



Original Article

## The Analysis of the Roasting Tradition (Se'i/Nu), Maternal Hemoglobin Level and the Uterine Involution Process among Puerperal Women

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### ABSTRACT

**Introduction:** Se'i/nu is one of the traditions of the local community on the island of Timor. The mother and the baby always breathe polluted air because the fuel commonly used is biomass fuel. This can lead to health problems for both the baby and the mother. The research objective was to prove the relationship between the roasting tradition (se'i/nu) with the hemoglobin level and the process of uterine involution in postpartum women.

**Methods:** The research design was analytical with an observational approach. The sample consisted of 42 respondents obtained through total sampling. The independent variable was the roasting tradition (se'i/nu) and the dependent variables were hemoglobin level and maternal uterine involution. The method used to measure the roasting tradition (se'i/nu) was an observation sheet. To measure the hemoglobin level, we used a laboratory check and to measure uterine involution, we conducted a physical examination and used an observation sheet.

**Results:** The results showed that the largest percentage of hemoglobin levels in postpartum mothers was among those that did the roasting tradition (se'i/nu) with an abnormal hemoglobin level of 66.66% (22 people). The puerperal women who did the tradition of roasting (se'i/nu) obtained high uterine fundus and the abnormal mothers made up the largest percentage of 69.70% (23 people). There was a correlation between the roasting tradition (se'i/nu) and maternal hemoglobin level ( $p=0.025$ ) and there was also a correlation between the roasting tradition (se'i/nu) with the process of maternal uterine involution (0.00).

**Conclusion:** The conclusion is that there is a prolonged uterine involution process and that the low hemoglobin levels in the puerperium may be due to exposure to chemical susceptibility as a result of inhaling polluted air due to the se'i/nu process.

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### INTRODUCTION

Among the 240 million people in Indonesia, there are many community groups who still hold to the local customs. These groups are spread out over 33 provinces and they are derived from 370 ethnicities/sub-ethnicities. One of community who still holds to the local culture is the local community in the middle of Timor Island, especially in North Central Timor District (Timor Tengah Utara). The

local community still implements the roasting tradition (Se'i/Nu)

Based on the observation conducted by interviewing the puerperal women initialed MN and the officer of subdistrict initialed JL, the Roasting tradition is the heating of the woman's vital area with smoke inside a traditional house (ume kbubu) within 40 days postpartum by an experienced shaman. This ritual obligates every woman who has just given birth to lie down next to a coal fire. The roasting tradition

is done in the morning and late in the afternoon whilst drinking a traditional concoction. This is a trusted way for the body to recover and to clean the body of "dirty blood" e.g. menstrual blood, blood clots or poisons. Puerperal women are forbidden from eating certain kinds of food. Because this activity has been banned, it is very rare to find a society where atoni meto is done nowadays (Christina R, 2014).

During the heating process, the puerperal women and her child will always suck in polluted air because they use biomass fuel (firewood). This incineration usually releases contaminants and pollutants such as dust particles (suspended particulate matter/SPM), carbon dioxide (CO<sub>2</sub>), sulfur oxide (SO<sub>2</sub>), formaldehyde (HCHO), nitrogen oxide (NO<sub>x</sub>), carcinogenic compounds such as polycyclic aromatic hydrocarbons, carbon monoxide (CO), nitrogen oxide (NO) and other free radicals. The inhalation of these substances can cause health problems ranging from respiratory irritation to lung disorders (Soerachman Rachmalina and Wiryawan Yuana., 2013).

In addition to carbon monoxide, exposure to carcinogenic substances such as benzene through inhalation over a certain range also has an effect on the blood hemoglobin levels. This can cause damage to human blood cells. This happens because benzene exposure can reduce the ability of the bone marrow to produce red blood cells and thus reduce the ability of the red blood cells to live, causing a decrease in blood hemoglobin levels. This can cause aplastic anemia, acute bleeding and immune cell damage (A Athena and Soerachman Rachmalina, 2014).

Anemia in puerperal women is caused by factors such as childbirth hemorrhage, pregnant women with anemia, less nutrition and viral disease. Anemia effect on the expectant phase is in the form of less breast-feeding and more easily getting a mammae infection. Anemia in the expectant phase can cause the subinvolution of the uterus. This can cause hemorrhage postpartum and a puerperal infection. This happens because the uterus has difficulty contracting in the expectant phase. This is because the oxygen level in the blood is decreased so the blood is not enough to provide the oxygen to the uterus. The result can be seen from the high level of fundus in the uterus which does not going back to normal in expectant women. There is also a greater risk of hemorrhage after giving birth (Prawirohardjo and Sarwono, 2005).

The purpose of this study was to analyze the relationship between the roasting tradition (se'i/nu), the hemoglobin level and the process of uterine involution in puerperal women.

## MATERIALS AND METHODS

This research was analytical. The design used was observational and analytical with a cross-sectional approach. The population in this study was mothers who had given birth who were still in the postpartum period. The sample in this research was the women who were still in the postpartum period from July to

September 2017. The determination of the sample was done using a total population equal to 42 respondents. Some of the sample criteria were postpartum mothers in the 10th to 40th days following with babies who were willing to be examined with parental consent. The independent variable in this study was the Roasting tradition (se'i / nu) and the dependent variable was the mother's hemoglobin level and the uterine involution process of puerperal women. The process of collecting the data involved using a laboratory test to determine the maternal hemoglobin level. An observation sheet was used to check the uterine involution process and the roasting (se'i/nu) tradition. The data was analyzed using Chi square (Fisher's Exact) with a level of significant  $\alpha = 0.05$  in to determine the relationship between the Roasting tradition (Se'i/Nu) and the hemoglobin level and uterine involution process. Ethical clearance was sought before conducting the research. Ethical clearance in this study was conducted by the Faculty of Public Health of Airlangga of University.

## RESULTS

Based on the research, it was found that of the puerperal women who over 30 years old and who practice the roasting tradition (se'i / nu) totaled 54.54% (18 people). Most of the puerperal women who practice the roasting tradition (se'i / nu) have a low education level, totaling 84.85% (28 people). Most of the puerperal women are housewives and they practice the roasting tradition (se'i / nu), totaling 90.90% (30 people). Most of the puerperal women have a low incomes and practice se'i / nu, totaling 78.78% (26 families).

Based on the statistical test results, some of the variables that have a connection with the Roasting tradition (Se'i/Nu) include the high level of the mother's uterine fundus (P value = 0.000) and the mother's hemoglobin level (P value = 0,025). This variable connection can be seen from the p value <  $\alpha$ . This means that there is a connection between the Roasting tradition (Se'i/nu) and the high level of the mother's uterine fundus. There is also a connection between the Roasting tradition (Se'i/Nu) with the mother's hemoglobin level. The OR (odd ratio) of the puerperal women's hemoglobin levels is 7.00. This means that the Roasting tradition (se'i/nu) is the risk factor that causes the hemoglobin level of puerperal women to become abnormal.

## DISCUSSION

The results showed that almost all of the respondents (78.6%) still maintain childbirth in a traditional way by warming up in the form of roasting. This is done in the form of a charcoal fire being placed under the bed of the respondent. The respondents acknowledged that there were benefits after se'i/nu including the mother and baby becoming healthier and stronger, in addition to warmth, the removal of dirty blood after childbirth being smooth and restoring the mother's condition to normal as it was before giving birth.

Table 1. Respondent's Characteristics

Variable	Roasting tradition (Se'i/Nu)	
	Heated	Not Heated
<b>Mother's Age</b>		
20-30 years	15 (45.45%)	5 (55.55%)
Over 30 years old	18 (54.54%)	4 (44.44%)
<b>Mother's Education</b>		
Low (Elementary – Junior High School)	28 (84.85%)	1 (11.11%)
High (Senior High School - College)	5(15.15%)	8 (88.88%)
<b>Mother's Work</b>		
Housewife	30 (90.90%)	3 (33.33%)
Private sector	2 (6.06%)	2 (22.22%)
Civil servant	1 (3.03%)	4 (44.44%)
<b>Family Income</b>		
Below the regional minimum wage ( <i>UMR*</i> ) (<850.000 IDR,-)	26 (78.78%)	1 (11.11%)
Above the regional minimum wage ( <i>UMR*</i> ) (>850.000 IDR,-)	7 (21.21%)	8 (88.88%)

Table 2. Statistical Test Results

Variable	Statistical Test Results			CI	
	(P Value)	OR	Lower	Upper	
Maternal Hemoglobin Level	0.025	7.000	1.416	45.772	
Uterine Involution Process	0.000		1.240	2.911	

There were 9 respondents who did not carry out this tradition after giving birth. The 9 respondents, after further questioning, were found to be non-native residents of the Eban region. Some came from families with a higher level of formal education and some acknowledged that they had received education from health workers stating that this tradition had been banned. This is because the se'i/nu tradition has a bad impact on both the mother and baby.

The hemoglobin level of the postpartum mothers who practiced the roasting tradition (se'i/nu) showed as abnormal for 66.66%. Most of the mothers who did not practice the roasting tradition (se'i/nu) had a normal hemoglobin level with a percentage of 77.77%.

A study was conducted to see the contribution of smoke from firewood (biomass fuel) and the impact that it has on anemia among pregnant women in Nagpur, India. The results of the study showed that the level of anemia was medium to high among the women who live in the house and use biomass fuel for their cooking activity compared to the women who live in a house that does not use biomass fuel. This research proves that using biomass fuel in a household as a part of the cooking activity can increase the anemia risk of pregnant women, despite the other factors involved. This result can be accepted logically because biomass smoke potentially evokes systemic infection. Systemic inflammation is a causal factor of anemia which is mediated by cytokine inflammation due to the factors of a necrotic tumor alfa (TNF- $\alpha$ ), interleukin-1 (IL-1), interleukin-6 (IL-6) and interferon- $\gamma$  (IFN- $\gamma$ ). The cytokine mechanism that causes anemia includes the dysregulation of iron homeostatis, the erythropoietin response being hampered due to the low level of hemoglobin and the response of the backbone to erythropoietin being changed(Charlotte M. Page, Archana Patel, 2015).

Another study (Hashim, Kadhim K. Ghadha, 2015) found, that there is effect from firewood smoke on the hemoglobin levels of people who are in proximity to it. The results showed that the hemoglobin level tend to be lower in the group in proximity to the smoke than in the control group. This may have a connection with oxidative stress. Oxidative stress will react with oxygen. The excess of reactive oxygen relative to glutathione peroxidase can cause red blood cell membrane damage and this can cause the lowering of the hemoglobin level.

There are 22.22% (2) respondents of puerperal women who do not practice se'i/nu tradition and have abnormal hemoglobin levels. Apart from exposure to biomass fuel as a trigger for the low or abnormal hemoglobin in postpartum mothers, hemoglobin level is influenced by many factors including chronic bleeding, vitamin B 12 deficiency or vitamin C, heredity, comorbidities and diet, especially in postpartum mothers.

Another research(K.A. Radoff, Lisa M. Thompson, KC Bly, 2012), stated that there is a tradition after giving birth in Guatemala where a lukewarm bath takes place. It is believed to normalize, cure, and to heat the uterine. The "heating uterine" concept is based on the ethnic cultural knowledge where they believe in the concept of a "hot-cold balance". The loss of blood during the postpartum period is believed to cause a cold condition and there are many practices for restoring and defending the warmth, thus repairing the condition of the mother during the expectant period. This cultural practice is believed to increase uterine involution and decrease blood loss after giving birth.

One study dealt with Tradisi Badapu in Aceh. There are some rituals in the badapu tradition such as heating the woman's body in the morning and late in the afternoon with the flame of a coal fire. This

restores the condition of the mother's stomach after giving birth using bricks or coconut that have been heated in fireplace and then wrapped in cloth and morinda. It is put on the mother's stomach and heated again after getting cold. It is believed that this will speed up the process of the stomach becoming wrinkled, bringing back the muscle tone of the stomach, making the body slender, making the mother's genital organs tighter, cleaning the dirty blood (Inong Sri Rahayu, Mudatsir, 2017).

Another research (Cindy-Lee Dennis, Kenneth Fung, Sophie Grigoriadis, Gail Erlick Robinson, 2007) showed that the traditional treatments performed on postpartum mothers by heating or occupying something hot can make their maternal better, such as sitting on hot coals or warming the mother up. While this can cause dehydration, it also results in vasodilation and decreased blood pressure. It can even stimulate bleeding which results in anemia.

Most of the postpartum mothers who practice the roasting tradition (se'i/nu), have an abnormally high fundus of the uterus, amounting to 69.70%. For the mothers who did not practice se'i/nu, all of the respondents had a normal uterine fundus height. From the results of the statistical tests, it was found that there is a relationship between the tradition of roasting (se'i/nu) and the process of uterine involution among the postpartum mothers who practice the roasting tradition.

The research shows that the low hemoglobin in puerperal women can cause anemia. During the postpartum period, anemia can make the uterus difficult to contract. This is because the oxygen that is bound in the blood decreases so then the blood is not oxygenated enough to provide oxygen to the uterine. The manifestations that are seen are from the height of the fundus of the uterus does not return to normal in the puerperal mothers and there is excessive postpartum/lochea blood expenditure after childbirth (Richard E, 2005).

The results of the study reveal that puerperal women who practice the se'i/nu tradition and who have a normal uterine involution process totaled 30.30% (10 people). The factors that influence the uterine involution process in postpartum mothers include the initiation of early breastfeeding (IM), lactation, early mobilization and nutrition. Breastfeeding immediately after the baby is born has a contracting effect on the uterine lining which helps to decrease the height of the uterine fundus.

## CONCLUSION

There is connection between the roasting tradition (se'i/nu) with the hemoglobin level of puerperal women. There is a connection between the roasting tradition and the uterine involution process among puerperal women.

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