

## Nurses' Performance Regarding Application of Acupressure Technique for Children undergoing Chemotherapy: An Assessment Study

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### Abstract

**Background:** Chemotherapy-Induced Nausea and Vomiting is one of the most common side effects in pediatric patients undergoing chemotherapy despite the development of antiemetics, so assessing nurses for knowledge and skills about chemotherapy-induced nausea and vomiting management is very important. Acupressure technique is one of non-pharmacological management approaches that control chemotherapy-induced nausea and vomiting among children with cancer. **Aim:** Assess nurse's performance regarding application of acupressure technique for children undergoing chemotherapy. **Design:** Descriptive exploratory design. **Settings:** The current study was conducted at National Cancer Institute and Dar-Elssalam Hospital which affiliated to Cairo University Hospital. **Subject:** A convenience sample composed of 36 nurses giving care for children with cancer and undergoing chemotherapy. **Tools:** Three tools were used for data collection; **First tool:** Structure questionnaire format. **Second tool:** Observational checklists for application of acupressure. **Third tool:** Attitude assessment scale. **Results:** The current study revealed that the mean age of the studied nurses was  $29.7 \pm 8.4$  years, three quarters of them were males, the majority of the studied nurses were graduated from technical nursing institute, and about three-quarters of the studied nurses had poor level of knowledge about chemotherapy-induced nausea and vomiting and acupressure technique and all of them had incompetent level of practice regarding application of acupressure technique and had a negative attitude toward acupressure technique. **Conclusion:** The current study concluded that more than two-thirds of studied nurses had a poor level of knowledge related to chemotherapy-induced nausea and vomiting, and, the majority of them had poor level of knowledge regarding application of acupressure as well as all of them were incompetent in their practice level regarding application of acupressure technique. **Recommendation:** Periodical implementation of educational programs for all oncology nurses to improve their performance about non-pharmacological management of chemotherapy-induced nausea and vomiting.

**Keywords:** Acupressure, Chemotherapy, Children, Nurses performance.

### Introduction:

Chemotherapy-Induced Nausea and Vomiting (CINV) is one of the most common and feared side effects in pediatric patients with cancer undergoing chemotherapy and remains an issue for many children which, impact on normal daily activities of the pediatric patient, treatment compliance, and overall healthcare cost. Despite the development of new antiemetic agents, it is affecting up to 40% of pediatric patients (Gupta et al., 2021).

Acupressure is one of non-pharmacologic strategy that recommended for preventing CINV (Khakpour et al., 2019). The

nurse plays a major role in caring for children with cancer through preparing the children and their family for diagnostic and therapeutic procedures, in the management period the nurse observing the manifestation and provide emotional support for children and their family to assist them in coping with the disease. Moreover, nurses caring for pediatric patients receiving chemotherapy require specialized knowledge in order to ensure safety for both patients' life and for their own safety of jobs (Ahmed, et al., 2018).

Nurses are providing proper assessment and management of CINV because of their

focus on holistic pediatric patient care as well as pediatric patient education. Nurses, specifically nurse practitioners, provide physical, social, psychosocial, and existential pediatric patient care and their families. Nurses, with their strong educational background, can serve as a link between oncologists and the rest of the oncological healthcare team (Steger, 2021).

Oncology nurses need adequate knowledge and skills for CINV assessment and management. They should also be knowledgeable about the evidence on novel therapies and new strategies (Al Qadire & Alkhalaleh, 2019).

### **Significance of the Study:**

Chemotherapy-induced nausea and vomiting is affecting between 40-80% of pediatric patients with antiemetic drugs (Campen *et al.*, 2022). The reported prevalence of acute CINV in pediatric patients is in up to 35% of pediatric patients and acute vomiting in approximately 13%, delayed CINV occurs with incidence after antiemetic prophylaxis is 20–50%. Breakthrough CINV occurs in an estimated 44% of pediatric patients (Gupta *et al.*, 2021). While anticipatory CINV varies widely, ranging from 11% to 59% (Patel *et al.*, 2021).

In spite of recent advances in antiemetic therapy, CINV is still a challenging issue so using Complementary and Alternative Therapies (CAT) are attractive given the possibility of ameliorating side effects without interacting with the many other medications, children can use CAT as using finger pressure to stimulate trigger points (acupoints) on the body (acupressure technique) for promoting blood circulation (Aapro, 2018).

### **The aim of the study:**

The current study aims to assess nurses' performance regarding application of acupressure technique for children undergoing chemotherapy.

### **Research questions:**

- 1- What's nurses' knowledge regarding application of acupressure technique for children undergoing chemotherapy?
- 2- What's nurses' practice regarding application of acupressure technique for children undergoing chemotherapy?
- 3- What's nurses' attitude regarding application of acupressure technique for children undergoing chemotherapy?

### **Technical design**

#### **Research Design:**

A descriptive design was utilized to conduct the study.

#### **Research Setting:**

The current study was conducted at the Pediatric Oncology Department of National Cancer Institute (NCI), Cairo-University, and the 4<sup>th</sup> floor of Dar-Elssalam Hospital which is affiliated to Cairo-University Hospital.

#### **Research Subjects:**

All nurses who are working in the previously mentioned settings with different qualifications and are dealing with children undergoing chemotherapy and complaining of CINV, their number was 36 staff; 27 in NCI (12 staff in the free side and 15 in the insurance side) and 9 staff in Dar ElSalam Hospital.

Purposive samples of children who are receiving chemotherapy and were available during the period of data collection, their number was 45.

### **Two tools were used for data collection:**

#### **Tool one: A structured questionnaire format:**

This tool was developed by the researchers based on a review of the literature; it includes the required data related to nurses and children as follows:

**Part I:** - Characteristics of nurses; included; age, gender, level of education, years of experience in the pediatric oncology

department, and attendance training program about complementary therapy.

### **Part II knowledge assessment:**

- It consisted of 20 questions in the form of true and false, multiple choice questions, and essay questions to assess nurses' knowledge related to:-
- Definition and treatment of cancer as well as, definition, side effects, and types of chemotherapy.
- Definition, types, predisposing factors, side effects, and management of CINV (Al Qadire & Alkhalaleh, (2018) & Sherani, et al., (2019).
- Definition, number, and methods of acupoint activation as well as pericardium 6
- Definition, effect, response, and uses of acupressure technique (Gaber, et al., (2018) & Najjari, et al., (2019).

### **❖ Scoring system for nurses' knowledge:**

Nurses' answers were checked with a model answer and each good and complete answer took "2" marks and an poor answer took zero. The total marks of the questions were 40, the nurses' scores were summed up and converted to percentages, and then nurses' total knowledge was categorized as poor knowledge (Score < 60%). good knowledge (Score ≥ 60%).

**Tool two: Observational Checklist:** It contained 7 steps including the preparatory phase, using the proper finger; pressing on the proper point, the proper way of pressure, and the proper time duration for the application of the acupressure technique (Gaber et al., (2018).

### **❖ Scoring system for the observational checklist:**

The score of each item is rated as follows: score 1 is assigned if the procedure was performed goodly and score 0 if the nurse performed it poorly or did not perform it at all. The total score of the checklist was 7 grades.

The submission of a score is considered competent if all steps are performed goodly (100 %) by nurses.

### **Tool three: Attitude assessment scale:**

The adapted scale consisted of seven questions for assessing nurses' attitudes toward the application of the acupressure technique (DeVellis, 2017).

### **Validity:**

The tools of the current study were judged by a panel of 3 experts and professors of pediatric nursing. The necessary modifications were done according to experts' opinions to ensure the validity of the content.

### **Reliability:**

The reliability of the tools was tested by using Cronbach's Alpha, the reliability of the knowledge assessment tool was 0.802 with good reliability and for practice assessment tool was 0.840 with good reliability. The reliability of the attitudes scale was 0.69.

### **Ethical considerations:**

The ethical considerations in the study included the following:

- ✓ All the gathered data was used for research purposes only.
- ✓ The study sample was informed about the purpose and expected outcomes of the study and they were assured that the study is harmless and their participation is voluntary and they have the right to withdraw from the study at any time and without giving any reason.

They were assured also that anonymity and confidentiality were guaranteed.

### **Operational design:**

The operational design included a preparatory phase, pilot study, and field work.

### **Preparatory phase**

A review of the past and current related literature covering various aspects of the

research problem was done by using available books, articles, periodicals and magazines to be acquainted with the research problem to develop the study tools and content.

#### **Pilot study:**

A pilot study was carried out on 10% (4 nurses) of the total study sample. The result of the data obtained from the pilot study helped in removing some repeated questions related to knowledge to avoid duplication of questions and then all nurses involved in the pilot study were included in the study sample.

#### **Field Work**

The actual fieldwork was carried out over 6 months from the beginning of June up to the end of November 2021. The researchers was available in the study setting 3 days a week from 9:00 a.m. to 5:00 p.m. in NCI and Dar El Salam Hospital.

The researchers used the pre-constructed tools in collecting the data about nurses' knowledge related to the care of children with cancer undergoing chemotherapy, chemotherapy induce nausea and vomiting (CINV), and practices related to the application of acupressure technique. The purpose of the study and its expectations were explained by the researchers to the studied nurses before starting interviewing and data collection. The questionnaire was filled in by the nurses; the time provided for fulfilling the structure questionnaire format was 30 minutes.

The observation checklist was filled in by the researchers during observation of nurses' practices regarding the application of acupressure technique (demonstration) and the time needed to fill in the checklist depended on nurses' practices related to the application of acupressure, the procedure time assessment ranged between 15 to 30 minutes.

#### **Administrative design:**

Official permission was obtained from the Dean of Faculty of Nursing Ain Shams University, National Cancer Institute [NCI]

belonging to Cairo University where the study was conducted and the head of the pediatric hematology department and nurses.

#### **Statistical Design:**

The data obtained was organized, analyzed, and presented in the form of tables and figures using the Statistical Package for Social Sciences (SPSS) Version 20. Qualitative variables were presented in the form of frequencies and percentages; quantitative variables were presented in the form of mean and SD. Chi square and Fishers Exact tests were used to test the significance of the results obtained. A statistically significant difference was considered at  $P < 0.05$

#### **Results:**

**Table (1):** Regarding the characteristics of the studied nurses, this table shows that their mean age of them was  $29.7 \pm 8.4$  years. Less than three-quarters (72.2%) of the studied nurses were males. As regard their years of experience in the oncology department, it was found that the mean  $\pm$  SD was  $8.59 \pm 2.6$  years. Also, it was found the majority (88.9%) of them were technical nurses.

**Table (2):** Regarding the characteristics of the studied children, this table reveals that the mean age of the studied children was  $11.7 \pm 4.41$  years, and more than half (53.3%) of them were females and at the primary school level. Concerning their residence, it was obvious that more than half (55.6%) of children were from rural areas. Also found that the mean weight and height of children were  $37.8 \pm 15.3$  kg.,  $140.6 \pm 18.8$  cm. respectively.

**Table (3):** clarified that all (100 %) of the study nurses had good knowledge related to the definition of cancer and three-quarters (75%) of them had good knowledge related to the treatment of cancer. This table also illustrated that 83.3 % and 91.7 % of nurses had good knowledge regarding the definition and side effects of chemotherapy respectively. While

more than half (47.2 %) of nurses had poor knowledge related to types of chemotherapy.

**Table (4):** Clarified that two-thirds (66.7 %), more than three-quarters (77.8 %) and almost (97.2 %) of the studied nurses had poor knowledge related definition of vomiting, predisposing factors for CINV and non-pharmacological management respectively. While, Regarding definition of nausea, types of CINV, side effects and mechanism of antiemetic drugs this table also showed that the majority (80.6%), more than half (52.8 %) and more than two-thirds of them had good knowledge regarding respectively, while almost (97.2 %) of the studied nurses had good knowledge respectively.

**Table (5):** revealed that more than half (55.6 %) of the studied nurses had good knowledge related to the definition of acupoints, while, more than half (63.9 %), and the majority of them had poor knowledge regarding the number of acupoints and methods for activation as well as pericardium point respectively.

**Table (6):** revealed that three quarters (75 %), more than two-thirds (69.4 %) and more than half of the studied nurses had poor knowledge about the definition of acupressure, the effect of acupressure, response and uses for acupressure technique respectively.

**Table (1):** Number and percentage distribution of the studied nurses according to their characteristics (n=36).

Items	N.	%
<b>Age in years</b>		
<20	2	5.6
20-<25	7	19.4
25-<30	17	47.2
≥30	10	27.8
<b>Mean ± SD 29.7 ± 8.4</b>		
<b>Gender</b>		
Male	26	72.2
Female	10	27.8
<b>Years of Experience in the oncology department</b>		
<5	9	25.0
5-<10	17	47.2
10-<15	6	16.7
≥15	4	11.1
<b>Mean ± SD 8.59 ± 2.6</b>		
<b>Job title</b>		
Technical nurse	32	88.9
Specialist	4	11.1

**Table (7):** showed that more than two-thirds (69.4%) of the studied nurses had a poor level of knowledge related to chemotherapy-induced nausea and vomiting, while, the majority (91.7%) of them had a poor level of knowledge regarding the application of acupressure.

**Table (8):** represented that all (100 %) of the studied nurses were not performed all preparation steps for the application of acupressure technique.

**Table (9):** represented that all (100 %) of the studied nurses were not performed all steps of the acupressure technique.

**Table (10):** represented that more than half (55.6 %) of the studied nurses had a positive attitude regarding the safety for using acupressure as a treatment for CINV, while two-thirds (33.3 %) of them recommended that using acupressure as a treatment for CINV. This table clarified also all (100 %) of the studied nurses not used the acupressure technique and need more educational opportunities regarding acupressure for CINV treatment, as well as more than two-fifth (41.7 %), considered that the acupressure technique does not enhance comfort for patients during sessions of chemotherapy and is an effective treatment.

**Table (2):** Number and percentage distribution of the studied children according to their characteristics (n=45).

Items	N.	%
<b>Age in years</b>		
6-<10	17	37.8
10-<14	10	22.2
14-18	18	<b>40.0</b>
<b>Mean ± SD 11.7± 4.41</b>		
<b>Gender</b>		
Male	21	46.7
Female	24	<b>53.3</b>
<b>Level of education</b>		
Primary	24	<b>53.3</b>
Preparatory	8	17.8
Secondary	13	28.9
<b>Residence</b>		
Urban	20	44.4
Rural	25	<b>55.6</b>
<b>Weight in Kg</b>		
<20	6	13.4
20-<40	20	<b>44.4</b>
40-≥60	19	42.2
<b>Mean ± SD 37.8± 15.3</b>		
<b>Length \ height in cm.</b>		
<110	1	2.2
110-<140	17	37.8
140-<160	20	<b>44.4</b>
≥160	7	15.6
<b>Mean ± SD 140.6± 18.8</b>		

**Table (3):** Distribution of the studied nurses' knowledge about cancer and chemotherapy (n=36).

Knowledge	Good		Poor	
	No.	%	No.	%
Definition of cancer	36	100.0	0	0
Different modalities for treatment of cancer	27	75.0	9	25.0
Definition of chemotherapy	30	83.3	6	16.7
Side effects of chemotherapy	33	91.7	3	8.3
Types of chemotherapy	19	52.8	17	47.2

**Table (4):** Distribution of the studied nurses' knowledge about chemotherapy induced nausea and vomiting (n=36).

Knowledge	Good		Poor	
	No.	%	No.	%
Definition of Vomiting	12	33.3	24	66.7
Definition of Nausea	7	80.6	29	19.4
Types of CINV	19	52.8	17	47.2
Predisposing factors for CINV	8	22.2	28	77.8
Side effects of antiemetic drugs	24	66.7	12	33.3
Mechanism of antiemetic drugs	25	69.4	11	30.6
Non-pharmacological management	1	2.8	35	97.2

**Table (5):** Distribution of the studied nurses' knowledge about acupressure (n=36).

Knowledge	Good		Poor	
	No.	%	No.	%
Definition of acupoint	20	55.6	16	44.4
Number of acupoints in human body	13	36.1	23	63.9
Methods for activation acupoints	6	16.7	30	83.3
Pericardium 6 (P6) point	4	11.1	32	88.9

**Table (6):** Distribution of the studied nurses' knowledge about acupressure technique (n=36).

Knowledge	Good		Poor	
	No.	%	No.	%
Definition of acupressure	9	25.0	27	75.0
Effect of acupressure	11	30.6	25	69.4
Response of acupressure	16	44.4	20	55.6
Uses for acupressure technique	15	41.7	21	58.3

**Table (7):** Number and percentage distribution of the studied nurses' total knowledge about chemotherapy-induced nausea and vomiting and about acupressure technique (n=36).

Total Knowledge	Good		Poor	
	N	%	N	%
Total Knowledge about CINV	11	30.6	25	69.4
Total Knowledge about acupressure	3	8.3	33	91.7

**Table (8):** Distribution of the studied nurses' practice about preparation for the application of acupressure technique (n=36).

Steps	Done		Not done	
	N	%	N	%
-Cutting nails.	0	0	36	100.0
-Remove hand accessories.	0	0	36	100.0
-Remove mobile phones or switch off	0	0	36	100.0
-Hand washing	0	0	36	100.0

**Table (9):** Distribution of the studied nurses' practice about the application of acupressure technique (n=36).

Steps	Done		Not done	
	N	%	N	%
Using proper finger	0	0	36	100.0
Press on the proper site	0	0	36	100.0
Direction of pressing the finger on acupoint	0	0	36	100.0
A proper way of pressure on acupoint	0	0	36	100.0
Proper time duration for application of acupressure technique	0	0	36	100.0

**Table (10):** Distribution of the studied nurses' attitude toward the application of acupressure technique (n=36).

Steps	Agree		Disagree		Indifferent	
	N	%	N	%	N	%
1. Acupressure is a safe treatment for CINV	20	55.6	6	16.7	10	27.8
2. I recommend acupressure for treatment of CINV to my family and friends	12	33.3	13	36.1	11	30.6
3. I recommend acupressure for treatment of CINV to patients	12	33.3	4	11.1	20	55.55
4. I personally use acupressure for the treatment of CINV	0	0	0	0	36	100
5. I would like more educational opportunities regarding acupressure for CINV treatment	36	100	0	0	0	0
6. Acupressure does not enhance comfort for patients during sessions of chemotherapy	6	16.7	15	41.7	15	41.7
7. Acupressure is an effective treatment for CINV	4	11.1	15	41.7	17	47.2

### Discussion:

Despite progress in antiemetic development, many pediatric patients still experience CINV. Chemotherapy-induced nausea and vomiting may have negative effects on daily activities and recurrent bad experiences during cancer treatment. So, Complementary and Alternative Medicine (CAM) has attracted the attention of healthcare providers and assumed significant importance in cancer therapy for reasons varying from accessibility to cost. Acupressure is a non-pharmacological method and one of CAM that was reported to play a role in controlling the CINV (*Khakpour et al., 2019*).

Concerning the studied nurses' knowledge related to the definition of chemotherapy, the result of the current study revealed that the majority of the studied nurses had good knowledge. From the researcher's point of view these results because most of the studied nurses graduated from NCI as well as, clinical experiences in the pediatric oncology department. The current result is not in agreement with *Yu et al., (2013)*, whose study titled "Evaluating nurses' knowledge of chemotherapy", they found that nurses have

insufficient knowledge about chemotherapy and recommended that, nurses need more education about chemotherapy in nursing school and through in-Hospital continuing education.

Regarding the studied nurses' knowledge related to side effects of chemotherapy, the result of the current study revealed that the vast majority of studied nurses had a good level of knowledge. From the researcher's point of view, might be related to the clinical experience of the studied nurses in the oncology department, as well as three-quarters of the studied nurses having more than five years of experience in the oncology department. This result is not supported with *Uzun & Kucuk, (2019)*, who assessed "Side effects of chemotherapy in children with cancer: effects of nursing training administered to caregivers" they found that the level of nurses' knowledge working in pediatric oncology clinics regarding the side effects of chemotherapy was inadequate and it was recommended that in his study, the levels of nurses knowledge should be increased, and the training in pediatric oncology clinics should be provided by the specialist nurses.

Regarding nurses' knowledge related to the definition of vomiting, the study results

revealed that nearly two-thirds of the studied nurses had a poor level of knowledge. The result of the current study is not in agreement with *Krishnasamy et al., (2014)*, who conducted an international survey about the nurse's role in managing chemotherapy-induced nausea and vomiting, and reported that the majority of participants goodly identified acute vomiting delayed and anticipatory vomiting.

Regarding nurses' knowledge related to types of CINV, the result of the current study revealed that half of the studied nurses had poor knowledge. From the researcher's point of view, may be due to no continuing education and the present study's finding emphasizes the need for continuous education to support clinical experience. The result of the current study is in agreement with *So, (2013)*, who conducted a study titled "Knowledge and practice among Hong Kong oncology nurses in the management of chemotherapy-induced nausea and vomiting", and reported that nearly half of oncology nurses had inadequate knowledge of different aspects of CINV.

Regarding the nurses' knowledge related to predisposing factors for CINV, the result of the current study revealed that three-quarters of the studied nurses had poor knowledge. From the researcher's point of view, the present study finding emphasis the need of continuous education to support clinical experience, as well, this reflects success of training program intervention in improving nurses' knowledge. The result of the current study is in agreement with *Krishnasamy et al., (2014)*, who found that, the participants were unsure about the various factors influence of on CINV.

Concerning the studied nurses' knowledge related to pharmacological management of CINV, the result of the current study revealed that more than two-thirds of the studied nurses had a good knowledge related side effects and mechanism of antiemetics. From the researcher's point of view, the pharmacological management of CINV is given within the chemotherapy protocol, so they have

enough knowledge. The result of the current study go in the same line with *So et al., (2013)*, who conducted a study titled "Knowledge and practice among Hong Kong oncology nurses in the management of chemotherapy-induced nausea and vomiting", and reported that the majority could clearly state the most common pharmacological agents used to treat chemotherapy-induced nausea and vomiting.

Regarding the nurses' knowledge related to non-pharmacological management of CINV, the result of the current study revealed that the majority of the studied nurses had poor knowledge. From the researcher's point of view, the current study result reflected a lack of training program intervention for the studied nurses that is may limit the chance to be updated their knowledge as well, as learn new strategies regarding non-pharmacological management of CINV. The result of the current study is in agreement with *Al Qadire & Alkhalaleh (2019)*, who illustrated that oncology nurses' knowledge about the non-pharmacological management of CINV is inadequate.

Regarding the studied nurses' level of knowledge about the application of the acupressure technique for children undergoing chemotherapy, the results of the current study revealed that the majority of them had poor knowledge. From the researchers' point of view, these reflect a lack of knowledge regarding complementary therapies. This result is in agreement with (*Gaber, et al., (2018)*), who stated in the study conducted at Cairo University titled with the effect of acupressure on frequency and severity of nausea and vomiting among leukemic children undergoing chemotherapy, it was found that, not enough knowledge about acupressure technique.

The results of the current study related to nurses' level of knowledge about the application of acupressure technique for children undergoing chemotherapy, is not in agreement with *Homa et al., (2017)*, who did a study titled "CRNA's Knowledge Regarding Acupressure as an Adjunct to Postoperative Nausea and

Vomiting Prevention” reported that all study nurses have an overall adequate knowledge about acupressure for nausea and vomiting management.

Concerning the total level of nurses' practice regarding the application of the acupressure technique for children undergoing chemotherapy, the present study findings showed the incompetent level of practice among all the studied nurses. From the researchers' point of view, this may be due to no educational guide in the pediatric oncology department based on evidence-based to improve nurses' new trends in practice. Meanwhile, the application of the training program increases the competent level of nurses' practice. These results are supported with the result of **Hooshangi et al., (2017)** who done a study titled “Knowledge, attitude and practice of students of Gonabad University of Medical Sciences toward famous methods of complementary and alternative medicine”, which suggests that nurses have incompetent practice toward complementary medicine, and recommended that, it is necessary to enhance students' awareness through CAM courses in the university. Also, the current findings were in agreement with **Zeighami & Soltani-Nejad, (2020)** who done a study titled “Knowledge, attitude, and practice of complementary and alternative medicine: a survey of Iranian nurses. Journal of Research in Nursing”, and reported that the nurses had the lowest 68.3% level of practice regarding acupressure technique. Additionally, go in the same line with **Makarem et al., (2022)**, who done a study titled “Knowledge, attitude, and practices of complementary and alternative medicine: a survey of physicians and nurses at an academic medical center in Beirut” and reported that less than half of the nurses have a difficult ability to access CAM.

The results of the current study revealed that there is a need for the training program to improve pediatric oncology nurses' knowledge and practices for caring for children undergoing chemotherapy.

## Conclusion:

Based on the results of the current study, it can be concluded that more than two-thirds of studied nurses had a poor level of knowledge related to chemotherapy-induced nausea and vomiting, and, the majority of them had a poor level of knowledge regarding the application of acupressure as well as all of them were incompetent in their practice level regarding the application of acupressure technique.

## Recommendation:

In view of the study findings, the following recommendations are suggested:

- Periodical implementation of educational programs for all oncology nurses to improve their performance about non-pharmacological management of CINV.
- Similar studies should be conducted for nurses in different settings to generalize the findings.

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