

Model of Giving Jamu Bejja and Oxytocin Massage in Improving Production of Breast Milk and Uterine Involution

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ABSTRACT

Breast milk is the best food for babies. WHO set an exclusive breastfeeding target of at least 50%, but the coverage of exclusive breastfeeding in Indonesia still reaches 32% to 38%. Similarly, in East Java, especially Bangkalan, exclusive breast milk coverage is still at 29.1%. The production of breast milk is influenced by various factors, namely breastfeeding education, early breastfeeding initiation, breastfeeding techniques, stress, and nutrients consumed. There has been no research on oxytocin massage and *Jammu Bejja* on the production of breast milk or uterine involution. Therefore, there need to be efforts to increase the production of breast milk by giving back massage combined with consuming supplement intake by drinking *Jamu Bejja* Madura. Methods used observational analytics with a cross-sectional approach, to obtain modeling, followed by the preparation of modules previously conducted field surveys and expert consultation. The population consisted of postpartum mothers in Arosbaya, Klampis, Blega. Samples were taken as many as 130 postpartum mothers. Variables were oxytocin massage, herbal medicine, breast milk production, and uterine involution. Data collection using questionnaires and analyzed using Partial Least Square. The results showed that oxytocin massage and herbal medicine had an effect of 84.3% on the production of breast milk and 83.7% on uterine involution. It can be concluded that oxytocin massage affects the production of breast milk and uterine involution, *Jammu bejja* affects uteri involution. It is expected that postpartum mothers get the services of oxytocin massage and herbal medicine to increase the production of breast milk and involution uteri.

Keywords: model; *Jammu Bejja*; oxytocin massage; breast milk production

INTRODUCTION

Breast milk is the best food for babies. WHO set an exclusive breastfeeding target of at least 50%, but the coverage of exclusive breastfeeding in Indonesia still reaches 32-38% ⁽¹⁾. Similarly, in East Java, especially Bangkalan, exclusive breast milk coverage is still at 29.1%. Breast milk production is influenced by various factors, namely breastfeeding education, initiation of early breastfeeding, breastfeeding techniques, stress, and nutrients consumed ^(2,3).

There has been no research on oxytocin massage and *Jammu bejja* on the production of breast milk or uterine involution. Giving herbal medicine bejja and oxytocin massage is an effort that can be used as the launching of breast milk. Therefore, there need to be efforts to increase the production of breast milk by giving back massage combined with consuming supplement intake by drinking herbal medicine bejja Madura herb.

The aim of this research were: 1) Analyze the effect of oxytocin massage on uteri involution and breast milk production, 2) Analyze the influence of herbal medicine on uteri involution and breast milk production, 3) Get an intervention model of oxytocin and herbal medicine bejja to increase the production of breast milk and uteri involution.

METHODS

The research design used observational analytics with a cross-sectional approach, to obtain modeling, followed by the preparation of modules previously conducted in field surveys and expert discussions. The population in this study was postpartum mothers in Arosbaya Subdistrict, Klampis, Blega. Sample were taken as many as 130 postpartum mothers in a cluster random sampling.

The variables in this study were oxytocin massage, herbal medicine, breastfeeding production, and uterine involution. Indicators of the measurement of back massage variables were technique and dosage. Indicators of measurement of herbal medicine were type and dose, indicators of measurement of breast production were breast tension, breast milk seepage, frequency of breastfeeding, frequency of urination, condition of the baby after breastfeeding, and meconium expenditure. While indicators of measurement of uterine involution were contraction, lochea expenditure, and high uterine fundus.

Data collection using questionnaires and analyzed using Smart PLS (Partial Least Square) software. This research had received ethically worthy information from the ethical clearance committee of Poltekkes Kemenkes Surabaya No: EA/0354/KEPK-Poltekkes_Sby/V/2020.

RESULTS

Characteristics of Postpartum Mothers

Complete data of the characteristics of postpartum mothers can be seen in Table 1. Based on the data in table 1, 73.8% of mothers who breastfed in this study were 20 - 35 years old, 71.4% high school educated, and 38.3% multigravida.

Table 1. Distribution of characteristics of postpartum mothers

Characteristics	Frequency	Percentage
Parity		
Primigravida	36	27.7
Multi gravida	50	38.5
Grande multigravida	29	22.3
Age		
< 20 years	15	11,5
20 – 35 years	96	73.8
>35 years	19	14,6
Education		
Elementary shool	32	24.6
Junior high school	20	15.4
High school	53	40.6
University	24	18.5

Jamu Bejja

“*Jamu Bejja*” (X) included the start time of drinking (X1.1) and frequency of drinking (X1.2). Descriptive analysis results can be seen in the table 2. The habit of drinking herbal medicine (“*Jamu Bejja*”) in postpartum mothers performed on the first day after childbirth by 47.7% with a frequency of drinking twice per day / more.

Table 2. Distribution of “*Jamu Bejja*” indicators

No	Indicator	Category	Frequency	Percentage
1	Start Time to drink	Immediately after birth	62	47.7
		After 3 days of birth	7	5.4
		Day 5	11	8.5
		After 7 Days of birth	1	8
2	Frequency of drink	Rarely	4	3.1
		1 time per day	4	3.1
		Twice per day	77	59.2
		Never	45	34,6

Oxytocin Massage

Table 3. Distribution of oxytocin massage indicators

No	Indicator	Category	Frequency	Percentage
1	Start time massage	Immediately after birth	44	33.8
		After 3 days of birth	27	20.8
		Day 5	4	3.1
		After 7 Days of birth	1	8
2	Frequency	Never	54	41.5
		1 time per day	9	6.9
		Twice per day/ more	67	51.5
3	Long massaging	<15 minutes	15	11.5
		>15 minutes	61	46.9
4	Who massages	Husband/ family	43	33.1
		Health Workers	33	25.4

Oxytocin Massage (X2) was measured through 4 indicator: the start time of massage (X2.1), the frequency of massage (X2.2), the length of massage (X2.3), which gives massage (X2.4). Descriptive analysis results can be seen in table 3. Postpartum mothers performed oxytocin massage 33.8% the day after giving birth, with frequency 2x/more (51.5%), which was performed 33.1% by husband and family for <15 minutes.

Breast Milk Production

Breast milk production was measured through 6 indicators: breast tension (Y1.1), breast milk breakage (Y1.2), breastfeeding frequency (Y1.3), urination frequency (Y1.4), infant condition after breastfeeding (Y1.5), and meconium discharge (Y1.6). Descriptive analysis results can be seen in table 4. The indicators of breast milk production 58% experiencing tension / full, experiencing breakage of 53.8%, breastfeeding 8 times / more (53.2%), BAK >6 times / 24 hours (53.8%), conditions after breastfeeding the baby fell asleep >2 hours (58.5%) and meconium expenditure of 61.5%.

Table 4. Distribution of breast milk production indicators

No	Indicator	Category	Frequency	Percentage
1	Tense	Full breast tesion	76	58.5
		Flabby	54	41.5
2	Seeping breast milk	Seeps	70	53.8
		Not seeps	60	46.2
3	Frequency of breastfeeding	< 6 times in 24 hours	62	47.7
		8 times/ more	68	53.2
4	Frequency of urinating	< 6 times in 24 hours	60	46.2
		≥ 6 kali in 24 hours	70	53.8
5	Baby's condition after breastfeeding	Fall asleep ≥2 hours	76	58.5
		Fall asleep < 2 hours	54	41.5
6	Meconium	In 24 hours	80	61.5
		More than 24 hours	50	38.5

Uterine Involution

Uterine involution was measured through 3 indicators: uterine contractions (Y2.1), decrease in fundus height (Y2.2), and lochea expenditure (Y2.3). The analysis results is described in table 5. Overall uterine contrast in the good category was 98.9%, the decrease in the height of the uteri fundus was mostly in line with the postpartum period of 80% and lochea expenditure was mostly by the postpartum period (66.1%).

Table 5. Distribution of uterine involution indicators

No	Indicator	Category	Frequency	Percentage
1	Uterus contraction	Hard	130	98.9
		Flaccid	0	0.0
2	Decline high of uterine fundusne	According to the postpartum period	104	80
		Not appropriate to the postpartum period	26	20
3	Lochea Production	According to the postpartum period	86	66.1
		Not appropriate to the postpartum period	44	33.9

Measurement Model Evaluation (Outer Model)

The outer model is analyzed by testing the validity of the construct and the reliability of the construct. The results of the measurement model are as follows:

Convergent Validity Test

Table 6. Cross loadings

Construct and indicator		Loading (λ)	t	Information
Jamu Bejja	X1.1	0.919	33.301	Valid & significant
	X1.2	0.973	157.400	Valid & significant
	X1.3	0.975	172.572	Valid & significant
Oxytosin massage	X2.1	0.918	41.174	Valid & significant
	X2.2	0.800	22.395	Valid & significant
	X2.3	0.938	47.615	Valid & significant
	X2.4	0.947	88.319	Valid & significant
	X2.5	0.930	58.265	Valid & significant
Breast milk production	Y1.1	0.734	9.885	Valid & significant
	Y1.2	0.698	9.781	Valid & significant
	Y1.3	0.862	21.461	Valid & significant
	Y1.4	0.872	23.461	Valid & significant
	Y1.5	0.776	12.044	Valid & significant
	Y1.6	0.818	14.860	Valid & significant
Uteri involution	Y2.1	0.928	36.683	Valid & significant
	Y2.2	0.906	25.284	Valid & significant
	Y2.3	0.930	33.753	Valid & significant

The validity of convergence is calculated based on the correlation between the score indicator (item score) and the construct score calculated with the help of Smart-PLS v 3.0 software. The results of the convergent validity test are described in table 6. All valid indicators measure their latent variables and show the criteria for the goodness of an outer model.

Communality

The communality value test results can be seen in the table 7. All latent variable constructs have valid convergent validity in constructing this modeling structural equation because communality values are more than 0.5.

Table 7. Validity test with communality criteria

Construct	Communality	Information
Jamu Bejja	0.953	Valid and powerful
Oxytocin Massage	0.946	Valid and powerful
Breast Milk Production	0.883	Valid and powerful
Uterine Involution	0.911	Valid and powerful

Composite Reliability

Composite reliability test results described in table 8. Composite reliability test results for exogenous latent variables produce a value (ρ_c) of more than 0.7. This means that the indicators used in construct measurements are fully trustworthy and robustly (capable) to measure their contracts.

Table 8. Composite reliability

Variable	Composite reliability (ρ_c)	Information
Jamu Bejja	0.969	Reliable
Oxytocin Massage	0.959	Reliable
Breast Milk Production	0.912	Reliable
Uterine Involution	0.944	Reliable

Structural Model Evaluation (Inner Model)

The test results of the full significance of the influence are described in table 9. Each variable significantly affects other variables both exogenous and endogenous with other endogenous variables (with a value of $T > 1.96$). Furthermore, the model formed with the T-statistical value is described in figure 1.

Table 9. Structural model significance test results

No	Causality	Coefficient	T	Information
1	(X1) jamu Bejja \rightarrow (Y1) Breast feed Production	0.410	3.963	Signifikan
2	(X1) Jamu Bejja \rightarrow (Y2) Involusio Uteri	0.299	2.089	Signifikan
3	(X2) Oxytocin Massage \rightarrow (Y1) Breast Milk Production	0.355	2.943	Signifikan
4	(X2) Oxytocin Massage \rightarrow (Y2) Uterin involution	0.639	4.474	Significance
5	(Y2) Uterin involution \rightarrow (Y1) Breast Milk Production	0.188	2.015	Significance

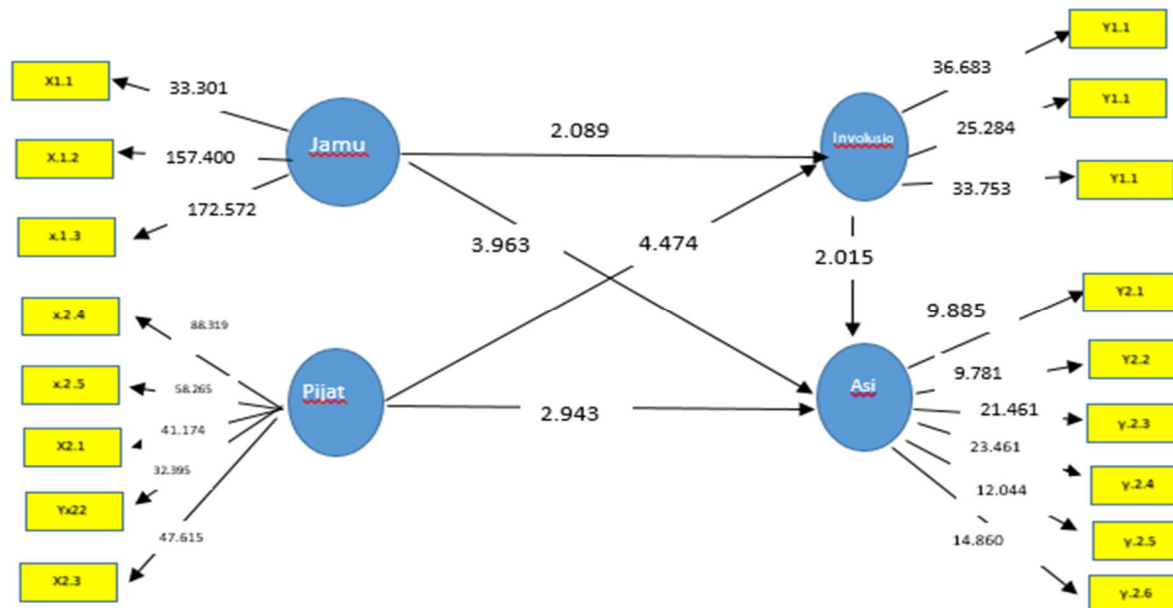


Figure 1. T-statistic on structural model

Based on figure 1 it is known that all T-statistic in the path chart was greater than 1.96. In conclusion, the model in figure 1 was structurally viable.

Tabel 10. R-square Value (R^2)

Breast milk production (Y1)	$R^2_{(\eta1)}$	0.843
Uterine involution (Y2)	$R^2_{(\eta2)}$	0.837

The $R^2_{(\eta1)}$ for breast milk production (Y1) was 0.843 which means that variations in breast milk production was explained by the administration of *Jamu Bejja* and oxytocin massage by 84.3% while the rest by other variables not found in the research model developed in this analysis model. The $R^2_{(\eta2)}$ for uterine involution was 0.837 which means that the uteri involution variation is explained by 83.7% by *Jamu Bejja* and oxytocin massage while the rest was influenced by other variables not present in this research model directly.

Based on the value of $R^2_{(\eta1)}$ it is known that the construction model has a very strong strength on the modified construction Effectiveness of oxytocin massage combination of herbal medicine to the production of breast milk and uterine involution.

An overview of the influence pathway of exogenous latent variables to t is described as follows.

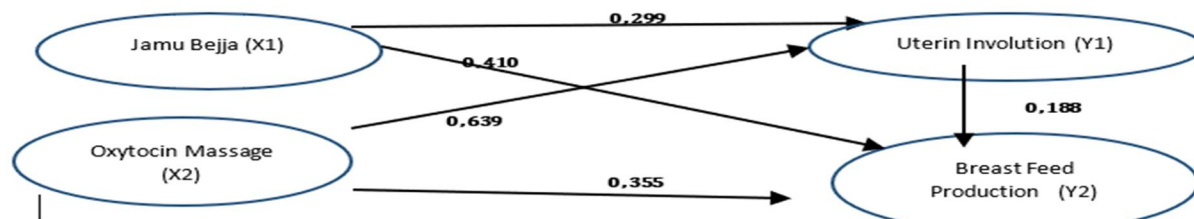


Figure 2. Path diagram and model path parameter coefficient

The path chart image and coefficient of path parameters above can explain the direct and indirect influence and total influence between exogenous latent variables to endogenous latent variables. The direct and indirect influence values are described in the following tables 11 and 12.

Table 11 Paths of Influence on Constructs

Path	Influence	
	Direct	Indirect
<i>Jamu Bejja</i> (X1) → Breast milk production (Y2)	There is	There is, through uteri invollusio
Oxytocin massage (X2) → Breast milk production (Y2)	There is	There is, through uteri invollusio
Uterine involution (Y1) → Breast milk production (Y2)	There is	Nothing

Calculation of direct factors that affect the production of ASi is herbal medicine Bejja Against Production ASi is 0.410, Massage Oxytocin against the production of ASi is 0.355. *Jamu Bejja* against Uteri involution is 0.299, Oxytocin massage against uteri involution is 0.639, and Uteri involution against ASi production is 0.188. Calculation of the value of direct and indirect influence on the production of Breast Milk can be explained as in table 12 follows:

Table 12. Calculation of indirect effect

Indirect line of influence	Indirect value of influence	
<i>Jamu Bejja</i> (X1) Breast milk production (Y2)	<i>Jamu Bejja</i> (X1) Uterine involution (Y1) Breast milk production (Y4) $0.299 \times 0.188 = 0.056$	0.056
Oxytocin massage (X2) Breast milk production (Y2)	Oxytocin massage (X2) Uterine involution (Y1) Breast milk production (Y2) $0.639 \times 0.188 = 0.12$	0.12

Table 12 explains that directly the production of breast milk can be influenced most strongly by the administration of herbal medicine bejja, while indirect factors in the production of breast milk are strongest when oxytocin massage is accompanied by uterine contractions

Strength Assessment Prediction from Model (GoF)

To validate the overall prediction model can be seen from the absolute goodness of fit (GoF) value with the following formula:

$$GoF = \sqrt{Com. R^2}$$

Based on the calculation obtained in the analysis of the validity of convergence above can be calculated communalities average value of 0.923 while the average value of so that it can be calculated the amount of $R^2 = 0.845$ the predictive model $(GoF) = \sqrt{0.923 \times 0.845} = 0.883$. GoF was very large and powerful, so it can be said that the prediction model in this study is very strong in explaining research variables or measures of the influence of large category variables.

DISCUSSION

The results showed that 84.3% of breast milk production was influenced by herbal medicine and oxytocin massage, while the rest was influenced by other factors. While 87.3% of uteri involution is influenced by the administration of herbal medicine and oxytocin massage while the rest by other factors. The production of breast milk and uterine involution is more effective when there is a combination of oxytocin massage and herbal medicine because there is an indirect influence of the variable. This is following Suryani⁽⁴⁾ which states that oxytocin massage will stimulate the release of oxytocin hormone that can increase myo-epitel cell contraction both in the uterus and in the breast alveoli so that it will increase the production of breast milk and accelerate uterine involution. The results of focus group discussion with experts found that in this study oxytocin massage can be done 2 times a day with a duration of 15 minutes. Massages can be done by husbands, other family members, and health workers. Family support is expected to provide a calmness to mothers to be able to go through the difficult period of breastfeeding on the first day of breastfeeding so that the production of breast milk can increase. This is following the results of suryaningsih which state that the support system in the family can increase the success of breastfeeding exclusively⁽⁵⁾. This support system can be both physical and psychological support. Wulandari also said that oxytocin massage does not have to be done by health workers, but massage done by the husband will increase the sense of security and comfort in the mother.⁽⁶⁾ Oxytocin massage is done 2 times a day with a duration of 15 minutes will increase breast milk production. This is following the ummah study which states oxytocin massage is done 2 times with a duration of 2-3 minutes.⁽⁷⁾ The length of massage time of 15 minutes will further increase the production of oxytocin which can stimulate myoepitel contractions in breast cells.

The results showed that the administration of herbal medicine (*Jamu Bejja*) can increase the production of breast milk if given in immediately after childbirth and taken 2 times a day. *Jamu bejja* contains kencur (*Kaempferia galangal L.*), contains starch, minerals, and essential oils, turmeric (*Curcuma domestica*) contains tumeron, curcumin, hars fat and vitamin C, key (*Kaempferia rotunda L.*) contains essential oils, sineol, and soparin, temulawak (*Curcuma xanthorriza*) contains cryamine, glucosides, and essential oils, betel (piper battle) contains carotene, vitamin C and amino acids, katu (*Sauropus androgynous*) contains protein, fat, potassium, vitamin K, Provitamin A, B vitamins, vitamin C, phosphorus and magnesium, *Tamarindus indica* contains vitamin A, sugar substances, pectin, beluntas, (*Plucea indica*) contains alkaloids and astiri oil which is a type of nutritional supplement to facilitate the production of breast milk. Based on the results of Agustina's literature review, most people in Java and Sumatra drink herbal medicine during the postpartum period to speed healing and recovery.⁽⁸⁾ Although the types are different, almost all herbs consumed during the postpartum period can increase recovery during the postpartum period and increase breast milk production. The type of herbal medicine used mostly contains empon empon consisting of kencur, ginger, bengle, laos, kunir, katu leaves, temulawak, puyang, and sleigh meeting.⁽⁹⁾

The results of this study are following Ahmad's research (2016) which states that mothers who drink herbal medicine katuk leaf herb, turmeric, lempuyangan, and tamarin have a production of breast milk 4 times more than those who do not drink herbal medicine⁽¹⁰⁾. The results of this study are also following the research Paryono (2014) which states that Javanese people have the habit of drinking herbal medicine to eliminate complaints during pregnancy and after childbirth including increasing the production of breast milk and accelerating the recovery of the uterus (uterine involution)⁽¹¹⁾. The culture of drinking herbal medicine is not only in the Madura community, the herbal medicine drunk by the Madura community is *Jamu Bejja* while in some other regions also drink herbal medicine with almost the same composition in the form of *empon empon*. Javanese people drink "*uyup uyup*" to launch breast milk⁽¹²⁾. Sumenep and Javanese people drink herbal medicine "*Gepyokan*" to launch breast milk,^{(13) (14)}

CONCLUSION

The conclusion was breast milk production was influenced by *Jamu Bejja* and oxytocin massage by 84.3% while the rest was by other variables not found in the research model developed in this analysis model. Uteri involution variation is explained by 83.7% by *Jamu Bejja* and oxytocin massage while the rest is influenced by

other variables not present in this research model directly. The prediction model in this study is very strong in explaining research variables or measures of the influence of large category variables

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