediatric leukemia patients (Hsiao et al., 2019). Using a general

descriptive analysis of psychosocial distress screenings could provide a general understanding of patient needs within demographic factors and focus time and attention on patients at higher risk for distress. This study aims to increase the growing body of literature of that focuses on distress in patients with leukemia.

HYPOTHESIS/ PROBLEM & SPECIFIC AIMS

Psychosocial distress can manifest in a variety of ways, and different factors such as age, ethnicity, cancer diagnosis, and gender could play a role how distress is manifested. These factors could be intrinsic as well as extrinsic or genetic. A study by Peters et al. (2020) looked for risk factors for psychosocial distress, and the result of their study, in addition to other supportive literature, discovered that being a woman and of a younger age could be two interesting factors that increase the risk of experiencing high levels of distress. Additionally, the type of cancer did not seem to impact the manifesting levels of distress (Peters, Brederecke, Franzke, de Zwaan, & Zimmermann, 2020). The only two subtypes of leukemia considered in this study are Acute Myeloid Leukemia (AML) and Acute Lymphoblastic Leukemia (ALL) because of their significant prevalence in childhood leukemia. Although ALL and AML have different 5-year survival rates, 90% and 60-75%, respectively (National Cancer Institute, American Cancer Society, 2018), the National Cancer Institute describes very similar treatment for both AML and ALL, which could translate into very similar levels of distress.

Ethnicity is another factor worth noting regarding how patients and parents display or cope with distress. There is no clear consensus on differences between ethnic groups with a psychosocial distress outcome, yet cultural differences could explain how patients cope with distress. (Zeltzer & Lebaron, 1985; Dixon et al., 2019). Another study by Zeltzer and Lebaron (1985) indicates no significant difference in ethnicities (Anglo and Hispanic) when comparing psychosocial distress levels related to cancer treatment in an adolescent population. This present study will also evaluate and compare distress levels between two major ethnic categories: Hispanic and Non-Hispanic, to help identify if there is any major association. The Hispanic group consists of both Hispanics born in the U.S. and Hispanics born outside the U.S.

The Distress thermometer tool allows the collection of a specific problem list that represents the source of distress. A study by Lowry et al. claimed that the most common problems associated with pediatric oncology were anxiety, irritability, worry, fatigue, and pain (Lowry et al., 2018). The problems mentioned previously belong to the Physical and Emotional categories. We will evaluate if the collected sample follows the same symptom patterns.

Specific Aims

- **Specific aim 1:** To compare levels of distress prevalence between Hispanic vs non-Hispanic patients with leukemia.

  -Hypothesis 1: Hispanics will experience a difference prevalence than non-Hispanic patients.
- **Specific aim 2:** To determine the most reported distressing symptoms between Hispanics vs non-Hispanics patients.

  -Hypothesis 2: Physical and emotional are the most reported distress categories overall in leukemia patients.

DESIGN AND METHODOLOGY

From a previously collected sample of 263 patients with different oncology diagnosis that completed the DT, only 113 patients met the inclusion criteria. The inclusion criteria included patients with leukemia who completed the Distress Thermometer screening from December 2020 to June 2022. Only the first distress screening was included in the study for patients who completed the screening more than once. Patient's data were abstracted and stored in REDCap (Harris et al. 2009), and Excel was used for basic analysis and to develop graphs. Additionally, the data were analyzed using Chi-Square (95% C.I) in SPSS. The information collected included: name, age, distress level, ethnicity, diagnosis, source of distress (from the Problem List), and date of screening.

The first comparison method classified distress into two categories: No/Low Distress (0-3) and significantly distressed (4-10). This method uses a suggested cut-off value of three from a study by Patel et al. in 2020, offering high specificity (79.7%) and sensitivity (87.0%).

To further explore the prevalence of distress, the second comparing method will divide distress levels into three categories: Low (0-3), Moderate (4-7), and High (8-10) across demographic factors such as ethnicity (Hispanic vs. non-Hispanic), gender (Male vs. Female), age group (0-5, 6-12, 13-18, 19-up), and leukemia diagnosis (AML vs. ALL).

This study also examined the most common symptoms associated with distress selected by patients with leukemia from the Problem List section of the DT—first, a general overall view and then considering the ethnicity demographic factor for a more comprehensive understanding. As this study involved only secondary research use of identifiable private information which included access to protected health information in the electronic medical records (Epic), and posed minimal risk to the study participants, the investigators requested an Exempt Review from the local IRB.

RESULTS

The sample of 113 participants included in this study is described in Table 1. Participants were evenly distributed between genders and between the ages of 1 and 20 years, with two outliers at 24 and 30 years. Almost two-thirds of the population were non-Hispanic. In terms of leukemia diagnosis, the majority had Acute Lymphoblastic Leukemia (ALL) followed by Acute Myeloid Leukemia (AML). Less than 5% were diagnosed with other types of leukemia. The mean distress score was 3.5 (median = 3, SD = 2.39). Only 15 participants (13.27%) indicated they experienced a level of 0; however, they still selected sources of distress from the problem list. The most common distress level was 3, with 21 participants (18.58%), while no participant reported the maximum level of distress 10. From the total number of participants, 58 (51.33%) indicated no/low levels of distress and 55 (48.67%) participants indicated moderate to high levels of distress.

Demographic Data (n=113)	
Age	Mean: 9.50 Median: 9 Range: 0-30 St Dev: 5.47
Gender	Males (56, 49.6%) Females (57, 50.4%)
Ethnicity	Hispanic (47, 41.6%) Non-Hispanic (66, 58.4%)
Leukemia Type	ALL (89, 78.8%) AML (19, 16.8%) Other types of leukemia (5, 4.4%)
Distress Levels 0-10	Mean: 3.53 Median: 3 Std Dev: 2.39

Table 1. Demographics results.

The most remarkable finding in regard to ethnicity from the first comparison between the three categories of distress level, was in the moderate distress category, where non-Hispanics experienced greater moderate distress than Hispanics, 48.48% vs. 27.66%, respectively. Hispanics experienced more low and high distress than non-Hispanics, but not by a great margin. The Chi-Square test indicated a significant association between ethnicity and moderate levels of distress (p=.032, Table 2). The second comparison also showed that non-Hispanics experienced more moderate to high distress levels 53.03% vs. 42.55%

	Hispanic (N=47)	Non-Hispanic (N=66)	Statistical test (X^2), p
Using cut-off value of 3			1.206, .272
• No/Low distress	27 (57.44%)	31 (46.97%)	
• Significant distress	20 (42.55%)	35 (53.03%)	
Three level of distress			6.898, **.032**
Low	27 (57.44%)	31 (46.97%)	
Moderate	13 (27.66%)	32 (48.48%)	
High	7 (14.89%)	3 (4.55%)	

Table 2. Comparison of distress and ethnicity using two different methods of categorization of levels of distress.

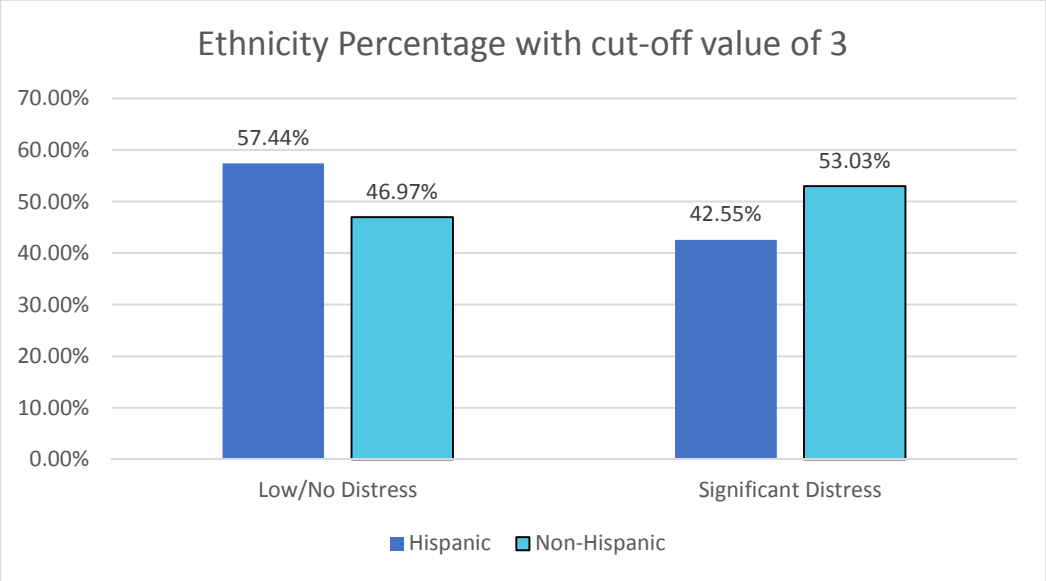

Figure 1. Within group percentages with cut off value across Ethnicity.

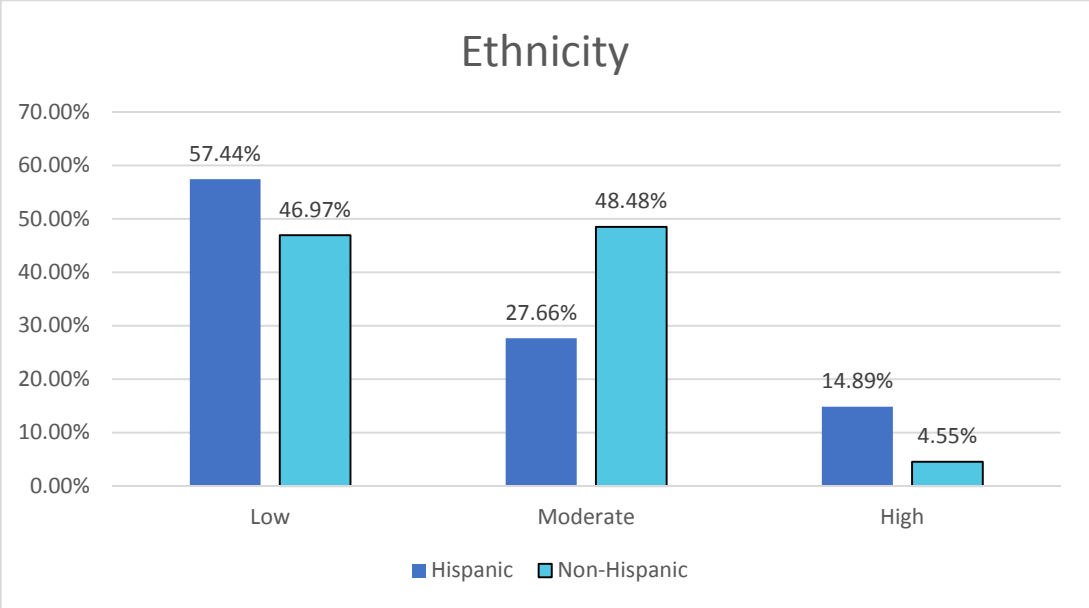

Figure 2. Within group percentages of 3 distress categories across ethnicity.

When examining distress levels across gender within the first comparison, females experienced slightly higher levels of moderate distress than males, while males experienced slightly higher levels of low distress than females (Table 3). Almost 9% of subjects in both genders reported having experienced levels of high distress. The second comparison using a cut-off value of 3 on the distress scale indicated that females generally experience higher prevalence of significance distress than males, but not by a great margin. Neither comparison revealed a significant association between gender and distress levels.

	Male (N=56) (%)	Female (N=57)	Statistical test (X^2), p
Using cut-off value of 3			.722, .396
• No/Low distress	31 (55.36%)	27 (47.37%)	
• Significant distress	25 (44.64%)	30 (52.62%)	
Three level of distress			.823, .663
Low	31 (55.36%)	27 (47.37%)	

Moderate	20 (35.71%)	25 (43.85%)	
High	5 (8.93%)	5 (8.77%)	

Table 3. Comparison of distress and gender using two different methods of categorization of levels of distress

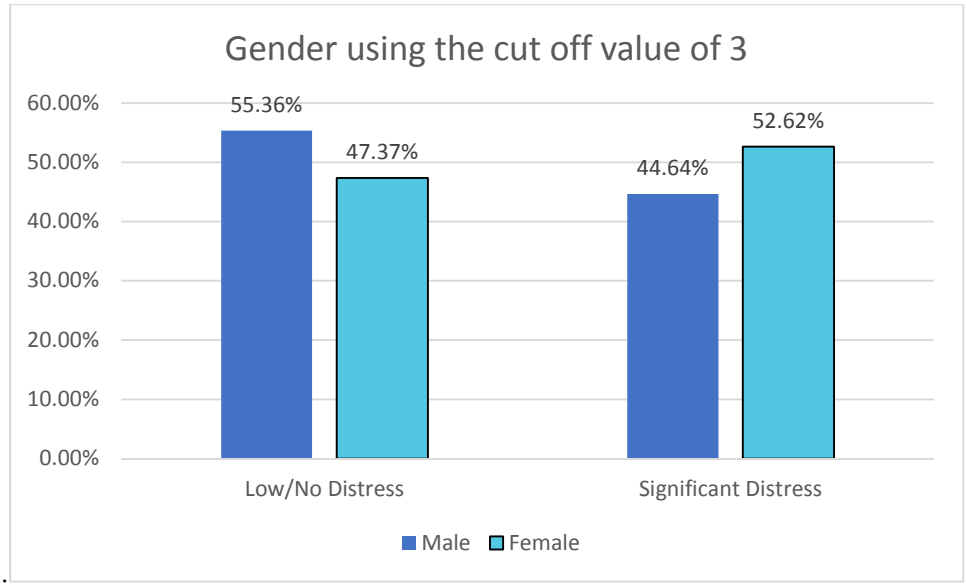

Figure 3. Within group percentages with cut off value across gender.

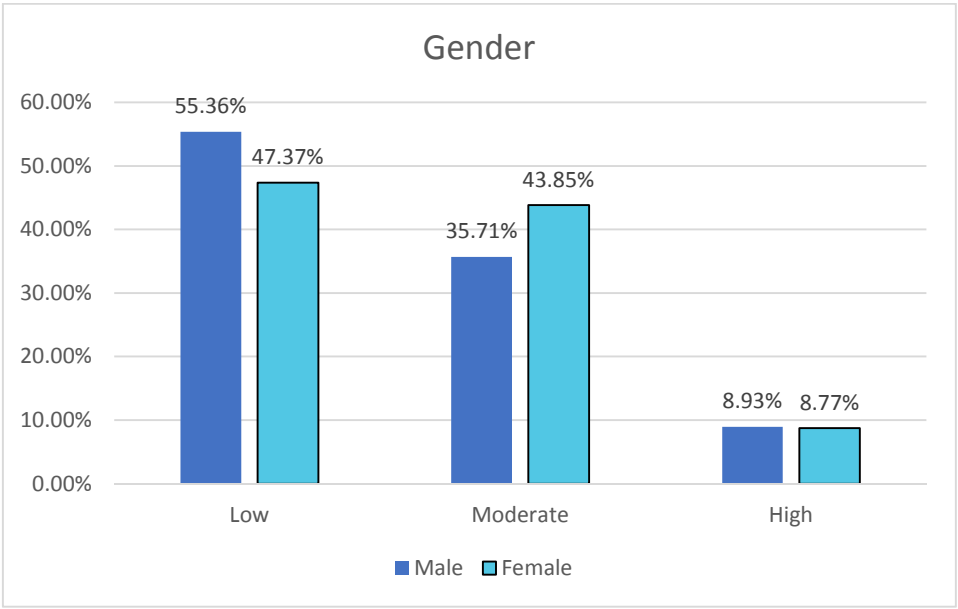

Figure 4. Within group percentages of 3 distress categories across gender.

Similar levels of distress were reported between subjects with ALL and AML when distress was evaluated between three levels (Table 4). The second comparison using a cut-off value of 3 for level of distress indicated that patients with AML reported experiencing slightly more distress than patients with ALL. Neither comparison revealed a significant association between distress levels and leukemia diagnosis.

	AML (N=19)	ALL (N=89)	Statistical test (X^2), p
Using cut-off value of 3			.117, .733
• No/Low distress	9 (47.40%)	46 (51.69%)	
• Significant distress	10 (52.63%)	43 (48.32%)	
Three level of distress			.128, .938
Low	9 (47.40%)	46 (51.69%)	
Moderate	8 (42.11%)	35 (39.33%)	
High	2 (10.52%)	8 (8.99%)	

Table 4. Comparison of distress and type of leukemia using two different methods of categorization of levels of distress.

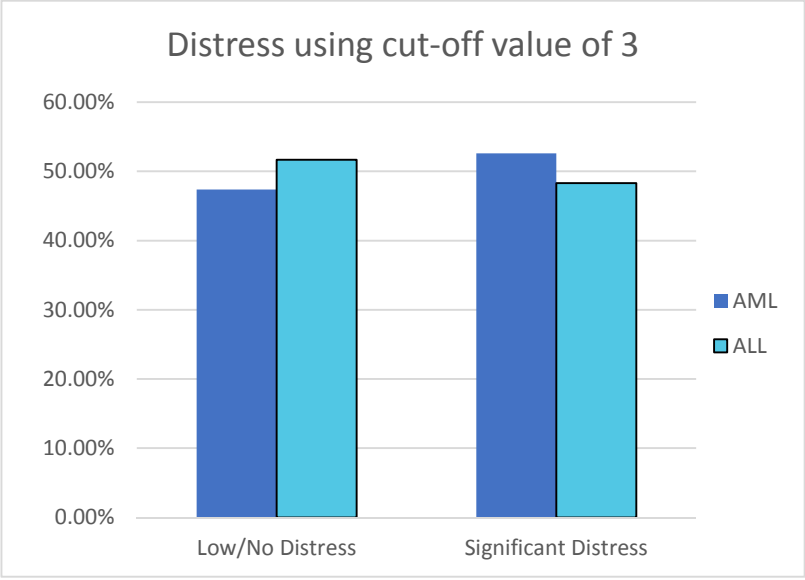

Figure 5. Within group percentages with cut off value across Leukemia type.

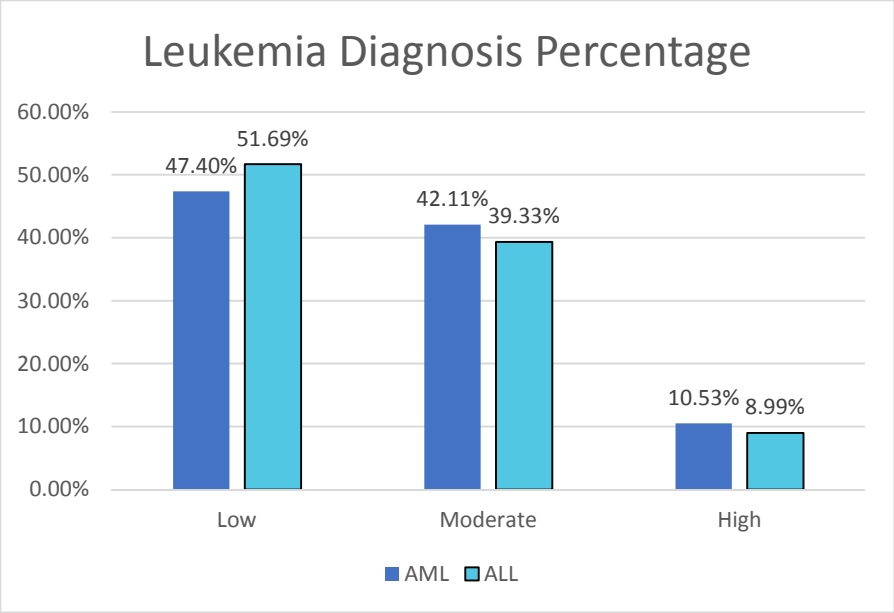

Figure 6. Within group percentages of 3 distress categories across Leukemia type.

Age group was the only category that utilized more than two sub-categories to minimize the impact of the different stages of psychosocial development by age (Table 5). This study included age groups of 0-5, 6-12, 13-18, and 19-30. When considering the three distress categories, the greatest difference is found in the moderate category, where the percent of

subjects reporting distress decreases as the age group increases (57% to 20%). The second comparison with two levels of distress indicated the age group 0-5 had the highest distress prevalence compared to the other groups. No significant association was identified between age and levels of distress in either comparison.

	0-5 (N=33)	6-12 (N=46)	13-18 (N=29)	19-up (N=5)	Statistical test (X^2), p
Using cut-off value of 3					3.384, .336
• No/Low distress.	13(39.39%)	24(52.17%)	18(62.07%)	3(60%)	
• Significant distress	20(60.61%)	22(47.83%)	11(37.93%)	2(40%)	

Three level of distress					8.188, .225
Low	13(39.39%)	24(52.17%)	18(62.07%)	3(60%)	
Moderate	19(57.58%)	17(37.00%)	8(27.59%)	1(20%)	
High	1(3.03%)	5(10.9%)	3(10.34%)	1(20%)	

Table 5. Comparison of distress and age using two different methods of categorization of levels of distress.

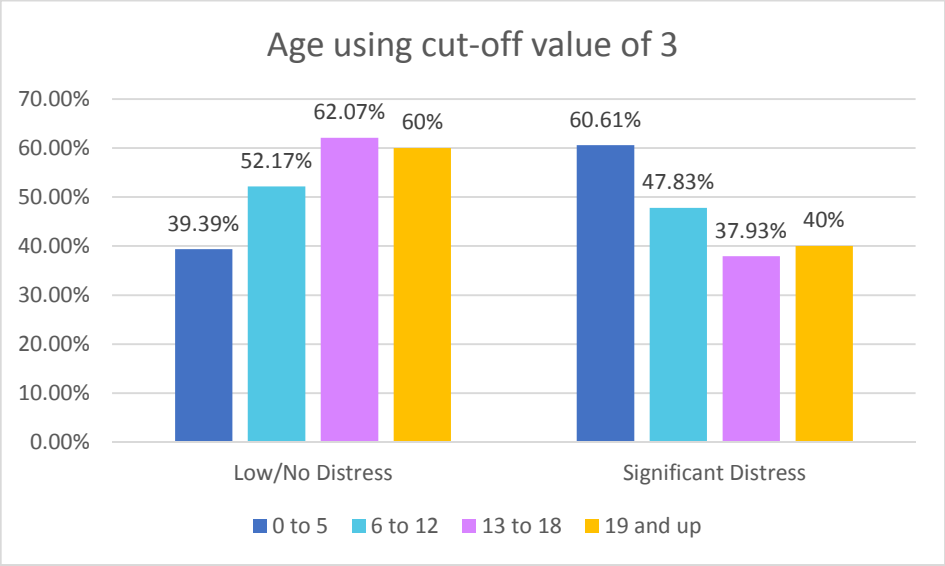

Figure 7. Within group percentages with cut off value across age group.

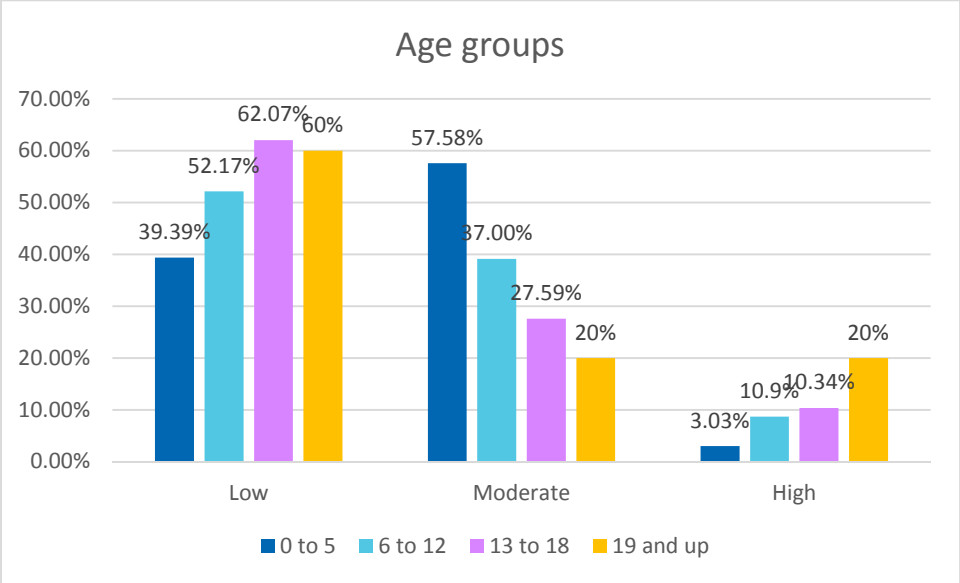

Figure 8. Within group percentages of 3 distress categories across age groups.

The last DT component was the responses from the problem list section (Table 5). Participants selected worry or anxiety most often with boredom or apathy and irritability each selected by one less subject. The remaining sources of distress chosen from the problem list were selected by between 18% and 28% of subjects. Considering the association discovered earlier between moderate distress levels and ethnicity, this study compared the categories of distress sources between Hispanics and non-Hispanics. Both ethnic groups indicated physical and emotional categories as the most selected, however non-Hispanics patients selected more instances of physical and emotional problems compared to Hispanics (Figure 10).

Top 10 sources chosen from problem list
1. Worry or Anxiety (38, 36.5%)
2. Boredom or Apathy / Irritability (37, 35.6%) Tied
3. Fatigue (30, 28.8%)

4. Pain (29, 27.9%)
5. Isolation (28, 26.9%)
6. Hair Loss or change in general appearance (24, 23.1%)
7. Anger (23, 22.1%)
8. Sadness or depression / Nervousness (22, 21.2%) Tied
9. Sleep (21, 20.2%)
10. Procedures (19, 18.3%)

Table 6. Most Selected sources of distress from the problem list section of the Distress Thermometer.

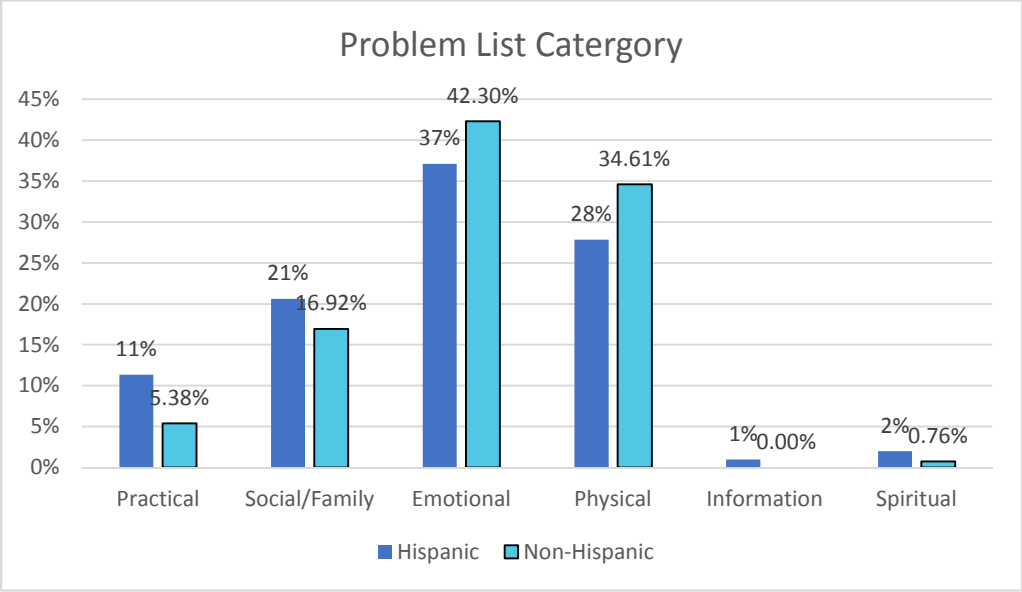

Figure 9. Problem list category in Hispanics vs. Non-Hispanics.

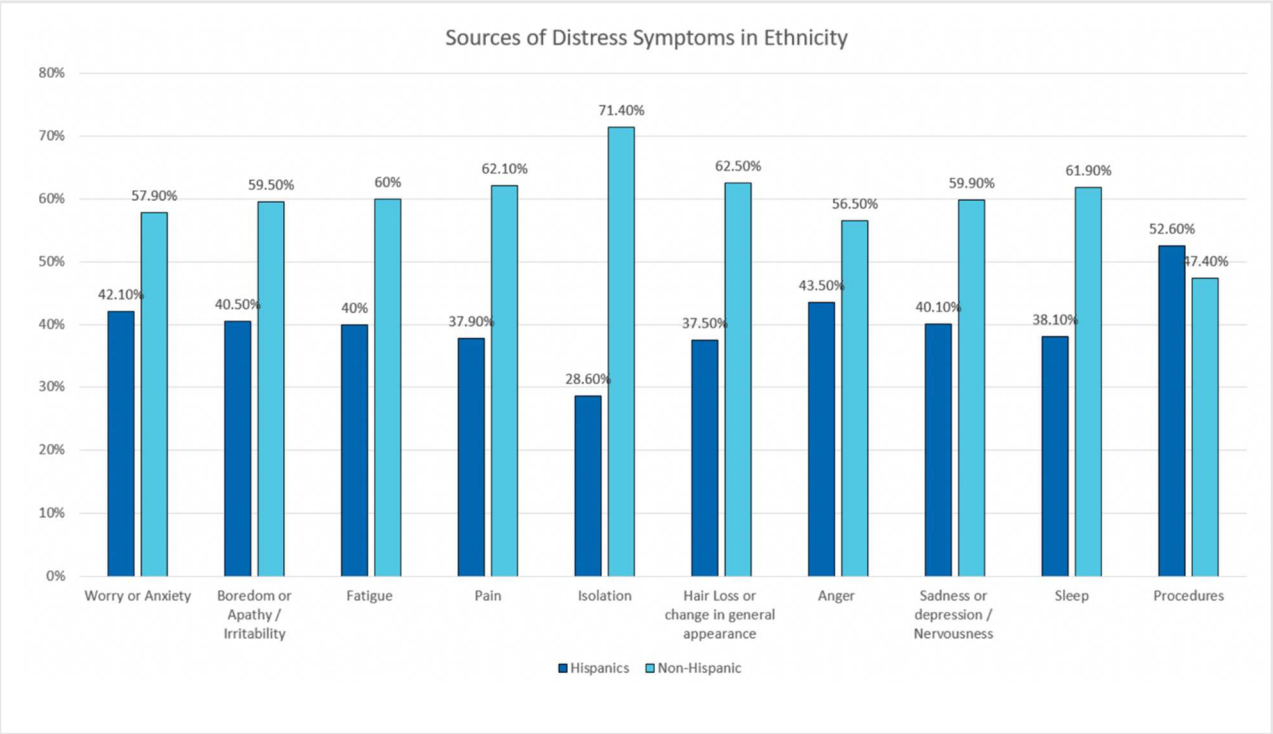

Figure 10. Problem List Specific Distressing symptoms in Hispanics vs. Non-Hispanics.

DISCUSSION AND CONCLUSION

DISCUSSION

The use of the distress thermometer in a pediatric oncology setting successfully allowed the screening of patients with leukemia and discovered a prevalence of psychosocial distress in almost half of the study participants. Despite the small sample size, one of the most interesting findings is how the incidence of ALL over AML matches and confirms the U.S. Cancer Statistics from the NIH database (Leukemia and Lymphoma Society, 2021), where 3 out of 4 children with leukemia have an ALL diagnosis.

Caring for the psychosocial needs of pediatric oncology patients is a relatively new practice. In order to receive official accreditation, health organizations are now required to

screen patients so that they may identify and address a patient's psychosocial needs in an effort to increase quality of life and chances of survival. Several validated distress screening tools exist, among which the distress thermometer is a rapid, convenient, and accurate screening tool (National Comprehensive Cancer Network, 2010). However, there are certain limitations associated with it. Patients must clearly understand the definition of distress to properly describe the intensity and potential source from the problem list. Several challenges are associated with the collection and management of distress and the majority lies on the administrative side due to the complexity of psychosocial distress (Deshields et al., 2021). In addition, the Distress Thermometer can be easily confused as a diagnostic test, when in reality it is used to refer a patient to receive further evaluation when the provider considers it appropriate. Psychosocial intervention studies have demonstrated the effectiveness of distress screening in reducing distress levels (Hsiao et al., 2019).

Distress level studies are limited, especially when involving leukemia, but a few utilize distress levels as a continuous or numerical value and compare the means across different demographic groups to evaluate for a significant difference. This study intended that approach initially; however, no significant differences were observed between genders, ethnic groups, or leukemia diagnosis. Therefore, this study adopted to categorize levels of distress using both the three levels of distress (Low, Moderate, and High) approach and a cut-off value to evaluate other differences among the demographic groups. This approach enabled us to identify more specific information about the distribution of distress levels between groups.

Non-Hispanics reported a higher incidence of moderate distress than Hispanics. Hispanics are considered part of a minority and are often associated with lower SES, which is associated with a higher risk for distress (Lerman Ginzburg, Lemon, Romo & Rosal, 2021). For this reason, this study initially expected the Hispanic subjects to demonstrate higher levels of distress than non-Hispanics. One possible explanation for this finding is supported in a study by Ginzburg (2021), where he proposes that the social convoy theory, a theory where family network and relationships among serve as a protective mechanism against distress, is greater in Hispanics communities compared to non-Hispanics. A study from Alcala also confirms that minorities (Blacks and Hispanics) have a lower incidence of depression and anxiety when compared to Non-Hispanic Whites. The author discusses how religion and spirituality could explain the lower incidence in addition to the cultural perception, willingness to seek help, and

understanding the cause of mental health; however, when it comes to cancer-related mental health morbidities, there is no clear conclusion due to the lack of studies and poor external validity because of small percipient size (Alcalá, 2014).

Despite not having a significant association between gender and distress, a small difference was found wherein females had a slightly higher distress prevalence over males. Gender might play a role in the manifestation of distress or coping/adapting mechanisms. A study by Viertiö et al. indicated that females are more likely to be at risk for higher levels of distress than men (Viertiö et al., 2021; Peters, Brederecke, Franzke, de Zwaan, Zimmermann, 2020). Although, the study by Viertiö focuses on middle to elderly adult participants, there is a need for studies that evaluate gender differences in pediatric population.

When evaluating age and distress, the main difference was in the moderate category, with the group aged birth to five reporting the highest levels of distress. A study by Peters et al. indicated that the younger the patient, the higher the risk of experiencing psychosocial distress (Peters et al., 2020). A possible explanation for this observation could be explained by the Erickson theory of psychosocial development that emphasizes the successful resolution of age-appropriate conflicts from previous years. A cancer diagnosis could interfere with the successful resolution to the next psychosocial stage, but it should be compared with a control group to find the effects on cancer-related distress in the corresponding patient's age.

Pediatric and adolescent oncology patients experience significant levels of distress originating from the diagnosis and treatment, emotional and physical problems such as anxiety, fear, isolation, pain, and fatigue (Lowry et al., 2018). The findings of this study confirm that anxiety, fatigue, isolation, and pain are among the most common sources of distress in children and adolescents with leukemia. In addition, comparing the problem list categories between Hispanics vs. Non-Hispanics demonstrated that non-Hispanic subjects had a slightly higher prevalence of emotional and physical problems associated with leukemia over Hispanic subjects.

The use of the distress thermometer was demonstrated to be feasible at our local oncology pediatric department, and over time, it would be ideal to extend screening distress to family members. The need to keep implementing distress screening for family members is real and studies demonstrate that parents and siblings with a cancer diagnosis also experience the negative effects of cancer-related distress (Chodidjah, & Kongvattananon, 2022).

Measuring psychosocial distress in patients can be challenging due to its multifactorial nature and the subjectivity of the feelings when answering the questionnaire. For that reason, future studies should consider including objective surrogate measures for a more robust body of evidence. Weckesser et al. (2019) suggested the use of the blood sample collection to measure cortisol levels as a complementary measure; although, this might cause the study to undergo a more scrutinous and lengthy IRB process.

Finally, to improve patient participation in distress screening and facilitate the logistics associated with data management, electronic distress screening questionnaires might improve the logistics and handling issues of the data directly to the EMR. An electronic Distress Thermometer could enable the team of providers to evaluate the data and refer patients more promptly for appropriate care (Manikowsky et al., 2022)

LIMITATIONS

The sample size is the most important limitation of the present study, something that significantly affected the groups of ethnicity and age. In addition, the sample utilized is a

convenience sample. Unfortunately, it was not representative of the actual population and, therefore, not valid for inferential statistical analysis nor do the findings have great generalizability (Jager, Putnick & Bornstein, 2017). Therefore, the study design did not include further statistical analysis other than descriptive statistics and Chi-Square analysis. The present study's design focuses primarily on providing foundational ideas that could potentially lead to a more advanced and detailed study. The initial implementation of the use of the distress thermometer at the pediatric oncology department represented a challenge that affected both how the data was collected and who administered the test. As a result, there was no systematic collection to prevent bias, eliminate confounding variables, or allow re-screening of the same patient over time on a regular basis. The data were collected in a cross-sectional manner.

There were also the following limitations found in the study: Not knowing the subjects' exact disease stage and where they were in their treatment timeline. Also, not controlling for co-founding variables (e.g., Covid restrictions effects, comorbidities, mental health diagnosis, SES,

or recurrence of the disease.) The mentioned limitations should be addressed when developing future distress in leukemia patients' studies.

CONCLUSION

The patients that completed the distress thermometer indicated a significant prevalence of moderate to high prevalence levels of distress, as well as physical and emotional problems associated with a leukemia diagnosis. The Distress thermometer is a useful and convenient screening tool that is brief and accurate to triage and utilize to request a more specific and comprehensive tests if needed. Psychosocial distress poses a risk for patients when psychosocial needs are not addressed or further evaluated (Ebob-Anya and Bassah, 2022), especially when the patient faces a leukemia diagnosis. Despite the usefulness of the distress thermometer tool, there are still limitations. Ultimately, the provider or psychosocial team should consider the best approach for the patient and their family. For this study, the use of distress level as a continuous or numerical variable indicated no significant difference when comparing the different demographic factors. Utilizing the suggested cut-off value of three also offered no noteworthy differences. However, using three categories of distress: low, moderate, and high, revealed

interesting findings, especially in the moderate category where there was a significant association between moderate distress levels and ethnicity. Future studies are needed to explore this probable association. Moderate levels of distress appear to encompass most differences found in the major demographic groups. Using the method of comparison that categorized the distress levels in three categories makes it more difficult to draw a clear conclusion about which group has a higher incidence of distress. Conversely, dichotomizing the data by utilizing a cut off value, seems to offer a better way to draw conclusive evidence. The study presents several limitations, which prevented the use of more inferential statistics; however, this internal study could serve as a starting point to further evaluate how ethnicity, age, gender, and diagnosis type play a role in the development of psychosocial distress in patients with leukemia. This study could lead providers to identify which groups are most at risk for distress after a more robust statistical analysis to prioritize, personnel time and resources.

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CHAPTER II: INTERNSHIP EXPERIENCE

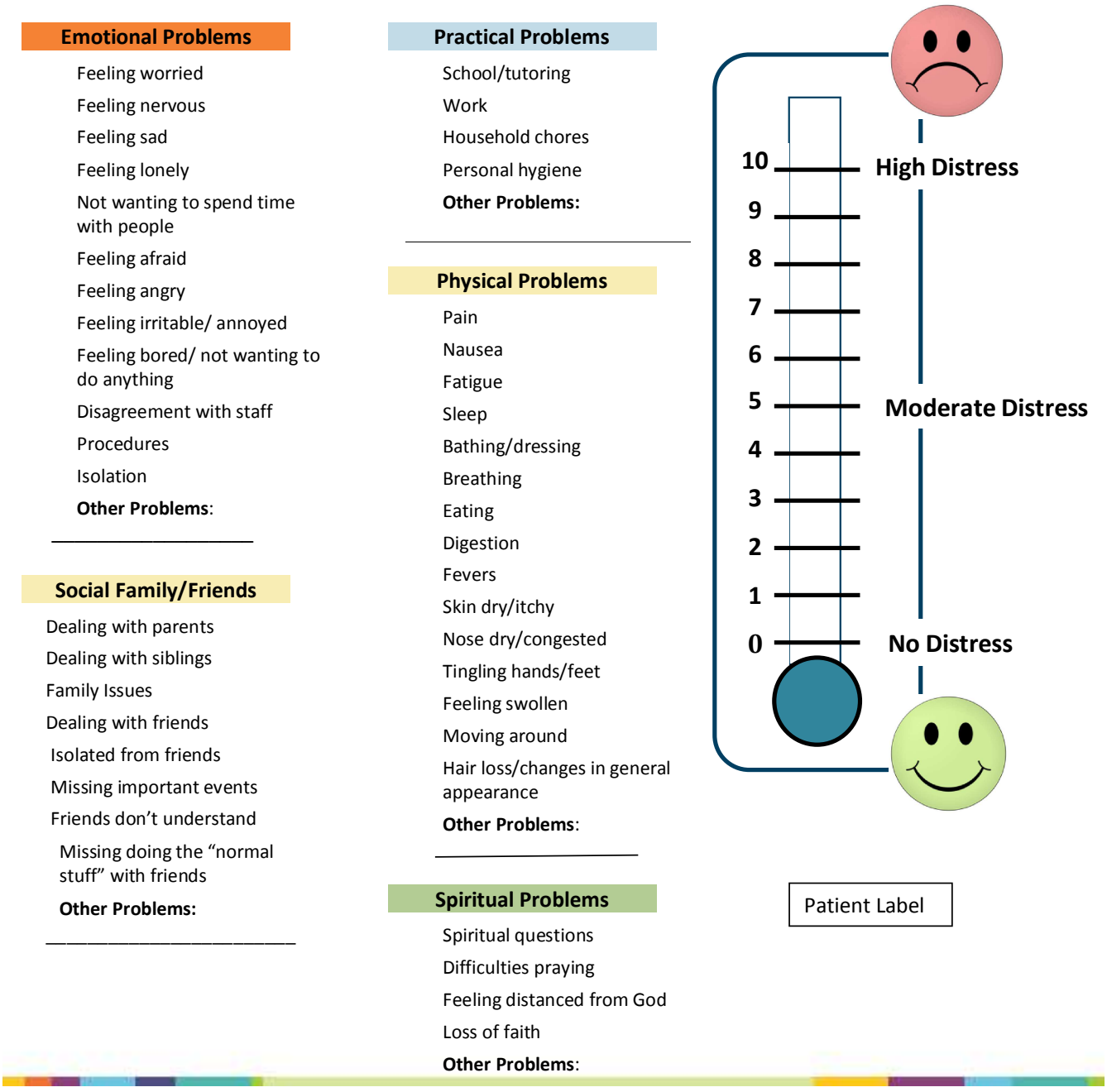
INTERNSHIP SUMMARY

My time as a clinical research intern at Cook Children's has increased my knowledge and understanding of how investigator-initiated studies and sponsor studies are developed. Despite being only ten years old, the Research Administration Office (RAO) has grown exponentially because of the excellent leadership, strategic management, and dedicated personnel driven to improve the quality of life for their patients. I helped Dr. Mohamed with a side project that stemmed from a quality improvement initiative. The creation of this in-house study involved the creation of a study protocol and communication with the local IRB and regulatory personnel. During the first half of my internship, I focused primarily on finishing and meeting the deadlines for the internship practicum report. At the same time, I could shadow and interact with the clinical research coordinators from sponsored studies, nurse coordinators, financial, regulatory and laboratory personnel from the RAO office. Occasionally, I would go with them to the clinic and see the patients for informed consent or clinical follow-up appointments. Als

A few months into my internship, I received the opportunity to help in a sponsored study with data entry. I saw firsthand the interaction between the study coordinators and the sponsoring organizations, I learned the benefits and the disadvantages of both study types. On the other side, I also learned more about how physicians receive support from the RAO project managers and coordinators to accomplish independent research projects. The interdisciplinary collaboration of health professionals in our office taught me and encouraged me to build trust with other members of my team for the completion of projects.

One of the best parts of my experience was interacting with and shadowing physicians in the oncology and PICU department. This unique experience enabled me to witness the importance and role of clinical research in delivering high-quality healthcare to Cook Children’s patients. I could stablish meaningful relationships that could open the doors in the future.

APPENDIX A: Distress Thermometer Tool.



Questionnaire 1. Pediatric Distress Thermometer used at Cook Children's.

APPENDIX B: Internship practicum Journal

Day 1 (06-06-2022)	On the first day, Alice introduced me to all the personnel and main areas/ locations at Cook Children's. We went to the badge department to receive my log in credentials and badge. After receiving my log in credentials, I was assigned log in and complete modules to gain access to the EMR used by Cook Children's. Finally, I was assigned to complete the Cook Children's Standard operation procedures and create an account to complete CITI training of Human subject research and JKP. I spend most of the day reading and acknowledging SOPs.
Day 2 (06-07-2022)	Today I spent most of the day reading and acknowledging the SOPs from the institution. Most of the SOP's reviewed from today had to with the informed consent process, IRB, Departmental logistics of studied drugs, basic overview of Redcap. I am planning to finish the SOPs tomorrow and start the CITI training, which is mandatory for personnel involved in human subject research as per IRB and FDA regulations.
Day 3 (06-08-2022)	Today I finished reading and understanding all the institutional SOPs. It took me almost all day. Then I started the CITI training designed specifically for Cook Children's.
Day 4 (06-09-2022)	Today I reviewed the requirements and focus for the internship practicum report. Then I participated in a zoom meeting with the data research team for the development of a new study. After that, I worked on CITI training modules for the rest of the day.
Day 5 (06-10-2022)	Today, I worked all day and completed the assigned CITI training.

Day 6 (06-13-2022)	I started the first part of my day completing the remainder CITI training modules. I met with Alice and discussed the next steps on the onboarding process as per protocol. Then I continued to work with a few more CITI

	training. I also send email to my committee members to plan our 1st meeting.
Day 7 (06-14-2022)	Today I completed paperwork for my degree plan and filled in forms for my committee members. I also worked in some complementary CITI training. In the afternoon, They invited me to participate in iRIS training, an online platform to overview regulatory and study-related paperwork.
Day 8 (06-15-2022)	Today I reviewed the guidelines and indications for the internship practicum report. I read a few papers related to clinical trials. Then after lunch, I met with Dr. Mohamed, Alice, and Katie to discuss the design ideas of Dr. Mohamed's research and evaluate possible roles for Katie and me.
Day 9 (06-16-2022)	IT personnel helped me create my accounts for software used by Cook Children's to comply with regulatory entities as well as to conduct, collect and analyze data. I read the protocol for Dr. Zhao's study to be familiar with it.
Day 10 (06-17-2022)	In the morning, I read Dr. Zhao's protocol to be even more familiarized with the study. I also worked on creating a small presentation for my first committee meeting. Finished the day watching a few introductory videos to one of the databases called Redcap.

Day 11 (06-20-2022)	Early in the morning, I worked on my presentation for the 1st committee meeting while I coordinated with the members the time and date via email. In the afternoon I brainstormed a few project ideas. Later, that day I met with Dr. Bailey to talk about the structure, schedule, format, and what to expect from the internship.
Day 12 (06-21-2022)	I worked on the committee meeting presentation all morning. In the afternoon, I searched for topics and ideas for my project and finished the afternoon working on my presentation slides and coordinating with committee members for the 1st meeting.
Day 13 (06-22-2022)	I searched for articles to support or conduct Dr. Mohamed's research ideas. Midday, I received

	training about collection, distribution, communication of laboratory samples by a clinic coordinator. I finished the day looking for more research articles.
Day 14 (06-23-2022)	Today I worked on my presentation and searched for articles all day. At the end of the day, I met with Dr. Bailey to discuss the feasibility of my ideas.
Day 15 (06-24-2022)	I searched for topics or ideas for my project, I watched a training video about Redcap. I worked on re-scheduling my committee meeting. I had a brief meeting with Dr. Mohamed and planned a few extra ideas for my personal project.

Day 16 (06-27-2022)	I spent a fraction of the day working on re-scheduling my committee meeting and then I searched and read articles for my personal project report.
Day 17 (06-28-2022)	In the morning I searched for articles that will help with the background study for Dr. Mohamed. In the afternoon I met with Dr. Laurie to discuss my role here at Cooks
Day 18 (06-29-2022)	Today I spent the morning preparing for the IPE (Inter-Professional Education) activity while I finalized organizing my committee meeting. Then I went to my school (UNTHSC) for the IPE activity that took place in the afternoon.
Day 19 (06-30-2022)	I shadowed Dr. Mohamed at the clinic all morning. In the afternoon I worked on my personal project presentation.
Day 20 (07-01-2022)	In the morning, I prepared my presentation for my 1st committee member. Then I presented my project ideas. Following the presentation, I met with Dr. Bailey to adjust and plan the timeline for the research project. I finished my day working in the draft for my research proposal.

Day 21 (07-04-2022)	Holiday, July 4th
Day 22 (07-05-2022)	Today I worked all day on my research proposal.

Day 23 (07-06-2022)	I kept working most of the day on the research proposal.
Day 24 (07-07-2022)	I worked all morning on the research proposal. Later in the day, I met with Dr. Bailey to adjust the content of the research proposal.
Day 25 (07-08-2022)	In the morning I worked and finished my research proposal document. In the afternoon, I completed training in SPSS and standing CITI.
Day 26 (07-11-2022)	Today I completed additional Citi training modules focused on Clinical research Modules. In the afternoon, I communicated with my major professor and talked about adjusting some details from the research proposal.
Day 27 (07-12-2022)	Today I communicated with My committee professors to adjust and work on the research proposal later that afternoon I kept working on a few more CITI training modules.
Day 28 (07-13-2022)	I worked on some parts of my application for medical school. Then I continue working with my research proposal, I talked with Alice with regards to updates on the IRB approval and started working on the research proposal for the IRB.
Day 29 (07-14-2022)	I met Dr. Yurvati to discuss additional feedback and make corrections to the research proposal.

Day 30 (07-15-2022)	Today I worked on the Research proposal all day.
Day 31 (07-18-2022)	I spent all day working on the research proposal.
Day 32 (07-19-2022)	Today I also spent all day working on the research proposal.
Day 33 (07-20-2022)	I worked all day on my research proposal.
Day 34 (07-21-2022)	I met with Dr. Laurie to discuss and plan the internship's next steps and discuss the requirements for the study protocol/IRB submission. Later that day, I worked in the protocol during the afternoon.
Day 35 (07-22-2022)	I filled out Dr. Basha required paperwork for submission of Research Proposal during the

	morning. Then I worked and finished the protocol by the afternoon.
Day 36 (07-25-2022)	I gathered all requirements for my project IRB submission. I started my application for an IRB expedited review.
Day 37 (07-26-2022)	Today I met with Alice to receive advice and guidance on how to receive some guidance in the IRB submission process. Later that afternoon, I worked on filling in the required forms for an IRB exempt review.
Day 38 (07-27-2022)	Day oof – working on Medical School Applications
Day 39 (07-28-2022)	Day oof – working on Medical School Applications
Day 40 (07-29-2022)	Day oof – working on Medical School Applications

Day 41 (08-01-2022)	In the morning, I met with Dr. Bailey to verify all the required documents for IRB submission. Then after submitting the IRB exempt IRB request, we talked about future activities related to the internship.
Day 42 (08-02-2022)	The IRB accepted my request for review and sent me a pre-review suggested changes to the protocol. I amended the protocol and resubmitted it. I also started to work on the general sections of my thesis.
Day 43 (08-03-2022)	Today I received the IRB approval from Cook Children. I met with Dr. Bailey to discuss the future of my project. Then I gathered the required documents to send to Dr. Mathew for UNTHSC IRB approval.
Day 44 (08-04-2022)	I worked on secondary medical school applications.
Day 45 (08-05-2022)	I started to work on the introduction of the thesis. Then I worked on secondary medical school applications during the afternoon.
Day 46 (08-06-2022)	I reviewed literature for my oral presentation.
Day 47 (08-07-2022)	I worked on medical school secondary applications
Day 48 (08-08-2022)	I met with Dr. Laurie to check the status of the project's goals. Then, I worked on medical school secondary applications

Day 49 (08-09-2022)	Today, I received a passing evaluation from UNTHSC graduate school. Then, I worked on medical school secondary applications

9 days off (08-10-2022 to 08-19-2022)

Day 51 (08-22-2022)	Today I worked on secondary applications. I communicated with Dr. Mohamed and Dr. Bailey to set up a meeting so we can start collecting data for the study.
Day 52 (08-23-2022)	Today I watched tutorial videos on Redcap, then I adjusted the data capture forms on Redcap. Later that day I worked on the introductory part of the thesis and read articles related to the study.
Day 53 (08-24-2022)	During the morning, I planned the discussion points for the meeting with Dr. Bailey and Dr. Mohamed. After the meeting, I better understood the data collecting process. Then I spent the afternoon reading literature related to topics of my study.
Day 54 (08-25-2022)	Today I read literature to increase my confidence about my thesis topic.
Day 55 (08-26-2022)	Today I reviewed city training modules to refresh the familiarity of a Clinical research coordinator. Then I spent the afternoon with a newly hired project manager in our department.

Day 56 (08-29-2022)	Today I revised the introduction of my project, including looking for sources. Then I spent the afternoon planning the logistics for a medical school interview. I communicated with Dr. Bailey to request permission to attend the medical school interview.
Day 57 (08-30-2022)	Out of town for Interview
Day 58 (08-31-2022)	Today I read articles and watched documentaries about the psychosocial effects on children with cancer. Then I met with Dr. Bailey and Dr. Mohamed to plan activities before collecting data for the development of the project.

Day 59 (09-01-2022)	Today I finished a secondary application in the morning and then attended an institutional IRB meeting in the afternoon.
Day 60 (09-02-2022)	Today I met with Dr. Mohamed to re-evaluate the design of the study. He presented me to Lindsey and Jordan, personnel that works with him in the field of psychosocial support. We agreed to meet to develop and start collecting data.

Day 61 (09-05-2022)	Labour day – I met with Dr. Mohamed, and he shared with me the raw data to start building the analysis of my project.
Day 62 (09-06-2022)	Today I prepared the data and organized the data collection sheet and watched various tutorial videos to become more familiar with Redcap.
Day 63 (09-07-2022)	Today I met with Lindsey, a distress screening expert that discussed with me potential ideas and directions my project could take. Then I attended a departmental statistic seminar. Finally, I met with Dr. Bailey to start collecting data.
Day 64 (09-08-2022)	Today I learned the basics of how to capture data into a software database called Redcap, then I spent the rest of the day cleaning and inserting the data into Redcap.
Day 65 (09-09-2022)	I spent the morning reading Distress Standard of care literature, then I met with Dr. Bailey to learn how to use SPSS, a software used for data analysis. Then I finished the day with improving the output tables from the captured data.

Day 67 (09-12-2022)	Today I cleaned and organized the analysis chart containing the captured data. Then I tried to find literature about distress and ethnicity. I finished the day meeting with Dr. Bailey and talked about the future activities of the internship.
Day 68 (09-13-2022)	Attended a farewell meeting for Dr. Marshall, the president of the research administration office at Cook Children's.

	Dr. Bailey, I was introduced to an opportunity to help in a study with data collection. I finished the day with a brief introductory meeting with Dr. Marshall
Day 69 (09-14-2022)	Today I met with Elizabeth, an oncology research coordinator and her team. They introduced me to the study and my role as a data collector. Then I spent my afternoon looking at the data captured
Day 70 (09-15-2022)	Today I met with Elizabeth and Maria, both clinical research coordinators. They invited me to shadow them that morning and afternoon. I learned how they do informed consents in children, their parents and navigate in clinic as a CRCs.
Day 71 (09-16-2022)	Today I spent the morning reading the protocol and related material to familiarize myself with the study I will be helping. Then I spent the afternoon writing my personal reflections on a personal journey about my internship as w alternative study I could develop on my own.

Day 72 (09-19-2022)	Today I spent the day reading studies and preparing for an Inter professional activity.
Day 73 (09-20-2022)	Today I searched for studies investigating the same topic of Distress. Then, on the afternoon, I meet with the Elizabeth and Maria to learn about collection of samples (Blood, urine, etc.) and shipping to the sponsor site.
Day 74 (09-21-2022)	Today I read the literature required for and upcoming IPE activity. Then I kept reading research articles about my distress study.
Day 75 (09-22-2022)	Today I kept reading articles for IPE activity on Friday, then I met with the team for the Data input training updates. Then I participated in a departmental meeting to learn about the current topics and processes at the Research Administration office.
Day 76 (09-23-2022)	Today I finished preparing for the IPE activity at TCU then around noon I went to the event.

Day 77 (09-26-2022)	Today I review the material and protocols from the Sponsored study I will be helping then I spend the afternoon reading literature about distress.
Day 78 (09-27-2022)	Today I arranged meetings with Dr. Mohamed and his assistant Lindsey to plan future directions for my project. Then I spent my afternoon looking for more information about distress studies. Also, I spent some time arranging accommodation for an upcoming medical school interview hotel.
Day 79 (09-28-2022)	This morning I attended a research oncology meeting to discuss and address issues with the new research director. Then I talked and met with my team from the Retro-Redial study. I completed and signed forms to the IRB to finish the process to be included in the study. I finished my afternoon reading and analyzing the data from mi distress study.
Day 80 (09-29-2022)	Today I met with the Retro-Redial team to train/learn on how to collect data for the study.
Day 81 (09-30-2022)	I spent the morning reviewing old-school classes then I proceeded to start creating the slide presentation for an upcoming student led seminar. I finished the day requesting a change for badge to increase my access to key clinic location.

Day 82 (10-03-2022)	Today I started the day reviewing literature about distress, then I met with Lindsey and finished the day preparing for my interview.
Day 83 (10-04-2022)	Today I requested the day off to attend a school interview.
Day 84 (10-05-2022)	Today I worked on my presentation for cancer scholars. Then I attended a monthly research meeting to discuss the use of various statistical tests. Then I met Dr. Mohamed to plan the future directions of the research project.
Day 85 (10-06-2022)	Today I met with Sissy, Elizabeth and Maria to review my new role in the study. We also talked about ways to be more efficient in communication. Then I worked on improving the display of collected data for my project.
Day 86 (10-07-2022)	In the morning the study group met with Dr. Stigall, the new Chair of the research

	department, to learn more about each member and discuss ways to improve his support. Then, I spent the rest of the day finishing the data display for my project.

Day 87 (10-10-2022)	I worked on my presentation for the student seminar. I kept searching for literature related to psychosocial distress. I finished the day meeting with Dr. Basha to talk about my overall internship experience.
Day 88 (10-11-2022)	Today I worked on reflections about my internship experience and how it could be further improved. Then I attended an Oncology/Hematology case presentation, following this, I attended a conference about the same topic.
Day 89 (10-12-2022)	Today I focused on working on my school presentation. Later in the day, I attended a meeting where multi-disciplinary teams meet to discuss a case presentation in the field of oncology.
Day 90 (10-13-2022)	Today I worked on the descriptive analysis of my project. Then I met with the Retro-Redial team, which I will be supporting.
Day 91 (10-14-2022)	I requested that day off to attend a school interview.

Day 92 (10-17-2022)	Today I worked on the presentation of my research project. I searched for complementing literature about the problem list section. Later, I met and talked to a project manager from the investigator-initiated side and learned more about his role. Then I finished the day by meeting with Maria to learn how to insert data in the
Day 93 (10-18-2022)	Today I started working on my thesis on a very casual fashion. Then I attended an oncology-tumor virtual conference to learn about cases and how physicians work as a team to solve treatment plans for patients. Then I spend the rest of my day working on my project presentation.
Day 94 (10-19-2022)	Today I worked in my personal

Day 95 (10-20-2022)	Today I shadowed Larry, a Nurse research coordinator. We went to the clinic and witnessed a follow up appointment with a research participant of a current study. Then I met with the Retro-Redial team to learn how to input data. Then I finished the day attending a
Day 95 (10-21-2022)	Requested day off for Medical School Interview.

Day 96 (10-24-2022)	Today I attended an internal student seminar from UNTHSC, then I went back to the office and watched a conference about the efforts to implement distress screening in oncology centers. Then I finished the day working on data input for the Retro-Redial study.
Day 97 (10-25-2022)	Today I worked on data entry during the morning. Then I worked on my presentation the first part of the afternoon. I finished the day contacting and setting an appointment with Dr. Mohamed and working on data entry.
Day 98 (10-26-2022)	Today I attended a Solid tumor meeting and was introduced to the team. Here I made new connections so I could shadow different key personnel. Then I worked on data entry for the Retro Redial study and finished my day meeting with Dr. Mohamed to discuss the progress of my project.
Day 99 (10-27-2022)	Today I met with the study team to update our supervisor. I also practice my student seminar presentation in front of them to receive feedback. Then I worked the rest of the day adding more end points to my project survey and finished my day meeting with Dr. Mohamed to discuss my project goals.
Day 100 (10-28-2022)	I worked on my project by adding more data end points. Then I worked on the Retro-redial Study data entry the resto of the day.

Day 101 (10-31-22)	I started my day working on my presentation for the student seminar. Then I attended a Staff appreciation event, and I finished my day working on my presentation.
Day 102 (11-01-22)	I worked all day working on a new approach to my study project. Then I finished my day by

	participating in a meeting with the Sponsor of the study I am helping with data entry.
Day 103 (11-02-22)	Today I attended an oncology research meeting from sponsored studies. Then I met with Dr. Bailey to go through the initial analysis of my study data. In the afternoon, I met with Dr. Bailey and a radiologist PI to discuss the elaboration of a protocol for the use of a surgical device.
Day 104 (11-03-22)	I worked on my student presentation for the most part. My day included a meeting with the Study team I help with data entry. Then I met with a Project manager to receive feedback about interpreting my results or how to approach the data
Day 105 (11-04-22)	Requested day off for medical school Interview.

Day 106 (11-07-2022)	Today I worked on finishing my presentation and practiced some speaking. Then, the other half of the day I worked on data entry for the rest of the day.
Day 107 (11-08-2022)	Today I presented my project progress at UNTHSC during the morning, then I returned to Cook's Children and started to process and write down recommendations and feedback from my presentation. I attended a neurology/oncology tumor seminar in the early afternoon and finished my day entering data for the study I am collaborating with.
Day 108 (11-09-2022)	I started my morning with data entry. Then, in the afternoon, I continued to enter data.
Day 109 (11-10-2022)	Requested day off for medical school interview.
Day 110 (11-11-2022)	I focused on entering data all day.

Day 111 (11-14-2022)	Today I watched a distress screening seminar. Then I worked on elaborating ideas for my project. During the afternoon, I attended a Oncology solid tumor case conference and finished the day with data entry.
Day 112 (11-15-2022)	Today I worked on data entry all day.
Day 114 (11-16-2022)	Today I worked on data entry all day.

	I attended a lunch/staff thanksgiving lunch and meeting. Then I worked on data entry until the day finished. We were sent home earlier.
Day 115 (11-17-2022)	I had a team meeting to update the progress of data entry. We established future goals. Then I finished my day with data entry.
Day 116 (11-18-2022)	This morning I started working on my project and then I started entering data for most of the day. I ended my day meeting with Dr. Bailey to start working on more data analysis.

Day 117 (11-21-2022)	I worked on the thesis of my project and then finished my day entering data to the study I am helping with.
Day 118 (11-22-2022)	I worked on the thesis of my project and then finished my day entering data to the study I am helping with.
Day 119 (11-23-2022)	I worked on the thesis of my project and then finished my day entering data to the study I am helping with.
Day 120 (11-24-2022)	Thanksgiving Day off
Day 121 (11-25-2022)	Thanksgiving Day off

Day 122 (11-28-2022)	Today I worked on my thesis most of the day and finished with data entry and prepared completion reports for my supervisor.
Day 123 (11-29-2022)	I met with my advisor committee member to receive feedback on my presentation. I helped enter data then I participated in a solid tumor case conference then I worked on editing my thesis and improving the wording of its content
Day 124 (11-30-2022)	Requested day off for medical school Interview.
Day 125 (12-01-2022)	Today I worked on submitting documents for medical school. Then I was invited to shadow a Clinical Research Nurse on the Solid tumor Study. Then I worked on my thesis for the rest of the day.
Day 126 (12-02-2022)	Today I met with Dr. Bailey in the morning to discuss my project and internship plans. Then I worked on organizing ideas for the elaboration of my thesis and finished the day entering data.

Day 127 (12-05-2022)	Today I met in the morning with my study supervisor and updated her on the data entry progress, then I updated my data entry log. I then worked on the references for my intro (thesis) and finished my day with data entry.
12-06-2022	Requested day off for travel
12-07-2022	Requested day off for travel
12-08-2022	Requested day off for travel
12-09-2022	Requested day off for travel

Day 128 (12-12-2022)	Today I organized my schedule for the week, sent a couple of emails then I worked on my thesis content. Then I finished the day with data entry.
Day 129 (12-13-2022)	Requested day off for medical school interview
Day 130 (12-14-2022)	Today I worked on the hypothesis/aim section of my project. Then I helped with data entry.
Day 131 (12-15-2022)	Today I met with the data entry supervisor and stablished goals for the future. Then I kept working on the thesis and finished the day with data entry.
Day 132 (12-16-2022)	Requested day off for medical school interview

Day 133 (12-19-2022)	Today I worked on the Methods/study design portion of my thesis.
Day 134 (12-20-2022)	Today I worked on the result section of my thesis and did data entry by the end of the day.
Day 135 (12-21-2022)	Today I worked on the conclusion section of my project.
Day 136 (12-22-2022)	Today I worked on improving aspects of my project and finished my day with data entry.
Day 137 (12-23-2022)	I worked on the Limitations sections of my project and ended my day entering data.

Day 138 (12-26-2022)	Office closed for Holiday
Day 139 (12-27-2022)	Today I started my morning trying a new approach to analyzing the data for my project. At noon, I participated in a Case presentation conference about solid tumors. And I continued to work on my project for the rest of the day.

Day 140 (12-28-2022)	Then I finished my day entering data to the study I am helping with.
Day 141 (12-29-2022)	Today I worked on editing and organizing the reference for my project.
Day 142 (12-30-2022)	I worked on adjusting and organizing the references for my project and concluded the last of the year entering data.

Day 143	Office closed for Holiday
Day 144	Today I worked on the presentation for my projects and fixing the graphs. Then I finished my day entering data.
Day 145	Today I watched tutorials on how to use SPSS and tried to run the data analysis for my project. I finished the day entering data to the Sponsored study I am helping with.
Day 146	Today I worked on the presentation slide and correction of graphs and figures. Then I finished my day entering data.
Day 147	Today I worked on a draft for an abstract submission.

Day 148 (01-09-2023)	Today I worked on the abstract summary for my project, then I met with Dr. Mohamed to receive feedback. I worked on sending emails to my professors for feedback.
Day 149 (01-10-2023)	I attended a student seminar from school in the morning. I went back to the office and attended a solid tumor solid presentation. Afterwards, I worked on the abstract/presentation for my project. I finished my day with data entry.
Day 150 (01-11-2023)	Today I worked and edited the abstract of my project. Then I finished the afternoon with data entry.
Day 151 (01-12-2023)	Today I finished and submitted the abstract and worked on my student presentation
Day 152 (01-13-2023)	Today I helped with data entry for the sponsor study. And finished my day making corrections to the Slide presentation and thesis for my project.

Day 153 (01-17-2023)	Martin Luther King Jr. Holiday

Day 154 (01-18-2023)	Today I worked on editing and correcting my thesis project. I attended a solid tumor case presentation and finished my day with data entry.
Day 155 (01-19-2023)	Today I attended an oncology research meeting for Sponsor studies. Then I worked on sending emails to my school professors/school then I finished my day working on my thesis.
Day 156 (01-20-2023)	Today I read additional literature to work on my project, then I participated in a monthly research staff meeting. Then I worked on correcting the results from my thesis.
Day 157 (01-21-2023)	I worked on the results and graphs of my the then I worked on data entry.

Day 156 (01-23-2023)	Today I worked on my project for the most part, at the end of the day, I met with Dr. Bailey to talk about future internship activities.
Day 157 (01-24-2023)	Today I worked on finishing my thesis draft, then I attended a Solid Tumor case conference then finished my day with data entry.
Day 158 (01-25-2023)	Today I finished my thesis draft. Sent a copy to my committee members. I met with Dr. Basha to talk about internship progress.
Day 159 (01-26-2023)	Today I worked on my thesis and helped enter data.
Day 160 (01-27-2023)	Today I worked on my thesis and helped enter data.

Day 161 (01-30-2023)	Today I worked on my Presentation. Filled
Day 162 (01-31-2023)	Office closed due to bad weather
Day 163 (02-01-2023)	Office closed due to bad weather
Day 164 (02-02-2023)	Office closed due to bad weather
Day 165 (02-03-2023)	Today I meet with My team supervisor to update on my progress then I worked on data entry for most of the day.

Day 166 (02-06-2023)	Today I worked on data entry during the morning. Then I met with Dr. Bailey to discuss future internship experiences. I finished my day with data entry.
Day 167 (02-07-2023)	Data entry day

Day 168 (02-08-2023)	Data entry day
Day 169 (02-09-2023)	Today I worked all day in entering data. I met with Dr. Stigall to discuss Clinical Research, then I went back to enter data for the rest of the day.
Day 170 (02-10-2023)	Today I revised literature related to my project and entered data for most of the day.

Day 171 (02-13-2023)	Today I shadowed Dr. Marshall at the PICU, Then I met with Dr. Bailey to talk about
Day 172 (02-14-2023)	I worked on my project based on the feedback I received. Next, I attended Valentine's staff meeting then I attended the neuro-oncology tumor case. I finished my day entering data.
Day 173 (02-15-2023)	I researched and read literature to prepare for my project presentation. Then I finished my day entering data.
Day 174 (02-16-2023)	I started my day entering data then I helped with set up for a research appreciation conference and I ended my day meeting with my sponsored study team.
Day 175 (02-17-2023)	Today was a Research Appreciation Day at Cook Children's at I attended the seminar, conference and poster presentation all day.

Day 176 (02-20-2023)	This morning I started with data entry until midafternoon. Then I focus on fixing my presentation and studying for my presentation.
Day 177 (02-21-2023)	Today I modified and fixed my presentation slides, then I worked with data entry.
Day 178 (02-22-2023)	Today I read additional literature to reinforce concepts for my presentation. I finished my day entering data.
Day 179 (02-23-2023)	Today I started my day with data entry and then worked on rehearsing my oral presentation. Then in the afternoon, I headed to the airport to fly to my medical school interview the following day.
Day 180 (02-24-2023)	Requested day off for School Interview.

Day 181 (02-27-2023)	Today I helped with entering data during the morning. Then I met with Dr. Bailey to plan the

	final weeks of activities as well as the design of my project. I finished my day working on the writing of my project.
Day 182 (02-28-2023)	I started my morning by entering data for most of the day, then I prepared and printed the monthly reports for my study supervisor, I finished my day adjusting and fixing my project paper.
Day 183 (03-01-2023)	Today I worked on data entry in the morning. At noon, I attended a statistics seminar by my on-site mentor, then I finished my day preparing for my oral presentation.
Day 184 (03-02-2023)	Today I attended a departmental team meeting to be updated on the latest events at the office. Then I worked on data entry, and I finished my day with data entry.
Day 185 (03-03-2023)	Today I started my day working on data entry, then I fixed my presentation slides and rehearsed my speech. Today also was match day.

Day 186 (03-06-2023)	Today I sent emails and worked with data entry. During the afternoon, I met with Jeff Kurland the director of finances and talked about the financial aspect of clinical research.
Day 187 (03-07-2023)	Today I entered data in the sponsor study I am helping with. At noon, I attended a neurology-solid tumor board. I finished my day adjusting to the formatting of my internship practicum. I sent my final draft to Dr. Basha.
Day 188 (03-08-2023)	Today I mainly helped with data entry and study for my presentation.
Day 189 (03-09-2023)	I worked with data entry during the morning. I set up appointments with Dr. Basha to practice my oral presentation. Then I finished my day studying for my thesis.
Day 190 (03-09-2023)	Today I focused on practicing my presentation and at the end of the day I helped with data entry.

Day 191 (03-13-2023)	Today I started my morning entering data then I met with a project manager to discuss details about my project. Afterwards, I met with Dr. Bailey to talk about the final activities for my

	internship. I finished my day modifying my presentation from the feedback received.
Day 192 (03-14-2023)	Today I worked on data entry for the first part of my day. Then, I met with Dr. Basha for feedback on my presentation towards the end of my day.
Day 193 (03-15-2023)	Today I shadowed Elizabeth from the regulatory team. I learned how to submit relevant documentation for Continuing Review from external to local IRB. Then I spent the rest of the day adjusting minor details for my presentation and rehearsing for my co-workers.
Day 194 (03-16-2023)	Today I shadowed a monitor for a sponsored study and learned how monitors audit files, records, and Pharmaceuticals. Then I worked on my thesis.
Day 195 (03-17-2023)	Today I practiced my presentation in the morning until noon. Then the rest of the day I worked on the final details for my thesis.

Day 196 (03-20-2023)	Today I met with Dr. Basha. I practiced my presentation and discussed additional feedback. Then I met with Dr. Bailey to discuss feedback for my thesis. I finished my day working on my presentation slides and thesis.
Day 197 (03-21-2023)	Today I practiced and prepared for my presentation.
Day 198 (03-22-2023)	Today I had my Presentation/Defense Day. I then attended an office
Day 199 (03-23-2-23)	Jury Duty - Day off
Day 200 (03-24-2023)	Today I came to the office and helped with data entry during the morning. Then I attended a CRM student presentation and finished my day with data entry.