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Effect of Nurses Using for P6 Acupressure on Nausea, Vomiting and Retching in Women with Hyperemesis Gravidarum

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Abstract: *Persistent nausea and vomiting associated with hyperemesis gravidarum in early pregnancy remains a significant health problem that result in negative side effects on women and their pregnancy.*

The aim of the study: *Was to evaluate the effectiveness of nurses using for P6 acupressure on nausea, vomiting and retching in women with hyperemesis gravidarum.*

Methods: *A Randomized clinical Trial was used, the study conducted on 120 women diagnosed with hyperemesis gravidarum admitted to maternity high risk care unit Mansoura University Hospital, Egypt in a period of six months and divided randomly in P6 acupressure and conventional therapy group. Data were collected by two tools; 1st A structured Interviewing Questionnaire Schedule and 2nd Rhodes Index of Nausea, Vomiting and Retching (INVR).*

Results: *It showed that there no statistically significant difference was found in baseline characteristics of nausea, vomiting and dry retching scores between the P6acupressure and conventional therapy group; while there was significant decrease in the average mean scores of nausea, vomiting and retching and the total score from base line to 4th day. Difference between the base line improvements in conventional group is significantly better than acupressure group in different days. The rate of improvement compared in P6 acupressure to conventional was 71.9% to 100% respectively.*

Conclusion: *The study concluded that using of P6-acupressure has an effective role in reducing nausea, vomiting and retching episodes in women with hyperemesis gravidarum.*

Key words: *Hyperemesis Gravidarum, Nurses, Nausea, Nei–Guan point P6 Acupressure, Retching, Vomiting.*

I. Introduction

Nausea and vomiting are common hard symptoms experienced by pregnant women in the first trimester, which affect 50 to 80 percent of pregnant women. These symptoms can have a reflective impact on women's general sense of well-being and day-to-day lives **(Smith, et al, 2000).** The condition of hyperemesis gravidarum represents an intense form of these symptoms and affects approximately 0.3 to 2.0% of pregnancies **(Fell et al, 2006).**

Hyperemesis Gravidarum (HG) has important features of intractable vomiting, weight loss of more than 5% of pre-pregnancy weight, ketosis, dehydration and imbalance in electrolyte level **(Jarvis& Nelson-Piercy, 2011).** HG can be life threatening if treatment is not initiated immediately. It is associated with dehydration, acidosis due to inadequate nutrition, alkalosis due to loss of hydrochloride and hypokalaemia. There are two degrees of severity: (i) grade 1, nausea and vomiting without metabolic imbalance; and (ii) grade 2, pronounced feelings of sickness with metabolic imbalance **(Mylonas, 2007).**

Hyperemesis Gravidarum has a great side effects; it can raise the threat of growth abnormalities for instance slow growth and fetal congenital anomalies (**O'Brien et al. 1996).** Pharmacotherapy such as antiemetic that can be used as a treatment to relieve hyperemesis gravidarum symptoms are not sufficient to treat hyperemesis gravidarum which may be possibly unsafe to the fetus so that, use of alternative treatments for decreasing of HG symptoms such as acupressure, particularly on the P6 point (Neiguan) on the inside of the wrist (**Shin, et al 2007).** According to conventional Chinese medicine, disease results from an imbalance in the body energy flow. This energy is restored with the use of acupressure on certain points in the body which have been recognized through significant observations and testing for several years **(Molassiotisa, 2007).**

Nei–Guan point (P6) can be helpful acupressure point to reduce pregnancy associated nausea and vomiting by decreasing gastric movements, stimulate the brain cortex and improving the blood circulation**(Kenyon (1988).**This can be happen by pressing P6 acupressure for five to ten minutes exactly in the width of the near inter phalyngeal thumb joint next to the distal wrist crease

about 1 cm deep to the skin between the tendons of Palmaris longus and the flexor carpiradials **(Dundee et al. (1991)&Molassiotisa, 2007).**

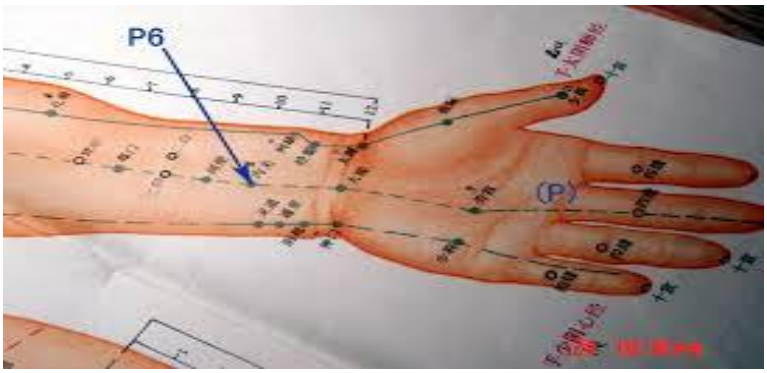

Fig 1:D. De Aloysio, P. Penacchioni,Morning sickness control in early pregnancy by Neiguan point acupressure. Obstet Gynecol J. Nov; 80(5), 1992, 852-4.

Significance of the Study

Hyperemesis Gravidarum is a harmful condition associated with pernicious nausea and vomiting, it has various physical and psychological complications that affect the pregnant woman's health **(Wegrzyniak et al, 2012).** It is associated with an increase in rate for hospitalization and health care; Losses of work time and decrease quality of life during pregnancy **(Vilming&Nesheim, 2000).**It was estimated that the prevalence of hyperemesis gravidarum in Egyptian hospital rate was 4.5% which is considered a high prevalence rate **(Mahmoud, 2012).**

P6 Acupressure procedure is one of the methods that supposed to be attempt not just by specialized health care although also by patients themselves or members of family. Acupressure is uncomplicated non-invasive procedure, self-controlled, painless, cost efficient, and safe to carry out. The procedure is commonly available to any healthcare expert, mainly to clinical nurses, **(Dibble et al. 2000).** So that, the study conducted to evaluate the effectiveness of nurses using for P6 acupressure on nausea, vomiting and retching in women with hyperemesis gravidarum.

Aim of the Study: The aim of this study was to evaluate the effectiveness of nurses using for P6 acupressure on nausea, vomiting and retching in women with hyperemesis gravidarum.

Research Hypothesis: Using of p6 acupressure will reduce nausea, vomiting and retching episodes in women with hyperemesis gravidarum.

II. Materials and Method

Research Design: A Randomized Clinical Trial design was used.

Research Setting: The study was carried out in maternity high risk care unit at Mansoura University Hospital from February 2014 until July 2014.

Subjects of the Study: Purposive sample was used through taking all women having the inclusion criteria, admitted to maternity high risk care unit at Mansoura university hospital, and diagnosed with hyperemesis gravidarum in a period of six months. 120 women selected according to inclusion criteria and randomly assigned into two groups; Intervention group (P6 acupressure) & Control group (conventional therapy) by using closed envelope containing card written on it P6 acupressure or conventional therapy group. Five women drop out and didn't complete the study as choosing to complete treatment in other places, so only 115 women complete the study classified as:

Intervention group: Consisted of 57women who receiving P6 acupressure intervention.
Control group: Consisted of 58 women who receiving conventional hospital treatment.

Inclusion Criteria

- The Gestational age of 10 To 16 weeks.
- Pregnant women between 20 and 40 years and willingness to participate in the study
- Women Diagnosed with hyperemesis gravidarum.
- Women without any other pregnancy problems or complications**.**

Tools of Data Collection

Tool I: A Structured Interviewing Questionnaire Schedule: It was designed by the researchers after reviewing related literatures to be filled from each pregnant woman diagnosed by hyperemesis gravidarum who was admitted to maternity high risk care unit the questionnaire was in the form of multiple choices (MCQ), closed ended questions. It consisted of 14 questions it consisted of two parts:

Part 1: Socio-Demographic Characteristics (Name, age, address, educational level, residence and occupation).

Part 2: Obstetrical History such as (Number of gravidity, parity, abortions, number of living children, outcomes of previous deliveries if present: (Number of normal vaginal deliveries, cesarean sections, Gestational age/weeks, and intended pregnancy).

Tool II: Index of Nausea, Vomiting and Retching (INVR) (Rhodes et al, 1996) it was developed by Rhodes to evaluate nausea, vomiting and retching. The INVR is self-report tool consisted of an eight-item. Every item was allocated a digit based on a pre defined scoring algorithm. A numeric value to each answer was ranged from 0, the least amount of distress, to 4, the most/worst distress. Total symptoms occurrence from nausea, vomiting and retching was calculated by summing the patient's responses to each of the 8 items on the INVR. Likert scale consisted of three subscales: nausea (range, 0–12), vomiting (range, 0–12), and retching (range, 0–8), provide a total range of 0–32. The range of scores was ranged from 0 to 32. 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. Rhode's score was used five times in the present study, on the baseline day and across the four assessment days of intervention.

Written Approval

A written letter clarifying the title and the aim of the study was directed to El-mansoura University Hospital director. Then the approval was obtained for data collection. The aim and the method of data collection were explained to all women before the study to gain their confidence and cooperation. Witten consent was obtained from each woman to participate in the study, after ensuring that data collected will be treated confidentially. The researchers clarified all ethical considerations to each woman before explaining the nature of the study**.**

Operational Design:

The study to be completed has passed through different phases: The preparatory phase, the pilot study, and the fieldwork phase.

Preparatory Phase:

Development of Study Tools Validity

Tool I used in the study were developed and adopted by the researchers after reviewing of the current local and international related literatures by the use of books, articles and scientific magazines. This helped them to be acquainted with the research problem, and guided them in designing the tools. Tool II were translated into Arabic and reviewed by jury of 5 expertises in the field of the study to test its contents and face validly.

Reliability

Tools reliability were tested using Cronbach's Alpha coefficient test which revealed that that reliability of tool II (INVR) 0.881. It was also calculated and confirmed by Cronbach's alpha (0.0898, 0.77, and 0.929 in Iran, United Kingdom and USA respectively **(Saberi, et al, 2013).**

Pilot Study

Pilot study was carried out on 12 (10%) women those were not included in the main study sample to test the clarity, applicability, simplicity and feasibility of the developed tools. It also assisted in the estimation of the time needed to fill in the forms. Necessary modification was done according to the results of the pilot study.

Field Work

The study period was consumed six months, started from February 2014 until July 2014. Official permission was obtained from the Head of the obstetrics and Gynecology Department,

Mansoura University Hospital. Aims and method of data collection were explained to the women and informed consent was taken. The intervention and control group were randomly assigned; by using closed envelope containing card written on it P6 acupressure or conventional therapy group. The average length of hospital stay of each woman was 5 days. On the first day of admission (the day before initiation of intervention), each woman enrolment in the study according to inclusion criteria interviewed and her medical record was reviewed, to obtain the socio-demographic data and the obstetrical history. Then the researchers measured the baseline for nausea, vomiting and retching. From the second day of hospitalization up to the day before discharge, acupressure treatment is carried out by pressing for ten minutes on the anterior surface of the forearm, between the tendons of Palmaris longus and the flexor carpiradials, every eight hours, for a total of three times daily. The conventional group received routine hospital treatment conventional (antiemetic drugs such as Zofran (ondansetron). All women received intravenous fluids beside their method of treatment. The relevant Items nausea, vomiting and retching degree are measured in each group on the 1st, 2nd, 3th, days of intervention and on the day of discharge by self-recorded symptoms according to the Rhodes index episodes in the 24 hours. The change in score of the two groups was compared. Then the proportion of results before and after treatment was compared. As well the overall women's scores days of treatment were calculated.

Data Analysis

Data entry and statistical analysis was done using Statistical Packages for Social Science (SPSS) version 18.0. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, means and standard deviations for quantitative variables. Qualitative variables were compared using chi-square test. Quantitative variable were compared using t test and ANOVAs test. Statistical significance was considered at p-value <0.05 **(Krzywinski& Altman, 2013).**

III. Results

Table (1) Comparison of Women Socio-demographic Data By Treatment Group

Characteristics	Total women number (120)				
	P6 Acupressure		Conventional Group		P-value
	No 60	% 100	No 60	% 100	
Age (yr.) ● <20 ● 20-29 ● 30-40 (Mean± SD)	4 31 25 **26.67±5.42**	6.7 51.7 41.7	6 34 20 **27.07±5.40**	10.0 56.7 33.3	X2=1.094 P 0.579
Education •Illiterate •Read and write •Basic •Secondary school • University	3 4 10 22 21	5.0 6.7 16.7 36.7 35.0	0 1 2 26 31	0.0 1.7 3.3 43.3 51.7	X2=12.39 P 0.015
Occupation • House wife • Working	35 25	58.3 41.7	35 25	58.3 41.7	----------
Place of Residence • Urban • Rural	31 29	51.7 48.3	25 35	41.7 58.3	X2=1.205 P 0.272

Table (1) Shows that there were more than half of women in P6 acupressure & conventional therapy group between the ages 20 - 30 year, with a mean age 26.67±5.42 and 27.07±5.40. As for educational level for both groups, 35.0% and 51.7% respectively were university educated. As regard occupation 58.3% of women were house wives. About half of women in both groups were living in urban and rural areas. There were no significant difference between the women most of socio-demographic data (women age group, occupation and residence) and hyperemesis gravidarum except in education level.

Table (2): Obstetrical History of the Studied Groups:

Items	Total Women Number (120)				
	P6 Acupressure		Conventional group		P-value
	No 60	% 100	No 60	% 100	
Total Number of Pregnancies					
• 1-3	55	91.7	54	90.0	X2=0.10
• >4	5	8.3	6	10.0	P 0.751
Parity					
• Null parous women.	26	43.3	23	38.3	X2=0.310
• Multi parous women.	34	56.7	37	61.7	P0.577
Number of Abortion					
• None	50	83.3	54	90.0	X2=1.15
• 1-2	10	16.7	6	10.0	P0.282
Number of Living Children					
• None	26	43.3	23	38.3	X2=0.310
• 1-3	34	56.7	34	61.7	P0.577
Number of Vaginal Delivery					
• 0	33	55.5	34	56.7	
• 1-3	26	38.3	26	43.3	X2=4.199
• >4	4	6.6	0	0.0	P0.123
Number of Caesarean Section					X2=1.076
• 0	39	65.0	41	68.3	P0.584
• 1-3	20	33.3	19	31.7	
• >4	1	1.7	0	0.0	
Gestational Age (Mean± SD)	12.32±1.25		12.85±1.60		T=2.029, P0.045
Intended pregnancy					
• Yes	46	76.7	54	90.0	X2=3.84
• No	14	23.3	6	10.0	P0.0.51

Table (2) concerning with obstetric history. 91.7 % of women had previous 1 to 3 previous pregnancies. Null parous women represented 43.3% and 38.3% in P6 acupressure and conventional group respectively. About 83.3% and 90.0% of them respectively had not abortion, and 56.7 & 61.7 had 1-3 living children.

The mean gestational age of women in acupressure and conventional group represented **12.32±1.25**and **12.85±1.60** week respectively. There was significant relation between gestational age and hyperemesis gravidarum.

Table (3) Nausea, Vomiting and Retching Mean and Standard Deviation and Total Rhodes Index Scores among Studied Groups:

Symptoms	Total Women Number (115)		t	P-value
	P6 Acupressure (N.57)	Conventional Group (N.58)		
	Mean± SD	Mean± SD		
Nausea				
• Baseline	11.93±0.32	11.92±0.39	0.242	0.809
• 1st Day	11.54±0.73	11.15±0.89	2.545	0.012
• 2nd Day	10.98±1.06	9.64±1.09	6.711	0.000
• 3rd Day	6.72±1.19	5.26±1.37	6.094	0.000
• 4th Day	2.60±0.96	1.62±0.71	6.125	0.000
Anova test, F=	623.11	714.26		
P*	0.000	0.000		
Vomiting				
Baseline	11.89±0.41	11.90±0.45	0.023	**0.982**
1st Day	11.51±1.05	11.00±0.88	2.813	**0.006**
2nd Day	10.77±1.13	9.43±1.20	6.153	**0.000**
3rd Day	6.14±1.42	5.37±0.95	3.382	**0.001**
4th Day	3.11±1.24	1.74±0.80	6.851	**0.000**
Anova test, F=	512.095	610.316		
P*	0.000	0.000		
Dry retching				
Baseline	7.94±0.23	7.93±0.26	0.363	**0.717**
1st Day	7.68±0.63	7.03±0.75	5.028	**0.000**
2nd Day	6.65±0.95	5.50±0.98	6.377	**0.000**
3rd Day	4.44±0.85	2.81±0.86	10.445	**0.000**
4th Day	1.96±0.79	1.42±0.65	4.010	**0.001**
Anova test: F=	548.539	557.042		
P*	0.000	0.000		
Total Score				
Baseline	31.82±0.60	31.83±0.57	0.028	0.978
1st Day	30.75±20.6	29.19±1.68	4.462	0.000
2nd Day	28.40±1.97	24.56±1.97	10.420	0.000
3rd Day	17.29±2.75	13.45±2.04	8.527	0.000
4th Day	6.60±2.17	2.91±1.18	11.18	0.000
Anova test, F=	998.010	1024.537		
P*	0.000	0.000		

P*: Statistical significance between average scores in different days, but the difference between baseline score and first day score is not significant.

Table (3) Shows that there was significant decrease in mean score of nausea, vomiting and retching and the total score from base line to 4th day after intervention (Anova test, P 0.000).An improvement in conventional group is significantly better than acupressure group in different days. The average total score is significantly decreased from 31.82±0.60 to 6.60±2.17 in p6 acupressure group and 31.83±0.57 to 2.91±1.18 in conventional group.

Table (4) Degree of Rhodes Index Scores in the Studied Groups through Different Intervention Days:

Time	Total Women Number (115)				Significance test
	P6 Acupressure group (57)		Conventional group (58)		
Base Line					
Worse (25-32)	57	100.0	58	100.0	
Severe (17-24)	0	0.0	0	0.0	----------
Moderate (9-16)	0	0.0	0	0.0	
Mild (0-8)	0	0.0	0	0.0	
1st Day					
Worse (25-32)	57	100.0	57	98.3	Fisher Exact test,
Severe (17-24)	0	0.0	1	1.7	P0.504
Moderate (9-16)	0	0.0	0	0.0	
Mild (0-8)	0	0.0	0	0.0	
2nd Day					
Worse (25-32)	54	94.7	30	51.7	
Severe (17-24)	3	5.3	28	48.3	X2=27.012
Moderate (9-16)	0	0.0	0	0.0	P 0.000
Mild (0-8)	0	0.0	0	0.0	
3rdDay					
Worse (25-32)	0	0.0	0	0.0	X2=21.491
Severe (17-24)	27	47.4	5	8.6	P 0.000
Moderate (9-16)	30	52.6	53	91.4	
Mild (0-8)	0	0.0	0	0.0	
4thDay					
Worse (25-32)	0	0.0	0	0.0	
Severe (17-24)	0	0.0	0	0.0	X2=18.912
Moderate (9-16)	16	28.1	0	0.0	P 0.000
Mild (0-8)	41	71.9	58	100.0	

Table (4): shows that the degree of Rhodes Score was 100% worse in both groups at the baseline, this degree was gradually improved. At the 4th day the percentage of worse and severe degree was 0.0% in both groups. Among the p6 acupressure group 71.9% was mild and only 28.1% was moderate, while 100% in conventional group was improved to mild degree. It means that the rate of improvement in acupressure group in comparison to conventional was 71.9%.

IV. Discussion

The incidence of pregnancy associated nausea and vomiting may happen in as many as 90% of pregnancies, where HG represent a more severe condition and is potentially lethal if not treated **(Mahmoud, 2012).**Also, the safety of antiemetic therapy is questionable especially during first trimester and had adverse effect **(Philip, 2003).** A randomized study results have revealed statistically significant effects of acupressure in the treatment of hyperemesis associated symptoms (vomiting, nausea, and retching) ($P < 0.001$) **(Jamigorn& Phupong, 2007; CanGurkan&Arslan, 2008).**

So, researchers designed the current study to evaluate the effectiveness of Nurses using P6 Acupressure on Nausea, Vomiting and Retching in women with Hyperemesis Gravidarum. The present study showed that more than half of women in the P6 acupressure& conventional groups were between the ages 20- 30 year, with a mean age 26.67±5.42 and 27.07±5.40. This result is in agreement with **Mahmoud, 2012** who studied the risk factors and prevalence of Hyperemesis Graviderum among pregnant women and found that more than half of women were in the age group 21-25 years old. Similarly, **Vikanes, et al, 2008** who reported that Women between ages 20–24 years were more probable to develop HG than teenage women. Additional raise in age was associated with prevalence decrease of hyperemesis gravidarum.

This result was in agreement with **Dodds et al, 2006** result who mentioned that more than half of women (64.8%) were in the same age group were complicated of hyperemesis gravidarum during their pregnancies. There was significant relation regarding educational level in both groups, the conventional therapy group was better in education, this may be considered as a rational for better improvement among women in this group.

As regards the obstetric history of the study groups, the present study revealed that more than three fourths of women in both groups had previous pregnancy and near the half of them were nullipara, this result is consistent with **Bailit, 2005** who reported in his study done at Sweden that hyperemesis gravidarum was positively common in primipara women with multiple gestation and pregnant in female sex fetus.

Also **Schiff et al, 2004** mentioned that increased oestradiol and oestrogen level are associated with hyperemesis gravidarum in pregnancy. Therefore, the presence of a female fetus is associated with severe nausea and vomiting. Similarly,**Vikanes et al, 2008** who reported in his study about Hyperemesis Gravidarum that 34.7% of women who were diagnosed with hyperemesis gravidarum were primigravida.

Regarding the gestational age, our study results revealed that women in both groups were in the beginning of second trimester, there was significant relation regarding gestational age of both groups. Gestational age of conventional treatment group was more rather than in P6 acupressure group. This result also interpreted the improvement observed in conventional treatment group. This result was contradicted by **Mahmoud, 2012**who found that the majority of women were admitted with HG at the first trimester. Also, **Vikanes, 2013** reported in his study about hyperemesis gravidarum that more than 60% of women with were hospitalized during first trimester only, where as about 20% were admitted during second trimester.

While, **Jueckstock et al, 2010** mentioned that this state is usually self-restrictive and peaks at around 9 weeks gestation. At 20 weeks symptoms typically cease. However, up to 20% of cases, nausea and vomiting may continue until delivery.This was in agreement with **Belluomini et al, 1994** who reported in his study about effectiveness of acupressure in reducing nausea and vomiting of pregnancy that there was no difference between groups in, parity, fatal number, maternal age, gestational age at entry, or pre-treatment nausea and emesis scores.

No statistically significant difference was found in baseline characteristics of nausea, vomiting and dry retching scores between two groups. This result clarifying that all women were complaining of same degree of symptoms severity, so it was difficult to leave any woman without treatment.

Otherwise there was significant decrease in the average mean score of nausea, vomiting and retching and the total score from base line to 4^{th} day after intervention. There was statistically significant difference regarding reduction in the rate of severity of Rhodes Index scores among both groups, there was observed changes in the degree of severity from worse to mild in conventional therapy group more than P6 acupressure group by 28.1%. These results clarifying that p6 acupressure has an effect on reduction rate of nausea, vomiting and retching among hyperemesis gravidarum.

This finding is consistent with **Saberi, et al, 2013** who stated in their study that acupressure was effective in relieving nausea, vomiting and retching.This result was in agreement with **Lee & Done, 1999** who stated that non-pharmacologic therapy such as acupuncture, transcutaneous electrical nerve stimulation, acupoint stimulation electro acupuncture, and acupressure were equal to commonly used antiemetic drugs. Similarly **Belluomini et al, 1994** who found in their study about the effectiveness of acupressure in reducing pregnancy nausea and vomiting, analysis of variance showed that there was significantly improvement in both groups over time, but there was more significantly improvement in nausea in the treatment group than in the sham control group ($F1,58 = 10.4$, $P = .0021$). There were no differences in the frequency and severity of emesis between the groups.

Also **Philip, 2003** found in his review of 12 randomized placebo-controlled studies that P6 acupressure point stimulation seems to be an effective anti-emetics practice and **Helmreich et al, 2006** reported in the RCTs applied on 683 pregnant women, with gestational age range between 8–11 weeks that both wrist band and finger acupressure significantly reduced the proportion of women reporting nausea compared with control, in addition, There was a significant reduction in the proportion of women reporting vomiting with wrist band acupressure compared with control.

Chernyak and Sessler, 2005 reported in the systematic review examined the effects of acupressure and acupuncture in treating nausea or vomiting in early pregnancy. The result found limited evidence that acupressure reduced the proportion of women reporting morning sickness (not defined) compared with sham acupressure.

According to **Werntoft& Dykes 2001** it was possible to decrease nausea and vomiting by using acupressure at P6 as compared to acupressure at a placebo point or no treatment at all in healthy women with normal pregnancies. On the other hand, The P6 group after 14 days experienced significantly less nausea when compared to the other groups. As well as acupressure applied to P6 was as effective as pharmacologic antiemetic medications for the prevention and reducing nausea and vomiting in post-operative adult's patients **(Nunley et al, 2008).**

V. Conclusion

We conclude that P6-acupressure can be used as an alternative means in addition to standard, antiemetic therapy, as well as P6-acupressure was an effective in reducing nausea, vomiting and retching episodes in women with hyperemesis gravidarum.

VI. Recommendations

Based on the finding of the present study the following were recommended:

- Organizing of training programs for nurses toward p6 acupressure technique.
- Using of P6 acupressure as nursing intervention for reducing degree of nausea, vomiting and retching episode.
- An application of similar studies to explore the effect and the outcome of P6 acupressure in two matched groups with increase more two days of intervention for complete recovery.
- An application of more scientific studies on other non-pharmacological methods effect in reducing hyperemesis gravidarum associated symptoms.

VII. Acknowledgments

We thank all women for their participation in this study and all staff members (nursing and medical staff) in maternity high risk care unit at Mansoura university hospital for their cooperation.

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