IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 6, Issue 5 Ver. V. (Sep. -Oct .2017), PP 60-72
www.iosrjournals.org

Efficacy of Non pharmacological technique on Chemotherapy Induced Nausea, Vomiting and Retching among Breast Cancer Patients

Gehan.H.Soliman[1], Hagar Alagizy [2], Omima Said M.H. Shehata[3]
[1] *Assis.prof. of Medical Surgical Nursing, Faculty of Nursing, Menoufia University, Egypt*
[2] *Assis.prof. of Clinical Oncology, Faculty of Medicine, Menoufia University, Egypt*
[3] *Lecturer of Medical Surgical Nursing, Faculty of Nursing, Menoufia University, Egypt*
Corresponding Author: Gehan.H.Soliman

Abstract
Background: *Despite the development of effective antiemetic drugs, nausea, vomiting and retching remain the main side effects of chemotherapy. Acupressure is a noninvasive type of massage therapy that may affect pain, stress, nausea, vomiting, promote wellness and treat disease.*
Aim: *The purpose of the current study is to examine the efficacy of P6 (Nei-Guan) acupoint acupressure as a non pharmacological technique on chemotherapy induced nausea , vomiting and retching among breast cancer patients as a part of nursing care in reducing nausea , vomiting and retching (during the first day) and delayed nausea , vomiting and retching (2-5 days) following chemotherapy.*
Subjects and Methods*:* ***Design****. The current study utilized quasi-experimental design to achieve the aim of the study.*
Setting*. The current study was conducted in outpatient clinics of Clinical Oncology Department of Menoufia University Hospital.*
Subjects*. The subjects were divided into study group and control group (50 for each group). Both groups received regular antiemtic medications but the study group received P6 acupoint acupressure and was instructed to perform the finger acupressure maneuver for 6 minutes on P6 point bilaterally, every 2 hours / day.* ***Tools.*** *Tool one, Structured interview questionnaire schedule. Tool two: the Index of Nausea, Vomiting and Retching (INVR)*
Results*: The results showed that there were significantly low mean score for study group rather than control group in acute and delayed NVR regarding to nausea, vomiting and retching experience.*
Conclusion: *So the current study suggests that stimulation on P6 acupoint acupressure as a non pharmacological technique appears to be an effective adjunct maneuver in control of nausea, vomiting and retching among breast cancer patients.*
Keywords: *Non pharmacological, P6 (Nei-Guan) acupoint, acupressure, chemotherapy induced nausea, vomiting and retching, breast cancer*.

Date of Submission: 14-03-2017 Date of acceptance: 07-10-2017

I. Introduction

Cancer is prevalent health problem all over the world among developed and developing nations. The incidence of cancer is rising, and it is estimated that by 2020, globally, more than 15 million people will experience cancer. Breast cancer is the most common cancer in women in the United States (US) and second only to lung cancer as a cause of cancer death. Over 175,000 women in the US are diagnosed with breast cancer each year. The American Cancer Society estimates that about 246,660 Americans were diagnosed with invasive breast cancer and about 40,450 died from the disease in 2016 [1,2,3]

In Egypt, breast cancer is the most common cancer among Egyptian women, the annual rate of developing cancer is equivalent to 114.5 cases per 100 thousand people and the annual rate diagnosed with breast cancer for females is equivalent to 35.5 cases per 100 thousand females and accounting for 35% of all cases treated at the National Cancer Institute as well as, a progressive increase in number of incident cases of breast cancer to reach 45,243 case in 2050 [4, 5, 6]

The Statistical Record of Menoufia University Hospital showed that about 1411 patients with cancer were admitted to the outpatient clinics in 2015, about 500 cases of breast cancer rate 35.5% from total cases [7]**.** Cancer treatment is based on chemotherapy, radiotherapy and surgical interventions**.** Chemotherapy is a powerful weapon against cancer but is associated with numerous side effects such as bone marrow suppression, increased susceptibility to infection, nephrotoxicity, anorexia, alopecia, fatigue, insomnia, nausea and vomiting [8, 9]**.**

Chemotherapy induced nausea and vomiting (CINV) remains the most severe and most distressing symptoms when receiving chemotherapy. It can range from mild to severe, repetitive vomiting and retching. As well as, CINV is one of the most feared side effects of cancer treatment for cancer patients**.** However, healthcare providers may underestimate the impact CINV has on their patients although is the most severe and most distressing side effect. Approximately 50% to 60% of patients with cancer receive highly emetogenic chemotherapy, and about 70% to 80% of that population may experience CINV if not properly treated[10,11,12,13]**.**

[14,15,16,17] added that chemotherapy induced nausea and vomiting are a serious problem for cancer patients. Despite recent advancements in pharmaceutical technologies that are commonly prescribed during chemotherapy cycles, about 50% to 60 % of cancer patients still suffer from nausea and vomiting. As well as, the overall effect of antiemetics for CINV seemed less than satisfactory as many as 20% of patients refuse to continue chemotherapy because of severe nausea and vomiting, result in reducing patients' adherence to the treatment, and having a need to decrease the chemotherapy dose.

Chemotherapy induced nausea and vomiting is classified as either "acute" taking place minutes or hours within 24 hour after chemotherapy or "delayed" nausea that taking place on days 2–5 of the chemotherapy. The prevalence of acute and delayed CINV is approximately 40%–60% and 40%–80% respectively and is particularly troublesome because there is no reliable pharmacological treatment for this problem [18, 13, 19, 20].

More efficient antiemetic drugs will no doubt be developed continuously and this figure will change in the future. The American Society of Clinical Oncology recommendations include giving potential 5-HT3 receptor antagonists plus corticosteroids before chemotherapy to patients receiving chemotherapy that are at high risk of emesis. Nevertheless, many patients still experience nausea and vomiting related to chemotherapy. Therefore, the expert panels emphasize the need for evaluation of additional ways to reduce these symptoms so many trials of simple, inexpensive effective approaches to managing CINV should continue and the efforts have been made by investigators to find non pharmacological techniques as alternatives to antiemetic drugs. [21, 22, 23]**.**

The need for additional ways and relief has led to interest in non pharmacological adjuncts to drugs like acupuncture or acupressure. Combining antiemetics with other non-pharmacological treatments may prove more effective in decreasing nausea than antiemetics alone [24]**.** Acupressure is a noninvasive type of massage therapy that presses and releases the energy that may affect pain, stress, nausea and vomiting. The use of acupressure can be traced back as far as 2000 B.C. According to traditional Chinese Medicine, acupressure can induce relaxation, promote wellness and treat disease [25]**.**

Two points are known for relieving nausea and vomiting, the Nei-Guan point (P6) and Joksamly (ST36 located at 4-finger breadths below the knee depression lateral to the tibia). Because of its easy access and freedom from restriction, patients tend to prefer the P6 point over the ST36 point. When the points are located correctly and applied through acupressure, the Chi energy flow is rebalanced, resulting in relief of nausea and vomiting [26, 27, 28]**.**

Indeed, acupressure can be integrated into the current nursing practice acupressure is probably the most suitable therapy to be practice by nurses and for nurses to teach patients because the skills of acupressure is easy to learn and can be used to help relief various symptoms in a wide range of patient care settings. Nurses are also able to combine interventions in a complementary way to promote comfort for patients. As well as, it is also easy to teach patients how to participate in their own healing both inside the hospital and at home. Hence, increase the sense of self-awareness and assist them to regain their own independence. In addition to oncology nurses are in a key position to monitor and assess patients' CINV with ongoing assessment that can lead to treatment changes or develop new management strategies [29, 30, 31, 32, 33,34]

Significance of the study

Identifying methods to successfully prevent and alleviate CINV remains a major clinical challenge, wherever, it has been observed over a period of clinical practice with nursing students in Clinical Oncology Department that there are many cancer patients admitted to the hospital, and most of them with their caregivers had a lack of knowledge about CINV. In addition, most patients are often denied sufficient controlled of CINV with antiemetic medication. Non pharmacological management/complementary therapy of CINV is considered neglected area for both physicians and nurses, although it is safe, noninvasive, and generally considered to be relatively free from side effect so it is necessary for raising awareness, improving treatment, and growing support to foster greater understanding of non pharmacological therapy and provide more effective and accessible treatment options.

Researches in this area are very limited, so it is hoped that the current study help nurses to develop a more effective management plan for CINV. According literature, this is matched with [35] who reported that many patients still experience nausea and vomiting in relation to chemotherapy so the need to evaluate additional ways to reduce these symptoms is still having the highest priority. Combining antiemetics with other non-pharmacological interventions may prove to be more effective in decreasing nausea than antiemetics alone.

Aim of the Study

The current study aims to examine the efficacy of P6 (Nei-Guan) acupoint acupressure as a non pharmacological technique on chemotherapy induced nausea, vomiting and retching among breast cancer patients.

Operational definition

- ***Non pharmacological management***: concerning P6 acupressure that stimulated of P6 acupoint by applying massage using fingertip
- ***Chemotherapy induced nausea, vomiting and retching*** is defined as acute (occurring within the first 24 hours after chemotherapy) and delayed (occurring from 2-5 days after chemotherapy)**.**
- ***Nausea*** is a subjective sensation associated with the desire to vomit.
- ***Vomiting*** is described as the oral expulsion of stomach or intestinal contents and is usually accompanied by nausea, and sometimes retching.
- ***Retching*** is preparation for vomiting without expulsion of vomitus (dry vomiting)

Research Hypothesis

The following research hypothesis is formulated in an attempt to achieve the aim of the current study:

- Subjects who will receive P6 acupoint acupressure as non pharmacological technique in addition to antiemetic drugs (study group II) will have significantly lower nausea, vomiting and retching compared to subjects who receive antiemetic drugs only as a routine hospital care (control group I).

II. Subjects

2.1, Research Setting:

The current study conducted in outpatient clinics of Clinical Oncology Department of Menoufia University Hospital, Menoufia Governorate, Egypt.

2.2, Research Design: the current study utilized quasi-experimental design.

2.3, Subjects:

100 patients were selected randomly based on sample size calculation as [36] who carry out the randomized controlled clinical trial study that rendered 100 subjects (50 subjects in each group) based on 70-80% prevalence rate of chemotherapy induced nausea, vomiting and retching among patients with cancer, 41-43% of breast cancer patients receiving moderately emetogenic chemotherapy experience nausea and vomiting as mentioned by [37]& odds ratio (OR) of nausea experience 1.18 for the acupressure in [38]With at least 80% power at Two-sided 95% significance level and ratio of case/control 1: 1, also based on previous study by [39]who studying effect of point 6 acupressure on chemotherapy associated nausea and vomiting among adolescents with cancer.

In the current study, 100 patients were divided alternatively into two equal groups; 50 for each group:

- Control group (I): received granisetron 3mg and dexamethasone 4mg, and routine hospital care only.
- Study group (II): received granisetron 3mg and dexamethasone 4mg, routine hospital care plus P6 Acupoint stimulation (acupressure) as non pharmacological technique.

The patients selected according to the following criteria:

- A breast cancer diagnosis, stage of II
- Beginning their second cycle of chemotherapy for breast cancer treatment,
- Had nausea/vomiting with their previous cycle,
- 20 years of age or older
- Willing to sign a consent form.

Exclusion criteria included:

- Received palliative chemotherapy,
- Had metastasis disease,
- Undergoing concurrent radiotherapy.

2.4, Variables:

The independent variable is P6 acupoint acupressure as a non pharmacological technique, while the dependent variable is chemotherapy induced nausea, vomiting and retching among patients with breast cancer.

2.5, Tools:

Two tools used for data collection, based on review of related literature, these tools are:

2.5.1, Structured interview questionnaire schedule: It was developed by researchers following an extensive, relevant literature review of CINV. This form was comprised of demographic data such as age, education, marital status, occupation and residence as well as, medical data including antiemetic use, previous experience of nausea and vomiting, sleeps hours, anxiety, and meals.

2.5..2*, *The Index of Nausea, Vomiting and Retching (INVR) Developed by Rhodes and was used to measure experience that included occurrence and distress for nausea, vomiting and retching. The INVR includes eight questions that arranged in three subscales: nausea experience (three questions), vomiting experience (three questions) and retching experience (two questions). Each question was assigned a number based on a predefined scoring algorithm. A numeric value to each response was ranged from 0, the least amount of distress, to 4, the most/worst distress. So the likert scale for three subscales: nausea (range, 0–12), vomiting (range, 0–12), and retching (range, 0–8). Total symptoms experience from nausea, vomiting and retching was calculated by summing the patient's responses to each of the 8 questions on the INVR. The scores were ranged from 0 (minimum score) to 32 (the highest score). The score of 0 indicated none NVR, 1-8 indicated mild NVR, 9-16 indicated moderate NVR, 17-24 indicated severe NVR, and 24-32 indicated worst NVR [40]**.**

The symptoms experience scale can be reflect to measure symptom occurrence and distress as the following nausea occurrence included two question from nausea experience (score rang 0-8), vomiting occurrence included two question from vomiting experience (score range 0-8) but retching occurrence included one question only (score range 0-4) so the total occurrence score ranged from 0-20. In addition to, nausea distress included one question (score range 0-4), vomiting distress included one question (score 0-4) and retching distress included one question (score range 0-4) so the total distress score ranged from 0-12. Split half reliability of INVR was 0.83-0.99; Cronbach's alpha was 0.98 and Construct Validity was 0.87 [40]**.** Recently **,** reliability were tested using Cronbach's Alpha coefficient test which revealed that that reliability of tool (INVR) was 0.881 as well as it was also calculated and confirmed by Cronbach's alpha (0.0898, 0.77, and 0.929 in Iran, United Kingdom and USA respectively [41]**.**

III. Method

1. Permission to carry out the study from responsible authorities and participants after explanation of the purpose of the study is done.
2. The tool I that is constructed by the researcher after reviewing of the relevant literature. Content validity is tested by five experts in the field to ascertain its relevance and completeness, as well as, is tested for validity and reliability using test-retest method. The other adopted tools II are used as itself without any change and its validity and reliability have been established in several studies.
3. Data collection was extended from the first of April 2015 to the first of December 2016.
4. Patients consent for participation in the study was obtained after explanation of the purpose of the study and the confidentiality was assumed.
5. A pilot study was conducted on 10% of study sample (10 patients) to evaluate the constructed tools for clarity and applicability then necessary modification carried out. The results of the pilot study are excluded from the study.
6. Each patient who agrees to participate in the study and fulfilling the inclusion criteria was interviewed individually by the researcher in outpatient of Clinical Oncology Department.
7. The study sample was selected randomly and divided alternatively into two equal groups, control group (1) and study group (II)

- The control group (1) received granisetron 3mg and dexamethasone 4mg, and routine hospital care. The drugs were administered intravenously over 2—5 min immediately before the beginning of chemotherapy.
- The study group (II) instructed for acupressure that applied to P6 point bilaterally as well as received antiemetic drug. The P6 (Neiguan), a point located on the pericardial meridian, which is found three fingers' breadth (approximately 5 cm) proximal to the proximal flexor palmer crease, about 1 cm deep between the tendons of flexor Carpi radials and palmers long us, is supposed to have an effect on nausea and vomiting [42,43]**.**

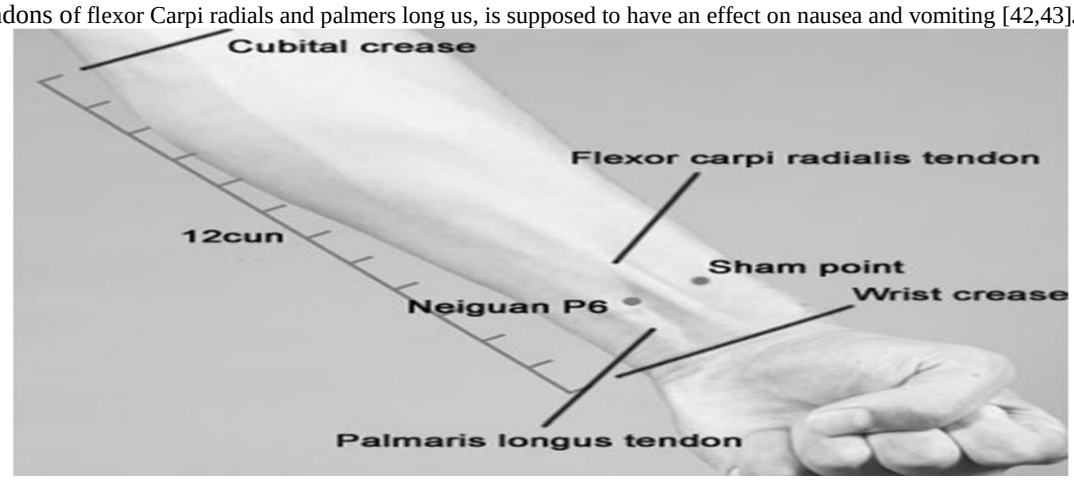

Figure (1): Location of P6 acupoint and sham acupoint

The researcher developed the acupressure teaching booklet to teach patients and their family (care giver) acupressure techniques. Validity of the content of this booklet has been established by 3 experts who taught acupressure techniques. Each patient was distributed the booklet. The patients and their family (care giver) taught how to access the P6 acupressure point if there is a problem to determine its site, this point is marked with water resistant ink so that easily in applied pressure by researcher or patient or care giver. As well as, In order to encourage patients to locate and assure the intensity of the finger pressure on the P6 acupoint correctly, they were urged to practice the technique on the researchers. Routine acupressure was carried out by pressing the P6 acupoint for 3 minutes at least 1 time/2 hours/daily; especially before mealtimes, otherwise anytime sensations of nausea were felt and performed bilaterally.

- At the beginning of a second chemotherapy cycle, all participants completed the baseline questionnaire and Rhode's Index of Nausea, Vomiting, and Retching (INVR); and the researcher were instructed the patients that were contacted by telephone to complete a daily log of INVR each morning after the first 24 hours and during days 2–5 following chemotherapy.

8. The comparison were done between two groups

Statistical analysis

The data collected were tabulated & analyzed by SPSS (statistical package for the social science software) statistical package version 20 on IBM compatible computer.

Two types of statistics were done:

1) Descriptive statistics: were expressed as mean and standard deviation (X+SD) for quantitative data or number and percentage (No & %) for qualitative data.

2) Analytic statistics:

1- Chi-square test (χ^2) & Fisher`s Exact test: They are tests of significance used to study association between two qualitative variables.

2- Student`s t- test: is a test of significance used for comparison between two groups of normally distributed quantitative variables.

P-value at 0.05 was used to determine significance regarding:

- P-value > 0.05 to be statistically insignificant.
- P-value ≤ 0.05 to be statistically significant.
- P-value ≤ 0.001 to be highly statistically significant

IV. Results

Table (I) Shows sociodemographic characteristics of both study and control groups. The majority of the age group for both study and control group were ranged from 40 to 60 years old (82.0% & 888.0% respectively), were secondary education (60.0% & 68.0% respectively), and were married (74.0% & 82.0% respectively). It is also observed that, most of the patients in the study and control groups were housewife (42.0% & 38.0% respectively) as well as the majority of both study and control group lived in rural areas (76.0% & 82.0% respectively). No statistical significant differences were found between study and control group regarding sociodemographic data

Table (2) shows medical data for the studied groups, study and control group. It was observed that the majority (100%) of study and control group were taking anti-emetics as well as majority not take medication for vomiting without prescription and not fellow other method to control vomiting as following (92.0% & 90.0% respectively), (96.0% & 92.0% respectively), also the majority (100%) of both study and control group had previous experience with nausea & vomiting and had difficulty in managing nausea & vomiting (80.0% & 76.0% respectively). Moreover, the majority of study and control group had sleep hours before and after chemotherapy within 1-6 hours (86.0% & 90.0% respectively), (60.0% & 64.0% respectively), as well as, 46.0% of study and 36.0% of control group had moderate anxiety and 82.0% of study and 84.0% of control group not taking meal before chemotherapy, No statistical significant differences were found between study and control group regarding to medical data.

Figure (2) Shows that descriptive statistics for total Index of nausea, vomiting and retching (INVR) for both study and control group**.** It was observed that the majority of both study and control group had moderate nausea, vomiting and retching before chemotherapy (72.0% & 70.0% respectively) and had also severe NVR in acute/ early (64.0% & 84.0% respectively) while had mild nausea, vomiting and retching in delayed NVR 74.0% in study group while 38.0% of control group had moderate NVR. Moreover, there were statistically significant differences between study and control group regarding to acute and delayed NVR, where p- value were ≤ 0.001.

Table (3) shows that experience score of nausea, vomiting and retching **(**INVR) of the studied groups It is observed that there were low mean score for study group rather than control group in acute and delayed NVR regarding to nausea, vomiting and retching experience. Moreover, there were statistically significant differences between study and control group regarding three mention items ,where p- value were ≤ 0.001 except before chemotherapy in three mention items as well as in acute vomiting, where P-value > 0.05.

Table (4) shows that total score of Index of Nausea, Vomiting and Retching (INVR) of the studied groups. It is observed that there were low mean score for study group rather than control group in acute and delayed NVR as well as there were statistically significant differences between study and control group regarding two mention items ,where p- value were ≤0.001.

Table (5) Shows that the occurrence score of nausea, vomiting and retching (INVR) of the studied groups, study and control group. It was observed that there were low mean score for study group rather than control group in acute and delayed NVR regarding to nausea, vomiting and retching occurrence and there were statistically significant differences between study and control group regarding to delayed NVR,where p- value were ≤ 0.001.

Table (6) Shows that the total occurrence score of Index of nausea, vomiting and retching (INVR) of the studied groups, study and control group. It was observed that there were low mean score for study group rather than control group in acute and delayed NVR and there were statistically significant differences between study and control group regarding to three items as before chemotherapy, acute and delayed NVR ,where p- value were ≤ 0.01; ≤ 0.001 respectively.

Table (7) Shows that distress score *of* nausea, vomiting and retching (INVR) of the studied groups, study and control group. It was observed that there were low mean score for study group rather than control group in acute and delayed NVR regarding to nausea, vomiting and retching distress and there were statistically significant differences between study and control group regarding to delayed NVR, where p- value were ≤ 0.001.

Table (8) Shows that total distress score of Index of nausea, vomiting and retching (INVR) of the studied groups, study and control group. It was observed that there were low mean score for study group rather than control group in early and delayed NVR and there were statistically significant differences between study and control group regarding two mention items ,where p- value were ≤ 0.02; ≤ 0.001 respectively.

Table (1): Demographic characteristics of the studied groups

Socio-demographic characteristics	Studied groups				χ^2	P value
	Study group (n=50)		Control group (n=50)			
	No.	%	No.	%		
Age (years):						
• 20-40 years old	4	8.0	3	6.0	0.74	0.68
• 40-60 years old	41	82.0	44	88.0		NS
• More than 60 years old	5	10.0	3	6.0		
Educational level:						
• Illiterate	5	10.0	6	12.0	1.34	0.51
• Secondary	30	60.0	34	68.0		NS
• University or above	15	30.0	10	20.0		
Marital status:						
• Single	8	16.0	3	6.0	2.56	0.27
• Married	37	74.0	41	82.0		NS
• Divorced	5	10.0	6	12.0		
Occupation:						
• Manual work	2	4.0	5	10.0	2.36	0.50
• Administrative work	7	14.0	10	20.0		NS
• Not work	20	40.0	16	32.0		
• Housewife	21	42.0	19	38.0		
Residence:						
• Rural	38	76.0	41	82.0	0.54	0.46
• Urban	12	24.0	9	18.0		NS

Table (2): Medical data for the studied groups

Medical data	Studied groups				χ^2	P value
	Study group (n=50)		Control group (n=50)			
	No.	%	No.	%		
Taking anti-emetics:						
• Yes	50	100.0	50	100.0	NA	NA
• No	0	0.0	0	0.0		
Taking medication for vomiting without prescription:						
• Yes	4	8.0	5	10.0	0.12*	1.0
• No	46	92.0	45	90.0		NS
Taking other method without prescription to control vomiting:						
• Yes	2	4.00	4	8.00	0.71	0.39

• No	48	96.0	46	92.0		NS
Previous experience with nausea & vomiting:						
• Yes	50	100.0	50	100.0	NA	NA
• No	0	0.00	0	0.00		
Difficulty in managing nausea & vomiting:						
• Yes	40	80.0	38	76.0	0.23	0.62
• No	10	20.0	12	14.0		NS
Sleep hours before chemotherapy:						
• 1-6 hours	43	86.0	45	90.0	0.49	0.78
• 2-8 hours	5	10.0	4	8.00		NS
• 3-10 hours	2	4.0	1	2.0		
Sleep hours after chemotherapy:						
• 1-6 hours						
• 2-8 hours	30	60.0	32	64.0	0.49	0.78
• 3-10 hours	15	30.0	12	24.0		NS
	5	10.0	6	12.0		
Anxiety before chemotherapy:						
• No	4	8.0	5	10.0	1.61	0.65
• Mild	16	32.0	16	32.0		NS
• Moderate	23	46.0	18	36.0		
• Severe	7	14.0	11	22.0		
Taking meal before chemotherapy:						
• Yes	9	18.0	8	16.0	0.07	0.79
• No	41	82.0	42	84.0		NS

NA=not applicable *Fisher`s Exact test

Figure (2): Descriptive statistics for Total Index of Nausea, Vomiting and Retching (INVR for both groups

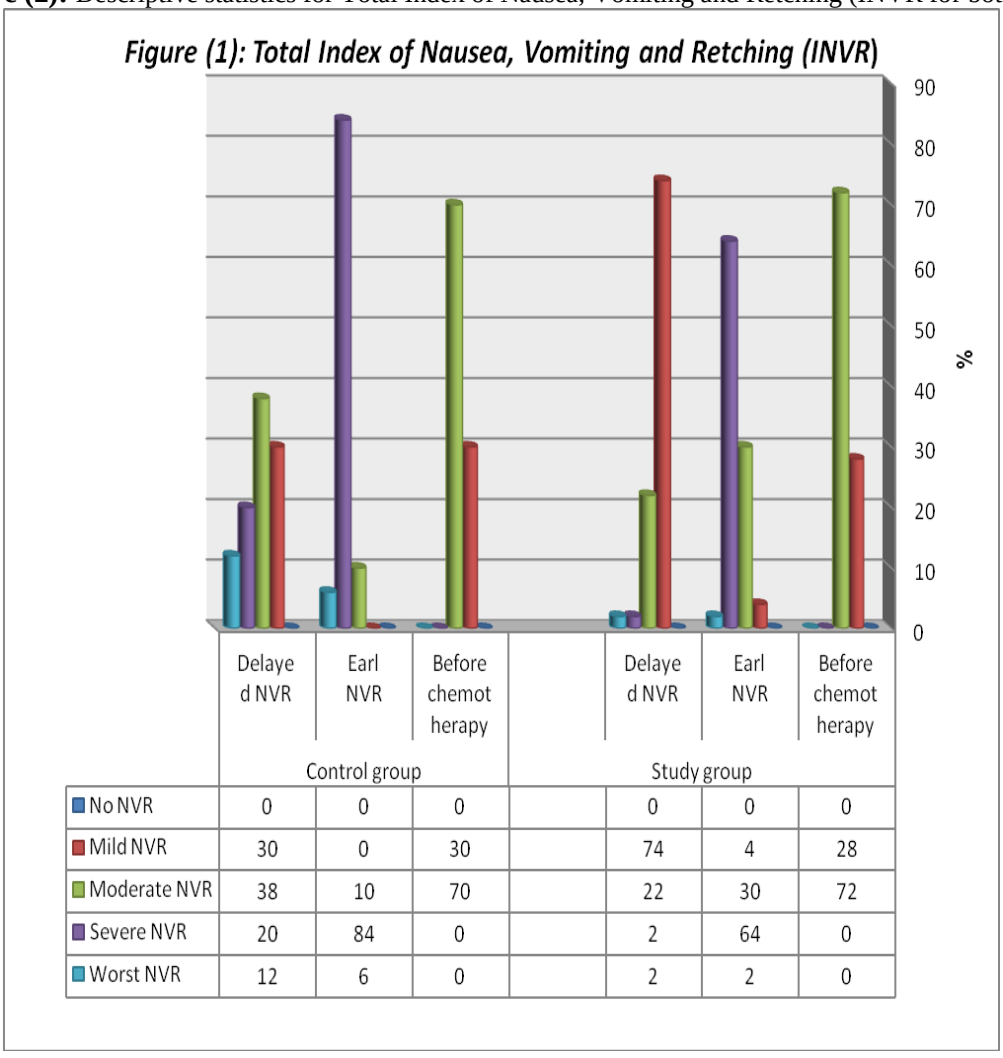

Table (3): Experience score of Nausea, Vomiting and Retching (INVR) of the studied groups

Experience of Nausea, Vomiting and Retching (INVR)	Studied groups		Student t test	P value
	Study Group (n=50)	Control Group (n=50)		
	Mean±SD	Mean±SD		
1) Nausea • Before chemotherapy	3.60±0.72	3.40±0.78	t=1.32	0.18 NS
• Acute N	7.52±1.24	8.16±1.13	t=2.68	0.009 S
• Delayed N	5.82±1.15	7.48±1.05	t=7.50	≤0.001 HS
2) Vomiting ▪ Before chemotherapy	3.68±0.79	3.60±0.78	t=0.50	0.61 NS
• Acute V	8.62±1.75	8.82±1.33	t=0.64	0.52 NS
• Delayed V	5.98±1.15	8.56±1.09	t=11.50	≤0.001 HS
3)Retching ▪ Before chemotherapy	2.66±0.62	2.52±0.57	t=1.16	0.24 NS
• Acute R	4.56±0.70	5.56±0.97	t=5.88	≤0.001 HS
• Delayed R	3.56±0.73	5.16±0.81	t=10.30	≤0.001 HS

Table (4): Total score of Index of Nausea, Vomiting and Retching (INVR) of the studied groups

Total score of Index of Nausea, Vomiting and Retching (INVR)	Studied groups		Student t test	P value
	Study Group (n=50)	Control Group (n=50)		
	Mean±SD	Mean±SD		
Total score • Before chemotherapy	9.96±1.71	9.54±1.50	t=1.30	0.19 NS
• Acute NVR	20.72±2.50	22.46±2.64	t=3.37	0.001 HS
• Delayed NVR	15.32±1.88	21.66±1.76	t=17.32	≤0.001 HS

Table (5): Occurrence score of Nausea, Vomiting and Retching (INVR)of the studied groups

Occurrence of Nausea, Vomiting and Retching (INVR)	Studied groups		Student t test	P value
	Study Group (n=50)	Control Group (n=50)		
	Mean±SD	Mean±SD		
1)Nausea • Before chemotherapy	2.48±0.57	2.22±0.46	t=2.47	0.01 S
• Acute N	5.12±0.91	5.32±0.97	t=1.05	0.29 NS
• Delayed N	3.98±0.84	4.76±0.79	t=4.74	≤0.001 HS
2) Vomiting ▪ Before chemotherapy	2.52±0.67	2.34±0.51	t=1.49	0.13 NS
• Acute V	5.52±1.19	5.74±1.12	t=0.94	0.34 NS
• Delayed V	3.92±0.77	5.82±0.82	t=11.84	≤0.001 HS
3)Retching ▪ Before chemotherapy	1.34±0.47	1.22±0.41	t=1.33	0.18 NS
• Acute R	1.76±0.65	2.52±0.61	t=5.97	≤0.001 HS
• Delayed R	1.54±0.50	2.32±0.47	t=7.99	≤0.001 HS

Table (6) *:* Total Occurrence score of Index of Nausea, Vomiting and Retching (INVR) for studied groups

Total Occurrence score of Index of Nausea, Vomiting and Retching (INVR)	Studied groups		Student t test	P value
	Study Group (n=50)	Control Group (n=50)		
	Mean±SD	Mean±SD		
Total score • Before chemotherapy	6.34±1.34	5.78±0.95	t=2.39	0.01 S
• Acute NVR	12.40±1.55	13.58±1.84	t=3.46	0.001 HS
• Delayed NVR	9.44±1.28	12.90±1.40	t=12.87	≤0.001 HS

Table (7): Distress score of Nausea, Vomiting and Retching (INVR) of the studied groups

Distress of Nausea, Vomiting and Retching (INVR)	Studied groups		Student t test	P value
	Study Group (n=50)	Control Group (n=50)		
	Mean±SD	Mean±SD		
1)Nausea • Before chemotherapy	1.12±0.32	3.40±0.78	t=0.83	0.40 NS
• Acute NVR	2.40±0.60	8.16±1.13	t=3.50	0.001 HS
• Delayed NVR	1.84±0.54	7.48±1.05	t=8.74	≤0.001 HS
2) Vomiting ▪ Before chemotherapy	1.16±0.37	3.60±0.78	t=1.22	0.22 NS
• Acute NVR	3.10±0.73	8.82±1.33	t=0.13	0.89 NS
• Delayed NVR	2.06±0.58	8.56±1.09	t=5.42	≤0.001 HS
3)Retching ▪ Before chemotherapy	1.32±0.47	1.30±0.46	t=0.21	0.83 NS
• Acute NVR	2.80±0.67	3.04±0.69	t=1.75	0.08 NS
• Delayed NVR	2.02±0.62	2.84±0.58	t=6.79	≤0.001 HS

Table (8): Total Distress score of Index of Nausea, Vomiting and Retching (INVR)

Total Distress score of Index of Nausea, Vomiting and Retching (INVR)	Studied groups		Student t test	P value
	Study Group (n=50)	Control Group (n=50)		
	Mean±SD	Mean±SD		
Total score ▪ Before chemotherapy	3.60±0.75	3.74±0.92	t=0.83	0.40 NS
• Acute NVR	8.30±1.37	8.96±1.51	t=2.28	0.02 S
• Delayed NVR	5.92±1.12	8.30±0.86	t=11.88	≤0.001 HS

V. Discussion

Biosociodemographic characteristics of the sample

The result of the present study revealed that there were no statistical significant differences in the basic data between the study and control groups as regards to age, residence, education, occupation, marital status.

The findings of the current study revealed that the majority of the age group for both study and control group were ranged from 40 to 60 years old, this finding is consistent with [44] who found the majority of the age group for both study and control group were ranged from 45 to 55 years. As well as, this finding is in line with [45], who reported that the highest peak age of breast cancer was ranged between 45 to less than 55 years of old. In addition, this result is in agreement with that reported by [46, 47,48] that the breast cancer is the most common cancer among women with an age adjusted rate of 49.6 year. Moreover, the findings is in line with the study done by [49] who stated that the age of the patients in their study ranged from 40 years to less than 60 years . On the contrary with [50] and [51], they noted that more than half of cancer cases were diagnosed after the age of 65 years. And the highest incidence of breast cancer occurs in women between 50 and 79 years of age [52].

Concerning to residence, the result of the present study revealed that more than two thirds of both group were lived in rural areas. This result is in accordance with [45, 53] who reported that the majority of the patients in their studies lived in rural areas.

Regarding to educational level, the present study found that the majority of both study and control groups had secondary education. This is consistent with [54] reported that about one third of the both studied groups had secondary education as well as about one third of the other group was university graduates. But these results on the contrary with [53, 49] who reported that the patients in their studies were illiterate. Moreover, the findings of this study approved that the majority of study group were house wife. This result is supported by [53] who stressed that the highest percentage of the patients were house wife.

As regards to marital status, the majority of studied sample were married. This result is in line with [55] who reported that the majority of breast cancer women were married.

Moreover, the findings of the current study approved that the majority of study and control group were taking antiemetics while the majority not take medication without prescription as well as, the majority of both study and control group had previous experience with nausea and vomiting, and had moderate anxiety from chemotherapy. This findings is consistent with [56] who reported that every patient (99%) used some form of antiemetic therapy with the first cycle of treatment , Nonprescription antiemetics were taken at home , in addition to, more than half of the women (59%) expected to experience nausea/vomiting during chemotherapy, and the majority (67%) reported feeling anxious prior to treatment.

Effect of non pharmacological tecnique (acupressure) on reducing/controlling chemotherapy induced acute and delayed nausea, vomiting and retching:

It is worthwhile to evaluate this simple and noninvasive approach to reduce chemotherapy-induced nausea and vomiting. Although multiple studies have reported that acupressure is effective in reducing the nausea and vomiting associated with post operation and pregnancy, only a few studies on the efficacy of acupressure for controlling chemotherapy induced nausea and vomiting are available [57,58,59]**.**

Acupressure is one of the well-investigated non pharmacological methods for reducing the incidence of nausea and vomiting [60,61] **.** [62] Suggested that acupressure and acupuncture were equivalent to pharmacological treatment in reducing nausea and vomiting as well as, [35] reported that combining anti-emetics with other non-pharmacological interventions may prove to be more effective in decreasing nausea than anti-emetics alone.

The results of the present study revealed that there were low mean score for study group rather than control group in acute and delayed nausea , vomiting and retching regarding of experience, occurrence and distress as well as there were statistically significant differences between study and control group. This is consistent with [38] who reported that the mean nausea experience of the patients using the Rhodes Index. Scores can range from 0 to 12, with higher scores indicating higher levels of nausea. Both the sham and the acupressure arms had less nausea experience compared with the standard care arm, as well as, the observed mean values represent very low levels of nausea.

As well as, the findings from the present study confirmed that acupressure is efficacious for control of acute and delayed chemotherapy related nausea, nausea, vomiting and retching; and is a value-added method in addition to pharmaceutical management for women undergoing treatment for breast cancer. This is in accordance with the accumulating body of evidence related to acupressure during chemotherapy and shows that acupressure is a safe and complementary option in the management of chemotherapy-related nausea and vomiting [17, 63,61]**.**

Moreover, the results of the current study is consistent with the study results of [61] which were shown that finger acupressure may decrease nausea among women undergoing chemotherapy for breast cancer. In addition to, it is also in agreement with the study of [17]who showed that acupressure wrist bands were efficacious and may be appropriate form of adjuvant therapy for nausea management for breast cancer patients, especially those who are most at risk for experiencing severe nausea following chemotherapy treatment

As well as, [61]compared differences in nausea experience and intensity in women undergoing chemotherapy for breast cancer between those receiving usual care only and those with usual care plus acupressure training. They reported significant decrease of frequency and intensity among all patients receiving usual care plus acupressure training. However, [27] failed to observe any beneficial effects of acupressure at P6 using the same Sea-Bands. Because the sample size of this study was small and they described some difficulty with data collection.

[64] Reported that since pharmacological treatments have failed to completely manage NV, exploring the complementary role of other, non-pharmacological, approaches that can be used in addition to pharmacological approaches become paramount. Acupressure at the P6 point is a value added technique in addition to pharmaceutics; management for women undergoing treatment for breast cancer to reduce the amount and intensity of delayed CINV, since up to 60% of patients had been reported nausea despite the use of antiemetics.

Moreover, Three randomized, controlled trials carry out by [61, 65, 63] found some evidence that acupressure reduced CINV compared to no intervention at all. The noted benefits were decreased severity, frequency, and duration and were seen in a patient population of mixed cancers.

In addition to, a study by [24] found significant decreases in occurrence and distress among patients with breast cancer. Finally, [64]*)* concluded that acupressure significantly reduced the frequency of CINV over time when compared to placebo or usual care.

Hence, [66] reported that acupressure seems to be a good way to complement antiemetic pharmacotherapy, as it is safe, convenient and with minimal costs involved. These make it a cost-effective intervention. Acupressure is easily learnt and taught and patients should be informed about its potential role and taught how to apply it. Self-administered acupressure appears to have a protective effect for acute nausea. There have been recent advances in chemotherapy-induced nausea and vomiting using 5-HT3 inhibitors and dexamethasone. However, many still experience these symptoms, and expert panels encourage additional methods to reduce these symptoms.

In addition to, research supports the effectiveness of acupuncture and acupressure for the treatment of chemotherapy-induced nausea and vomiting. Used in conjunction with current antiemetic drugs, acupuncture and acupressure have been shown to be safe and effective for relief of the nausea and vomiting resulting from chemotherapy [67]**.**

The results of the current study revealed that there were the majority of both study and control group had moderate nausea, vomiting and retching before chemotherapy and had also severe NVR in early 64.0% for study group and 84.0% for control group while had mild nausea, vomiting and retching in delayed 74.0% for study group and 30.0% for control group as well as, there were statistically significant differences between study and control group regarding to acute and delayed NVR.

This finding is consistent with the study that involving 1,413 cancer patients undergoing chemotherapy, 80% experienced nausea to some degree, with 40% having at least one episode of vomiting [17]**.** Similarly, in a study, 76% of 322 patients who received chemotherapy regimens containing cisplatin, carboplatin, or doxorubicin experienced nausea following their first treatment, despite what was felt by physicians to be adequate antiemetic prophylaxis. Of these 322 patients, 147(46%) had nausea of moderate to severe [12]**.**

[68,69] reported that nausea and vomiting often occurs prior to the second or subsequent administration of chemotherapy**.** It occurs almost exclusively in patients who have experienced poorly controlled nausea and vomiting during previous courses of chemotherapy**.**

VI. Conclusions

Consistent with other studies, the results of this research concluded that stimulation on P6 acupoint acupressure as a non pharmacological technique appears to be an effective adjunct maneuver in control of nausea, vomiting and retching among breast cancer patients.

VII. Recommendation

- Acupressure as non pharmacological technique should be carried out as supportive nursing intervention strategies to relieve chemotherapy induced nausea and vomiting in breast cancer patients.
- Further study of acupressure as a complementary therapy for chemotherapy-induced nausea should be carried out in a large number of cases with a randomized control design.
- Nurse educators and clinical nurses should recognize information on non-pharmacologic management of nausea and vomiting, such as acupressure techniques and need to develop educational tools for training nursing students, patients, and families on the use of acupressure techniques.
- Handouts about acupressure for the management of nausea and vomiting could be available in chemotherapy units for breast cancer patients and their families who are interested to use such technique with a given instruction from nurses or other health professionals.

Reference

[1]. American cancer society. (2016). Breast Cancer Facts & Figures | American Cancer Society. Available at: https://www.cancer.org/acs/groups/content/@research/documents/.../acspc-047079.pdf, derived on 1/2/2017.
[2]. Higginson, I. J., & Costantini, M. (2008). Dying with cancer, living well with advanced cancer. European Journal of Cancer, 44(10), 1414-1424.
[3]. Siegel, RL, Miller, KD. Jemal, A. (2015). Cancer statistics, 2015. CA Cancer J Clin; 65:5–29.
[4]. Amal ., ibrahim , hussien., khaled., nabiel., Mikhail., Baraka h., & kamel h., (2014). Cancer incidence in egypt: results of national population- based cancer registry program. Journal of cancer epidemiology. Available at: http://dx.doi.org/10.1155/2014/437971
[5]. Najeeb, A., (2015). Breast cancer in Egypt: when myths and patriarchy stand in the way. Available at: http://www.cairoscene.com/In-Depth/Breast-Cancer-in-Egypt-When-Myths-and-Patriarchy-Stand-in-the-Wa. Derived on, 12/10/1016
[6]. National program of cancer registry. (2014). Collects data on the occurrence of cancer; the type, extent, and location of the cancer, avaiablr at: http://seer.cancer.gov/index.html
[7]. Statistical records of cancer. (2015). Clinical Oncology Department; Menoufiya University.
[8]. American Cancer Society. (2015). Side effects of chemotherapy. New York. Available at: htpp://cancercontrol.cancer.gov/ocs/prevalence/.
[9]. Vincent, CA., & Richardson, PH. (2001). Complimentary and alternative medicine in Psychiatry.JR SOC Med: (88) 199 - 201.

[10]. Cohen, l., Moor, C., Eisenberg, P., Ming, E., & Hu, H. (2007). Chemotherapy- induced nausea and vomiting- incidence and impact on patient quality of life at community oncology settings. Support Care Cancer, 15, 497-503

[11]. Grunberg, S. M., Deuson, R., Mavros, P., Geling, O., Hansen, M., Cruciani, G., Daniele, B., De Pouvourville, G., Rubenstein, E. B., & Daugaard, G. (2004). Incidence of Chemotherapy-Induced Nausea and Emesis after Modern Antiemetics Perception versus Reality. Cancer. 100 (10), 2261-2268.

[12]. Hickok, J.T., Roscoe, J.A., Morrow, G.R., King, D.K., Atkins, J.N., & Fitch, T.R. (2003). Nausea and emesis remain significant problems of chemotherapy despite prophylaxis with 5-hydroxytryptamine-3 antiemetics: A University of Rochester James P. Wilmot Cancer Center Community Hospital Clinical Oncology Program study of 360 cancer patients treated in the community. Cancer, 97, 2880-2886.

[13]. Lohr, L. (2008). Chemotherapy-Induced Nausea and Vomiting. The Cancer Journal, 14(2), 85-93.

[14]. Hesketh, P. J. (2008). Chemotherapy-Induced Nausea and Vomiting. The New England Journal of Medicine, 358(23), 2482-2494.

[15]. Pirri, C., Katris, P., Trotter, J., Bayliss, E., Bennett, R., & Drummond, P. (2011). Risk factors at pretreatment predicting treatment-induced nausea and vomiting in Australian cancer patients: a prospective, longitudinal, observational study. Supportive Care in Cancer, 19(10), 1549-1563.

[16]. Lindley, CM. & Hirsch, JD. (1994) Oncology nurses? Attitudes, perceptions, and knowledge of quality of life assessment in patients with cancer. OncolNursForum. 21:103–108.

[17]. Roscoe JA, Morrow GR, Hickok JT, Stern RM. (2002). Nausea and vomiting remain a significant clinical problem: trends over time in controlling chemotherapy-induced nausea and vomiting in 1413 patients treated in community clinical practices. J Pain Symptom Manage. 20: 112–121.

[18]. Booth, C., Clemons, M., Dranitsaris, G., Joy, A., Young, S., Callaghan, W. (2007). Chemotherapy-induced nausea and vomiting in breast cancer patients: a prospective observational study. J Support Oncol. 2007;5(8):374–80

[19]. National Comprehensive Cancer Network. (2008). Clinical Practice Guidelines in Oncology™: Antiemesis [v.2.2008]. available at: http://www.nccn.org

[20]. Morrow, JR., Roscoe, JA. Hickok, JT. (1998). Initial control of chemotherapy induced Nausea and vomiting in patient quality of life. Oncology (Huntingt) 12: 32–37.

[21]. Gralla, R.J., Osoba, D., Kris, M.G., Kirkbride, P., Hesketh, P.J., Chinnery, L.W., & Pfister, D.G. (1999). Recommendations for the use of antiemetics: Evidence-based, clinical practice guidelines. Journal of Clinical Oncology, 17, 2971-2994.

[22]. Yeong, S., Tae, K., ,MiSook, S. & Hee-Soon, J. (2004). Effect of Acupressure on Nausea and Vomiting During Chemotherapy Cycle for Korean Postoperative Stomach Cancer Patients. Cancer Nursing™, Vol. 27, No. 4, 250-267.

[23]. White PF. (1997). Are nonpharmacologic techniques useful alternatives to antiemetic drugs for the prevention of nausea and vomiting? Anesth Analg. 84:712–714.

[24]. Molassiotis, A., Helin, A.M., Dabbour, R., & Hummerston, S. (2007). The effects of P6 acupressure in the prophylaxis of chemotherapy-related nausea and vomiting in breast cancer patients. Complementary Therapies in Medicine, 15(1), 3-12

[25]. Gaskell, K. (2011).Acupressure exercises for breast cancer. Available at: http://www.livestrong.com/article/336743-accupressure-exercises-for-breast-cancer/. Retrieved on: 22/3/2012

[26]. Gach, MR. (1990). Acupressure's Potent Points. New York: Bantam.

[27]. Brown, S., North, D., Marvel, MK., Fons, R. (1992). Acupressure wristbands to relieve nausea and vomiting in hospice patients: Do they work? Am J HospPalliat Care.9:26–29.

[28]. Dale, RA.(1997). Demythologizing acupuncture, Part 1: The scientific mechanisms and the clinical uses. Altern Complement Ther.3:125–131.

[29]. Lansbury, G. (2000). Chronic pain management: a qualitative study of elderly people's preferred coping strategies and barriers to management. Disability & Rehabilitation. 22(1-2): 2-14.

[30]. Lowe, N. K., (1996). The pain and discomfort of labor and birth. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 25(1): 82-92.

[31]. Maxwell, J., (1997). Complementary therapies: The gentle power of acupressure. Research Nursing, 60(4): 53-56.

[32]. Oncology Nursing Society. (2008). Quick view: Chemotherapy-induced nausea and vomiting. Retrieved from http://www.ons.org/Research/PEP/media/ons/docs/research/outcomes/nausea/quickview.pdf

[33]. Ortego, N. E. (1994). Acupressure: an alternative approach to mental health counselling through bodymind awareness. Nurse Practitioner Forum, 5(2): 72-6.

[34]. Yamashita, H., Tsukayama, H., Tanno, Y. and Nishijo, K. (1999). adverse events in acupuncture and moxibustion treatment: a six-year survey at a national clinic in Japan. Journal of Alternative Complementary Medicine. 5(3): 229-36.

[35]. Roffe, L., Schmidt, K., & Ernst, E. (2005). A systematic review of guided imagery as an adjuvant cancer therapy. Psycho-Oncology, 14(8), 607-617.

[36]. Panahi, Y., Saadat, A., Sahebkar, A., Hashemian, F., Taghikhani, M., & Abolhasani, E. (2012). Effect of ginger on acute and delayed chemotherapy-induced nausea and vomiting: a pilot, randomized, open-label clinical trial. Integr Cancer Ther. Sep;11(3):204-11.

[37]. Smith, HS. Smith, JM., & Smith, AR. (2012). An overview of nausea/vomiting in palliative medicine. Annals of palliative medicine. Sep 14;1(2):103-14.

[38]. Molassiotis, A., Russell, W., Hughes, J., Williams, M.; Hulme, C. Campbell, M. & Ryder, W.(2013). The effectiveness and cost-effectiveness of acupressure for the control and management of chemotherapy-related acute and delayed nausea: Assessment of Nausea in Chemotherapy Research (ANCHoR), a randomised controlled trial. Southampton (UK): NIHR Journals Library; 2013 Jun. (Health Technology Assessment, No. 17.26.)

[39]. Abusaad, FE., & Ali, WG. (2016). Effect of point 6 acupressure on chemotherapy associated nausea and vomiting among adolescents with cancer. Journal of Nursing Education and Practice. Apr 1;6(4):122.

[40]. Rhodes, V. A., & McDaniel, R. W. (2001). Nausea, vomiting, and retching: Complex problems in palliative care. CA: A Cancer Journal for Clinicians, 51, 232-248.

[41]. Saberi, F. , Z. Sadat, M. Abedzadeh-Kalahroudi and M. Taebi,. (2013). Acupressure and Ginger to Relieve Nausea and Vomiting in Pregnancy: a Randomized Study. Iranian Red Crescent Medical Journal. September; 15(9): 854-61.

[42]. Feng RZ, Li N., (2013). P6 acupoint stimulation for prevention of postoperative nausea and vomiting in patients undergoing craniotomy: study protocol for a randomized controlled trial. Available at: https://openi.nlm.nih.gov/detailedresult.php?img=PMC3668145_1745-6215-14-153-2&req=4. Reterived on 2/8/2016.

[43]. Hyde, E. (1989). Acupressure therapy for morning sickness: a controlled clinical trial. J Nurse Midwifery.34:171–178.

[44]. Shehata, O., (2013). Efficacy of progressive relaxation technique and acupressure on pain management and sleep quality among breast cancer patients; unpublished Doctoral Dissertation, faculty of Nursing; Menoufia University.

[45]. Abd-Elalem, S. (2008). Effect of stress on immune responses after surgical treatment of breast cancer; unpublished master thesis, faculty of Nursing; Menoufyia University.
[46]. Ibrahim, A. S. (2002). Cancer profile in Gharbiah, Egypt. Methodology and results. Cairo, Egypt and middle East Cancer Consortium
[47]. Omar, S., Khaled, H., Gaafar, R., Zekry, A., Eissa, S., & El-Khatib, O. (2003). Breast cancer in Egypt: a review of disease presentation and detection strategies. La Revue de Santé de la Méditerranée Orientale, 9(3): 448-63.
[48]. Abdel-Aziz, S. (2008). The effect of skin preparation by using alovera gel on incidence of skin reactions among breast cancer patients undergoing radiation therapy; unpublished master thesis; faculty of Nursing; Menoufyia University.
[49]. Hamed, A. (2003). Self esteem among cancer patients receiving chemotherapy in Shebin El-kom, University hospital, unpublished Master thesis. Faculty of Nursing, Menoufiya University.
[50]. Boring, C.C.; Squires T.S. & Tong T. (1992). Cancer statistics, CA, 42(1):19
[51]. Nettina, S. (1996). Manual of Nursing Practice. 2nd ed., Philadelphia, Lippincolt-Raven publisher, 99-112.
[52]. American Cancer Society. (2012). Breast Cancer Facts & Figures 2011-2012. Available at: http://www.cancer.org/Research/CancerFactsFigures/BreastCancerFactsFigures/breast-cancer-facts-and-figures-2011-2012. Retrieved on: 2/4/12012.
[53]. Sallam, S. (2012). The effect of early versus delayed shoulder exercises on seroma formation and shoulder function after modified radical mastectomy, unpublished doctoral dissertation, faculty of nursing, Menoufyia University.
[54]. El- Badawy, A. (2006). Impact of non pharmacological therapy on the physical and psychological status of women who develop lymph edema after mastectomy. ASNJ. 5(2):49-50.
[55]. Hussien, S.H. (2007). Nurse's role in early detection of breast cancer through mammography and genetic screening and its impact on patient's outcome, Unpublished Doctoral thesis, Faculty of Nursing, Cairo University.
[56]. Christopher, M. Booth, MD., Mark , MD., George D., BPharm, MS., Anil Joy, MD., Scott , MD., Walter , HBA., Maureen , MD., & Teresa , MD. (2007). Chemotherapy-Induced Nausea and Vomiting in Breast Cancer Patients: A Prospective Observational Study. J Support Oncol.5:374–380
[57]. Stein, DJ., Birnbach, DJ., Danzer, BI., Kuroda, MM., Gutenbaum, A, & Thys, DM. (1997). Acupressure versus intravenous metoclopramide to prevent nausea and vomiting during spinal anesthesia for cesarean section. AnesthAnalg. 84:342–345.
[58]. O'Brien, B., Relyea Joyce, M., & Taerum, T. (1996). Efficacy of P6 acupressure in the treatment of nausea and vomiting during pregnancy. Am J Obstet Gynecology.174:708–715.
[59]. Fessele, KS. (1996). Managing the multiple causes of nausea and vomiting in the patient with cancer. OncolNurs Forum.23:1409–1415.
[60]. Al-Sadi, M., Newman, B., & Julious, AS. (1997). Acupuncture in the prevention of postoperative nausea and vomiting. Anaesthsia; 52:658–661.
[61]. Dibble, SL., Champman, J., Mack, KA. Shih, AS. (2000). Acupressure for nausea:results of a pilot study. OncolNurs Forum.27:41–46.
[62]. Lee, A, & Done, ML. (1999). The use of nonpharmacologic techniques to prevent postoperative nausea and vomiting: a meta-analysis. AnesthAnalg. 88:1362–1369.
[63]. Shin, Y.H., Kim, T.I., Shin, M.S., & Juon, H. (2004). Effect of acupressure on nausea and vomiting during chemotherapy cycle for Korean postoperative stomach cancer patients. Cancer Nursing, 27, 267-274.
[64]. Dibble, S.L., Luce, J., Cooper, B.A., Israel, J., Cohen, M., Nussey, B., & Rugo, H. (2007). Acupressure for chemotherapy-induced nausea and vomiting: A randomized clinical trial. Oncology Nursing Forum, 34, 813-820.
[65]. Klein, J., & Griffiths, P. (2004). Acupressure for nausea and vomiting in cancer patients receiving chemotherapy. British Journal of Community Nursing, 9, 383-387.
[66]. Ezzo, JM., Richardson, MA. Vickers, A.(2006). Acupuncture-point stimulation for chemotherapy-induced nausea or vomiting. Cochrane Database Syst Rev.2:CD002285.
[67]. . Collins, K.B., & Thomas, D.J. (2004). Acupuncture and acupressure for the management of chemotherapy-induced nausea and vomiting. Journal of the American Academy of Nurse Practitioners, 16 (2), 76-80.
[68]. Dupuis, L. L., & Nathan, P. C. (2003). Options for the Prevention and Management of Acute Chemotherapy-Induced Nausea and Vomiting in Children. Pediatr Drugs, 5(9), 597-613.
[69]. Schwartzberg, L. (2007). Chemotherapy-Induced Nausea and Vomiting: Clinician and Patient Perspectives. The Journal of Supportive Oncology, 5(2), 5-13.

Gehan.H.Soliman. "Efficacy of Non pharmacological technique on Chemotherapy Induced Nausea, Vomiting and Retching among Breast Cancer Patients." IOSR Journal of Nursing and Health Science (IOSR-JNHS) , vol. 6, no. 5, 2017, pp. 60–72