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Effectiveness of Acupressure at Neiguan (P6) Point on Nausea and Vomiting During Early Pregnancy

Maria Tariq[1], Uzma Nayyer[2], Sana Hassan[3], Sara Jamil Khan[4], Aisha Yousaf[5], Maryam Noor Malik[6]

[1,2]Assistant Professor, Islamabad Medical and Dental College, Islamabad
[3]Senior Registrar, Islamabad Medical and Dental College, Islamabad,
[4]Assistant Professor, Frontier Medical College, Abbottabad
[5]Associate Professor, Mohi-ud-Din Islamic Medical College (MIMC), Mirpur, AJK
[6]Senior Registrar, Shifa International Hospital, Islamabad

Author`s Contribution

[1]Provided concept/research design, data collection, project management, takes the responsibility and accountable.
[2,5]Did critical revision of the manuscript for important intellectual content.
[3,4] critical revision of the manuscript for important intellectual content
[6]Did statistical analysis and manuscript writing

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Address of Correspondent
Dr. Maria Tariq
Assistant Professor, Islamabad Medical and Dental College, Islamabad
maria.tariq@imdcollege.edu.pk

ABSTRACT

Objective: This study investigates the effectiveness of acupressure at Neiguan Pericardium 6 (P6) point using Psi-Bands on severity of pregnancy-related nausea and vomiting, comparing the results with those of a placebo group.

Methodology: This randomized, placebo-controlled trial, 40 pregnant females experiencing mild to moderate levels of nausea and vomiting before 20 weeks of gestation were allocated into two groups equally (n=20). Pregnant females were recruited between April and June 2024 from Islamabad Diagnostic Centre (IDC), and Executive Clinics of IDC in Islamabad, Pakistan. In acupressure group, pressure was exerted on P6 point using a Psi-Band knob/button for 3 days, while in placebo group, the Psi-Band was worn without applying pressure to P6 point. Frequency and severity of nausea and vomiting were documented twice daily for 1 week, with intervention commencing on 4th day. ANOVA, Mann-Whitney U test, and Fisher's exact tests were employed for data analysis.

Results: The mean women age was 26.3±5.3 years. After three days of intervention, acupressure group showed a substantial decrease in nausea duration, frequency, and severity, as well as in vomiting frequency, compared to placebo group ($p < 0.05$). After intervention, acupressure and placebo groups showed a substantial difference in frequency and severity of nausea ($p < 0.05$), but insignificant difference was seen in duration of nausea or frequency of vomiting ($p > 0.05$).

Conclusion: Applying acupressure at P6 point using a wristband for at least 3 days seems to effectively relieve pregnancy-related nausea and vomiting. This effect may partially result from placebo effect.

Keywords: Acupressure; Nausea; Pregnancy; Vomiting.

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Introduction

Around 50% to 80% of pregnant females experienced nausea and vomiting during early pregnancy (NVP), ranging from mild food aversions to severe and persistent vomiting.[1] These symptoms can lead to physical, social, and psychological disruptions for affected women. As NVP can significantly impact quality of life in cases of lesser severity, it must not be overlooked, making early diagnosis and intervention essential.[2]

Although numerous pharmacological interventions are offered for managing NVP, issues with potential impacts on fetus outcome lead many healthcare professionals and pregnant females to prefer minimizing medication use and opting for non-pharmacological therapies instead.[3] Acupressure, a technique rooted in Traditional Chinese Medicine (TCM), is among the most commonly utilized non-pharmacological intervention for managing these symptoms.[4]

TCM posits that vital energy within the body is essential for providing strength and vitality.[5] This energy, known

as Chi, flows through invisible pathways beneath the skin known as Meridians. Chi quality is determined by balance between mental, sensory, psychological, and physical features of the body. Imbalances in any of these features can disrupt the flow of energy, potentially leading to illness. Most frequently used acupressure technique involves applying pressure to specific point along energy pathways to manage various ailments.[6] In TCM, stimulating P6 point, or Neiguan, is often utilized to alleviate nausea and vomiting.[7] Pressing on P6 point helps relieve abdominal and chest congestion, calms the mind, and reduces symptoms such as motion sickness, nausea, and excitement.[8] P6 point is situated on inner surface of forearm, width of three finger above the wrist area, between long flexor tendon.[9] The study aimed to investigate the effectiveness of acupressure P6 using a Psi-band with pressure knob on frequency and severity of NVP, compared to a placebo group.

Methodology

This randomized, placebo-controlled trial was performed with pregnant females getting prenatal care at two healthcare centres of Islamabad Diagnostic Centre (IDC), and Executive Clinics of IDC in Islamabad, Pakistan, from April to June 2024. Based on sample size for ANOVA with $\alpha = 5\%$, $1\text{-}\beta = 80\%$, $r = 3$, and $\Delta/\sigma = 1$, the minimal sample required was determined to be 20 each group. Twenty women from each of two healthcare centres were allocated to the groups. The inclusion criteria were nausea and vomiting from mild to moderate levels (assessed using a Likert scale, 3 days prior to intervention), a planned and uncomplicated pregnancy, and gestation age < 20 weeks (verified through ultrasound prior to 10 weeks or by last menstrual cycle). The exclusion criteria included Hyperemesis Gravidarum symptoms (e.g., weight loss and hydration therapy requirement, IV medications, or hospitalization for NVP), threatened abortion, molar and twin pregnancies, any known condition that could cause nausea or vomiting, recent psychological disorder requiring psychologist/psychiatrist consultation, recent traumatic events, smoking, and use of antiemetic or emetic medications. The hospital's ethics committee granted approval for study (No.: IRB. 260/IMDC/IREB-2024).

One of the researchers provided an oral explanation of the study's methodology and purpose to all participants. Eligible participants were also informed that the researchers were unaware of the treatment outcomes. The treatment assignments were concealed from the participants, which were determined randomly. Informed written consent was taken from all study participants.

Participants who met the criteria were assigned randomly to two groups by computerized procedure. Sample (n = 40), number (n = 2) and names (acupressure P6 and placebo) of the groups were entered. Output included the numbers ranging from 1 to 40. The numbers placed then in envelopes by one researcher. The researcher administering the treatment and the researcher who placed the numbers in envelopes were both blinded to treatment assignments. Each woman was assigned to one of two groups according to sequence number.

In acupressure group, a wristband (Psi-Band) was used to apply continuous pressure to P6 point on both wrists for 3 days, with exception of during showering. To ensure precise positioning of the wristband on P6 point, the researcher initially applied Psi-Bands on each participant's wrists at the healthcare centres. The bands were positioned exactly 2 cun (the width of 3 fingers) above the wrist folds, in accordance with the study's guidelines. Women were instructed on how to reapply the wristband after every shower at home, as they returned home for duration of treatment.

Whereas, placebo group participant wore a wristband in same manner as acupressure group, but without the pressure button. Participants in this group also unaware of their intervention assignments. One of the researchers provided all participants with verbal and written recommendations on dietary modifications during the first visit. These included eating small, frequent meals, ceasing before fullness, and stop fried foods. In all three healthcare centers, midwives provided prenatal care to all pregnant women following national guidelines, while one of the researchers administered the study interventions.

The main outcomes measured were the duration (in min.), frequency, and severity of nausea (rated on a scale from 0 'no nausea' to 4 'very severe nausea') as well as vomiting frequency. Data were compiled through daily diary that participants completed twice a day (at noon and before bedtime) in two phases: initially, over the first 3 days before intervention, and secondly, over the 3 days of intervention. Variables score was summed prior to and over intervention, resulting in pre- and post-intervention score. Other outcomes were evaluated using 3 questions, assessing the overall response to treat nausea and vomiting separately [rated from 0 ('significant worse') and 4 ('significant better')], adherence to dietary modifications ('no', 'almost', 'yes'), and satisfaction with

treatment ('no', 'almost', 'yes'). These outcomes were evaluated using a scale specifically designed and validated by researchers to assess nausea and vomiting during pregnancy. Data analysis was performed with SPSS v 25. The characteristics at baseline across the groups was compared with Fisher's exact test, the Kruskal-Walli's test (with subsequent Tukey's test), and Mann-Whitney's U test. The Wilcoxon's test was employed to assess the changes in nausea duration, frequency, and severity, as well as vomiting frequency, before and after intervention within the groups. Non-parametric tests were employed either because of small sample or when the data was not normalized. The analysis was performed using a significance level set at $p < 0.05$.

Results

All 40 women completed the study and submitted their diaries for analysis. Baseline characteristics did not show significant variation across the groups (Table I).

Additionally, the baseline symptoms did not differ significantly ($p > 0.05$). Table II displays variations in mean score for nausea duration, frequency, and severity within groups. Kruskal-Walli's test indicated a significant difference between groups in nausea duration, frequency, and severity after intervention ($p = 0.001$ for all). Mann-Whitney's U and Tukey's tests revealed significant difference between groups in nausea frequency ($p = 0.01$) and severity ($p = 0.04$), but not in duration ($p = 0.7$) after treatment.

A comparison of frequency of vomiting across the groups was measured (Table III). The frequency of vomiting varied significantly between the groups. Tukey's test revealed insignificant difference between groups in this aspect ($p = 0.7$).

Table IV compares participants' views on changes in nausea and vomiting with their satisfaction levels across the groups. The groups showed no difference in changes to nausea characteristics and vomiting ($p = 0.4$, & $p = 0.2$). Acupressure group reported significantly high level of satisfaction with treatment compared to placebo group ($p < 0.001$). No side effect was reported by participants by using the Psi-Band.

Table II: Nausea duration, frequency, and severity were evaluated among groups. (n=40)

Nausea duration	Acupressure (n=20)	Placebo (n=20)	p-value
Pre intervention	331.8±551.2	245.9±296.4	.230
Post intervention	249.4±494.7	98.8±87.1	.001
Change	82.4±56.5	150.6±407.6	.001
p-value	.001	.001	
Frequency			
Pre intervention	22.3±6.7	21.5±6.3	.930
Post intervention	7.5±5.2	9.2±5.8	.001
Change	14.8±1.5	12.3±0.5	.001
p-value	.001	.001	
Severity			
Pre intervention	36.2±29.7	33.9±25.7	.820
Post intervention	23.1±22.1	27.2±23.4	.001
Change	13.1±7.6	6.7±2.3	.001
p-value	.001	.001	

Table III: Vomiting frequency was compared among groups. (n=40)

Vomiting	Acupressure (n=20)	Placebo (n=20)	p-value
Pre intervention	4.2±4.4	4.2±5.4	.910
Post intervention	2.6±2.2	2.0±4.7	.03
Change	1.6±2.2	2.2±0.7	.04
p-value	.001	.001	

Discussion

The present study examined the effectiveness of 3 days of acupressure P6 using a Psi-Band on frequency and severity of NVP, and compared the results with placebo group. In this study, acupressure reduced nausea frequency and severity, but no more effective than

Table I: Pregnant women characteristics at baseline. (n=40)

Variables		Acupressure (n=20)	Placebo (n=20)	p-value
Age (years)	Mean ± SD	26.86±5.32	25.67±5.29	.602
Education (year)	≤ 12	14 (70%)	15 (75%)	.794
	> 12	6 (30%)	5 (25%)	
Occupation	Housewives	17 (85%)	16 (80%)	.282
	Employed	3 (15%)	4 (20%)	
Gestation age (wks)	Mean ± SD	13.27±2.39	13.71±1.06	.301
No. of pregnancies	Mean ± SD	2.79±0.96	2.71±0.87	.360
Dietary changes	No	5 (25%)	5 (25%)	.771
	Almost	7 (35%)	8 (40%)	
	Yes	8 (40%)	7 (35%)	

placebo in shortening nausea duration or decreasing vomiting frequency.

Table IV: Changes in nausea and vomiting, along with participant satisfaction, were compared among groups. (n=40)

Outcomes		Acupressure (n=20)	Placebo (n=20)	p-value
Changes in nausea	Better	16 (80%)	14 (70%)	.0001
	No change	3 (15%)	6 (30%)	
	Worse	1 (5%)	0	
Changes in vomiting	Better	15 (75%)	11 (55%)	.001
	No change	5 (25%)	9 (45%)	
	Worse	0	0	
Stratification	Yes	12 (60%)	5 (25%)	.001
	Almost	7 (35%)	15 (75%)	
	No	1 (5%)	0	

In a related study, Mobarakabadi et al observed that using a wristband on P6 point for three days decrease nausea severity compared to placebo.[10] Gul studied the effect of acupressure P6 on NVP and found that stimulating P6 point three times a day for one week led to significant improvements in nausea and vomiting compared to control group.[11] Gong et al performed a meta-analysis of 33 trials and found that acupressure was effective for females experiencing nausea and vomiting during pregnancy, an odds ratio of 4.8. It significantly reduced nausea and vomiting scores.[12]

Several factors may account for differences between findings of these studies and current results, including variations in method and duration of P6 point stimulation, as well as differences in the placebo groups. The significant decrease in nausea duration, frequency, and severity observed in placebo group in this study may be attributed to placebo effect. Tara et al evaluated the effects of acupressure on P6 point with those in placebo group for managing NVP and observed differences in treatment effect among the three groups. This effect became significant different on 5th day regarding vomiting frequency, nausea duration, and frequency.[13] Yılmaz et al found that acupressure wristbands reduced nausea and vomiting scores in experimental group, although not to a statistically significant degree, and had no effect on nausea and vomiting scores in control group.[14] Given that the wristband had consistent size and flexibility among all study groups, may provide effects of stimulation through pressure to P6 points or along its pathway of meridian.[15]

This study observed a significant decrease in vomiting frequency over treatment in both acupressure and placebo groups. However, results between the groups showed insignificant difference, which could be attributed to two factors. Firstly, the reduction in vomiting frequency may not have been caused by pressure to P6 points. Significant difference between acupressure and placebo groups may suggest that women who utilized wristband supposed it would alleviate their nausea and vomiting, highlighting potential influence of placebo effect. Secondly, wristband utilized in placebo group also applied stimulation to P6 points. Wang et al performed a meta-analysis of 11 trials and found that acupressure significantly improved symptom scores compared to the control group. They concluded that acupressure may offer a potentially beneficial or effect for treating nausea and vomiting during pregnancy.[16]

One limitation of this study was its duration of 3 days, whereas related studies were conducted over 4 and 7 days. A further limitation was the absence of control over stimulation of Pericardium meridian or P6 point in placebo group, making it difficult to differentiate placebo effect from effect of acupressure. This limitation addressed by future studies should consider stimulating a control point in placebo group.

Conclusion

The study demonstrated that 3 days of acupressure P6 using a Psi-Band can decrease both nausea frequency and severity. Additionally, both acupressure P6 and placebo technique led to a significant decrease in nausea duration and vomiting frequency. Further studies are necessary to confirm that Psi-Band without button did not unintentionally stimulate P6 point in placebo group. Generally, acupressure on P6 point appears to be a safe technique for alleviating NVP. Women did not report any complaints or side effects related to administered intervention.

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