

# Dual Method P6 Acupressure Therapy for Nausea and Vomiting during Early Pregnancy in Indonesia: A Mixed Method Study

Meihartati T<sup>a</sup>, Ahmad ZA<sup>b</sup>, Suddin LS<sup>c</sup>

<sup>a</sup>Department of Midwifery, Institute of Health Technology and Science Wiyata Husada Samarinda, Indonesia

<sup>b</sup>Department of Obstetrics and Gynaecology, Faculty of Medicine, Universiti Teknologi MARA, Malaysia

<sup>c</sup>Department of Public Health Medicine, Faculty of Medicine, Universiti Teknologi MARA, Malaysia

## ABSTRACT

**INTRODUCTION:** Nausea and vomiting during pregnancy (NVP) are not only considered to be a sign of discomfort both culturally and clinically but also seen as potential safety risks for mothers and their unborn children. One of the non-pharmacological complementary therapies was the use of acupressure. The purpose of this study was to assess the effectiveness, safety, and satisfaction of the dual method of P6 acupressure as an intervention in affected pregnant women to reduce NVP and explore the method P6 acupressure perception as the intervention of choice in the treatment of nausea and vomiting in pregnancy. **MATERIALS AND METHOD:** A mixed-methods sequential explanatory study was conducted which consisted of two phases: quantitative followed by qualitative. The first phase involved the recruitment of 120 pregnant women with moderate to severe NVP symptoms. Six participants were in the intervention group qualitative phase. **RESULTS:** The Pregnancy-Unique Quantification of Emesis (PUQE) scores of participants in the intervention group were lower compared to that of the control group after the intervention period ( $p < 0.01$ ). The PUQE score was found to be reduced in the intervention group of having severe into having mild symptoms. There were no adverse effects reported after the intervention. Majority of the participants were satisfied after using the dual P6 acupressure method ( $Z=1830$ ,  $p < 0.01$ ). Meanwhile, during the qualitative phase, six themes emerged. **CONCLUSION:** A dual method of P6 acupressure therapy could be effective, safe, and satisfactory in relieving NVP. Therefore, maternity care providers may consider using this method as a therapeutic alternative for the management of NVP.

## Keywords

P6 acupressure, Nausea, Vomiting, Early pregnancy

## Corresponding Author

Assoc. Prof. Dr. Leny Suzana Suddin  
Department of Public Health Medicine,  
Faculty of Medicine,  
Universiti Teknologi MARA,  
Sungai Buloh Campus, Selangor Branch,  
47000 Jalan Hospital, Sungai Buloh,  
Selangor, Malaysia.

E-mail : leny@uitm.edu.my

Received: 18<sup>th</sup> October 2023; Accepted: 5<sup>th</sup> December 2023

Doi: <https://doi.org/10.31436/imjm.v23i02>

## INTRODUCTION

Nausea and vomiting during pregnancy (NVP) occur early in the first trimester, and only 23.5% of mothers were symptomatic until the third trimester.<sup>1,2</sup> In the past, both patient and physicians were hesitant to use drugs during pregnancy, especially in the first trimester because of the possibility of harm to the unborn child<sup>3</sup>. Pregnant women might experience nausea and vomiting which usually starts with nausea when they wake up to start their day, known as morning sickness.<sup>2,4</sup> Although morning time is the most common time to experience this discomfort, it could also occur throughout the day, or at night<sup>2</sup>. Pregnant women who experienced varying degrees of morning sickness and vomiting and were usually worried about their health and that of their unborn child.<sup>5,6</sup> It was found that NVP during pregnancy had resulted in a negative impact of more than 85% on the aspect of physical health and psychosocial quality of life.<sup>2</sup> The increase in NVP cases will also lead to negative impact on maternal health, especially if it were accompanied by other symptoms such as dehydration, vomiting, acidosis, alkalosis, and weight loss.<sup>2,7</sup>

In Indonesia, the prevalence of NVP was about 14.8% of all pregnancies. Complaints of nausea and vomiting occurred in about 60-80% primigravida and 40-60% multigravida<sup>8</sup>. In 2013, Indonesian statistics observed that around 24.2% from 2,203 pregnant Indonesian mothers experienced problems associated with NVP. In comparison with pregnant mothers in United States, more

than 85% of pregnant women experience nausea and vomiting during pregnancy, it was estimated that only 5% will need the management of electrolyte fluid balance. Meanwhile, 1-3% of NVP prevalence occurs in ASEAN countries such as Indonesia, Pakistan, Turkey, and Malaysia<sup>9</sup>.


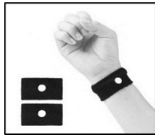



In the literature NVP was found to be influenced by hormonal changes. The pathophysiological increment of oestrogen, progesterone and human chorionic gonadotrophin (hCG) leads to NVP. As the hormone enters the brainstem via the stomach, it binds to the Chemoreceptor Trigger Zone (CTZ), where it activates the vomiting centre. The proposed mechanism for the effect of NVP treatment was by using the P6 acupressure method. P6 acupressure method involves stimulation of acupressure points, resulting in a complex neurohormonal response.<sup>1,10,11</sup>

In general, the most common application of acupressure to treat ailments was to apply pressure to specific locations in the energy pathways.<sup>12,13</sup> The stimulation

of the P6 point, or Neiguan, is a typical traditional and complementary medicine (TCM) treatment for nausea and vomiting<sup>14</sup>. In past studies, it was found that the pressure on the P6 point relieves chest and abdominal congestion, relaxes the mind, and aids in the reduction of excitement, nausea, and motion sickness.<sup>13,15</sup> Additionally several studies<sup>16,17</sup> had investigated the effect of P6 activation on NVP. However, these trial results had varied. Although the P6 activation has been shown in several clinical investigations to be effective for NVP.<sup>16,17,18,19</sup> However, some research findings indicate that these therapy approaches are rarely effective in helping affected women to fully recover.<sup>11,20</sup> The lack of control groups, the application of pressure on non-P6 locations in placebo groups, the use of varied techniques for P6 stimulation, and underreporting of dietary alterations were all found to be factors of the variance in these studies' results. Thus, more clinical investigations were recommended to overcome these flaws.<sup>14,21,22</sup>

Therefore, this study aimed to assess the effectiveness, safety, and satisfaction of using the dual method P6

**Table 1.** Intervention Protocol Dual Methods P6 Acupressure For NVP

No	Pictures	Stages	Description
1		Tool	<ol style="list-style-type: none"> <li>1. Vegetable Complex Oil</li> <li>2. Acupressure Bracelet</li> <li>3. Small Towel</li> </ol>
		Orientation and Preparation Stage	<ol style="list-style-type: none"> <li>1. Confirm patient identity</li> <li>2. Explain to the patient or family about the intervention to be performed</li> <li>3. Position the patient comfortably (Sit)</li> </ol>
2	  	Work Stage	<p>Determine the acupressure P6. Then press on the P6 acupressure point. Location: 2 Cun (1 Cun is one-thumb width) below the wrist.</p> <ol style="list-style-type: none"> <li>1. Patients are taught about how to identify P6.</li> <li>2. A band acupressure will be placed on the left hand at the identified P6 point.</li> <li>3. This band can be used for up to 30 minutes per/day until the next follow-up.</li> <li>4. Right hand, the patient will be massaged at the identified point P6.</li> <li>5. Pressure is applied for approximately 10-15 minutes, and can be repeated at least 3 times for 1 week.</li> </ol>
3		Termination Stage	<ol style="list-style-type: none"> <li>1. Explain to the patient that therapy has been completed.</li> <li>2. Give positive reinforcement to the patient.</li> </ol>
4		Result Stage	<ol style="list-style-type: none"> <li>1. Evaluate the results of activities and the patient's response after the intervention.</li> <li>2. Make a contract for further therapy.</li> <li>3. End the activity in a good way.</li> <li>4. Wash hands.</li> </ol>

## RESULTS

### Phase 1

**Table 2.** Comparison of baseline characteristics between participants in the control and intervention group

Variables	With Intervention (n=%)	Without (Control Group) (n=%)	P-value
Age (Mean + SD)	28.52 ± 5.17	27.03 ± 5.72	0.163 <sup>a</sup>
Education Level			
Low	14 (23.3)	16 (26.67)	0.673 <sup>b</sup>
High	46 (76.67)	44 (73.33)	
Job Status			
Unemployed	32 (53.33)	35 (58.33)	0.581 <sup>b</sup>
Employed	28 (46.67)	25 (41.67)	
Income			
Low	19 (31.67)	17 (28.33)	0.690 <sup>b</sup>
High	41 (68.33)	43 (71.67)	
Parity			
Primigravida	19 (31.67)	27 (45.00)	0.133 <sup>b</sup>
Multigravida	41 (68.33)	33 (55.00)	

Noted: <sup>a</sup> Mann-U Whitney Test, <sup>b</sup> Chi-Square Test, p<0.01 taken as level of significance

acupoint therapy as an intervention to manage NVP and explored method P6 acupressure perception as the intervention of choice in the treatment of nausea and vomiting in pregnancy.

This is a mixed-methods sequential explanatory study conducted in two phases: quantitative followed by qualitative done in January 2023. Non-equivalent (pre-test and post-test) control group design was used, and the intervention group and the control group were selected without random assignment.

In the first phase, a total of 120 pregnant women with moderate to severe NVP symptoms from 6 to 16 weeks of gestational period were divided equally into control and intervention groups and recruited from 4 private maternity clinics in Samarinda, Indonesia. The intervention was application of dual methods (manual pressure and acupressure band) of P6 acupressure therapy. The detailed protocol of the study was published elsewhere.<sup>23</sup> Eligibility criteria were pregnant women with nausea and vomiting who agreed to participate in this study, with PUQE score >6, period of gestation until 16 weeks, age >17 years old with singleton pregnancy. The study instruments included the tool used to measure nausea vomiting which was the Pregnancy-Unique Quantification of Emesis (PUQE), while the safety

domain of the dual method of P6 acupressure was assessed using the Adverse Event Form, and the satisfaction domain was measured using Service Quality (SERVQUAL) questionnaire.

The second phase (qualitative) technique selected for this study was in-depth interviews based on research questions that was validated by experts from the profession of obstetrics and gynaecology specialists, midwives, and the Indonesian Aesthetic & Acupuncture Institute and pregnant women.

In Table 3, the differences in the change of scores indicate that in the Intervention Group, the treatment given to participants had reduced the NVP symptoms which was statistically significant. There was a significant difference in the intervention and control groups.

**Table 3.** Changes in PUQE's score between the control and comparison groups

Group	Pre-Test	Pos-Test	Change	P-Value
Intervention Group	9.98 ± 2.32	3.06 ± 1.85	-6.92 ± 2.26	< 0.01
Control	10.16 ± 2.17	5.93 ± 2.19	-4.23 ± 2.29	< 0.01

Note: <sup>a</sup> Wilcoxon Test, p<0.01 taken as the level of significance

Based on Table 4, there was a significant difference in the intervention and control groups. However, the score difference in the intervention group was higher.

**Table 4.** Comparison of PUQE's score between control and intervention groups according to NVP severity category.

Variables	With Intervention		Change	Without (Control Group)		Change	P-Value
	Pre-Test	Post-Test		Pre-Test	Post-Test		
PUQE Score (±SD)							
Medium NVP	8.75 ±1.20	2.75 ±1.54	-6.00 ±1.53	9.13 ± 1.18	5.56 ±2.31	-3.56 ±2.13	<0.01*
Severe NVP	13.37 ± 0.5	3.94 ±2.38	-9.44 ±2.06	13.57 ± 0.51	7.14 ±1.09	-6.43 ±1.16	<0.01*

Note: <sup>a</sup> Wilcoxon Test, \*p<0.01 taken as the level of significance

### Safety of dual method P6 acupressure therapy

Among the 60 participants who received the dual method P6 acupressure intervention, none of the participants in the Intervention Group experienced side effects or a negative impact on maternal and fetal health. This suggested that the intervention was safe to use in reducing nausea and vomiting in early pregnancy.

### Satisfaction of dual method P6 acupressure therapy

For the Satisfaction variable, showed that dual methods P6 acupressure did elicit a statistically significant change in satisfaction in pregnant woman with NVP (Z=1830, p=0.000). Indeed, median satisfaction Score rating was 74 post therapy.

### Association between the satisfaction of dual method P6 acupressure with changes in PUQE's score

Based on the results of the SERVQUAL questionnaire, the correlation score of satisfaction with the difference in PUQE scores in the intervention group was 0.04, indicating that the correlation was in the very weak category. The positive correlation indicates that the pattern of relationship between satisfaction variables and differences in PUQE scores is linear. This means that higher PUQE's score difference tends to increase the satisfaction score.

### Phase 2

The interviews were conducted with pregnant women who experienced nausea and vomiting and had carried out the dual method P6 acupressure P6 intervention. The following are some of the themes that were derived and emerged from the interview sessions.

#### (1) expected results at the time of treatment of acupressure.

Interviews conducted with 6 respondents revealed that the positive responses that emerged during the interviews were reduced feelings of nausea; the body feeling lighter and better, able to carry out daily activities.

*"Yes, ma'am. Thank God there is a change with the use of acupressure... it feels more comfortable. The nausea is reduced. So, they can eat and do their daily activities."* (R1).

#### (2) hope of getting service and action

Such expressions can be seen in this passage:

*"I hope that maybe I can inform other mothers and my friends are also surprised what to do with your hands like this, so I finally share the knowledge that you shared with me."* (R6, R4).

#### (3) overview of maternal understanding in the process of pregnancy

In addition, an overview of the women's understanding of the process of pregnancy is excerpted from the following interview:

*"You know, when I feel nauseous, I think it's just a "take cold", but I don't realize it. At first, it was comfortable, but over time, the nausea got worse drastic can't do anything "can't eat"."* (R1)

In addition, the participant revealed that emesis occurs during pregnancy;

*"What is it my body is "weak"; moreover, I can't drink, and I don't drink enough fluids until I "vomit" nothing is vomited."* (R1)

This expression can be seen in the following interview excerpts:

*"Previously, hmmm, like a pregnant woman, "I tried to eat candy, ginger candy, and sweets with a sour taste, chewing."* (R6).

#### (4) support resources

Of the 6 (six) participants who became the study's object, all received support from internal and external

sources. The above can be seen from the following interview results:

*"Many provide support, including "parents, husbands, and relatives." (R1, R4)*

### **(5) negative response during pregnancy**

The following are some excerpts from participants' expressions of negative responses during pregnancy:

*"To be honest, it's uncomfortable, I feel stressed, I want to cry, I can't eat.. yes, ma'am, I even got an IV because no food and drink was coming in at all and my energy was exhausted." (P1, P3)*

The negative response expressed a deep trauma during pregnancy. Here are some participant expressions:

*"Yes, it's a bit traumatizing because so far I've never been like this, I don't know why, is it because of age."(R3).*

### **(6) handling of nausea and vomiting.**

The following are the results of interviews related to these categories:

*Yes, but I don't know if the midwife was given medicine too (R3)*

This description was expressed by the participants in the following interview excerpts:

*"Alhamdulillah, after I used band acupressure, I felt comfortable, ma'am and the nausea was reduced. Previously, I was like a pregnant woman, and I tried to eat ginger candy with sour candy, then I rubbed eucalyptus oil; I also balanced a lot of sleep." (R6).*

## **DISCUSSION**

### **Phase 1**

The effectiveness of dual method P6 acupressure (intervention group) was proven by the difference in scores in the intervention group was higher. This explains that the dual method of P6 acupressure can reduce nausea and vomiting experienced by pregnant women in early pregnancy. According to one of the acupressure experts, giving acupressure at point P6 can activate the modulation system in the opioid system, and the non-

opioid system, as well as inhibition of the sympathetic nerves resulting in a decrease in frequency, and nausea.<sup>24</sup> Band acupressure at point P6 is an alternative therapy for nausea and vomiting in early pregnancy, especially before using pharmacological drugs. Other research reviews show that acupressure can reduce nausea and vomiting in pregnancy, but acupressure therapy was not more effective than vitamin B6 in reducing symptoms of nausea and vomiting in the first trimester of pregnancy.<sup>25</sup> The difference between the results of the reviewers and the study settings is one of the main reasons for the different results.

This method can be employed synergistically with pharmacological approaches in the treatment of (NVP), enhancing the efficacy and safety of results. Pregnant women express satisfaction with the outcomes achieved through these interventions.

We conducted a safety analysis of participants subjected to the P6 acupressure dual method intervention, no adverse effects or negative impacts on maternal and foetal health were observed within the Intervention Group. These findings indicate the safety of the intervention for alleviating nausea and vomiting during early pregnancy. Mehta et al. have reported that acupressure is a user-friendly technique with minimal side effects. Nevertheless, caution is advised when applying acupressure to burnt skin, swollen or damaged body parts, and areas with fractures. Furthermore, acupressure should not be administered in emotionally charged atmospheres or on a full stomach.<sup>26</sup> Notably, acupressure treatment at pericardial points has been shown to influence the intensity of nausea and vomiting in first-trimester pregnant women. Beyond its antiemetic effects, acupressure has the potential to enhance overall well-being by increasing energy levels and improving blood flow, thereby signalling the endocrine system to release endorphins (happy hormones) based on the body's requirements. This holistic approach contributes to a sense of safety, calmness, and comfort among expectant mothers.<sup>21</sup>

Based on the analysis in our study, related to satisfaction it was found that the majority of participants were

satisfied with the P6 double acupressure intervention. Based on the results of the SERVQUAL model, it was found that the correlation between the satisfaction score and the difference in the PUQE score in the intervention group was 0.04, indicating that the correlation was in the very weak category. On other hand, the positive correlation indicates that the pattern of relationship between satisfaction variables and differences in PUQE scores is linear. Patient satisfaction is an assessment after using a service, or an assessment that the selected service at least meets or exceeds expectations.<sup>27</sup> The intervention model is very important to understand the effect of the intervention and to explain the satisfaction of pregnant women with the given intervention and its use. The patient's assessment of the intervention of health workers is based on the patient's experience. Aspects of patient experience can be interpreted as interventions or actions of health service providers that are or have been experienced, felt, and supported by someone who uses the services of health service providers.

## Phase 2

The six themes that emerged from the in-depth interviews succeeded in providing a better understanding of the experience of using the P6 acupressure dual method of intervention. The qualitative findings indicated that four of the six themes were related to the positive effect of using the intervention in reducing NVP. The treatment given to respondents tended to be successful in reducing the NVP score, meaning they did not experience nausea and vomiting. As for the safety and satisfaction variables in the intervention group, it can be seen descriptively that there were no respondents for the safety variable in the intervention group who experienced side effects. This means that the intervention is safe to reduce nausea and vomiting in early pregnancy. The satisfaction variable descriptively shows an increase in pregnant women's satisfaction with using significant interventions to reduce nausea and vomiting felt by pregnant women in early pregnancy. Therefore, the overall results of our study indicate that the intervention of P6 pressure and the use of acupressure bands are significantly effective.

Expectations of pregnant women in obtaining services

and actions are formed from one sub-theme, namely communicative. All participants expected the healthcare provider to provide relevant counselling and coping skills at home.

The level of patient satisfaction is very important and is closely related to the outcome of the intervention given to the patient, so it can be used as an indicator of the quality of health services. The expectation of getting results from the given intervention includes feeling comfortable and having no negative side effects on health.

In early pregnancy, the mother experiences various transitional processes or adaptations regarding physiological changes in herself, so she needs support from her environment. Lack of social support can exacerbate the physiological complaints of pregnant women including (NVP). Complaints of nausea and vomiting can affect the mother in carrying out her daily activities, and social situation with the environment which leads to emotional stress. Therefore, it is very important to have internal and external support sources to avoid negative impacts on pregnant women who experience complaints of nausea and vomiting in early pregnancy.<sup>14</sup>

According to the researchers' assumptions, the closest person to the pregnant woman should support them both internally and externally. Support can be provided in the form of emotional, instrumental, informational, and assessment forms consequently it will affect the handling of nausea and vomiting of pregnancy so that it does not become a pathological case or hyperemesis gravidarum. Because psychological factors play an important role in complaints of early pregnancy discomfort, no support causes mental conflicts that can exacerbate nausea and vomiting.

The process of acceptance of pregnant women who experience nausea and vomiting greatly influences their readiness for pregnancy. Pregnancy is not a short process, because it takes time and a long journey from conception to the development of the baby in the womb, until birth. The perceived process of pregnancy was different for each participant in this study. The mother's response during pregnancy is a feeling of discomfort that varies in

each trimester.

The mother's response during pregnancy has negative and positive effects on both physically and psychologically. One of the body's negative responses in early pregnancy is that pregnant women experience nausea and vomiting. Nausea and vomiting must be watched out for if they get worse and persist, the face is pale, the body is very weak, and the frequency of urinating is small so that the fluids will decrease and blood will become thick, cannot be active, cannot maintain food and drink, will cause dehydration, fluid balance, and body electrolytes and nutrients will cause Hyperemesis gravidarum.

The results of our research showed that pregnant women with NVP had felt a positive effect from using the P6 acupressure intervention. The intervention is very easy, does not require costs, is safe because there are no negative impacts, and can be done at any time so that all participants feel satisfied with the intervention they get.

### **Strength and Limitation**

This research has several advantages, one of which is the development of intervention methods for treating nausea and vomiting by combining interventions between pressure and the use of acupressure bands, and in the research, methodology using a mixed method. Besides that, protocol for handling nausea and vomiting in pregnancy with acupressure P6 method, compliance with standard operating procedures in intervention sessions, and the use of concise instructions or protocols to be practiced at home, to encourage consistency in the application of P6 acupressure interventions in the treatment of nausea and vomiting in early pregnancy. The follow-up period for measuring nausea and vomiting was carried out after eight weeks of using the intervention to find out more about the effectiveness, safety, and satisfaction of respondents in using a non-pharmacological method to reduce nausea and vomiting during early pregnancy. When patients forget their instructions, they can refer back to the protocol for revision. In this study, the patient's safety and satisfaction were uppermost of our concern.

This research also has limitations, as it only includes respondents who checked their pregnancy at Clinics in

Samarinda. The other disadvantage was that the pressure was applied by the patients themselves and thus the amount of pressure may vary from patient to patient.

### **CONCLUSION**

The dual method of using P6 acupressure, which consisted of manual pressure and an acupressure bracelet, was effective, safe, and satisfactory in relieving NVP, as reflected in the positive respondents' perception. In the future, governments and policymakers can consider recognizing this therapy as a therapeutic alternative for NVP.

### **CONFLICTS OF INTEREST**

We declared no conflicts of interest.

### **ACKNOWLEDGEMENTS**

The authors wish to thank 4 Maternity Clinics (Maternity Clinics Kartika Jaya, Hasanah, Ramlah Parjib, and Aminah Amin) located in Samarinda City for permission to conduct research, the Health Polytechnic of the Ministry of Health of East Kalimantan as an ethics committee and the Aesthetics Course and Training Institute & Indonesian Acupuncture (AAI).

### **REFERENCES**

1. Heitmann K, Nordeng H, Havnen GC, et al. The burden of nausea and vomiting during pregnancy: severe impacts on quality of life, daily life functioning and willingness to become pregnant again - results from a cross-sectional study. *BMC Pregnancy Childbirth*. 2017;17:75. doi: 10.1186/s12884-017-1249-0.
2. Revell, M. A. Self-care of nausea and vomiting in the first trimester of pregnancy. *International Journal of Childbirth Education* 2017;32. <https://link.gale.com/apps/doc/A484096563/AONE?u=anon~5e8237f8&sid=googleScholar&xid=33f360e7>.
3. Shawahna R, Taha A. Which potential harms and benefits of using ginger in the management of nausea and vomiting during pregnancy should be addressed? a consensual study among pregnant women and gynecologists. *BMC Complement Altern Med*.

- 2017;8;17(1):204. doi: 10.1186/s12906-017-1717-0.
4. Almond, D., Edlund, L., Joffe, M., et al. An adaptive significance of morning sickness? Trivers-Willard and Hyperemesis Gravidarum. *Economics and Human Biology*. 2016;21: 167–171. <https://doi.org/10.1016/j.ehb.2016.02.001>.
  5. Forbes LE, Graham JE, Berglund C, et al. Change during Pregnancy and Women's Reasons for Change. *Nutrients*. 2018;10(8):1032. doi: 10.3390/nu10081032.
  6. Holden SC, Gardiner P, Birdee G, et al. Complementary and Alternative Medicine Use Among Women During Pregnancy and Childbearing Years. *Birth*. 2015;42(3):261-9. doi: 10.1111/birt.12177.
  7. Ozgoli G, Saei Ghare Naz M. Effects of Complementary Medicine on Nausea and Vomiting in Pregnancy: A Systematic Review. *Int J Prev Med*. 2018;30;9:75. doi: 10.4103/ijpvm.IJPVM\_430\_16.
  8. RI, K. K. Lap Visit Kesehatan Dasar (Riskesdas), Jkt: Badan penelitian dan pengembangan kesehatan Kementerian kesehatan RI. Dinkes. 2013. <http://depkes.go.id>.
  9. Walsh, J. W. Asuhan kebidanan pada hamil: normal & patologi. Yogyakarta: Nuha: Medika. 2007.
  10. Bustos M, Venkataramanan R, Caritis S. Nausea and vomiting of pregnancy - What's new? *Auton Neurosci*. 2017;202:62-72. doi: 10.1016/j.autneu.2016.05.002.
  11. Galeshi, M., Ghanbarpour, A., Naeimi Rad, M., et al. A comparison of the effect of pressure on the KID21 (Youmen) and P6 (Neiguan) points on the severity of nausea and vomiting of pregnancy. *J Complement Integr Med*. 2020;17(2). doi:10.1515/jcim-2019-0035.
  12. Walsh, J. W. Asuhan kebidanan pada hamil: normal & patologi. Yogyakarta: Nuha: Medika. 2007.
  13. G. Stux, B. Pomeranz. *Acupuncture: Textbook and Atlas*. Springer Science & Business Media, 2012.
  14. Matthews, A. H., D. M., O'Mathúna, D. P. Dowswell, T. Interventions for nausea and vomiting in early pregnancy. *Cochrane Database of Systematic Review*. 2015;9. <https://doi.org/10.1002/14651858.CD007575.pub4>.
  15. Streitberger K, Ezzo J, Schneider A. Acupuncture for nausea and vomiting: an update of clinical and experimental studies. *Auton Neurosci*. 2006;30;129(1-2):107-17. doi: 10.1016/j.autneu.2006.07.015. Epub 2006; 1. PMID: 16950659.
  16. Adlan AS, Chooi KY, Mat Adenan NA. Acupressure as adjuvant treatment for the inpatient management of nausea and vomiting in early pregnancy: A double-blind randomized controlled trial. *J Obstet Gynaecol Res*. 2017 ;43(4):662-668. doi: 10.1111/jog.13269. PMID: 28418209.
  17. Werntoft E, Dykes AK. Effect of acupressure on nausea and vomiting during pregnancy. A randomized, placebo-controlled, pilot study. *J Reprod Med*. 2001;46(9):835-9. PMID: 11584487.
  18. D. de Aloysio, P. Penacchioni, Morning sickness control in early pregnancy by Neiguan point acupressure, *Obstet. Gynecol*. 1992;80(5):852–854.
  19. H.S. Shin, Y.A. Song, S. Seo, Effect of Nei-Guan point (P6) acupressure on ketonuria levels, nausea and vomiting in women with hyperemesis gravidarum, *J. Adv. Nurs*, 2007;59(5):510–519.
  20. Mobarakabadi, S. S., Shahbazzadegan, S., & Ozgoli, G. The effect of P6 acupressure on nausea and vomiting of pregnancy: A randomized, single-blind, placebo-controlled trial. *Advances in Integrative Medicine*. 2020;7(2):67-72. <https://doi.org/https://doi.org/10.1016/j.aimed.2019.07.002>.
  21. B.O'Brien, M.J.Relyea, T. Taerum. Efficacy of P6 acupressure in the treatment of nausea and vomiting during pregnancy, *Am. J. Obstet. Gynecol*. 1996;174(2):708–715.
  22. F. Saberi, Z. Sadat, M. Abedzadeh-Kalahroudi, et al. Acupressure and ginger to relieve nausea and vomiting in pregnancy: a randomized study, *Iran. Red Crescent Med. J*. 2013;15(9):854–861.
  23. Meihartati, T., Ahmad, Z. A., & Suddin, L. S. A study protocol to explore the effectiveness of point 6 acupressure therapy in nausea and vomiting in early pregnancy in Samarinda, Indonesia. *International Journal of Health Sciences*. 2022;6(S8):5241–5249. Retrieved from <https://sciencescholar.us/journal/index.php/ijhs/article/view/13426>.
  24. Reed Gach M. How to apply pressure to Acupressure



Points. 2014. Available: [http://www.acupressure.com/articles/Applying\\_pressure\\_to\\_acupressure\\_points.htm](http://www.acupressure.com/articles/Applying_pressure_to_acupressure_points.htm).

25. Jamigorn, M., & Phupong, V. Acupressure and vitamin B6 to relieve nausea and vomiting in pregnancy: a randomized study. *Archives of gynecology and obstetrics*. 2007;276(3):245–249. <https://doi.org/10.1007/s00404-007-0336-2>.
26. Mehta, P., Dhapte, V., Kadam, S., et al. Contemporary acupressure therapy: Adroit cure for painless recovery of therapeutic ailments. *Journal of Traditional and Complementary Medicine*. 2017;7(2):251-263. doi:<https://doi.org/10.1016/j.jtcme.2016.06.004>.
27. Manzoor, F., Wei, L., Hussain, A., et al. Patient Satisfaction with Health Care Services; An Application of Physician's Behavior as a Moderator. *International journal of environmental research and public health*. 2019;16(18):3318. <https://doi.org/10.3390/ijerph16183318>.