

## Effect of Scraping Technique (Gua-Sha) on Breast Engorgement among Primi Post-Natal Women

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### Abstract

**Background:** Breast engorgement is a common problem that prevents women from initiating and maintaining breastfeeding. The number of recommended interventions to treat breast engorgement is insufficient. Therefore, **this study aimed to** determine the effect of scraping technique (Gua-Sha) on breast engorgement among primi post-natal women. **Design:** A non-randomized controlled clinical trial design was used. **Subjects:** A convenient sample of 80 primi-postnatal women was recruited from the National Medical Institute's postnatal unit in Damanhour, El-Behiera Governorate. **Five tools** were used to collect data; **Tool I:** Basic data structured interview questionnaire; **Tool II:** A visual analogue scale (VAS) for severity of breast engorgement; **Tool III:** A six-point engorgement evaluation; **Tool IV:** Assessment of breast redness and edema around the areola, and **Tool V:** A latch score record. **Results:** There were a highly statistically significant differences in the severity of breast engorgement pain between the intervention and control groups after post assessment 2 ( $P=0.000$ ). Before intervention, both the intervention and control groups had severe breast engorgement (37.5% and 32.5%, respectively). However, the intervention group showed greater improvement in post assessment 2, and there were highly statistically significant differences between both groups  $P=.000$ . **Conclusion:** The findings revealed that women who practiced the Gua-Sha technique during the early post-partum period exhibit less breast engorgement than women received routine care. **Recommendations:** The Gua-Sha technique should be recommended as a safe non-pharmacological method in treating breast engorgement and include it as part of post-partum women's discharge teaching plan.

**Keywords:** Scraping technique (Gua-Sha), breast engorgement and primipara.

### Introduction

Breastfeeding is a natural process, however, if it is not controlled properly, it may be affected by various complications, the most popular of which is breast engorgement. (Lauwers and Swisher, 2020). It is defined as a breast swelling that results in painful and tender breasts. It's caused by a mix of milk accumulation, stasis, increased vascularity, and congestion. Both breastfeeding and non-breastfeeding mothers experience it around the third postpartum day, and it lasts for about 24 to 48 hours specially in primiparous women. (Black Burn, 2018)

The main causes of the breast engorgement include: The failure of direct stimulation of the breast as a result of the cessation of spontaneous breastfeeding, delay in breast feeding, insufficient breastfeeding, and inadequate breastfeeding time and frequency (Patil K, 2020). When milk production develops rapidly, the volume may exceed the

alveolar storage capacity inside the breasts. If breast milk is not excreted, the alveoli will swell, decreasing capillary blood supply to the alveolar cells. Fluid escapes into surrounding tissue when blood vessels get more and more obstructed, resulting in edema. (Moacs et al., 2020).

The engorged breast hardens, gets sensitive and heated, and becomes glossy and taut. The baby's inability to retain the nipple and areola in his or her mouth is the most serious problem of breast engorgement consequently, this may make the mother unable to maintain exclusive breastfeeding. As a result, the severity of breast engorgement may increase, which could be debilitating for the mother (Perry et al., 2016). Unfortunately, if not treated on time, breast engorgement may be the prime mover to many complications such as nipple damage, mastitis, and the cessation of breastfeeding (Amir et al., 2021). Establishing and maintaining breast milk flow, as well as properly emptying the milk through the baby's

sucking or expression, may lead to the prevention of this distressing problem. (Kaye, 2023)

Breast engorgement can be treated using both pharmacological and non-pharmacological methods. Proteolytic subcutaneous oxytocin is one of the pharmacological methods. Pain medications as ibuprofen can help relief pain and discomfort and it is safe during breastfeeding (Zakarija et al., 2020). Otherwise, non-pharmacological methods for treating breast engorgement are gaining popularity. Acupuncture, effective milk removal, cold gel packs, lukewarm water application, and Gua-Sha (scraping therapy) are among them. Even though various techniques of these therapies have been explored, just a little evidence has proven them to be beneficial. (Jacob, 2021)

Gua-Sha (scraping therapy) is a traditional non-pharmacological treatment used to relieve breast engorgement. It is characterized as a treatment method used in the pressure points of the affected breast such as ST16, CV17, ST17, SP17, and ST18 to reduce breast engorgement. (Tang K, 2020). Gua Sha therapy is a Chinese way of healing the body and it helps to improve women's wellness. When there is blockage of blood flow, illness occurs. The Gua Sha also called spooning, coining, or scrapping, it is facilitating the flow of blood in the body. Scrapping the surfaces of the skin also helps to improve energy flow in the body (Liyod, 2020).

The mechanism of action includes stimulating microcirculation in the fascia right beneath the skin, Gua sha improves and strengthens the immune system and stimulates it to release an antioxidant that helps in decreasing inflammation. When the circulation in the superficial fascia is improved, it then transmits relaxation and increased circulation to deeper levels of fascia that also connect to muscles and organs (Leifer, 2018). The theory behind Gua-Sha therapy is that it can activate epidermal nerve endings, generating stimulation of the self-reflex of the breast, resulting in improved partial circulation and pain reduction (Siregar & Hardjanti, 2019).

#### Significance of the study

Breast problems are most frequent in the first few days after giving birth. According to literature, it was found that the world incidence rate of breast engorgement is 65%-75%, while

in Egypt it is about 82%. (El-hady, 2021). The principle of Gua-Sha therapy aligns with the Chinese theory of meridians and is a simple, non-pharmacological form of treatment. Although there are numerous treatments for breastfeeding-related engorgement, the researcher came to the conclusion that there was not enough data to suggest any specific treatment plan. As a result, this study was executed as a trial to assess the effect of the scraping technique (Gua-Sha) on breast engorgement among primi-post-natal women.

#### Aim of the study:

This study aimed to evaluate the effect of scraping technique (Gua-Sha) on breast engorgement among primi post-natal women.

#### Research Hypotheses:

**H0:** Women who received scrapping technique during early post-natal period exhibit similar severity of breast engorgement than those who received routine care.

**H1:** Women who received scrapping technique during early post-natal period exhibit less severity of breast engorgement than those who received routine care.

#### Operational definitions:

**1- Gua-Sha scrapping technique:** The Gua-Sha procedure choose acceptable acupoint placements, including ST16, ST18, SP17, and CV17.

- ST16: Is in the 3<sup>rd</sup> intercostal space, at 4 inches lateral to the midline.
- ST17: Is located in the 4<sup>th</sup> intercostal space, in the center of the nipple.  
at 4 inches lateral to the midline,
- SP17: Is located 6 inches lateral to the anterior midline at the 5<sup>th</sup> intercostal space.
- ST18: Is located in the 5<sup>th</sup> intercostal space, at 4 inches lateral to the midline.
- CV17: Is located at the midline level, between the two nipples, with the 4<sup>th</sup> intercostal space of the sternum.

**2-Breast engorgement:**

- Refers to a painful breast fullness that is typically brought on by an imbalance between the production and demand for milk.

**3-Primi-postnatal mothers:**

- Refers to the first-time mothers who had breast engorgement during the first- and fifth days following delivery.

**Materials and Method****Materials****Research design:**

This study used a non-randomized controlled clinical trial research design to assess the effect of the independent variable the Gua-Sha therapy (the scraping technique) on the dependent variable (breast engorgement).

**Setting:**

The research was conducted in the postnatal unit affiliated in Obstetrics and Gynecology department at the major hospital in Damanshour (National Medical Institution), Al-Behera Governorate. This setting was chosen because it provides postnatal services for women with various socioeconomic backgrounds and have increased turnover of primi-postnatal women.

**Subjects:**

The following criteria were used to choose a convenient sample of 80 primi-postnatal mothers from the aforementioned setting:

- Primi-postnatal women
- Lactating during the first 10 days postpartum.
- Has breast engorgement.
- Delivery of a viable healthy baby.
- Not receiving suppressants of lactation.
- No breast infection, mastitis or abscess
- Willingness to take part in the research.

The chosen mothers were distributed equally between the two groups:

- **Intervention group (1)** comprised "40" women who received instructions to scraping technique to the engorged breast/s.
- **Control group (2)** included "40" women who received instructions to apply routine interventions to the engorged breasts such as compresses and combing.

**Tools:**

Five tools were used to collect data.

**Tool I: Basic data structured interview questionnaire.**

It was developed and used by the researcher. It included two parts: **Part I:** Socio-demographic characteristics included: age, level of education, occupation, type of work, residence, and family type. **Part II:** Breastfeeding and breast engorgement history comprised initiation of breastfeeding, duration, maternal position during breast feeding, onset of breast engorgement, associated problems with breast engorgement, stopping of breast feeding and duration of stopping.

**Tool II: Visual analog scale (VAS).**

The researcher adjusted a scale developed by **Melzack and Katz (1994)** to assess the intensity of breast pain. It was translated into Arabic in order to portray Egyptian culture. It comprises a horizontal line that is used to subjectively measure women's pain and suffering. It has a 10-point numerical scale that represents the intensity of the discomfort, with zero representing no pain from breast engorgement and 10 reflecting the worst degree pain of breast engorgement. Each 2 cm gap between these two opposing ends is labeled with a word such as mild, moderate, severe, and unbearable.

**Tool III: Six-point engorgement scale.**

It was created by **Hill and Humenick (1994)**. Breast engorgement is graded on a scale of 1 to 6. Each score represents the following description: (1) soft and no changes in the breast, (2) small changes in the breast, (3) firm and no tender breast, (4) firm and beginning tenderness in the breast, (5) firm and tender of the breast, and (6) very firm and tender.

**The breast engorgement scoring system includes:**

- Score 1 signifies normal breast.
- Score 2 and 3 signifies mild breast engorgement.
- Score 4 and 5 signifies moderate breast engorgement.
- Score 6 signifies severe breast engorgement.

#### Tool IV: Breast redness and edema around areola assessment scale.

This scale was used by the researcher to assess breast engorgement related to redness and edema; it was given the following score:

##### Scoring of redness:

- 0 indicates no redness.
- Redness reaches surround areola by 1cm indicate mild redness.
- Redness reaches surround areola by 2 cm indicate moderate redness.
- Redness reaches surround areola more than 2 cm indicate severe redness.

##### Scoring of edema:

- 0 indicate no edema
- Edema reaches surround areola by 1cm. indicate mild edema
- Edema reaches surround areola by 2cm indicate moderate edema
- Edema reaches surround areola more than 2 cm indicate severe edema

#### Tool V: Latch Score record:

It was developed by **Jensen et al., (1994)** to assess the efficiency of the breast-feeding process. The LATCH noted an area of proper breastfeeding assessment where "L" stands for how the infant will attach to the breast, "A" stands for how much swallowing can be heard, "T" stands for the mother's nipple type, "C" stands for how much assistance the mother needs to hold the infant to the breast, and "H" stands for how much assistance the mother needs to hold the infant to the breast. It was used by the researcher to assess both mother and infant variables.

##### Latch scoring system:

- Score 1-3 indicates poor breast feeding.
- Score 4-6 indicates fair breast feeding.
- Score 7-10 indicates good breast feeding.

#### The study was accomplished according to the following steps:

##### 1. Approval:

- After research proposal, an approval letter from research Ethics committee at the

Faculty of Nursing, University of Damanhour was obtained.

- An official letter from the University of Damanhour's Faculty of Nursing was addressed to the relevant authorities of the study setting to acquire authorization to collect data.

##### 2. Tools:

- The tool (I) was developed by the researchers after reviewing the recent literature and tools II, III, IV and V were translated into Arabic.
- Content and face validity for tools were tested by five obstetric and gynecological nursing experts.
- The reliability of tools II, III, IV and V were determined using Cronbach's alpha test, where  $r = 0.86$ ,  $r = 0.84$ ,  $r = 0.87$  and  $r = 0.88$  respectively.

##### 3. Pilot Study

A pilot study was carried out on eight women (excluded from the sample).

##### The pilot study's main goals were to:

- Determine the tools' applicability, clarity, and usefulness.
- Calculate the amount of time required to acquire the data.
- Identify any problem with the statements' order and clarity that may interfere with the data collection process.

##### Results of the pilot study:

- After the pilot study, the tools were rebuilt and prepared for usage.
- As a consequence of the pilot study, a few terms were changed.
- The tool phrases were clear, relevant, and suitable.

##### 4. Work field:

- Data were obtained during a 5-months period, beginning in November 2022 and ending in March 2023.
- Each post-natal woman who had the inclusion criteria and accepted the

participation in the research was randomly assigned into intervention and control group.

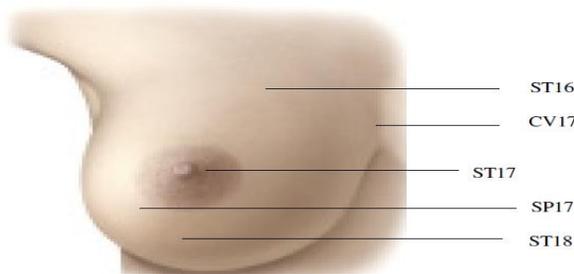
- The researcher was started by control group before the intervention group to prevent contamination of the study.
- The study was conducted according to the following phases (assessment, implementation and evaluation phases):

#### Assessment phase

- Data were collected through an interview schedule, which was conducted individually and in total privacy.
- Study subjects with breast engorgement, confirmed by the physician, were interviewed on the 4<sup>th</sup> day postpartum in the

study settings to collect data of tool I. In addition, tools II, III, IV, and V were collected to assess the breasts' condition (pre intervention assessment).

- There were three different types of Gua-Sha friction methods (hard, moderate, and soft), as well as three various therapy durations (short, moderate, and protracted), and the researcher choose the gentle and short Gua-Sha friction protocol.
- Regarding the intervention group: - During the first interview (4<sup>th</sup> day), the researcher taught the intervention group (1) how to use the Gua-Sha procedure, which included acupoint positions ST16, ST18, SP17, and CV17 (**figure 1**). Each point was lightly scraped three times for two minutes for a total of 30 minutes for one cycle.



**Figure 1:** Gua-Sha technique for breast engorgement

[https://www.myungtherapies.com/wpcontent/uploads/2012/03/Effects\\_of\\_Gua\\_Sha\\_Therapy\\_on\\_Breast\\_Engorgement\\_31.pdf](https://www.myungtherapies.com/wpcontent/uploads/2012/03/Effects_of_Gua_Sha_Therapy_on_Breast_Engorgement_31.pdf)



**(Figure 2)** Gua-Sha instrument



**(Figure 3)** supportive bra

- The researcher offered each woman with equipment to help them perform the technique, which included a Gua Sha device (**figure 2**) and a supportive bra based on breast size (small-medium-large) that was drawn in a direction to facilitate the technique application (**figure 3**).

#### For the intervention group:

Women were asked to do the following:

- Step 1: Wash hands
- Step 2: Lie down in bed.
- Step 3: Uncover the engorged breast.
- Step 4: Put on the supporting bra provided by the researcher.

#### Implementation phase

- Step 5: Choose the scraping points based on the direction of the supportive bra - ST16, ST17, ST18, SP17, CV17.
- Step 6: Scrape each site for 2 minutes three times for a total of 30 minutes for one cycle.
- Step 7: Repeat the technique twice a day till the breast softens.

#### For The control group:

The women were instructed to apply the recommended routine care such as compresses and combing the breasts.

#### Evaluation phase

- The both groups were followed-up at seven days (post assessment 1) of postpartum at hospital to assess the condition of their breast/s, using tool II, III, IV, and V.
- They were then followed-up at 10 days postpartum (post assessment 2) in the same places to assess the condition of their breast/s using the same tool.
- Degree of breast engorgement was compared within each group before and after intervention and the differences between the two study groups were determined.

#### 5. Statistical analysis:

##### The researcher conducted data analysis in the following steps:

- The researcher used the Statistical Package for Social Sciences, or SPSS, version 20 application to categorize, classify, computerize, tabulate, and analyze the data.
- Following that, the relevant tables were prepared, and statistical formulas such as percentages, the Chi square test (X<sup>2</sup>), and the Fisher Exact test at the 5% level were employed to establish the statistical significance difference between the results.

#### 6. Ethical considerations:

For each subject recruited, the following aspects were considered: obtaining informed consent, maintaining anonymity, respecting her privacy and the right to withdraw at any time as well as assuring confidentiality of her data.

#### Results

**As shown in Table (I)** There were no statistically significant differences between the control and intervention groups in terms of sociodemographic characteristics. The same proportion of the control and intervention groups, 37.5%, were in the safe reproductive age range of 20 to 25 years. Furthermore, 27.5% and 12.5% of the control and intervention groups respectively were able to read and write. Furthermore, only 17.5% of the control and 35% of the intervention groups were working. According to their original residence and familial type, a significant proportion of study participants (62.5%, 57.5%, and (52.5, 55%) were urban indwellers and have extended family in the control and intervention groups, respectively.

**Table (II)** When comparing the history of breast feeding between the intervention and control groups, no statistically significant differences were found. The table demonstrates that 67.5% of the control group began breastfeeding within the first 24 hours, as opposed to 65% of the intervention group. Moreover, 32.5% of the control group initiated breastfeeding after 24 hours compared to 35% of the intervention group. Regarding the duration of the breastfeeding, 45% of control group breastfed their babies for 10 minutes compared to 47.5% of the intervention group. Only 10% of the control group breastfed for 30 minutes compared to 7.5 % of the intervention group. In terms of maternal position, 62.5% of the control group breastfed while side lying, compared to 72.6% of the intervention group. In both the control and intervention groups, the beginning of breast engorgement on the 3<sup>rd</sup> day was 37.5% & 30% respectively compared to 35% and 37.5 % in the 5<sup>th</sup> day postpartum among control and intervention group respectively. More than half of women 55% and 60 % was reported cracked nipple with breast engorgement among the control and intervention group respectively. In addition (57.5%, 34.8) and (45%, 33.3%) was reported stopping the breast feeding and duration for three days and more among the control and intervention group respectively.

**Table (III)** The table shows, before the intervention, 45% and 57.5% of the intervention and control groups, respectively, experienced severe breast engorgement pain;

however, in the post-intervention assessment (2), severe pain was reduced to 7.5% among the control group compared to 0% among the intervention group. There was a statistically significant difference between the two groups in the post assessment (2),  $p=0.000$ .

**Table (IV)** displays that moderate engorgement was reported by 52.5%, 57.5% respectively before the intervention among the control and intervention groups. These percent decreased to 30% and 7.5% post assessment (2) among the control and intervention groups respectively. Severe engorgement was apparent among 37.5% and 32.5% before the intervention among control and intervention group respectively. These results decreased to 7.5% in the control group and a complete absence of breast engorgement was noticed in the post assessment (2) among the intervention group. There was a highly statistically significant difference in the favor of intervention group ( $p=0.000$ ).

**Table (V)** shows that before the intervention, 52.5% and 32.5% of the control and intervention groups, respectively, exhibited nipple redness measuring 2 cm around the nipple. After the post-assessment (2), these percentages in the control group decreased to 15% and disappeared totally in the intervention group. Before the intervention, 47.5% and 65% of the control and intervention groups, respectively, exhibited severe redness around the nipple more than 2 cm. After the post-assessment (2), these percentages disappeared

totally among the control and intervention group. There was a highly statistically significant difference where,  $p= 0.001$ .

**Table (VI)** The table portrays the signs of edema around the nipple. The Average edema around the nipple of 2 cm was observed before the intervention in 45% of the control group and in 35 % of the intervention group. These percent was decreased after the post-assessment (2) to 45% of the control group and completely absent in the intervention group. Severe edema around the nipple more than 2 cm was reported by 55% and 65% before the intervention in the control and intervention groups respectively. This result decreased to 5% in the control group and a complete relief of edema was noticed in the intervention group during the post assessment (2). There was a highly statistically significant difference in which  $p= 0.001$ .

**Table (VII)** According to the table, 37.5% of the control group had poor breast feeding before the intervention, compared to 45% of the intervention group. These percentages were reduced to 22.5% in the control group after post-assessment 2 compared to complete absence in the intervention group. Before the intervention, approximately 22.5% and 25% of the control and experimental groups reported good breastfeeding, respectively. This percentage became 27.5% in the control group and 50% in the intervention group, after post-assessment (2) between both the control and intervention groups, there was a highly statistically significant difference in which  $p= 0.001$ .

**Table (I):** Distribution of study subjects according to socio-demographic characteristics.

Socio-demographic Profile		Control		Intervention		F, X <sup>2</sup> (P)
		N n= 40	%	N n= 40	%	
	▪ Less than 20	16	40	13	32.5	Chi-square test $\chi^2=11.981$ (P=0.680))
	▪ 20-25	15	37.5	15	37.5	
	▪ 25-35	9	22.5	12	30	
<b>Mean±SD</b>		21.92±4.24		22.83±5.15		
<b>Min – Max</b>		18 – 32		19 – 33		
<b>level of Education</b>	• Illiterate	6	15	6	15	Chi-square test $\chi^2=8.743$ (P=0.120)
	• read and write	11	27.5	5	12.5	
	• Primary and preparatory	16	40	19	47.5	
	• Secondary	3	7.5	9	22.5	
	• University	4	10	1	2.5	
<b>Occupation</b>	• Housewife	33	82.5	26	65	Chi-square test $\chi^2=3.164$ (P=0.075)
	• Working	7	17.5	14	35	
<b>If working what is the type of work</b>	• employment	2	28.5	3	21.3	Chi-square test $\chi^2=6.996$ (P=0.072)
	• professional	0	0	4	28.5	
	• house keeping	1	14.3	4	28.5	
	• farmer	4	57.2	5	35.7	
<b>Original Residence</b>	▪ Rural	15	37.5	19	47.5	Chi-square test $\chi^2=.888$ (P=0.366)
	▪ Urban	25	62.5	21	52.5	
<b>Type of family</b>	▪ nuclear	17	42.5	18	45	Chi-square test $\chi^2=.000$ (P=0.589)
	▪ extended	23	57.5	22	55	

 $\chi^2$  (P): Chi-Square Test & P for  $\chi^2$  Test

F (P): Fisher Exact test &amp; P for F Test

\*: Significant at P ≤ 0.05

**Table (II):** Number and percent distribution of the study subjects according to current history of breast feeding.

History of breast feeding		Control		Intervention		F, X <sup>2</sup> (P)
		N n= 40	%	N n= 40	%	
<b>Initiation of breast feeding</b>	▪ First 24 hours	27	67.5	26	65	Chi-square test $\chi^2=.813$ (P=0.500)
	▪ After 24 hours	13	32.5	14	35	
<b>Duration of breast feeding</b>	▪ Ten minutes	18	45	19	47.5	Chi-square test $\chi^2=.170$ (P=0.919)
	▪ Twenty minutes	18	45	18	45	
	▪ Thirty minutes	4	10	3	7.5	
<b>Maternal position during B.F</b>	▪ Sitting	15	37.5	11	27.4	Chi-square test $\chi^2=.912$ (P=0.237)
	▪ Side lying	25	62.5	29	72.6	
<b>Onset of breast engorgement</b>	▪ 3 <sup>rd</sup> day of postpartum	15	37.5	12	30	Chi-square test $\chi^2=.213$ (P=0.899)
	▪ 4 <sup>th</sup> day of postpartum	11	27.5	13	32.5	
	▪ 5 <sup>th</sup> day of postpartum	14	35	15	37.5	
<b>Associated problems with breast engorgement</b>	▪ Cracked nipple	22	55	24	60	Chi-square test $\chi^2=.597$ (P=0.742)
	▪ Small nipple	16	40	13	32.5	
	▪ Inverted nipple	2	5	3	7.5	
<b>Are you stopping breast feeding as action of this problem?</b>	▪ Yes	23	57.5	18	45	Chi-square test $\chi^2=1.251$ (P=0.186)
	▪ No	17	42.5	22	55	
<b>If answer yes, mention the duration of stopping breast feeding</b>	▪ One day	5	21.7	3	16.7	Chi-square test $\chi^2=.121$ (P=0.941)
	▪ Two days	10	43.5	9	50	
	▪ Three days or more	8	34.8	6	33.3	

 $\chi^2$  (P): Chi-Square Test & P for  $\chi^2$  Test

F (P): Fisher Exact test &amp; P for F Test

\*: Significant at  $P \leq 0.05$

**Table (III):** Number and percent distribution of the study subjects according to severity of pain by using (VAS)

Pain intensity (VAS)	G 1(control group)						G 2(Intervention group)					
	Pre-intervention		Post –assessment(1)		Post-assessment 2		Pre-intervention		Post –assessment(1)		Post-assessment 2	
	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%
No pain(0)	0	0	5	12.5	9	22.5	0	0	5	12.5	24	60
Mild (1-3)	0	0	14	35	18	45	1	2.5	30	75	12	30
Moderate (4-6)	19	47.5	16	40	10	25	11	27.5	5	12.5	4	10
Severe (7-9)	18	45	5	12.5	3	7.5	23	57.5	0	0	0	0
Unbearable	3	7.5	0	0	0	0	5	12.5	0	0	0	0
<i>Test of significance</i> (P-value)	Chi-square test $\chi^2=82.386$ (P=0.034)						Chi-square test $\chi^2=108.090$ (P=0.000)*					
Test of significance (P-value) before intervention between two groups	Chi-square test $\chi^2=4.243$ (P=0.236)	Test of significance (P-value) 7 days postpartum between two groups		Chi-square test $\chi^2=25.044$ (P=0.000)**		Test of significance (P-value) 10 days postpartum between two groups				Chi-square test $\chi^2=9.691$ (P=0.001)**		

 $\chi^2$  (P): Chi-Square Test & P for  $\chi^2$  Test

\*: Significant at P ≤ 0.05

**Table (IV):** Number and percentage distribution of study subjects according to degree of breast engorgement using a six-point engorgement scale

Evaluate signs of breast engorgment	G 1(control group)						G 2(Intervention group)					
	Pre-intervention		Post –assessment(1)		Post-assessment 2		Pre-intervention		Post –assessment(1)		Post-assessment 2	
	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%
Normal	0	0	3	7.5	10	25	0	0	2	5	17	42.5
Mild engorgement	4	10	10	25	15	37.5	4	10	18	45	20	50
Moderate engorgement	21	52.5	20	50	12	30	23	57.5	16	40	3	7.5
Severe engorgement	15	37.5	7	17.5	3	7.5	44	32.5	4	10	0	0
<i>Test of significance</i> (P-value)	Chi-square test $\chi^2=2.2548$ (P=0.182)						Chi-square test $\chi^2=103.59$ (P=0.001)*					
Test of significance (P-value) before intervention between two groups	Chi-square test $\chi^2=.234$ (P=0.890)	Test of significance (P-value) 7 days postpartum between two groups		Chi-square test $\chi^2=21.359$ (P=0.000)**		Test of significance (P-value) 10 days postpartum between two groups				Chi-square test $\chi^2=53.500$ (P=0.000)**		

 $\chi^2$  (P): Chi-Square Test & P for  $\chi^2$  Test

\*: Significant at P ≤ 0.05

**Table (V):** Number and percent distribution of the study subjects according to nipple redness signs

Evaluate signs of nipple redness	G 1(Control group)						G 2(Intervention group)					
	Pre-intervention		Post – assessment(1)		Post-assessment 2		Pre-intervention		Post –assessment(1 )		Post-assessment 2	
	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%
zero no redness	0	0	5	12.5	11	27.5	0	0	9	22.5	24	60
Simple redness around the nipple by 1 cm	0	0	16	40	23	57.5	1	2.5	31	77.5	16	40
Average redness around the nipple by 2 cm	19	52.5	15	37.5	6	15	13	32.5	0	0	0	0
severe redness around the nipple, more than 2 cm	21	47.5	4	10	0	0	26	65	0	0	0	0
<i>Test of significance</i> (P-value)	Chi-square test $\chi^2=0.3599$ (P=0.785)						Chi-square test $\chi^2=111.49$ (P=0.001)*					
Test of significance (P-value) before intervention between two groups	Chi-square test $\chi^2=2.657$ (P=0.265)		Test of significance (P-value) 7 days postpartum between two groups		Chi-square test $\chi^2=10.581$ (P=0.005)		Test of significance (P-value) 10 days postpartum between two groups		Chi-square test $\chi^2=8.608$ (P=0.01)*			

$\chi^2$  (P): Chi-Square Test & P for  $\chi^2$  Test      \*: Significant at  $P \leq 0.05$

**Table (VI):** Number and percent distribution of the study subjects according to signs of nipple edema

Evaluate signs of nipple edema	G 1(Control group)						G 2(Intervention group)					
	Pre-intervention		Post – assessment(1)		Post-assessment 2		Pre-intervention		Post – assessment(1 )		Post-assessment 2	
	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%
zero no edema	0	0	1	2.5	8	20	0	0	2	5	28	70
Simple edema around the nipple by 1 cm	0	0	5	12.5	12	30	0	0	26	65	12	30
Average edema around the nipple by 2 cm	18	45	24	60	18	45	14	35	12	30	0	0
severe edema around the nipple, more than 2 cm	22	55	10	25	2	5	26	65	0	0	0	0
<i>Test of significance</i> (P-value)	Chi-square test $\chi^2=3.0333$ (P=0.114)						Chi-square test $\chi^2=125.2477$ (P=0.001)*					
Test of significance (P-value) before intervention between two groups	Chi-square test $\chi^2=.361$ (P=0.247)		Test of significance (P-value) 7 days postpartum between two groups		Chi-square test $\chi^2=4.074$ (P=0.130)		Test of significance (P-value) 10 days postpartum between two groups		Chi-square test $\chi^2=7.294$ (P=0.019)			

$\chi^2$  (P): Chi- Square Test & P for  $\chi^2$  Test      \*: Significant at  $P \leq 0.05$

**Table (VII):** Number and percent distribution of the study subjects according to Latch score

Latch on score	G 1(control group)						G 2(experimental)					
	Before intervention		Post –assessment(1 )		Post-assessment 2		Before intervention		Post –assessment(1 )		Post-assessment 2	
	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%	N n=40	%
Poor breast feeding(1-3)	15	37.5	14	35	9	22.5	18	45	9	22.5	0	0.00
Fair breast feeding(4-6)	16	40	16	40	18	45	12	30	18	45	20	50
Good breast feeding(7-10)	9	22.5	10	25	11	27.5	10	25	13	32.5	20	50
<i>Test of significance</i> (P-value)	Chi-square test $\chi^2=72.396$ (P=0.034)						Chi-square test $\chi^2= 107.080$ (P=0.000)*					
Test of significance (P-value) before intervention between two groups	Chi-square test $\chi^2=4.233$ (P=0.237)		Test of significance (P-value) 7 days postpartum between two groups		Chi-square test $\chi^2=26.044$ (P=0.000)**		Test of significance (P-value) 10 days postpartum between two groups				Chi-square test $\chi^2=9.881$ (P=0.001)**	

$\chi^2$  (P): Chi-Square Test & P for  $\chi^2$  Test

\*: Significant at  $P \leq 0.05$

## Discussion

Breast engorgement is the most common and primary reason of stopping exclusive breast feeding in the few days after giving birth. It is swelling, tightness, and an increase in size of the breasts. It typically happens between days 3 and 5 of breast feeding, but it can happen as late as days 9 or 10. When breast engorgement is moderate to severe, the breasts become firm, full, tense, heated, and tender with throbbing and aching pain, which inhibits successful breastfeeding. **Gianni ML et al., (2019)**.

Non-pharmacological treatments for breast engorgement include warm and cold compresses, breast massage with cabbage leaves, therapeutic ultrasonography, and cold packs. **Chiu JY et al. (2010)** decided that there was insufficient data to recommend any specific treatment plan. As a result, the purpose of this study was to determine the effect of the scraping technique (Gua-Sha) on breast engorgement among primi-post-natal women.

The current study's findings on breast pain using VAS revealed a highly statistically significant decrease in breast pain after post assessment 1 and post assessment 2 among the intervention group, compared to the control group. They may reflect the fact that, according to Melzack and Wall's pain gate theory, massage reduces pain by stimulating sensory nerve endings, which blocks the pain's passage. The mechanical action of massage stretches the soft tissue's individual fibers, releasing tension. Because of the enhanced drainage from the massaged area, metabolic wastes are also removed. **Melzack R, (2005)**.

These findings are congruent with those of **Thomas et al. (2017)** and **Cho et al. (2012)**, who indicated that after breast massage, the majority of the researched sample experienced a 50% reduction in pain.

When the intensity of breast engorgement was examined, the current study found a highly statistically significant difference after post assessment (2) between two groups, with severe breast engorgement reduced to 7.5% in the control group and completely absent in the intervention group.

These findings back up the findings of **Chiu JY et al. (2010)**, who studied 54 women

who got Gua-Sha therapy in certain acupoint positions. In two cycles, every point was softly scraped seven times. The control group received 10 minutes of heat packs and massages. According to the study's findings, Gua-Sha therapy could be a more effective intervention for breast engorgement. Moreover, another supporting study done by (Neethu, 2012) revealed that the Gua-Sha therapy produced a significant reduction in breast engorgement among the study participants.

Additionally, **Dehghani et al. (2018)** and **Krishnaveni (2014)**, who investigated the breast massage impact on cesarean-affected mothers with breast engorgement and reported that after breast massage, the majority of the experimental group's engorgement levels were normal and moderate in the control group.

Furthermore, the results were consistent with a double-blind, randomized clinical trial conducted in the city of Amman on 100 postpartum mothers to determine the effectiveness of heat applications and breast massage in reducing breast engorgement. According to the study's findings the application of breast massage to reduce breast engorgement was successful (**Moumita M et al., 2017**).

The study's findings revealed a statistically significant difference in nipple redness between the two groups. Where the result of post assessment noticed that the signs of nipple redness were decreased after post assessment (2) among control group and completely disappeared among the intervention group. This could be a reflection of the concept of breast inflammation, which is to avoid excessively high intra-alveolar and intra-ductal pressures since they can stress and break a critical mass of lactocyte tight junctions. This is accomplished through routine breast massage and flexible milk removal. **David P. (2022)**.

Concerning the symptoms of nipple edema. The current study's findings revealed that the percentage of nipple edema was reduced after the intervention (2) to 45% in the control group and completely absent in the intervention group. The current study finding is congruent with **Ezzo J et al., (2015)**, who evaluated manual lymphatic drainage for lymphedema after breast cancer therapy and

discovered that compression and breast massage decreased the swelling associated with lymphedema.

Regarding the total latch score of breasts feeding, this study showed that the percentage of good breast feeding was increased to half after post assessment 2 among the intervention group. This finding confirmed by **Dewi et al., (2018)** who reported that the lactation massage is one of the techniques that can be done by the mothers who give birth and has many benefits for smooth breast feeding. One of these is to aid in the production of the hormone oxytocin, which causes the muscle cells surrounding the alveoli to contract and push milk towards the nipple. While the infant sucks, more milk is produced.

Furthermore, **Dehghani et al., (2018)** and **Ngestiningrum et al., (2022)** reported that latching created softness and suppleness for the breasts and nipples, which improved closure, increased nursing, and decreased breast engorgement.

In contrast to this finding, **Abbas and Hasan (2015)** found that after analyzing the latch score for breastfeeding among postpartum mothers, the majority of the study sample obtained a fair grade for the latch breastfeeding assessment.

Based on this evidence, we can conclude that the scraping technique (Gua-Sha) reduces the severity of breast engorgement in primi-post-natal women more promptly and efficiently than the standard care.

### Conclusion

Based on these results, it can be concluded that the research hypothesis (H1) was accepted, where the breast engorgement was decreased among primi postnatal women who practiced the Gua-Sha technique during early post-natal period.

### Recommendation

The following recommendations can be made based on the results of this study:

- The Gua-Sha technique should be recommended as a safe non-pharmacological method in treating breast engorgement.
- Maternity nurses should organize and design prenatal sessions for women in order to

expand their understanding and practice of self-care strategies for managing breast engorgement with massage and the Gua-Sha technique.

- Nurses should be trained in treating breast engorgement utilizing breast massage and the Gua-Sha technique as part of their discharge teaching plan.
- To support widespread use of Gua-Sha technique to treat breast engorgement problems, future studies should try to incorporate larger sample sizes.
- The effectiveness of various non-pharmacological treatments used for the treatment of breast engorgement should be thoroughly examined and further study on them urgently needs to be conducted.

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