

Effect of Acupressure Band-Aid Combined with Expectancy Manipulation Instructions on Pregnancy related Nausea and Vomiting

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Abstract

Background: Acupressure is used in traditional Chinese medicine to apply pressure to certain points which is believed to decrease nausea and vomiting. **Aim:** to examine effect of band-aid combined with expectancy manipulation instructions on pregnancy related nausea and vomiting. **Design:** a comparative quasi-experimental was used. **Setting:** This study was conducted at antenatal outpatient clinics at Minia Children and Maternity University Hospital in Minia City. **Subjects:** a purposive sample of 120 pregnant women who are currently experiencing nausea and vomiting were selected. **Tools:** The data were collected using three tools: a structured interview questionnaire, the pregnancy unique quantification of emesis (PUQE) scale and nausea severity expectancy and perceived susceptibility tool. **Results:** The current study found a statistically significant variation in the severities of nausea and vomiting during the post-intervention stage in contrast to the pre-intervention stage in favor of the acupressure band-aid with expectancy-enhancing instructions $p \leq 0.05$. Also, nausea severity expectancy and susceptibility decreased in the acupressure band-aid with expectancy-enhancing instructions group than in the acupressure band-aid with expectancy-neutral instructions and the control groups. **Conclusion:** acupressure band-aid applied on umbilical area combined with expectancy-enhancing instructions has good effect on reducing nausea and vomiting severity, expectancy and susceptibility. **Recommendation:** acupressure band-aid applied on umbilical area must be taught to maternity nurses for managing women complaining from nausea and vomiting to lower the dangers of taking antiemetic medications in the first trimester.

Keywords: Acupressure band-aids- Expectancy manipulation- Nausea- Pregnancy- Vomiting.

Introduction

Nausea and vomiting during pregnancy (NVP) are common experiences in pregnancy, affecting 70–80% of all pregnant women and can happen at any time of day and is not limited to the morning (**American College of Obstetricians and Gynecologists (ACOG), 2020**). More than 85% of women experience (NVP), which has a variety of negative impacts on the course of the pregnancy (**Hu et al., 2022**). Moreover, it's caused by hormonal changes brought on by an increase in the hormones progesterone, estrogen, and human chorionic acid release (**Pulungan et al., 2020**). Also, helicobacter pylori, and gastric slow-wave rhythm disorder may cause NVP (**Liu et al., 2022**)

The first three months of pregnancy is extremely important since the fetus is still developing its body and organs. A fetus may

fail to develop certain organ formations if experienced malnutrition. In addition to the chance that the fetus will be born underweight. Also decreased fluid can impact fetal development throughout the body. For the previous few decades; there hasn't been much of change in the available therapy alternatives (**Organization of Teratology Information Specialists (OTIS), 2022**). A variety of therapy approaches are used to handle NVP, such as outpatient nutritional counseling, antiemetic medication administration, hospitalization, and intravenous fluid replacement in severe or recurrent episodes (**Smith, 2022**).

Traditional Chinese medicine goal is to help patients' minds, bodies, and spirits reestablish a harmoniously balanced state of wellbeing by treating their vital energy (Qi) carried through meridians. The meridians' acupressure points are places where the Qi is more readily

accessible for therapeutic purposes (**Fabio et al., 2021**).

Applying pressure to meridians acupoints releases chemicals like adrenaline, dopamine, and β -endorphins, maintaining bodily function and reducing nausea and vomiting symptoms by altering nerve pain messages. (**Deutsch & Hass, 2021, Kirca et al., 2020**). Acupressure foundation is acupuncture, a traditional Chinese medical procedure (**Memorial Sloan Kettering Cancer Center (MSKCC), 2024**).

The benefits of acupressure include the absence of pharmacological interactions and negative effects. It is accepted, noninvasive, practical, and easy to use. Moreover, it is more affordable (**Boelig et al., 2018**). P6 (Pericardium 6 or Neigunan), CV8 (known as "Shenque," which means "Spirit Gate" at the center of the abdomen), and ST36 (Zusanli or Stomach 36) are acupressure sites utilized in cases such as nausea-vomiting (**Lee et al., 2015**).

Prior research shown the potential of an external treatment administered at the Shenque acupoint (CV8), by Shenhuang Plaster (SHP), to successfully reduce inflammation of the small intestine and enhance gastrointestinal transmission (**Logue et al., 2016**). Accordingly, women's health, digestive, and respiratory disorders can benefit from the application of the tape compression technique alone on the CV8 point (**Yu et al. 2018; Engin 2021**).

Morning sickness is linked to the Penetrating vessel's blood and Qi imbalance, causing Qi to rebel upward and cause nausea and vomiting. Imbalances in stomach and spleen, liver Qi stasis, and phlegm can lead to further imbalances, causing severe vomiting and affecting heart and stomach Qi (**Levarda, 2021**).

Expectancy in managing nausea is influenced by patients' expectations of efficacy, past experience, sociocultural factors and information from clinicians, hospital staff, and others. These expectancies can be internal or external sources, reflecting a dual role in the effectiveness of bands. (**Anita et al., 2020**).

Justification of the problem

Severe episodes of NVP can cause weight loss, acid-base imbalance, electrolyte imbalance, dehydration, and even pathological hyperemesis gravidarum, which require hospitalization (**Smith, 2022**). In particular population, non-pharmacological therapy is favored where conditions permit to reduce the likelihood of drug side effects on the developing fetus (**Hu et al., 2024**). Additionally, there is a decrease in medication compliance due to the possible teratogenic effects. Consequently, non-pharmacological therapies that is secure and efficient - like acupuncture, acupressure, aromatherapy, and physical therapy-are important (**Nafiah et al., 2022**).

As nausea and vomiting (NV) symptoms often occur during the first period of pregnancy where antenatal care not yet have been established, it is important to empower women to optimally self-manage their care to ensure maternal and fetal health. As the points Shenque (CV 8) is centrally located at the midpoint of the umbilicus, so application is easy, comfortable as the person can do by himself. It is true that beliefs about the future might affect health outcomes. This implies that optimism, positive thinking, and a proactive mindset could lead to improved health results. This highlights the importance of cultivating positive outlooks and adaptive coping strategies to promote overall health and resilience.

Aim of this study:

The current study main aims were to;

- 1- Examine effect of band- aid combined with expectancy manipulation instructions on pregnancy related nausea and vomiting.
- 2- If the effectiveness of acupressure band- aid on nausea severity could be improved by increasing women's expectation of the band-aid's efficacy.

Research hypotheses;

H1: Women who received acupressure band-aid with expectancy-enhancing instructions are expected to show good effect on reduction of NVP.

H2: Women who received acupressure band-aid with expectancy-neutral instructions are

expected to show good effect on reduction of NVP.

Operational definitions

Acupressure band- aids

Acupressure band- aid are adhesive patches that apply pressure to specific acupressure points on the body (**Joon, 2018**), providing relief from ailments like nausea, motion sickness, headaches, and stress. Although scientific evidence is mixed, they are generally safe and have minimal side effects (**Memorial Sloan Kettering Cancer Center (MSKCC), 2024 & Engin 2021**).

Expectancy manipulation

Expectancy manipulation involves intentionally altering a person's expectations or beliefs about an event or outcome, used in research, therapeutic interventions, marketing strategies, and interpersonal interactions. It is often used to study placebo effects, enhance treatment outcomes, and shape consumer behavior (**Stemerding et al., 2023**).

Nausea and vomiting during pregnancy (NVP)

Usually known as morning sickness, is a common condition among pregnant women that is marked by nausea and the tendency to vomit up. Morning sickness is a misconception because it may happen at any time of day (**American College of Obstetrics and Gynecology. ACOG, 2023**).

CV8 (Shenque)

CV8 stands for "Conception Vessel 8." This is a specific point on the meridians used in conventional Chinese medicine. Located at the center of the abdomen, it is also known as "Shenque," which means "Spirit Gate." This point is used in acupressure to enhance vital energy and improve overall health (**Lee et al., 2015**).

Qi (pronounced "chee") stands for "life force" or "vital energy" in traditional Chinese medicine. It is considered the essential energy that flows through the body, maintaining health and vitality. It is thought that healthy living depends on free-flowing, balanced Qi, as

blockages or imbalances in Qi can cause disease or discomfort(**Fabio et al., 2021**).

Material and methods:

2.1. Study design

The study design used was a comparative quasi-experimental. A technique that employs manipulation but does not randomly assign individuals to groups in order to describe similarities and differences in variables between two or more groups in a natural situation. In this sense, it is similar to an experiment. It makes use of already-existing groups instead.

2.2. Setting:

The study was conducted at antenatal outpatient clinics which located on the hospital's ground floor at Minia Children and Maternity University Hospital in Minia City. The hospitals provide free and economical service to all patients and receive large numbers of patients each month. This hospital composed of five-floor; the private section on the first floor and the other four floors for the governmental section.

Subjects

The study' included a purposive sample of 120 pregnant women whose age ≥ 18 years, with mild NVP, carrying one fetus, and had no history of chronic disease. Each pregnant woman was reviewed for inclusion criteria and was allocated to one of the three groups;

Group A: the next 40 women who received acupressure band- aid and expectancy-boosting and enhancing instructions

Group B: the next 40 women who received acupressure band- aid and expectancy-neutral and objective instructions.

Group C: control group who received routine care (the first 40 women).

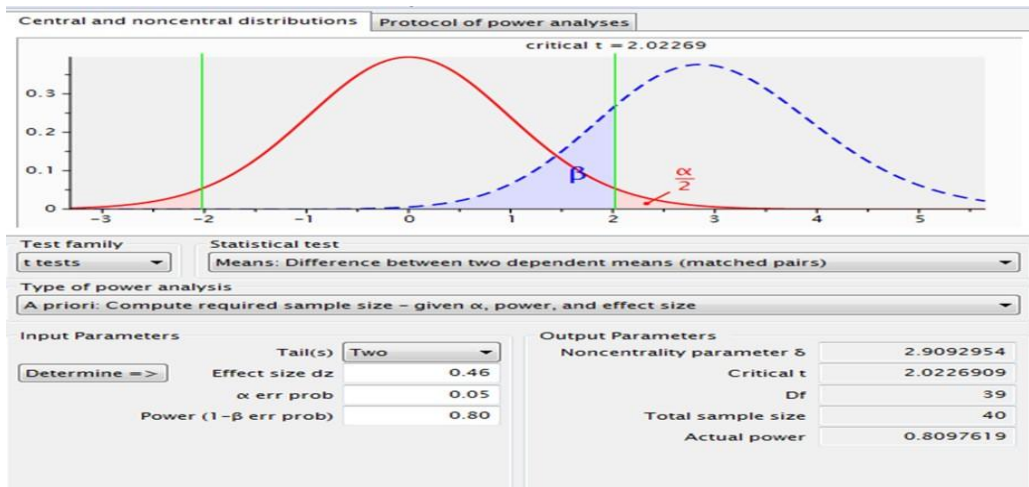
In order to prevent cross-contamination, the study groups were arranged after the control group until the necessary number was attained. The data were collected over a period of seven months starting at the first of July 2023 and ending of January 2024.

Calculating the Sample Size:

Sample size was calculated using a priors method of power analysis (**Faul et al.,2007**); In

order to detect an effect size of Cohen’s $d = 0.46$ with 80% power ($\alpha = .05$, two-tailed), G*Power suggests we would need 40

women per each group in a paired samples t-test”.



Data collection tools:

The data were collected using tools:

Tool 1: A Structured Interviewing questionnaire

The researchers designed it after reviewing the related literature, and translated it into Arabic. There were three parts of it:

Part I: Examined the personal characteristics of women, including age, occupation, income, education, and residence.

Part II: Included the women's obstetrical history as; parity, gravidity, and prior abortion.

Part III: Included questions about history of vomiting and nausea as: history of vomiting and nausea in previous pregnancies, family history of vomiting and nausea (mother or sister previous complaints), in which pregnancy month did nausea and vomiting start? (Calculated from the LMP before

pregnancy). Also, if she suffer from nausea/vomiting right now?

Tool 2: Pregnancy Unique Quantification of Emesis (PUQE) scale (Koren et al.,2009, Koren & Cohen,2021). This validated scale uses three questions about symptoms (vomiting, nausea, and retching) to classify the severity of NVP. Every query is graded on a scale of 1 to 5. A total score of 3 to 15 points is possible; score ≤ 6 points denote a weak NVP, moderate NVP is indicated by score from 7 to 12 points, while severe NVP is indicated by score 13 or more points. Before and after the intervention, both groups were asked to rate the degree of nausea and vomiting, as well as how often they experienced it on the PUQE scale. It shows strong validity (0.95), internal consistency, and reliability (0.846). Women were asked to add the three results to the total points between the brackets from the three questions and record the result in the daily diary for nausea and vomiting during pregnancy:

Tool 3: Nausea severity expectancy and Perceived susceptibility (Joseph et al., 2010).

PUQE Results	1 st day	2 nd day	3 rd day	4 th day	5 th day	6 th day	7 th day
The best							
The worst							

Part 1: Nausea severity expectancy was evaluated using the inquiry, "What do you anticipate the nausea level will be after this treatment at its worst?" Responses ranging from "very mild or none at all" to "mild," "moderate," "severe," "very severe," and "intolerable," coded 1 through 6, will be accepted. Women's score of 1 to 3 were classed as "were uncertain or weren't expecting nausea," while those who scored "4-5" were categorized as were "expecting nausea."

Part 2: Perceived susceptibility

The question used to assess perceived sensitivity to nausea was "Generally, do you think you are more vulnerable to nausea more than your peers?" "More" (ranked as 3), "about the same" (ranked as 2), and "less" (ranked as 1) were the possible answers.

Method

Ethical considerations:

The study received approval from the research ethics committee and Minia Maternity University Hospital director. The study involved women who provided informed consent, were informed about; the study's objectives, and the right to withdraw at anytime.

Validity of the tools:

Juries of five professors in gynecology and obstetrics received all data collection tools, and changes were made based on their feedback.

Pilot study:

For one month, 10% of the study's (twelve woman) were included in the pilot study to evaluate the study tools' practicality, applicability, and clarity, and no necessary adjustments were made.

Procedures

The Preparatory Phase

The researcher reviewed the most contemporary relevant literature related to the issue of the study during this phase. Tools for gathering data were developed.

The Implementation Phase

The study's implementation involved three sessions over an hour.

1) Introduction to the study and its purpose and education on NVP (45 minutes).

The researchers interviewed women in the previously mentioned setting's antenatal clinics two days per week (Sunday and Tuesday) from 10 a.m. to 1 p.m., based on their registration. After explaining the study's purpose and obtaining their consent, they were individually assessed for nausea duration, frequency, severity expectancy, and perceived susceptibility. Through visual aids as; pictures and posters as well as group discussion and educational booklets, women in group A and B received acupressure band- aid, general nausea and vomiting during pregnancy -related educational material plus a written instructions that were either expectancy-boosting and enhancing (group A) or expectancy-objective and neutral (group B). The key points of session about nausea and vomiting during pregnancy:

- 1) Overview of nausea and vomiting during pregnancy, prevalence, causes, symptoms & associated complications, management strategies and lifestyle and home remedies.
- 2) Health education about acupressure band aids; explanation of acupressure and its principles, mechanism of action, benefits, when to use, and specific precautions and considerations e.g. recognizing when medical intervention is necessary (e.g., signs of dehydration, severe vomiting).
- 3) Women taught how to regularly prevent nausea and vomiting, as eating small frequent diet, avoiding spicy and fatty foods, and having dry bread or crackers right before bed. Women were instructed that; based on NVP symptoms over 24 hours, severe NVP scores (≥ 13 points) for more than 3 consecutive days require doctor visits.

2) Expectancy manipulation sessions (30 minutes).

Women were allocated to one of the threegrups:

1) Group A; Received acupressure band-aid and general nausea and vomiting during pregnancy -related educational material plus expectancy- boosting and enhancing instructions The researcher highlighted the effectiveness of acupressure in relieving nausea and vomiting (NVP), motion sickness, and relaxation. They emphasized the band-aid's effectiveness in treating other patients and hoped it would be beneficial to them, promoting the idea that acupressure bands could be beneficial for individuals.

2) Group B; Received acupressure band-aid, general NVP -related educational material plus expectancy-objective and neutral material The researcher provided neutral statements about acupressure treatment steps for NVP, and emphasizing the importance of compliance to the procedure steps. They also provided educational materials, thank you notes, and non-prescription notes, that advising women to use acupressure bands in addition to regular medication.

2) *Demonstration of band- aid application.*

Group A's and B's women were instructed to apply a hazelnut-sized cotton ball to their navel before bed, gradually increasing pressure until no pain appeared. Pregnant women could use this procedure for nausea and vomiting, and were instructed to use it alongside their antiemetic regimen.

- Throughout the seven days of the acupressure intervention, women were instructed to record their symptoms in the diary every 24 hours when they felt nausea and vomiting.
Distribution of materials (e.g., band-aids, symptom tracking diaries, researchers' mobile phone numbers for any questions or issues between sessions and for follow-up).

3) Group C; Control group: Received only an expectancy-neutral handout" given only a thank you note for participating in the study". Without the mention of acupressure bands.

Follow-Up Sessions: The researchers contacted the studied women through daily phone calls to; review the symptom tracking

diary, reinforce the expectancy manipulation messages, address any questions or concerns, and provide additional tips and support to motivate women to apply the band- aid.

2.6.3. The Third phase: Evaluation phase:

After the seven days of acupressure intervention; the researchers collected the study materials (e.g., diaries) and reassessed each women in the pre mentioned setting using the interview sheets. The study's conclusion involved women completing a feedback questionnaire on the effectiveness of acupressure bands in managing NVP, assessing their reduction in apprehension, and recommending them to others.

Limitation of the Study:

- ❖ Insufficient national research had been carried out to examine the present research issue.
- ❖ It was not possible to generalize the results due to the small sample size.

Statistical analysis:

The last SPSS version "26" was used to analyze the data. Significant was defined as $P < 0.05$. The demographic criteria of the three groups were compared using T tests and chi-square analysis. The Friedman, Mann-Whitney, and Sign-rank tests were employed to assess the degree of nausea and frequency of vomiting.

Results

Table 1 summarized the **personal characteristics** and illustrated that; (55%, 50% & 45% respectively) of women in the acupressure band- aid with expectancy-enhancing instructions, acupressure band- aid with expectancy-neutral instructions and control groups age ranged from 18 to 23 years. (57.5%, 57.5% & 65% respectively) of the studied women in all groups were urban residents .Additionally, (42.5%, 30% & 32.5 %) of the studied women in all groups had secondary education. In relation to occupation and income, (72.5%, 80% & 80% and 47.5%, 57.5% & 67.5%) of the studied groups were housewives and hadn't sufficient income respectively.

Using Chi square test revealed non-significant statistical differences between all three studied groups' personal characteristics indicating that all studied groups had similar characteristics.

Table 2 shows that there were no statistically significant variations in the **obstetrical histories** of the studied groups ($p > 0.05$). As (32.5% & 32.5 respectively) of the studied women in the acupressure band-aid with expectancy-enhancing instructions group had a **Gravidity history** of 3 and more than 4 times, while (37.5% & 35%) of women in the acupressure band-aid with expectancy-neutral instructions and the control groups were pregnant for the first time respectively. Additionally, (42.5%, 60%, 55% respectively) of the studied women in all groups hadn't previous history of abortion.

Table 3 Revealed non-significant statistical differences between all the three studied groups' **history of NVP as**; (60%, 65% & 62.5% respectively) of women in the acupressure band-aid with expectancy-enhancing instructions, acupressure band-aid with expectancy-neutral instructions and control groups had history of NVP in previous pregnancies. While; (47.5%, 67.5% & 67.5% respectively) of the studied women in all groups, their mother and sisters had previous history of NVP. Additionally; (47.5%, 65.5% & 62.5% respectively) of the studied women in all groups, suffering from NVP began from the 1st month. Almost every pregnant woman, across all the study groups, experienced nausea and vomiting.

Table 4 Displayed the comparison of studied women's **duration and frequency and vomiting** at preprogram phases. Using chi square tests, with regard to every item on the PUQE scale, there were non-significant statistical variations among the three studied groups As, about (42.5%, 30%, 27.5% respectively) of the studied women in all groups felt NVP discomfort more than 6 hours, (27.5% , 30% & 27.5%, 30% respectively) of women in the acupressure band-aid with expectancy-enhancing instructions group, acupressure band-aid with expectancy-neutral instructions group reported discomfort 5-6 times /day ,and had retching or dry heaves without bringing anything up. While, (32.5%, 45% respectively) of women in the control

group felt discomfort 3-4 times per day and had retching or dry heaves without bringing anything up.

Table 5 displayed a highly significant reduction in the **frequency and duration** and of nausea and vomiting according to the PUQE scale **after 7 days** in women of the acupressure band-aid with expectancy-enhancing instructions group, acupressure band-aid with expectancy-neutral instructions than the control group (p -value ≤ 0.001).

Regarding **the duration of nausea and vomiting**, about (0%, 0%, 8 % respectively) of the studied women in all groups felt NVP discomfort more than 6 hours, and (30%, 7.5%, 2.5 % respectively) didn't feel nauseated or sick (daily) at all in favor of acupressure band-aid with expectancy-enhancing instructions.

While comparing **the frequency of nausea and vomiting**, about (0%, 0%, 7.5 % respectively) of the studied women in all groups reported discomfort 5-6 times /day , moreover, (0%, 22.5%, 27.5 % respectively) of the studied women in all groups had retching or dry heaves without bringing anything up. In favor of acupressure band-aid with expectancy-enhancing instructions.

Table 6 shows that the acupressure band-aid with expectancy-enhancing instructions at post intervention had a statistically significant effect on the **NVP severities** compared to pre intervention phase ($p \leq 0.05$). This variation suggested that acupressure band-aid is beneficial in lessening the severity of NVP.

Table 7 showed that the **expectancy level of reduced nausea severity** was much higher during the post-intervention phase than it was during the pre-intervention phase. in the acupressure band-aid with expectancy-enhancing instructions group than women in the acupressure band-aid with expectancy-neutral material and the control groups, as (95 %) of women in expectancy-enhancing did not expect or were unsure about nausea, and only a few women (5%) of them expected nausea (p -value ≤ 0.001).

Table 8 displayed that (65%, 40%, 42.5%, respectively) of women in the acupressure band-aid combined with the expectancy-enhancing/neutral material and control groups, significantly had more perceived susceptibility to nausea during the pre-intervention phase (p -value ≤ 0.01). while; at the post intervention

phase, there is highly significant difference in perceived susceptibility to nausea as(67.7%&40%respectively) of women in the acupressure band- aid combined with the expectancy-enhancing/neutral material had less

perceived susceptibility to nausea compared to women in the control groups (p -value ≤ 0.001) in favor of acupressure band-aid with expectancy-enhancing instructions.

Table (1): Distribution of the studied groups according to their socio-demographic characteristics (n=120).

Personal Characteristics	Acupressure band-aid and expectancy-enhancing instructions (n=40)		Acupressure band-aid and expectancy-neutral instructions (n=40)		Control (n=40)		χ^2	P-value
	No.	%	No.	%	No.	%		
Age (years)								
- 18 – 23	22	55	20	50	18	45	2.576	0.631
- 24 – 29	10	25	12	30	9	22.5		
- 30 – 35	8	20	8	20	13	32.5		
Residence								
- Urban	23	57.5	23	57.5	26	65	0.625	0.732
- Rural	17	42.5	17	42.5	14	35		
Level of education								
- Can't read and write	6	15	7	17.5	4	10	9.453	0.306
- Read and write	5	12.5	8	20	10	25		
- Basic education	10	25	12	30	7	17.5		
- Secondary education	17	42.5	12	30	13	32.5		
- University education	2	5	1	2.5	6	15		
Occupation								
- Housewife	29	72.5	32	80	32	80	0.860	0.650
- Employed	11	27.5	8	20	8	20		
Income								
- Sufficient	9	22.5	9	22.5	5	12.5	3.92	0.416
- Fairly sufficient	12	30	8	20	8	20		
- Not sufficient	19	47.5	23	57.5	27	67.5		

Table (2): Comparison between the studied groups' obstetric history (n=120).

Obstetric History	Acupressure band-aid and expectancy-enhancing instructions (n=40)		Acupressure band-aid and expectancy-neutral instructions (n=40)		Control (n=40)		χ^2	P-value
	No.	%	No.	%	No.	%		
Gravidity								
- One	4	10	15	37.5	14	35	12.40	0.054
- Two	10	25	11	27.5	9	22.5		
- Three	13	32.5	5	12.5	6	15		
- \geq Four	13	32.5	9	22.5	11	27.5		
Parity								
- None	8	20	19	47.5	16	40	10.83	0.211
- One	15	37.5	10	25	14	35		
- Two	9	22.5	9	22.5	6	15		
- Three	7	17.5	2	5	3	7.5		
- \geq Four	1	2.5	0	0	1	2.5		
Abortion								
- None	17	42.5	24	60	22	55	7.31	0.503
- One	16	40	11	27.5	10	25		
- Two	4	10	5	12.5	6	15		
- Three	2	5	0	0	2	5		
- \geq Four	1	2.5	0	0	0	0		

Table (3): Comparison between the studied groups' history of NVP (n=120).

	Acupressure band-aid and expectancy-enhancing instructions (n=40)		Acupressure band-aid and expectancy-neutral instructions (n=40)		Control (n=40)		χ^2	P-value
	No.	%	No.	%	No.	%		
History of NVP in previous pregnancies								
- Yes	24	60	26	65	25	62.5	0.213	0.899
- No	16	40	14	35	15	37.5		
Family History of NVP in mother or sisters								
- Yes	19	47.5	27	67.5	27	67.5	4.47	0.107
- No	21	52.5	13	32.5	13	32.5		
In which pregnancy month did NVP start								
- 1 st month	19	47.5	26	65	25	62.5	6.35	0.384
- 2 nd month	15	37.5	12	30	12	30		
- 3 rd month	4	10	2	5	3	7.5		
- 4 th month	2	5	0	0	0	0		
Do you suffer from nausea/vomiting right now?								
- Yes	40	100	40	100	40	100	-	-
- No	0	0	0	0	0	0	-	-
(+) this variable is not mutually exclusive.								
(-) no statistics was calculated because this variable is constant.								

Table (4): Comparison between the studied groups' duration and frequency of NVP at preprogram phases (n=120).

PUQE	Acupressure band-aid and expectancy-enhancing instructions (n=40)		Acupressure band-aid and expectancy-neutral instructions (n=40)		Control (n=40)		χ^2	P-value
	No.	%	No.	%	No.	%		
How long do you feel sick or nauseated (daily)?								
- 1 hour	8	20	9	22.5	8	20	3.13	0.792
- 2-3 hours	6	15	10	25	10	25		
- 4-6 hours	9	22.5	9	22.5	11	27.5		
- More than 6 hours	17	42.5	12	30	11	27.5		
How many times do you vomit or through up (daily)								
- 1-2 times	10	25	11	27.5	11	27.5	1.54	0.956
- 3-4 times	10	25	11	27.5	13	32.5		
- 5-6 times	11	27.5	12	30	9	22.5		
- More than or equal 7 times	9	22.5	6	15	7	17.5		
How many times have you had dry heaves or retching without bringing anything up?								
- Not at all	1	2.5	0	0	0	0	9.62	0.293
- 1-2 times	11	27.5	10	25	6	15		
- 3-4 times	8	20	11	27.5	18	45		
- 5-6 times	11	27.5	13	32.5	8	20		
- More than or equal 7 times	9	22.5	6	15	8	20		

Table (5); Comparison between the studied groups' duration and frequency of NVP at post program phases (n=120).

PUQE	Acupressure band-aid and expectancy-enhancing instructions (n=40)		Acupressure band-aid and expectancy-neutral instructions (n=40)		Control (n=40)		χ^2	P-value
	No.	%	No.	%	No.	%		
How long do you feel sick or nauseated (daily)?								
- Not at all	12	30	3	7.5	1	2.5	41.40	0.000**
- 1 hour	11	27.5	9	22.5	9	22.5		
- 2-3 hours	16	40	13	32.5	12	30		
- 4-6 hours	1	2.5	15	37.5	10	25		
- More than 6 hours	0	0	0	0	8	20		
How many times do you vomit or through up (daily)								
- Not at all	17	42.5	6	15	1	2.5	30.67	0.000**
- 1-2 times	12	30	14	35	14	35		
- 3-4 times	11	27.5	16	40	15	37.5		
- 5-6 times	0	0	4	10	7	17.5		
- More than or equal 7 times	0	0	0	0	3	7.5		
How many times have you had dry heaves or retching without bringing anything up?								
- Not at all	17	42.5	10	25	2	5	25.21	0.000**
- 1-2 times	11	27.5	14	35	12	30		
- 3-4 times	12	30	7	17.5	15	37.5		
- 5-6 times	0	0	9	22.5	11	27.5		

Table (6); Comparison between the studied groups' levels of severity of NVP through program phases (n=120).

Phases	Acupressure band-aid and expectancy-enhancing instructions (n=40)						Acupressure band-aid and expectancy-neutral instructions (n=40)						Control (n=40)						χ^2	P-value
	Mild		Moderate		Severe		Mild		Moderate		Severe		Mild		Moderate		Severe			
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Pre	0	0	18	45	22	55	0	0	22	55	18	45	0	0	24	60	16	40	1.875	0.392
Post	15	37.5	25	62.5	0	0	9	22.5	22	55	9	22.5	2	5	24	60	14	35	23.097	0.000**

Table (7); Comparison between the studied groups' nausea severity expectancy at program phases (n=120).

Groups	Acupressure band-aid and expectancy-enhancing instructions (n=40)				Acupressure band-aid and expectancy-neutral instructions (n=40)				Control (n=40)				χ^2	P value
	Did not Expect		Expect		Did not Expect		Expect		Did not Expect		Expect			
	No	%	No	%	No	%	No	%	No	%	No	%		
Pre	18	45	22	55	19	47.5	21	52.5	20	50	20	50	0.201	0.905
Post	38	95	2	5	26	65	14	35	21	52.5	19	47.5	14.874	0.000**
χ^2 (P value)	23.810 (0.000**)				2.489 (115)				0.050 (0.823)					

Table (8): Comparison between the studied groups' overall perceived susceptibility levels for nausea and vomiting at program phases (n=120).

Perceived susceptibility	Acupressure band-aid and expectancy-enhancing instructions (n=40)		Acupressure band-aid and expectancy-neutral instructions (n=40)		Control (n=40)		χ^2	P-value
	No.	%	No.	%	No.	%		
Pretest								
- More	26	65	16	40	17	42.5	12.807	0.012*
- About the same	14	35	15	37.5	13	32.5		
- Less	0	0	9	22.5	10	25		
Posttest								
- More	0	0	12	30	12	30	20.444	0.000**
- About the same	13	32.5	12	30	17	42.5		
- Less	27	67.5	16	40	11	27.5		

Discussion

Morning sickness sometimes referred to as nausea and vomiting related to pregnancy (NVP), usually starts four to eight weeks following the last menstrual cycle. It usually goes away in the second trimester and is characterized by vomiting and nausea that is more frequent in the morning (**BMJ Best Practice, 2023**). The daily life and overall sense of well-being of women may be affected by these symptoms (**Mady et al., 2019**).

Pregnant women who experience prolonged, severe vomiting and an inability to eat may experience consequences such as electrolyte imbalance, acidosis, ketosis, liver and renal failure, and dehydration. Severe instances are dangerous for the health of pregnant women and fetuses because they can cause oliguria, jaundice, and Wernicke encephalopathy if left untreated (**Ngo et al., 2022**). Treatments that are appropriate and effective are therefore essential.

The present study focused on examining effect of band-aid combined with expectancy manipulation instructions on pregnancy related nausea and vomiting, and if the effectiveness of acupressure band-aid on nausea severity could be enhanced by boosting women's expectation of the band-aid's efficacy.

Regarding the personal characteristics of the pregnant women; the study results revealed that there are no significant statistical difference between all three studied groups' personal characteristics that indicating homogeneity of the sample.

Concerning effect of acupressure band-aid combined with instructions expectancy manipulation on NVP; there was a highly significant reduction in the **frequency and duration** and of NV according to the Pregnancy Unique Quantification of Emesis (PUQE) scale **after 7 days** in women of the acupressure band-aid with expectancy-enhancing instructions group, acupressure band-aid with expectancy-neutral instructions than the control group (p -value ≤ 0.001) in favor of acupressure band-aid with expectancy-enhancing instructions. The current study findings; can be attributed to several factors: firstly, expectancy manipulation can enhance

the acupressure band-aid effect. If patients are led to believe that the acupressure band will significantly reduce their symptoms, their belief can lead to a real reduction in symptoms due to psychological mechanisms as it can provide reassurance and reduce anxiety, which may help in alleviating symptoms and positively influence the perception and severity of NVP. Secondly, instructions and expectancy manipulation can encourage patients to pay more attention to their symptom patterns and triggers, leading to behavioral adjustments that reduce NVP. Thirdly, we decided to use a single point in order to prevent confusion for our pregnant women who were to self-treat.

There are no published articles regarding the use of acupressure band-aid applied to the umbilical area alone to treat pregnancy-related nausea and vomiting. Although, the case report by **Engin (2021)** in Sakarya, Turkey who assessed the effect of pressure on relevant acupuncture points (a raw bean applied on the umbilicus along with pressure applied with tape) to cure motion sickness-related nausea and vomiting (Travel Sickness) in a child Patient. After the treatment, it was discovered that the child did not complain while travelling for seven hours. Furthermore, it was discovered that the child slept soundly on the journey because she had no complains.

Additionally, the results align with the study conducted by **Naeimi et al. (2012)** in Tehran to ascertain the impact of acupressure therapy (on KID21 area) on pregnancy-related nausea and vomiting. This study shown pressure on the KID21 point, which is situated on the kidney duct above the belly button, and the two symmetric points of 0.5 CUN (unit of measurement) on either side of the midline in the study group is more effective than (sham acupressure therapy) group when treating nausea and vomiting during the first trimester of pregnancy

Findings of **Azizi et al. (2020)** in Mashhad, Iran who studied the impact of acupressure on pregnant women's nausea, vomiting, and retching severity. And reported that; before the intervention, there was no significant difference between the three groups in terms of the severity outcomes. However, on the fifth day following the intervention, there

was a significant difference between the three groups in terms of vomiting frequency, distress from retching, nausea duration, vomiting amount, nausea and retching frequency ($p < 0.001$ for each outcome).

Moreover, **Mansour et al. (2015)** in Mansoura University Hospital, Egypt who looked at how P6 acupressure helped women with hyperemesis gravidarum (HG) with their vomiting, nausea, and retching. They found that P6 acupressure helped these women experience fewer episodes of vomiting, nausea, and retching.

In addition, **Saberi et al. (2013)** in Iran, used the same Acupoint and the same gestational age to examine effect of Ginger and acupressure in reducing NVP in women below 16 weeks of gestation and showed that both Ginger and acupressure were effective in decreasing severity and frequency of nausea and vomiting in favor of Ginger.

While, another study by **Puangricharern and Mahasukhon, (2008)** in Thailand who evaluated the efficacy of auricular acupressure for treating early pregnancy nausea and vomiting. Each woman in the intervention group put magnet pellets into both of her auricles. On the third and sixth days, after being told to start utilizing acupressure, they were compared with the control group. According to the study, ear acupressure therapy could not be useful for managing nausea and vomiting in the first trimester of pregnancy.

Also, **Matthews et al. (2010)** Dublin, Ireland, who evaluated all treatments for nausea, vomiting, and retching in the first 20 weeks of pregnancy for efficacy and safety, and reported that there isn't enough reliable evidence supporting up any specific NVP intervention.

Concerning effect of acupressure band-aid combined with instructions expectancy manipulation on severities of NVP; the current study shows that the acupressure band-aid with expectancy-enhancing instructions at post intervention had a statistically significant effect on the **NVP severities** compared to pre intervention phase ($p \leq 0.05$). This variation suggested that acupressure band-aid is beneficial in lessening the severity of NVP.

This finding was confirmed by **Mady et al., 2019** who assessed the effect of acupressure on NVP in Kafr-Ashma at Cairo and discovered that when comparing the results from the two groups, there was a highly significant difference in the degree of vomiting and nausea before the study and after receiving acupressure. Also, **Markose et al., (2004)** in Iran who employed the identical P6 acupoint and found that, in comparison to the control group, acupressure greatly lessened the study group's symptoms of vomiting and nausea.

Regarding effect of acupressure band-aid combined with instructions expectancy manipulation on nausea severity expectancy and susceptibility; The present study demonstrated a significantly greater decrease in **nausea severity expectancy level** in comparison the pre-intervention phase with the post-intervention phase in the acupressure band-aid with expectancy-enhancing instructions group than women in the acupressure band-aid with expectancy-neutral instructions and the control groups. As the majority of women in expectancy-enhancing group did not expect or were unsure about nausea, and only a few women (5%) of them expected nausea ($p\text{-value} \leq 0.001$). Also, acupressure band combined with the expectancy-enhancing/neutral instructions, significantly reduced **nausea susceptibility** in favor of acupressure band-aid with expectancy-enhancing instructions.

The success of expectancy manipulation in reducing nausea severity may be attributed to the manipulation technique, elimination of myths, encouraging statements, no risks, and written handouts about the band's efficacy. This is supported by the widely accepted assumption that the effectiveness of a placebo requires a positive expectancy (**Finniss et al., 2010**). Moreover, the difference in perceived susceptibility to nausea preprogram was due to the potent emetic effect of pregnancy, and women may have learned about the likelihood of nausea from a number of sources, including the media, their family, friends, and medical professionals affecting their beliefs and expectations.

To the extent of the knowledge we have, no prior research has looked at how acupressure band-aid combined with instructions expectancy manipulation differs in its effects on NVP. Our findings match with those published by **Roscoe et**

al., (2009) in New York who investigated the possibility that an informational modification intended to raise acupressure band users' expectations of efficacy would boost those bands' effectiveness, and found that patients with high chemotherapy induced nausea (CIN) expectancies showed improved control of their condition when acupressure band efficacy expectations were altered.

The study's findings were confirmed by finding of Rosen et al., (2016) in Sweden who evaluated the possibility of modifying treatment expectations through the use of manualized verbal communication, emphasized the complicated nature of treatment communication and expectations in acupuncture therapy, and shown the substantial influence of expectancy on results. In addition, the study by Suarez et al., (2010) in Houston, USA. They investigated the effects of acupuncture specialists' communication approaches and compared the effectiveness of sham acupuncture with traditional Chinese acupuncture (TCA). Researchers discovered that, in comparison to patients in a neutral group, those in an encouraging communication group showed greater improvements in knee discomfort and happiness. In contrast, Peoples et al., (2020) in New York- USA investigated whether increasing patients' expectations of the bands' efficacy could increase the efficacy of acupressure bands and did not find substantial distinction between acupressure bands with expectancy-boosting and enhancing information when used as an extra therapy to traditional antiemetic to lessen cancer induced nausea (CIN) and acupressure bands with expectancy- objective and neutral material, which is meant to increase expectations regarding the efficacy of acupressure bands. The strong emetic potential of the chemotherapy was the reason why the expectation manipulation failed to lessen the intensity of the nausea.

Conclusions:

Based on the results of this study, it can be said that hypothesis (H1) is accepted and H2 is rejected according to the present study findings; compression by band- aid applied on the relevant acupressure points (umbilical area), combined with expectancy-manipulation instructions is effective in reducing severity of NVP. Also, nausea severity expectancy and susceptibility decreased in the acupressure band- aid with

expectancy-enhancing instructions group than in the acupressure band- aid with expectancy-neutral instructions and the control groups. This is in line with the benefits of acupressure as an easy-to-use, non-invasive method that doesn't require expensive prescription drugs and has no negative effects on either the expectant mother or the developing fetus, accordingly, their quality of life will rise. The results of this study are hopefully offered as a contribution to the body of literature.

Recommendations:

In sum, our data highlight that treatment outcomes can be successfully influenced by expectations. Therefore;

- It is recommended that acupressure band-aid applied on umbilical area must be taught to maternity nurses for managing women complaining from nausea and vomiting to lower the dangers of taking antiemetic medications in the first trimester. Also, be available as booklets to patients who are experiencing NV.

Additional research is required for:

- Focuses only on acupressure band- aid applied to the umbilical area to treat NVP.
- Assessing the effect of acupressure band-aid combined with instructions expectancy manipulation to other acupoints for the management of pregnancy-related NV
- The same study could be performed in a larger sample size.
- In the future, in clinical trials, the current study might be used as a model to reinforce the expectations for treatment.

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