

Effect of Acupressure on Nausea and Vomiting among Children with Leukemia

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Abstract

Background: One non-pharmacological technique that has been successful in lowering the frequency of vomiting in children with leukemia is acupressure. **Aim:** This study aimed to evaluate the effect of acupressure on nausea and vomiting among children with leukemia. **Method:** A quasi-experimental (pretest/ posttest) research design was used. **Setting:** The study will be conducted at Minia Oncology Centre. **Sample:** (80 children) were randomly assigned to either study or control groups at the Minia Oncology Centre over the period of 6 months period. **Tools:** One tool was used to collect data including two parts (I) A demographic as well as clinical data interview questionnaire. Part (II) Rhodes scale for Nausea as well as Vomiting. **Results:** In comparison to the control group, the applying of acupressure in children with acute leukemia undergoing chemotherapy resulted in a highly statistically significant reduction (P.value 0.0001) in the frequency, distress, and severity of nausea as well as in the duration, frequency, as well as severity of vomiting through forty eight hours of the start administration of chemotherapy. **Conclusion:** Acupressure must be performed as a supportive nursing intervention to minimize Chemotherapy-induced nausea as well as vomiting (CINV) in children with leukemia. **Recommendations:** Acupressure may be suggested as a useful, nonpharmacologic treatment for nausea and vomiting brought on by leukemia-related chemotherapy.

Keywords: Acupressure, Children, Leukemia, Nausea and Vomiting

Introduction

Cancer that started in the blood-forming cells of bone marrow is called leukemia. Leukemia comes in several varieties. Based on the type of blood cell it starts in and how quickly it develops, each variety of leukemia has its own name. Thirty percent of juvenile malignancies are leukemias. Acute lymphoblastic leukemia, which can occur as much as forty per million children in affluent nations each year, accounts for approximately twenty-five percent of cancer diagnoses in children with age of fifteen (**American Cancer Society, 2016**) & (**Jong, et al., 2020**) Leukemia is the most frequent disease in children in Egypt, accounting for over thirty three of newly diagnosed cases of children cancer. About four instances per 100,000 children are reported to occur yearly at the National Cancer Institute (NCI) at Cairo University in Egypt (**MOHAMMED, et al., 2018**)

The majority of leukemia forms are treated with chemotherapy, which combines or uses several anticancer medications as stand-alone treatments (**American Cancer Society, 2016**) & (**Fugetto, et al., 2020**) Chemotherapy is a key element of the treatment of acute lymphoblastic leukemia. It kills cancer cells in three stages: induction of remission, consolidation (or intensification), and maintenance (or continuation) therapies; it also includes prophylactic treatment for the central nervous system and relapse management. Regrettably, chemotherapy has adverse consequences in addition to its therapeutic benefits, as nausea as well as vomiting (**ZEKRI, et al., 2016**) & (**Fugetto, et al., 2020**).

When chemotherapy is administered to pediatric patients, nausea as well as vomiting are two of more common as well as concerning side effects that they worry. Despite advancements in antiemetic medication, CINV remains a prevalent and unpleasant side effect that interferes with quality of life and compliance with leukemia regimens. Chemotherapy drugs' inherent emetogenicity made it possible

to divide patients into 4 risk categories: high, fair, low, and lowest emetogenicity risk (**COSTA, et al., 2015**) & (**Qiu, et al., 2020**).

Based on the timing of onset, the CINV is widely categorized into acute, delayed, and anticipatory types: Acute CINV happens during the first twenty-four hours following administration of chemotherapy; delayed chemotherapy-induced nausea as well as vomiting frequently happens twenty four hours after treatment and may last for up to five days; and anticipatory chemotherapy-involved nausea as well as vomiting typically happens before chemotherapy is actually administered because of prior experiences with chemotherapy-involved nausea as well as vomiting. Since CINV is yet a difficult problem despite recent advancements in antiemetic treatment, non-pharmacological techniques are appealing since they may reduce side effects without interfering with the many other drugs (**LONGO, et al., 2016**) & (**Gottschling, et al., 2020**).

One non-pharmacological strategy for lowering the frequency of vomiting is acupressure, which was successful in keeping 66% of the kids from throwing up. Regrettably, despite the success of acupressure treatment and its ease of learning, less people in Egypt are adopting it to treat a range of conditions, including nausea. The acupressure technique works by applying pressure with the fingers to certain bodily trigger points, or acu-points, in order to increase blood flow (**MIAO, et al., 2017**) & (**Stub, et al., 2020**).

When it comes to providing pediatric patients as well as their families with comprehensive information regarding the adverse effects of chemotherapy as well as actions that might help lessen those effects, oncology nurses are essential to the care of these youngsters. CINV is a prevalent and problematic side effect that negatively affects a cancer patient's quality of life. Pediatric patients receiving potentially emetogenic treatments might benefit from the knowledge that

oncology nurses can provide about non-pharmacologic management options, partial side effects from order antiemetic medications, and potential risks and adjustments (ONCOLINK, 2017) & (Abohadida, et al., 2020). Therefore, the use of acupressure is a non-pharmacological strategy aims to guarantee the wellbeing of such children, lower the CINV, and teach caregivers how to apply acupressure when necessary. Additionally, to further our understanding of an evidence-based practice study in pediatric nursing, children with leukemia in school need to be taken care of (MOHAMMED, et al., 2018) & (Sima, and Marya, 2020).

Research's Significance

According to the (WHO) World Health Organization, cancer is a health chronic issue which is quickly spreading around the globe, much like diabetes and hypertension. In the coming decades, it is expected to become a major global source of disease and mortality. By 2020, there will be roughly 24.6 million cancer patients worldwide, accounting for twelve percent of all cancer-related fatalities. A type of diseases known as cancer occurs when a collection of cells exhibit uncontrollably fast growth, invasions, and occasionally metastases to other regions of the body (HERNÁNDEZ, et al., 2016) & (Stub, et al., 2020). Every year, almost four hundred thousand children and teenagers up to the age of nineteen receive a cancer diagnosis worldwide. About 350 children reside in Norway (Cancer Registry of Norway, 2020)

The preferred medication is a chemotherapy agent since it is usually cytotoxic and can kill the majority of cancer cells. Chemotherapy functions by stopping or decreasing the growth of rapidly dividing cancer cells. Among the most upsetting and crippling side effects that people undergoing chemotherapy have reported are nausea and vomiting (National Comprehensive Cancer Network (NCCN), 2017) & (Dana, et al., 2022).

Even with the most current advancements in pharmaceutical technology, as many as twenty percent of patients decline to continue chemotherapy due to severe nausea and vomiting, and over 40% of teenage cancer patients receiving chemotherapy with antiemetic drugs still experience nausea and vomiting. An inadequate treatment of these particular side effects leads to weariness, discomfort, metabolic imbalance, and a reduced quality of life. There is little doubt that more potent antiemetic medications will continue to develop, and this number may alter in the future. Chemotherapy side effects might be expected and accepted by patients, especially teenagers, so they may be reluctant to disclose them. Nurses should closely monitor patients for nausea and vomiting brought on by chemotherapy and assist them in learning how to manage these side effects (MOHAMMED, et al., 2018).

Nurses should keep a close eye out for any nausea or vomiting that the patient may have after chemotherapy and assist them in learning how to manage these side effects. Researchers have looked for non-pharmacological treatments to replace antiemetic medications. Studies have shown that acupressure may effectively reduce nausea in around 66% of teenage cancer patients, suggesting that it may be the key to mitigating the most common side effects of chemotherapy. Based on the acupuncture technique used in traditional Chinese medicine to regulate the body's energy pathways, acupressure is an age-old therapeutic skill. Act-points, or

cosmic life force trigger points, are locations on the body that may be stimulated by finger pressure. By applying pressure to these places, you may relieve tense muscles and increase blood flow (MIAO, et al., 2017) & (Sima, and Marya, 2020).

Research's Aim

This study aim of the present study is to evaluate the effect of acupressure on nausea and vomiting among children with leukemia

Hypothesis of the Research

H1: Children who receiving acupressure will reduce nausea as well as vomiting among children with leukemia.

Research design: Quasi-experimental (pre as well as post-test) research design was utilized in the current research.

Operational Definitions:

- 1- **Leukemia** a cancer which originates in the blood-forming cells of bone marrow. Leukemia comes in several varieties. Based on the type of blood cell in which it starts and how quickly it grows, each variety of leukemia is given a name (American Cancer Society, 2016)
- 2- **Acupressure:** one of the non-pharmacological strategies which has been successful in reducing the frequency of vomiting in children with leukemia (MIAO, et al., 2017).

Setting: The study will be conducted at Minia Oncology Centre at 3rd floor. It receives all children with chemotherapy from all over Minia governorate, and the total number of beds in this unit is nine and provides high levels of care.

Sample: The study sample consisted of all available pediatric patients who admitted to chemotherapy unit at the Minia Oncology Centre over the period of 6 months period (the total number was 80 pediatric patients) Subjects were randomly attributed to either group study or control (40 subjects each).

The Inclusion criteria included ages among 6 and 18 years old and accept to participate.

The exclusion criteria included radiation exposure, injuries to the pressure region, malignancies of the nervous system and gastrointestinal tract, and altered consciousness.

Tools: One tool was utilized to gather data including two parts

Tool 1: Pre-designed questionnaire sheet that, was created by the researchers post reviewing of the related evidence (McDaniel and Rhodes (1995)). The important information was gathered utilizing the tool of data collection. It contains two parts are the following:

Part one: An interview questionnaire of demographic as well as clinical data. It was created by the researcher following a study of the literature and includes clinical information (child's diagnosis, illness stage, as well as chemotherapy side consequences) as well as sociodemographic factors (age, sex, domicile, as well as family history of neoplasia).

Part two: Rhodes scale for Nausea and Vomiting: It was developed by (McDaniel & Rhodes in 1995) evaluate the frequency, severity, as well as distress of nausea also the vomiting through forty eight hours post the starting of chemotherapy. The scale was translated into Arabic and

altered by Hassan et al. (2011) for the purpose of evaluating Egyptian youngsters. The measure comprises six questions with a Likert scale of 5 points to evaluate the frequency of vomiting incidents per day, the type as well as amount of vomiting, the intensity and duration of nausea, and the discomfort related to nausea and vomiting every twelve hours for forty-eight hours starting from the start induction of chemotherapy.

The scoring system is classified as: zero indicated none; one indicated mild; two indicated moderate; three indicated severe; four indicated very severe. The internal consistency of part two's reliability was assessed utilizing the test of Cronbach's alpha, and the result was 0.93.

Validity and Reliability:

A team of three specialists from the pediatric nursing department examined the content validity to make sure it was valid in terms of comprehensiveness, correctness, clarity, and relevancy. The appropriate adjustments were made as a result. The Cronbach Alpha Test yielded a reliability score of 0.93 for the Rhodes scale for nausea as well as vomiting, indicating the tool's dependability.

Pilot study:

A pilot research with 10% of subjects. A pilot research was carried out to evaluate the study scales' completeness and clarity as well as the amount of time needed to fill them out. The necessary additions, exclusions, and/or modifications were made in accordance with the pilot's results. Prior to beginning the real study, a jury accepted the final forms, and the reliability was evaluated in a pilot study by calculating the internal consistency of the forms using the Cronbach's alpha coefficient technique.

Ethical consideration:

Before beginning the study, the Scientific Research Ethical Committee of Minia University's Faculty of Nursing granted research approval. After the researcher made clear the purpose of the study to each participant in an effort to earn their trust and confidence, each participant gave their oral consent. The researcher guaranteed to keep participant data private and anonymous. The nurses were made aware that participation is entirely optional.

Field work:

The six months that the field work was conducted, from February 2022 to July 2022, corresponded to the six months needed for the program's implementation. Five months for application, one month for pre- and post-test. At first, the researcher estimates that doing in-person interviews took between 50 and 60 minutes to complete the interview instruments. children's cooperation by establishing a friendly rapport with them through quick chats, The study and control group were assessed twice before the intervention, after the intervention, and after the control group took routine hospital care. The researchers filled out the structured interview questionnaire and assessed the study group's nausea and

vomiting. The researchers used instruments I to assess the conditions of the study and control groups' youngsters. For seven days, a physical therapist at the Minia Oncology Center taught the researchers how to do the acupressure method correctly via practice, observation of photos also the videos, as well as discussion. Neiguan, or pressure point P6, is situated on the inner arm, close to the wrist. For forty-eight hours following the start of chemotherapy, the study and control groups' nausea and vomiting indices were assessed at regular intervals of twelve hours. To apply acupressure to this point, perform these steps: (1) Hold your hand with the palm facing you and the fingers pointing upward. (2) Press the first three fingers of your opposing hand over your wrist to locate pressure point P-6 (see Figure 1). (3) Just below your index finger, put your thumb on your wrist's inside. Under your thumb, there must be two sizable tendons that you can feel. Point P-6 is this location (see to Figure 1).

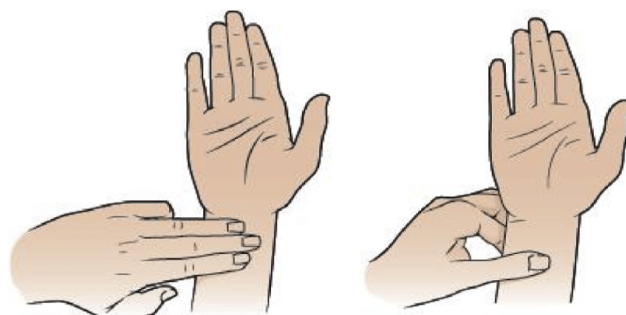


Figure (1): Placing 3 fingers across wrist and after that Placing thumb on point below index finger (Memorial Sloan Kettering Cancer Center, 2016).

(4) Utilize your thumb or fingers to push on this spot for two to three minutes utilizing a circular motion. Adhere to a firm but non-aggressive stance. Three minutes of acupressure on point P6 on two body's sides made up the acupressure program. Three sequential intervention sessions were given to each child: the first took place thirty minutes pre to the commencement of chemotherapy, the second took place pre supper on the day of chemotherapy, as well as the third took place pre breakfast the following day. The same researcher conducted the intervention sessions.

Statistical analysis:

The twentieth version of the SPSS statistical program was used to examine the data. For three days, continuous data were gathered before and post the acupressure, and the mean standard deviation (SD) was computed to represent the results. Numerical as well as percentage methods were used for presenting categorical data. The variations between the 2 groups were examined utilize the independent t-test, as well as the differences between each group prior to and after a massage were evaluate utilizing the paired t-test. The results were evaluated using the chi-square test. The chi-square test was utilized to look into the connection among both of the factors. P-values under 0.05 indicated statistically significant.

Results

Table (1) Characteristics of children in the study and control groups n=80

Personal data	Study (n = 40)		Control (n = 40)	
	No.	%	No.	%
Age of children				
6:10years	20	50	14	35
10:14 years	12	30	16	40
14:18yrs	8	20	10	25
Mean ± SD	10.12 ± 2.43		9.10 ± 1.66	
Sex				
Male	26	65	24	60
Female	14	35	16	40
Residence				
Rural	23	57.5	26	65
Urban	17	42.5	14	35

Table (1) The findings revealed that children in the study and control groups had a mean age of (M ± SD) 10.12 ± 2.43 and 9.10 ± 1.66; respectively, 65% of children in study group male, while 60% male children in control group. In relation to (Residence) 57.5% of children from rural area in study group, and 65% of children from urban area.

Table (2) Comparison of control as well as study groups related to leukemia characteristics as well as the side effects of chemotherapy n=80

Personal data	Study (n = 40)		Control (n = 40)	
	No.	%	No.	%
Diagnosis				
Acute lymphoblastic leukemia	32	80	36	90
Acute myeloid leukemia	8	20	4	10
Stage of disease				
Induction	10	25	12	30
Remission	18	45	20	50
Relapse	12	30	8	20
Family history of neoplasia				
Positive	16	40	14	35
Negative	24	60	26	65
Side effects of chemotherapy				
Diarrhea	2	5	1	2.5
Nausea/vomiting	17	42.5	18	45
Alopecia	3	7.5	3	7.5
Anorexia	3	7.5	3	7.5
Bleeding	4	10	3	7.5
Infection	3	7.5	2	5
Fatigue	4	10	4	10
Mouth sores	4	10	6	15

Table (2) shows that 80%, and 90% of children diagnosis was Acute lymphoblastic in study as well as control groups respectively; 60%, and 65% of children have negative family history of neoplasia in study as well as control groups respectively; 42.5%, and 45% of children have vomiting side effects of chemotherapy in study as well as control groups respectively.

Table (3) Percentage distribution for Rhodes index of nausea as well as vomiting scale of children through forty eight hours after administration of chemotherapy n=80

Personal data	Study (n = 40)				Control (n = 40)			
	Pre-test		Post-test		Pre-test		Post-test	
	No.	%	No.	%	No.	%	No.	%
Vomiting frequency								
No	10	25	23	57.5	16	40	17	42.5
Mild (1-2)	15	37.5	13	32.5	12	30	15	37.5
Moderate (3-4)	15	37.5	4	10	12	30	8	20
Great (5-6)	0	0.00	0	0.00	0	0.00	0	0.00
Severe (≥ 7)	0	0.00	0	0.00	0	0.00	0	0.00
X ² -test (P.value)	8.10 (0.0001)**				9.13 (0.12)			
Vomiting distress								
No	12	30	30	75	14	35	14	35
Mild	12	30	8	20	20	50	15	40
Moderate	16	40	2	5	6	15	10	25
Great	0	0.00	0	0.00	0	0.00	0	0.00
Severe	0	0.00	0	0.00	0	0.00	0	0.00
X ² -test (P.value)	5.07 (0.0001)**				4.08 (0.15)			
Vomiting severity								
No	15	37.5	36	90	20	50	25	62.5
Small (up to 1/2 cup)	20	50	3	7.5	18	45	13	32.5

Personal data	Study (n = 40)				Control (n = 40)			
	Pre-test		Post-test		Pre-test		Post-test	
	No.	%	No.	%	No.	%	No.	%
Moderate (1/2-2 cups)	5	12.5	1	2.5	2	5	2	5
Large (2-3 cups)	0	0.00	0	0.00	0	0.00	0	0.00
Very large (>3 cups)	0	0.00	0	0.00	0	0.00	0	0.00
X ² -test (P.value)	4.02 (0.0001)**				4.05(0.18)			
Nausea duration								
No	8	20	37	92.5	5	12.5	20	50
Mild (≤ 1 hour)	22	55	2	5	20	50	12	30
Moderate (2-3 hours)	8	20	1	2.5	12	30	7	17.5
Great (4-5 hours)	2	5	0	0.00	3	7.5	1	2.5
Severe (≥ 6 hours)	0	0.00	0	0.00	0	0.00	0	0.00
X ² -test (P.value)	5.10 (0.0001)**				5.012(0.08)			
Nausea severity								
No	9	22.5	36	90	13	32.5	20	50
Mild	15	37.5	3	7.5	17	42.5	12	30
Moderate	14	35	1	2.5	10	25	8	20
Great	2	5	0	0.00	0	0.0	0	0.00
Severe	0	0.00	0	0.00	0	0.00	0	0.00
X ² -test (P.value)	3.07 (0.0001)**				3.01(0.07)			
Nausea frequency								
No	14	35	35	87.5	16	40	22	55
Mild (1-2)	16	40	3	7.5	18	45	12	30
Moderate (3-4)	8	20	2	5	5	12.5	6	15
Great (5-6)	2	5	0	0.0	1	2.5	0	0.00
Severe (≥ 7)	0	0.00	0	0.00	0	0.00	0	0.00
X ² -test (P.value)	4.11 (0.0001)**				4.012(0.08)			

**highly statistical significance differences

Table (3) illustrates that related to frequency of vomiting in study group was 57.5% of children having no vomiting in post-test, and 42.5% of children have no vomiting in post-test. Related to nausea frequency post-test 87.5% of children have no nausea in study group, 55% of children have no nausea in post-test in control group. When children in the study group were compared to those in the control group, there was a very significant improvement in the frequency, distress, as well as severity of nausea as well as the frequency, length, and intensity of vomiting following the administration of acupressure (p = 0.0001).

Table (4) Comparison of study as well as control groups in after-test related the mean scores items of Rhodes Scale for nausea as well as vomiting scale through forty eight hours after administration of chemotherapy

Personal data	study (n = 40) Post-test	Control (n = 40) Post-test	X ² -test (P.value)
Vomiting			32.146 (0.0001)**
Frequency	0.22 ± 0.22	0.16 ± 0.15	
Vomiting Distress	0.19 ± 0.18	0.12 ± 0.16	
Severity	0.12 ± 0.15	0.12 ± 0.10	
Nausea			30.225 (0.0001)**
Duration	0.25 ± 0.16	0.17 ± 0.11	
Nausea Severity	0.17 ± 0.18	0.10 ± 0.8	
Frequency	0.18 ± 0.18	0.16 ± 0.13	

**highly statistical significance differences

Table (4) demonstrates that there was a highly significant decreased in the study group's children's mean scores of the Rhodes scale items for nausea as well as vomiting when measured forty eight hours after chemotherapy was administered, compared to the control group's children. This indicates a significant positive impact of applying the acupressure (p = .0001).

Table (5) Comparison of study as well as control groups in post-test related to the mean scores of Rhodes scale for nausea as well as vomiting scale through forty eight hours after administration of chemotherapy

Personal data	study (n = 40) Post-test	Control (n = 40) Post-test	(P.value)
Vomiting			(0.0001)**
1 st 12 hours	0.22 ± 0.14	5.16 ± 0.22	
2 nd 12 hours	0.26 ± 0.16	6.14 ± 0.52	
3 rd 12 hours	0.28 ± 0.22	1.13 ± 0.44	
4 th 12 hours	0.21 ± 0.17	1.2 ± 0.41	

**highly statistical significance differences

Table (5) displays a comparison of the study and control groups' overall mean Rhodes scale scores for nausea and vomiting at 12-hour intervals over the 48-hour period that follows the delivery of chemotherapy. Using the Mann-Whitney test, there was a very significant drop in the mean scores beginning after the first twelve-hour period and continuing until the end of forty-eight hours after the administration of chemotherapy (p = .0001).

Discussion

Many complementary and alternative medicines have been used over the past few decades to treat children with cancer who have nausea and vomiting related to active therapy. However, a thorough evaluation comparing the efficacy of various treatments has not yet been carried out. By performing a systematic review on the most recent data, we will close this knowledge gap in the body of existing research. The findings are anticipated to support medical practitioners in making clinical decisions, namely about the best complementary and alternative medicines for managing nausea as well as vomiting associated with cancer therapy. (Ka Yan, et al., 2019).

The malignancy of the bone marrow and blood is called leukemia. Leukemia can be treated in a number of ways, but the most common treatment for children with acute leukemia is chemotherapy, which aims to suppress the disease. Despite chemotherapy's effectiveness, it has the potential to harm both healthy and leukemic cells, which can have a number of negative consequences. The most upsetting side impact of chemotherapy is nausea and vomiting. The frequency of nausea and vomiting can be decreased using non-traditional therapies including acupressure, guided imagery, music therapy, self-hypnosis, biofeedback, guided imagery, herbal treatment (like ginger), and relaxation techniques (Abohadida, et al., 2020)

According to this research, the mean age of the children in the study as well as control groups was 10.12 ± 2.43 and 9.10 ± 1.66 , respectively. More than fifty percent of the children in the study as well as control groups were male, and in terms of residence, the study group included more than half of the children from urban areas and roughly half of the children from rural areas. According to Yousef et al. (2019), the control and study groups' mean ages were 8.08 ± 3.72 and 7.96 ± 3.82 , respectively. In the control group, more than half of the kids were male, while in the study group, fewer than fifty percent of the kids were male.

Acute lymphoblastic leukemia was the most typical diagnosis in the study group and the most common diagnosis in the control group in the current investigation. According to Yousef et al. (2019), approximately sixty children in the study group had a positive family history of an oncological disease, whereas forty children in the control group had a negative family history. Approximately sixty-five children in the study group had a negative family history, and approximately sixty six had a positive history family of oncological disease. roughly two thirds of the children in the control as well as study groups had a negative history family of oncological disorders, whereas roughly one third had a positive family history. This finding was comparable with the results of (Abohadida et al., 2020).

Applying acupressure to children with acute leukemia and undergoing chemotherapy resulted in a highly statistically variations (P.value 0.0001) decrease in the frequency, distress, and severity of nausea as well as the duration, frequency, as well as severity of vomiting through forty eight hours of the start administration of chemotherapy when compared to the control group in the current study. According to Yousef et al.'s (2019) findings, applying acupressure at P6 to children receiving chemotherapy for acute leukemia resulted in a highly significant reduced in the frequency, distress, and severity of nausea as well as in the duration, frequency, and severity of vomiting through forty

eight hours of the start administration of chemotherapy when compared to the control group. Abohadida et al., (2020) who reported that there was no significant difference in the experimental and placebo groups' preintervention nausea severity (P= 0.2). P6 acupressure was shown in this study to decrease nausea as well as vomiting, which is common in children who have had cancer treatment.

Numerous studies have attempted to explain how acupressure applied to specific points on the body improves CINV. They have found that applying acupressure to impact meridians on the surface of the body can effectively reduce CINV by increasing energy flow, boosting meridian energy, improving blood circulation, as well as promoting the recuperation of gastrointestinal function (Sima and Maryam, 2020).

The current investigation discovered that every twelve hours throughout the forty-eight hours that followed the delivery of chemotherapy; the total mean scores on the Rhodes scale for nausea as well as vomiting were compared between the study and control groups. Using the Mann-Whitney test, there was a very significant drop in the mean scores beginning after the first twelve-hour period and continuing until the end of forty-eight hours after the administration of chemotherapy (p =.0001).

According to research by Mohammed et al. (2018), acupressure in the P6 area may help reduce CINV by preventing nausea as well as vomiting. Acupressure must be begun a few days pre to chemotherapy to avoid these side effects. When compared to the control group, Abohadida et al. (2020) observed a substantial decrease in the duration, frequency, intensity of nausea, vomiting, as well as retching.

Conclusion

In conclusion, compared to children who took routine hospital care only in the control group, an applying technique of acupressure to children with leukemia took chemotherapy resulted in a significant decreasing in the mean scores of nausea as well as vomiting duration, frequency, as well as severity through forty eight hours from the starting of chemotherapy. Consequently, before chemotherapy begins and as a supportive nursing intervention, acupressure should be used to reduce CINV in children with leukemia.

Recommendations

Pediatric oncology nurses may benefit from acupressure education and training sessions on a regular basis to reduce the negative effects of chemotherapy-induced nausea and vomiting. Policies and procedures for the pediatric oncology unit may take into account the use of acupressure as an alternative medicine to treat the side effects of leukemia, as nausea as well as vomiting. Medical staff in the pediatric cancer unit may have access to video cassettes or pamphlets on the advantages of acupressure in the treatment of leukemia nausea and vomiting side effects. Children with leukemia and their caregivers can participate in educational programs on complementary and alternative medicine, such as acupressure, which helps reduce the adverse effects of chemotherapy, as nausea as well as vomiting.

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