Hypnotherapy is more effective than acupressure in the production of prolactin hormone and breast milk among women having given birth with caesarean section

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Abstract
This research aimed to analyze the effectiveness of hypnotherapy compared with acupressure toward the prolactin hormone level and the production of breast milk among women giving birth by caesarean section. The research groups were divided into two groups, namely hypnotherapy-receiving women group and acupressure-receiving women group. The hypnotherapy was done in accordance with the standard and guided by the hypnotherapist. The acupressure was done in the meridian of stomach and small intestine, meridian of kidney, and spleen. There was a significant increase in the prolactin hormone level and production of breast milk before and after the therapy (p < 0.05) for both treatment groups. In the production of prolactin hormone and breast milk, hypnotherapy technique was significantly more effective than acupressure (p < 0.05). It can be concluded that the hypnotherapy is more effective than acupressure in stimulating the production of prolactin hormone and production of breast milk among women giving birth with caesarean section. Thus, hypnotherapy can be the alternative in support of the successful exclusive breast milk feeding.

Keywords: Hypnosis, acupressure, caesarean section, lactation, prolactin

Introduction
Breast-feeding is very fruitful for baby, in particular to provide proper nutrition for its health and development as well as protection against infection. Breast-feeding also aims to build the emotional and biological relationship between mother and the baby [1-7]. Young mothers having little experiences are commonly confused about the duration and initiation in breast-feeding. That’s why in many cases, babies are given formula milk in which it is also strengthened by the advertisement. Nutrition is essential for baby and mother must decide whether to breast-feed or give formula milk [8]. In the uncertain times, some mothers are not capable of initiating breast-feeding due to the caesarean section or medical treatment [9,10]. When the onset production of milk is delayed, the breast-feeding is also hampered in which it causes the baby will lose its weight. Then, the baby will also depend on the formula milk supplementation.

Hypnotherapy is an application of hypnotherapy practice (giving positive affirmation) for mother to breast-feed. The hypnotherapy is conducted under the guidance of hypnotherapist for reaching deep relaxation. The previous study proved that hypnotherapy gave positive impact on the successful exclusive breast-feeding 12.21 times better than the control [14]. Hypnotherapy has significant effect on the optimization of colostrums for postpartum mother on the first day due to the endorphin secretion which in fact is the support hormonal for prolactin secretion [15].

The function of the acupressure is similar to acupuncture which aims to balance the energy of various points spread in human body. These points are called as meridian which is related to specific organs, but without using needle [16]. Various systematic literature reviews and randomized controlled trials show beneficial effect of acupressure, which is in the form of prolactin secretion and breast milk, and the increased endorphin hormone production [17-19]. Until now, there is no research comparing the effectiveness between hypnotherapy and acupressure in helping the production of breast milk in women with caesarean section. Thus, this research aims to analyze the effectiveness of hypnotherapy compared with acupressure related to the prolactin hormone level and the production of breast milk among women giving birth with caesarean section.

Material and Methods

Subjects
The research subjects were postpartum women (first day) having given birth with caesarean section. The inclusion criteria were women aged 15-49 years old, who were willing to be respondents in the research by signing the informed consent, birth weight of infant ≥ 2,500 grams, term infant, did not consume alcohol and smoke, did not use hormonal birth control (KB), did not find any breast
anatomic disorders, body mass index $\geq 18.5$ kg/cm$^2$, upper arm circumference $\geq 23.5$ cm, and Javanese. For inclusion criteria included mothers who had 24 hours caesarean section postpartum and did not mobilize to right and left, were not able to communicate well, experienced complication or other circumstances that could not provide breast milk, had high level of mental disorders, hearing disorders, consumed herb drink or breast milk supplementation, and experienced malnutrition. The research groups were divided into two groups, namely hypnotherapy-mother group and acupressure-mother group.

**Hypnotherapy**
In hypnotherapy, the first thing to do was the preparation of body, mind, and soul in order to be successful in breast-feeding. The environment had to be cozy to support the therapy. The subjects took deep breath, exhaled, closed their eyes, and relaxed the body. The subjects relaxed their muscles from head till feet. Mothers had to have sincere intentions to provide exclusive breast milk to their beloved babies and be sure that all mothers, whether working or not, had the ability to breast-feed the babies. Subjects were guided to get in the relaxation condition of mind, muscles, and deep relaxation. Then, the subjects were given positive belief and the repetition of positive affirmative which given continuously without time limitation and depended on the need. Before finishing the relaxation session, subjects had subconscious promise that the particular activity would make women awake from the relaxation mode and could directly react against it.

**Acupressure**
The acupressure treatment was given for 15 minutes. The targeted acupressure points were meridians of stomach (stomach-ST) and small intestine (small intestine-SI), kidney, and spleen which aimed to increase prolactin and oxytocin hormone. In this research, the massage was done in accordance with meridian direction in accupoint points named ST 15, 16, 18, 36, CV17, and SI1. The pressure and massage were done in accordance with each organ in ST 15, 16, 18, 36, the pressure was done by rotating in clockwise direction for 20-30 seconds where the massage was done downward, resulting in tonification effect. For CV17, the pressure was done by rotating in clockwise direction for 20-30 seconds where the massage was done upwards in line with the kidney’s meridian, resulting in tonification effect. For SI17, the pressure was done by rotating in clockwise direction for 20-30 seconds where the massage was done upward in accordance with the small intestine’s meridian, resulting in tonification effect. For SP18, the pressure was done by rotating in clockwise direction for 20-30 seconds where the massage was done upwards in accordance with spleen’s meridian resulting in tonification effect.

**Production of breast milk**
The production of breast milk is defined as the continuity of breast milk produced and can be received by the babies with the weight as the indicator.

**Analysis of prolactin level**
The prolactin level was analyzed using the detection kit of Imunnochemiluminescent human prolactine. The procedures were done based on instructions of the kit.

**Ethics**
In this research, the ethical approval has been obtained from the Health Research Ethics Committee of Health Polytechnic Semarang.

**Statistical Analysis**
The data were presented as mean $\pm$ SD and the difference between treatment groups was analyzed using t-student test. The analysis was done using SPSS 23.0 statistical package program for Windows. The probability value ($p < 0.05$) was stated as significant difference.

**Results**
Subjects’ characteristics are presented in table 1. There was no significant difference for age, level of education, parity, and breast care treatment during pregnancy between groups who were treated with hypnotherapy and acupressure ($p > 0.05$).

**Table 1. Baseline subjects characteristics**

<table>
<thead>
<tr>
<th></th>
<th>Hypnotherapy group n = 18</th>
<th>Acupressure group n = 18</th>
<th>$p$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$&lt; 20$ years</td>
<td>2 (11.11 %)</td>
<td>4 (5.56 %)</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>$20 - 35$ years</td>
<td>15 (83.33 %)</td>
<td>17 (94.44 %)</td>
<td></td>
</tr>
<tr>
<td>$&gt;35$ years</td>
<td>1 (5.55 %)</td>
<td>0 (0 %)</td>
<td></td>
</tr>
<tr>
<td>Educational degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary school</td>
<td>4 (22.22 %)</td>
<td>5 (27.77 %)</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Junior high school</td>
<td>8 (44.44 %)</td>
<td>7 (38.88 %)</td>
<td></td>
</tr>
<tr>
<td>Senior high school</td>
<td>4 (22.22 %)</td>
<td>6 (33.33 %)</td>
<td></td>
</tr>
<tr>
<td>Postgraduate</td>
<td>2 (11.11 %)</td>
<td>0 (0 %)</td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nullipara</td>
<td>10 (55.55 %)</td>
<td>10 (55.55 %)</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Multipara</td>
<td>7 (38.88 %)</td>
<td>7 (38.88 %)</td>
<td></td>
</tr>
<tr>
<td>Grandemultipara</td>
<td>1 (5.55 %)</td>
<td>1 (5.55 %)</td>
<td></td>
</tr>
<tr>
<td>Breast care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>7 (38.88 %)</td>
<td>6 (33.33 %)</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Absent</td>
<td>11 (61.11 %)</td>
<td>12 (66.66 %)</td>
<td></td>
</tr>
<tr>
<td>Prolactin (ng/ml)</td>
<td>118.66</td>
<td>175.39</td>
<td>$p &gt; 0.05$</td>
</tr>
<tr>
<td>Body weight (gram)</td>
<td>3082.17</td>
<td>2910.78</td>
<td>$p &gt; 0.05$</td>
</tr>
</tbody>
</table>
Before giving the treatment, prolactin level and breast milk production of the two treatment groups were analyzed. There was no significant difference in the level of prolactin between the groups treated with hypnotherapy and acupressure ($p > 0.05$). There was significant increase in prolactin hormone level and breast milk production before and after the therapy ($p < 0.05$) in the hypnotherapy group (Figure 1). The same case was found in acupressure group. Breast milk production increased significantly before and after the therapy ($p < 0.05$), as shown in Figure 2. The difference in prolactin hormone level and breast milk production was significantly higher in the hypnotherapy group than acupressure group ($p < 0.05$).

![Figure 1. Mean prolactin level of various research groups. Note: Data are presented in mean ± standard deviation; *p<0.05 compared to hypnotherapy group; ng/ml: nanogram/milliliter.](image)

![Figure 2. Mean body weight of various research groups. Note: Data are presented in mean ± standard deviation; *p<0.05 compared to hypnotherapy group.](image)

**Discussion**

In this research, there was no significant difference in age, level of education, parity, and breast care of groups treated with hypnotherapy and acupressure ($p > 0.05$). Besides, there was no significant difference in prolactin level and breast milk production between groups treated with hypnotherapy and acupressure ($p > 0.05$), so both groups could be compared.

Breast milk production of women who gave birth with caesarean section was lower than normal birth [20]. This is because of the high cortisol level in women who have caesarean section [21]. In this research, for hypnotherapy group, there was significant increase in prolactin hormone level and breast milk production before and after the therapy ($p < 0.05$). The same case happened in the acupressure group in which the prolactin hormone level and breast milk production significantly increased before and after the therapy ($p < 0.05$). This fact shows that hypnotherapy and acupressure can trigger prolactin hormone production thus this in turn influences the breast milk production. For hypnosis, this research extends the previous research findings which stated that hypnosis stimulated successful lactation [22]. For acupressure, this research is consistent with the previous research finding that acupressure increased the prolactin and breast milk production [17,23]. This research also extends the previous research findings that auricular acupressure might provoke breast milk production among women with caesarean section.

For the effectiveness, the difference in average prolactin hormone level and breast milk is significantly higher in
the hypnotherapy group than acupressure group ($p < 0.05$). This fact shows that hypnotherapy is more effective in triggering prolactin hormone which then triggers an increase in breast milk production. The researcher assume that hypnotherapy may influence the mother’s beliefs, even though it is temporary, in the form of effective attention focus in control [25,26], especially for breast-feeding. This effect will decrease depression and influence the hormonal axis [27-29].

It can be concluded that hypnotherapy is more effective than acupressure in stimulating prolactin hormone production and breast milk production among women giving birth with caesarean section. Thus, hypnotherapy technique can be used as alternative in the success of providing exclusive breast milk.

Statement of conflict of interest
The author declares that there is no conflict of interest in the publication of this article.

References