Increasing the Comfortable Feel for Pregnant Women Through the Endorphin Massage

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Abstract. Mostly pregnant women suffered back pain. Based on a preliminary studies conducted by researcher in the Tarai Bangun, 15 pregnant women in third trimester said that they had back pain. Back pain can be overcome, one of which is by doing an endorphin massage that can make the mother relax and reduce the pain felt. This study aims to determine the effectiveness of endorphin massage on back pain in pregnant women. The study design used was Quasy Experiment with a non-equivalent control group design which it divided into an experimental group and a control group. The sample was 34 respondents using purposive sampling technique. The measuring instrument used in both groups was the Numeric Rating pain scale. Data analysis used dependent t test and independent t test. The results showed that there were differences in back pain scores before and after endorphin massage in the experimental group, so it can be concluded that endorphin massage is effective against back pain in pregnant women with a p value of 0.001 (p <0.05). The results of this study can be used as a reference to using endorphin massage as a way to deal with complaints of back pain in pregnant women.

1. Introduction

Being pregnant is a dream for every woman and is one way to achieve the perfection of a woman [1]. Pregnancy is a condition that is very remembered in a woman's life where during pregnancy women have a high curiosity about the process of pregnancy and want to always ensure that the pregnancy goes smoothly, safely and the baby will be born later in a healthy condition [2]. Pregnancy is also an important milestone in a couple's relationship because there are needs and expectations between the couple [3]. Pregnancy as a condition in which a woman is pregnant and developing the fetus in her womb for nine months or as long as the fetus is still in the womb [4].

Pregnant women during their pregnancy will experience many changes, these changes include physiological and psychological changes. Psychological changes experienced such as feeling uncomfortable, feeling himself ugly, becoming more sensitive and appearing a sense of rejection and even anxiety [5]. Physiological changes in pregnant women are changes in the reproductive system, integumentary system, endocrine system, cardiovascular system, urinary system, respiratory system, gastrointestinal (digestive) system, and musculoskeletal system [6]. The changes that occur during pregnancy cause discomfort and concern for most pregnant women [7].
The prevalence of pregnant women with back pain in the world is more than 50% [8]. The research conducted in the United States in 2007 of 599 pregnant women, 389 people (65%) of pregnant women experienced back pain [9]. Another study conducted in Brazil in 2013 explained that the prevalence of low back pain in pregnant women is very high, reaching 93.23% [10].

Back pain in pregnant women occurs due to an increase in the weight of a pregnant woman which causes the posture and way of walking of the pregnant woman to change markedly. Increased abdominal distension makes the pelvis tilt forward, decreased abdominal muscle tone, and increased body weight at the end of pregnancy requires adjustment to the spinal bone. The center of gravity of the woman also shifts forward, so the normal lumbosacrum curve must be increasingly curved to maintain balance. Breast enlargement also causes the position of the shoulders to be bent when standing and will increasingly make the curve of the back and lumbar more prominent [11]. In addition, the increase in the hormones progesterone and relaxin which causes sagging of the connective tissue and muscles will also be able to trigger the emergence of back pain in pregnancy [12].

In this research, the effectiveness of endorphin massage on back pain in third trimester pregnant women in Tarai Bangun Village, will be examined. The pregnant women will be group into two groups, which is treated with endorphin message and without treated with endorphin message.

2. Methodology

This research was a quantitative study with a quasi-experimental research design and a non-equivalent control group research design. This study involved two groups, namely the experimental group and the control group [13]. In the experimental group measurements were taken before intervention of treatment (pre-test) and measurements were carried out after the intervention of treatment (post-test). Whereas in the control group no intervention was carried out but pre-test and post-test measurements were still carried out.

This research was conducted on pregnant women who experience back pain in Tarai Bangun Village, the working area of the Tambang Health Center which has the highest number of pregnant women in 2018.

The sampling technique used in this study was a purposive sampling technique in which samples are taken based on criteria included in the research to be carried out [14]. The instruments used in this study were demographic questionnaires, endorphin massage standard operating procedures (SOPs), and Numeric Rating Scale pain scales.

Data collection was a process of approaching the subject and the process of gathering the characteristics of the subjects needed in a study. The steps in data collection depended on the research design and instrument techniques that will be used in the study [15]. The procedures performed in data collection were as follow:

Preparation Stage. In this preparation stage, researchers first determine the research problem and conduct a literature study. The researcher takes care of the preliminary study permit application letter and also runs an administrative process to take care of the data collection permit application.

Implementation Stage. The implementation phase begins after the researcher completes the paperwork for a research permit application. Researchers came to the research location in the village of Tarai Wake the working area of the Tambang Health Center to get approval from the Head of the Health Center. The researcher selects respondents in accordance with predetermined criteria and is acquainted with respondents, then the researcher explains the purpose and objectives of the researcher as well as those obtained for respondents who are willing to participate in the research. After obtaining consent from the respondent, the researcher asked the respondent to sign an informed consent.

a. Pretest Stage

At this stage the researcher contacted or met the respondent namely third trimester pregnant women who experience back pain. Researchers measured respondents' back pain scales in the experimental and control groups before intervention and action.

b. Intervention Implementation
In the experimental group, researchers made a contract from the beginning with the respondent that the respondent would be given an endorphin massage intervention. The intervention was carried out for 3 consecutive days for 20 minutes. Whereas in the control group respondents were not given an intervention. However, researchers still observe the situation of respondents and encourage respondents to take the usual actions to reduce back pain.

c. Posttest Stage
At this stage the experimental group and the control group re-measured the intensity of back pain after 3 days of intervention in the experimental group.

3. Results and Discussion
The results of research on the effectiveness of endorphin massage on back pain of pregnant women that have been carried out starting from 4 - 25 March 2019 in Tarai Bangun Village, the working area of the Mine Health Center, shows that the endorphine massage is effective to reduce the back pain of the pregnant women. This research was involving 34 respondents consisting of 17 experimental respondents and 17 control respondents.

The endorphin massage was applied to the experiment pregnant women group (Figure 1). In the Figure 1, it can be seen the researcher and one of the pregnant women in the experiment group was practicing how to perform the endorphin massage. The researcher was practicing the endorphin massage with commencing by the relaxation and followed by the all procedures in the endorphin massage. In the last procedure, the sample of pregnant women mentioned that the endorphin massage reduced her back pain.

![Figure 1](image)

**Figure 1.** The endorphin massage applied to the pregnant women

Univariate analysis used to obtain data on the characteristics of respondents including age, education, occupation, parity and the average back pain value of pregnant women before and after endorphin massage both in the experimental group and in the control group. Univariate analysis results obtained in this study are as in Table 1:
Table 1. Frequency distribution of respondents based on respondent characteristics

| Characteristic | Experiment (n=17) | Control (n=17) | Total (n=34) |
|---------------|------------------|----------------|-------------|
|               | N    | %      | N    | %      | N    | %      |
| Age group     |      |        |      |        |      |        |
| < 20          | 2    | 2.9    | 1    | 5.9    | 1    | 2.9    |
| 20-35         | 13   | 76.5   | 11   | 64.7   | 24   | 70.6   |
| >35           | 4    | 23.5   | 5    | 29.4   | 9    | 26.5   |
| Education     |      |        |      |        |      |        |
| SD            | 1    | 5.9    | 1    | 5.9    | 2    | 5.9    |
| SMP           | 2    | 11.8   | 4    | 23.5   | 6    | 17.6   |
| SMA           | 10   | 58.8   | 7    | 41.2   | 17   | 50.0   |
| PT            | 4    | 23.5   | 5    | 29.4   | 9    | 26.5   |
| Work          |      |        |      |        |      |        |
| PNS           | -    | -      | 1    | 5.9    | 1    | 2.9    |
| Swasta        | 3    | 17.6   | 5    | 29.4   | 8    | 23.6   |
| IRT           | 14   | 82.4   | 11   | 64.7   | 25   | 73.5   |
| Paritas       |      |        |      |        |      |        |
| Primipara     | 4    | 23.5   | 5    | 29.4   | 9    | 26.5   |
| Multipara     | 13   | 76.5   | 12   | 70.6   | 25   | 73.5   |

The average results of back pain score pre-test endorphin massage in the experimental and control groups are presented in Table 2.

Table 2. Distribution of pre-test pain scale scores in the experimental and control groups

| Variable     | N  | Mean | SD  | Min | Max |
|--------------|----|------|-----|-----|-----|
| Experiment   | 17 | 5.23 | 1.43| 3.00| 7.00|
| Control      | 17 | 4.52 | 1.32| 3.00| 7.00|

Based on Table 2, it was found that the mean back test of back pain in the experimental group was 5.23 with a minimum score of 3.00 and a maximum score of 7.00 and a standard deviation of 1.43. The mean back pain pre-test in the control group was 4.52 with a minimum score of 3.00 and a maximum score of 7.00 and a standard deviation of 1.32. The average results of back pain score post test that has gave an endorphin massage in the experimental group and without giving endorphin massage in the control group can be seen in Table 3.

Table 3. Distribution of post-test pain scale scores in the experimental and control groups

| Variable     | N  | Mean | SD  | Min | Max |
|--------------|----|------|-----|-----|-----|
| Experiment   | 17 | 3.52 | 1.84| 1.00| 7.00|
| Control      | 17 | 5.35 | 1.45| 2.00| 8.00|

Table 3 shows the mean value of back pain in the experimental group that was 3.52 with a minimum score of 1.00 and a maximum score of 7.00 and a standard deviation of 1.84. The mean back pain post test in the control group was 5.35 with a minimum score of 2.00 and a maximum score of 8.00 and a standard deviation of 1.45.

Bivariate analysis was used to see differences in sleep scores in the experimental and control groups and to see the effectiveness of endorphin massage on the back pain scale of pregnant women. The results of the study are said to be effective if the p value <(0.05). Before processing the data with...
a statistical test, the data normality test is performed first to see that the data used is normally distributed and is worth testing. After a normality test has been obtained and the results of the data are normally distributed p value > α (0.05), the statistical analysis used is the Dependent T Test and Independent T Test.

Table 4. Test data normality with the Shapiro-Wilk test

| Group of respondents | N   | p value |
|----------------------|-----|---------|
| Experiment           | Pretest | 17    | 0.037 |
|                      | Posttest |   | 0.282 |
| Control              | Pretest | 17    | 0.030 |
|                      | Posttest |   | 0.244 |

Table 4 was obtained from the data normality test with the Shapiro-Wilk test results obtained in the pretest and posttest experimental groups are normally distributed data with p value (0.030-0.282)> alpha (0.05).

Comparison of back pain for post test of endorphin massage (experimental group) with no treatment of endorphin massage (control group) can be seen in Table 5. Independent T Test is used to analyze the comparison of back pain post test giving endorphin massage (experimental group) with no administration of endorphin massage (control group).

Table 5. Comparison of back pain post test of endorphin massage with no endorphin

| Variable | N | Mean  | SD  | P     |
|----------|---|-------|-----|-------|
| Experiment | 17 | 3.52  | 1.84 | 0.003 |
| Control  | 17 | 5.35  | 1.45 |       |

Table 5 shows the independent test results obtained mean post-back pain test in the experimental group was 3.52 with a standard deviation of 1.84. The mean post-test back pain of the control group was 5.35 with a standard deviation of 1.45. The statistical test results using the Independent T Test obtained p value 0.003 < alpha 0.05. So it can be concluded that H0 is rejected, which means that endorphin massage is effective against back pain in pregnant women.

4. Conclusion

Based on the results of the study, it can be concluded that the majority of respondents were at the age of 20-35 years (70.6%), the majority of respondents' education was secondary education (50.0%), the majority of the types of work respondents were housewives (73.5%) and the majority of respondents' parity is multigravida (73.5%). Based on the results of statistical tests, there were differences in back pain scores before and after endorphin massage in the experimental group, it can be concluded that endorphin massage is effective against back pain in pregnant women with a p value of 0.001 (p <0.05).

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