

IMPROVING SLEEP QUALITY IN THIRD TRIMESTER PREGNANT WOMEN THROUGH MASSAGE EFFLEURAGE

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Abstract

Background: Sleep quality disorder has become an experience that is considered as normal experience in the third trimester of pregnancy. Pregnant women feel a disruption to their sleep patterns and quality. Some pregnant women do not care about this disorder and do not do any effort to overcome it. By Improving sleep quality, it will give a positive impact on the mother and fetus health. Through this research the opinion of pregnant women should be changed from sleep disturbance they that assume it is a common complain during pregnancy. In short, by using this intervention, sleep quality of mother will be increased and the baby will be health.

Method: The type of research is quasi experiment with one group pre test-post test design approach. The populations in this study were all third trimester pregnant women who had sleep problems. This research was conduct on 7 days. For each intervention, it took time for about 5 minutes. Purposive sampling technique had been used to take the samples. Then, 10 people had been chosen as the samples of this research. The data were collected sleep quality observation sheet (PSQI). It was analyzed by computerization (univariate and bivariate analysis).

Results and Conclusions: The results showed that the average sleep quality of respondents before doing the intervention was 10.90 and after that it was 4.50. Then, there was a difference in the average quality of sleep before and after the intervention with an average difference of 6.40 and $p = 0.005$. Moreover, there was an increase sleep quality with a decrease in the average PSQI score. In short, it can be concluded that effleurage massage is effective in improving the quality of sleep in pregnant women in the third trimester. Then, it is expected that the health workers provide education and training to third trimester pregnant women and also their families able to apply this technique in managing sleep disorders independently.

Keywords: Effleurage Massages, Pregnant Women, Third Trimester, Sleep Quality

Background

Sleep quality disorder has become an experience that is considered as normal experience in the third trimester of pregnancy. Pregnant women feel a disruption to their sleep patterns and quality. They do not care about this disorder and do not do any effort to overcome it. By Improving sleep quality, it will give a positive impact on the mother and fetus health. World Health Organization (WHO) estimates that around 15% of pregnant women have risk complications related to their pregnancy and it may threaten their lives. From 5,600,000 pregnant women in Indonesia, most them have complications or problems. According to The Demographic and health survey which was conducted in 1997, from 1992-1997, 26% of women with live births experienced complications. (FadlunandFeriyanto. A, 2012). Then, Taskiran (2011) reported that sleep quality was reduced due to increasing age, baby's body weight, and mother's sleep duration decreased during the last pregnancy. (Taskiran, 2011)

Sleep quality in pregnant women may occur in the second trimester. It is because of the psychological health. At this time, there is a significant change in the physical and psychological of pregnant women. They do not only face their pregnancy situation but also think about the process that will be faced for childbirth. (Rezaei, Moghadam, & Saraylu, 2013)

Then, as study reported 89 of 100 pregnant women experienced significant changes in sleep hours in the third trimester. In third trimester, pregnant women often face sleep disturbance due to anxiety about labor day, hyperlordosis because of an enlarged stomach which makes sleep uncomfortable and psychological problems. (Facco & Kramer, 2010)

Moreover, according to some research related to this problem such as Wahyuni and LayinatunNi'mah's (2013) it can be concluded that the decrease of sleep duration of pregnant women in the third trimester because insomnia, increased anxiety, and physical discomfort. Then, Andari (2013) stated that sleep quality and sleep patterns third trimester pregnant women are bad because of the physiological and psychological changes experienced by the mother. Furthermore, Atika (2013) suggested that back massage for a long time may provide a deeper effect of relaxation, maximizing the process of stretching the muscles, and increasing tissue elasticity. Next, Nilifda Hanafi, Nadjmir and Hardisman (2016) added that the most important burden in poor sleep quality is stress threatens not properly resolved.

According to the Directorate General of Nutrition and MCH, the Ministry of Health of the Republic of Indonesia (2014), the coverage of K4 pregnant women visits in 2014 and the third quarter was 64.58%. In 2014, in West Sumatra the highest coverage of pregnant women K4 s.d visit in the third quarter was in the District of Lima Puluh Kota 80.00% while the lowest one was in Dhamasraya. It was around 32.86%. There were two districts that have coverage above national coverage in the same period. They were Lima Puluh Kota and West Pasaman Regencies. It was 77.26%. The Health Office District of Lima Puluh Kota (2014) reported that the highest Community Health Center with K4 service coverage was Halaban Community Health Center (84.62%), while the lowest coverage was Mahat Community Health Center (31.53%). Taram Community Health Center (2016) described that on December the number of pregnant women were 386 people and highest percentage of K4 visits were 91.8% with 41 pregnant women.

Based on the results of a preliminary survey which was conducted on 5 pregnant women who had been given a sleep quality questionnaire, 4 from 5 pregnant women had sleep disorder

Literature Review

Pregnancy is a process that occurs in a woman's body. It is not a dangerous pathological condition. This process occurred by fertile women who have sexual intercourse. However, if there is a problem in their health, the pregnancy must be welcomed and prepared in such a way as to be passed properly and safely (Dahro, 2012)

Pregnancy can be divided into three trimesters. They are:

a. First Trimester

The first trimester is the first physical sign. It can be seen in bleeding or spotting. It is about 11 days after conception when the embryo attaches to the lining of the uterus. This implantation bleeding is usually less than the duration of normal menstruation. After a late menstrual period, the next physical change is pain and breast enlargement followed by chronic/persistent fatigue and frequent BAK. The mother will experience the last two symptoms for the next three months. Then, morning sickness or nausea and vomiting usually will start around 8 weeks and may end up to 12 weeks. At 12 weeks' gestation, uterine growth above the pubic symphysis can be felt. Mothers usually gain weight around 1-2 kg during the first trimester.

The changes from month to month are:

1) 4th week / 1st month

It can be seen by the late in menstruation, the breast becomes painful and enlarged, chronic fatigue (persistent) and often BAK. These situations happen in three months. HCG is in the urine and serum 9 days after conception.

2) Week 8 / 2nd month

In eight month, the Nausea and vomiting occur until 12 weeks' gestation. The uterus changes from a pear to a globular form. Hegar and Goodell's signs appeared. Flexion and leucorrhea checkups increased, and weight gain has not yet been seen.

3) 12th week / 3rd month

Chadwick's sign appears and the uterus rises above the symphysis. Braxton Hick contractions begin and it may continue throughout pregnancy. It also potentially increases the urine tract infection. The weight gain around 1-2 kg during the first trimester. The placenta is now fully functional and produces hormones (Dewi and Sunarsih, 2012).

b. Second Trimester

In this trimester, estrogen and progesterone hormones increase and hypervascularization occurs because of the increasing the genitalia's blood vessels. Then, oxygenation and nutrition in the genitalia's tools also improve. Next, the vascularity of the vagina and other back vision are more sensitive. It may increase the sexual desire and arousal. Furthermore, congestion plus relaxation of blood vessel walls and heavy uterus can cause edema and varicose veins. It usually improve during the post partum period. After 12 weeks, the nipple will produce clear white liquid. It is called by colostrums and makes breast size increase progressively.

Besides, constipation usually occurs due to the influence of the increased hormone progesterone. Then, flatulence due to enlarged uterine pressure in the abdominal cavity urges the organs in the stomach, especially the digestive tract, the large intestine upwards and laterally. Last, hemorrhoids are quite frequent in pregnancy mostly due to constipation and increased

pressure of the veins under the uterus including hemorrhoids. Abdominal heat occurs due to backflow of acid gas into the lower esophagus (Romauli, 2011).

c. Third Trimester

In the seventh month, brown fat has begun to form. It is useful as a baby's protector in the first day after being outside world. The body parts of the fetus are more perfect like the hands, feet and nails, eyelashes (it can open and close).

Although the kidneys and lungs are formed, oxygen is still supplied by the mother through the blood flow to the umbilical cord. It is suggested that in this month, mother consumes some foods that contain lots of calcium for the formation of fetal bones and kidneys. Then, the mother should sleep to the right with the feet on the pillow pad.

Moreover, in the eighth month, fetal growth develops rapidly, where the size of the fetus reaches 1.5 kg and a length about 45-50 cm. The fetus has been able to understand simple language outside. For this age, stories are often read since in the womb so the baby will easy fall asleep and do not hold back the urge to urinate. The mother does not panic when there is an early contraction, because it is natural, and it lasts a few minutes in 1-3 times a day.

At the ninth month, the fetus is more refined. Weak tissue continues to grow which functions as a cushion and body warmer when the baby is born. At this stage, the mother will give antibody as a baby's defensive properties it is about 6 months (Kusumawati, 2008). In the third trimester, pregnant women may change her physical and emotional such as feel hot because the body temperature increases. – Then, feels the baby starts to kick hard. - Baby movements begin to appear from the outside. Next, it is difficult for her to have good sleep position. After that, the mild contractions begin to feel in the uterus. Then, vaginal fluid starts to increase and become thicker in the last month. Next, legs are swollen. After that, she also feels happy and fear because giving birth is close.

Moreover, she likes to think more about some duty as a mother (Budi and Novaria Al, 2012). Indiarti (2015) also added that insomnia as a disorder which often experienced pregnant women. It is sleep deprivation in the form of anxiety or not being able to sleep at all. It is common happen at night. This disorder is more common due to psychiatric problems. This condition will arise at the end of pregnancy because of anxiety about the day of delivery, the greater stomach burden makes sleeping uncomfortable. Sleep disturbances will continue to interfere with the physical and psychiatric of the mother lead to the daily activities. It may be disrupted because they become tired easily, do not excited, lazy, explosive emotions and depression.

A pregnant woman is categorized as having a sleep disorder if she has difficulty falling asleep, often wakes up at night, wakes up too early, and has difficulty falling asleep again, wakes up without looking fresh, snoring and feels difficulty to breath or feels pain in the legs when waking up at night. Human sleep needs is depend on the level of development. The following table summarizes human sleep requirements based on age. Sleep quality can be measured by using the Pittsburg Sleep Quality Index (PSQI). This questionnaire is a tool for assessing sleep quality, which consists of 18 question points that are in 7 value components. 18 questions examine extensively sleep-related to some factors such as sleep duration, sleep latency and sleep problems. Each score component has a value range of 0-3. Those 7 components explained how to score for subjective sleep quality, sleep latency, nighttime sleep, sleep efficiency, nighttime

sleep disturbances, sleep medications and disruption in daytime activities and summed components. 0-21 it means that the score more than 5, they had good sleep quality. The score is lower than 5, it means that they had poor sleep quality (Buysse, 1998).

According to Imelda (2010), good sleeping positions during pregnancy are: first, sleeping on a prone position. It is safe for pregnant women. However, in the first trimester of pregnancy breast enlargement and more sensitive breasts will cause discomfort to sleep prone, and at a time when the mother's stomach starts to enlarge early 14 weeks sleep on her stomach is very uncomfortable because the mother has to support her thigh with a pillow to sleep on her stomach due to an enlarged stomach. From a survey of pregnant women who slept prone position before 16 weeks 1% but after more than 16 weeks it became 0%. Second, sleeping with supine position. It is recommended after 16 weeks of pregnancy pregnant women do not to sleep on their backs, because by sleeping the supine position the mother puts the entire weight of the uterus to the back, intestines and inferior vena cava.

Sleep supine position can also increase the risk of back pain, hemorrhoids, digestive disorders and interfere the breathing and circulation. In the second and third trimesters sleeping position can also affect blood pressure. For some women, a decrease in blood pressure makes them feel dizzy and partly increases blood pressure. In cases of pregnancy with high blood pressure, sleeping with a supine position is not recommended. According to Uliyah and Hidayat (2015), some factors that influence sleep are: the first one is disease. Many diseases may increase sleep needs, such as diseases caused by infection, especially spleen infections. Spleen infection is related to fatigue, so the sufferer needs more sleep to overcome it. There are also many illnesses that make the patient sleep less, even unable to sleep. Second is exercise and Fatigue. Training due to high activity can require more sleep to maintain the balance of energy that has been released.

This can be seen in someone who has done activity and achieved fatigue. Third one is psychological stress. It may occur to someone who have mental stress. Someone who has psychological problems will experience anxiety, so it is difficult to sleep. Medication can also affect sleep. Some types of drugs that affect the sleep process, such as types of diuretic drugs that can cause antidepressant insomnia. Nutrition Fulfillment of nutritional needs can accelerate the process of sleep. High protein consumption can cause the individual to accelerate the process of going to sleep because tryptophan is produced. Tryptophan is an amino acid derived from protein digestion that can help ease sleep. Likewise, lack of nutritional needs can also affect the sleep process, sometimes even difficult to sleep. Next is environment A safe and comfortable environment for a person can speed up the process of sleeping. Conversely, an unsafe environment is comfortable for someone can cause loss of calm so that it affects the sleep process. After that is motivation. Motivation is an urge or desire of someone to sleep, so that it can affect the process of sleep. In addition, the desire to not sleep can lead to disruption of the sleep process.

According to Wijarnako et al (2010), massage is a hand gesture that aims to get fitness, recover injuries, cure diseases and support sports or work achievements. The mechanical effect of this hand motion will cause a sense of calm and comfort for the recipient. Massage can be given to everyone. Its uniqueness lies in its ability as a tool to establish wordless communication between therapist and patient. With a smooth and soft touch of the hand can cause a sense of

pleasure and sympathy for the patient to the therapist. If the patient gets a good and correct massage, they will be happy, safe and peaceful mental and physical situation. It also causes the cessation of the child's or baby's crying.

Effleurage is a movement that is done by rubbing it repeatedly in the same direction. This manipulation can be done with the surface of the palm, both with one or both hands. This massage is done with a stronger intensity called *reibungen*. The therapist uses the tips of the fingers, knuckles and the back of the hand or fist hand. The goal of stronger rubbing is to cause a strong hyperaemia in the skin. *Reibungen* can be done by rubbing a rough towel into the body to remove / remove oil or lubricant from the body, as well as to obtain a strong hyperaemia. The power of effleurage manipulation during the massage cannot be changed. Smooth muscles, you should not be too strong in the massage. The effleurage done in the transverse direction provides a stronger stimulus compared to the longitudinal direction, generally this manipulation is done composing the muscle extension, and towards the heart. The purposes of effleurage are to increase the heat from the surface of the skin and muscles, to streamline blood flow in veins and capillaries, to make the lymph fluid smooth to absorb the remnants of combustion (oxidation) and to swell and also reduce muscle fatigue (Darni et al, 2010).

Method

This research is Quasi Experiment with the One Group Pretest Posttest Design approach which is to determine the effectiveness of effleurage massage. The populations in this study were third trimester pregnant women who had sleep quality disturbances. Purposive sampling had been used to choose the samples. It was based on a particular consideration based on the characteristics or characteristics that were previously known by the researcher. The samples were 10 people. In order to test the normality, Shapiro-Wilk test had been used. The p-value results <0.05 , the data was not normally distributed, and it had been used the Wilcoxon test.

Result and Discussion

Table 1
Massage Effleurage Affectivity toward the Quality of Sleep in Pregnant Women in the Taram Community Health Center in 2017

Variable	Mean	SD	N	Z	P
Pre test	10,90	1,10	10	-2,82	0,005
Post test	4,50	0,52	10		

Based on the Wilcoxon Test in table 1, it is described that the average quality of sleep in pregnant women in the third trimester before intervention was 10.90 and after the intervention, it was 4.50. The significance value of p-value was 0.005 or $0.005 < 0.05$, then H_0 is rejected. It can be concluded that there was a decrease in the score of The Pittsburgh Sleep Quality Index (PSQI) or an increase in sleep quality after a significant intervention.

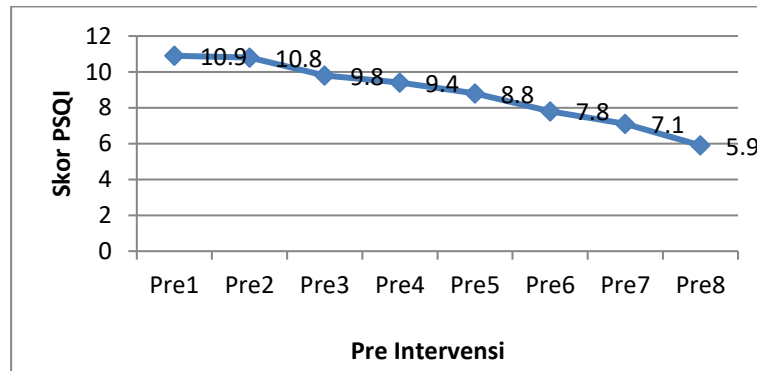


Figure 1

The Mean Change in the Pre Test for each Intervention based on PSQI (Pre Intervensi 1 – Pre Intervensi 8)

Graph 1 presents the change of pre-test average for each intervention based on the score of The Pittsburgh Sleep Quality Index (PSQI), the highest average PSQI score was seen in pre-intervention 1 and the lowest change occurred in pre-intervention 8.

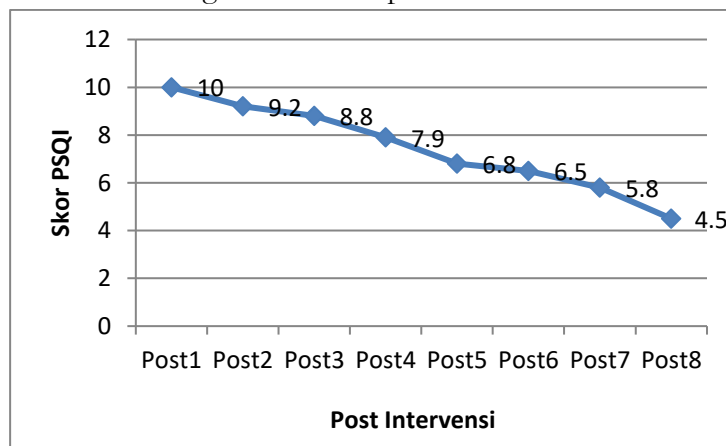


Figure 2

The Mean Change in the Posttest for each Intervention based on PSQI scores (Post Intervensi 1 – Post Intervensi 8)

Based on graph 2, it can be seen that the changes of post test for each intervention in The Pittsburgh Sleep Quality Index (PSQI) were the highest score of The Pittsburgh Sleep Quality Index (PSQI) was in post-intervention 1 and the lowest change occurred in the post intervention 8.

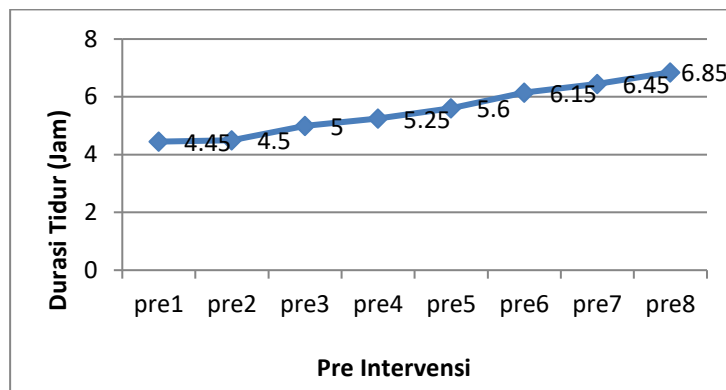


Figure 3

The Mean Change in the Pretest for each Intervention based on Sleep Duration (Pre Intervensi 1 – Pre Intervensi 8)

Graph 3 describes that the average change in pre-test for each intervention based on sleep duration, the lowest average sleep duration was in pre-intervention 1 and the highest average sleep duration was in pre-intervention 8.

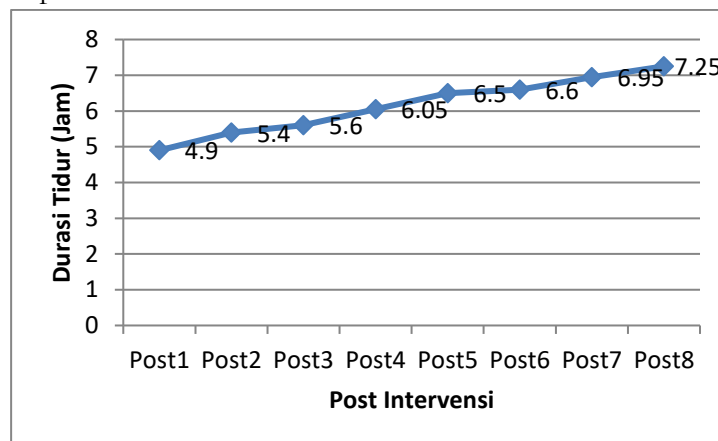


Figure 4

Mean Change in the Posttest for each Intervention based on Sleep Duration (Post Intervensi 1 – Post Intervensi 8)

Graph 4 presents the changes mean post-test of each intervention based on sleep duration. The lowest average sleep duration was in post-intervention 1 and the highest average sleep duration in post-intervention 8. From the result of the research above, it can be seen that there was a difference in the average sleep quality of third trimester pregnant women between before and after massage with effleurage, stroking and friction techniques. The average sleep quality score based on The Pittsburgh Sleep Quality Index (PSQI) before intervention was 10, 90 and after intervention 4.50 with $p\text{-value} = 0.005$. It means that there was a significant difference in the average sleep quality score between before and after the intervention.

Impaired sleep quality in pregnant women is often caused by psychological factors and physiological changes during pregnancy. According to Facco, et al (2010), 89 from 100 pregnant women had significant changes in sleep hours in the third trimester. This condition occurs due

to anxiety about childbirth, hyperlordosis due to an increasingly enlarged stomach that makes sleep uncomfortable and common psychological problems. The results of this study are in line with the previous research which was conducted by Atika (2013) on improving sleep quality in third trimester pregnant women, based on Wilcoxon test $p\text{-value} = 0.005$.

According to the results of the study, effleurage massage therapy is effective in improving sleep quality in pregnant women in the third trimester. Sleep quality disorders in pregnant women in third trimester are generally caused by psychological factors and physiological changes during pregnancy. Moreover, the discomfort during pregnancy due to physiological changes and anxiety facing childbirth causes disruption of sleep quality patterns in pregnant women. Effleurage massage therapy is stroking and friction techniques that may overcome various problems that trigger sleep quality disturbances in pregnant women. It also may improve body relaxation by improving tissue circulation and reducing muscle fatigue which often occurs in pregnant women in the third trimester due to the burden on the muscles of the back, hips and waist. This massage will increase hormone secretion endorphins in the blood, where these hormones are natural analgesics for the body so that by increasing the concentration of the hormone endorphin in the blood it will provide a comfortable effect and reduce anxiety and stress in pregnant women. In short, it can be concluded that effleurage massage therapy by stroking and fractioning are effective in improving sleep quality in pregnant women in the third trimester.

Conclusion

Based on the results of the research and discussion about the effectiveness effleurage massage by stroking and fractioning techniques on the sleep quality of third trimester pregnant women, it can be found that the average sleep quality score of third trimester pregnant women based on PSQI before intervention was 10.90 with a sleep duration of 4 hours. Then, the average score sleep quality of third trimester pregnant women based on PSQI after intervention was 4.50 with a sleep duration of 7.5 hours. There was a difference in the average score of sleep quality of pregnant women between before and after the intervention was 6.40 and $p\text{-value} = 0.005$. In short, it is recommended for pregnant women in Trimester III to do effleurage massage regularly to improve and maintain the quality of their sleep in order to improve their health and their babies

References

- Andari, Putri Sri. (2013). *Kualitas Tidur dan Pola Tidur Pada Ibu Hamil Trimester III Yang Memeriksa Kebamilan Di Klinik Mariyati Labuhan Deli Kecamatan Medan Marelan Tahun 2013*. Di ambil dari <http://repository.usu.ac.id/bitstream/123456789/52034/7/> (23 Desember 2016)
- Atika, Anna Fita. (2013). *Pengaruh Back Massage Terhadap Kualitas Tidur Ibu Hamil Trimester III*. Di ambil dari <http://eprints.ums.ac.id/27523/11/> (3 Januari 2017)
- Budi, T.P. dan Novaria A.I. (2012). *Tips Cerdas Kebamilan Persiapan Hamil Hingga Menyusui*. Jakarta Selatan: Tugu Publisher
- Buysse. (1998). The Pittsburgh Sleep Quality Index : A New Instrument for Psychiatric Practice and Research. *Psychiatric Research*, 193–213.

- Dahro, Ahmad. (2012). *Psikologi Kebidanan Analisis Perilaku Wanita Untuk Kesehatan*. Jakarta: Salemba Medika
- Darni, Rosmaneli dan Zulman. (2010). *Buku Ajar Teori Dan Praktek Massage Olabraga*. Fakultas Ilmu Olahraga Universitas Negeri Padang
- Dewi, Vivian Nanny Lia dan Tri Sunarsih. (2012). *Asuhan Kebamilan Untuk Kebidanan*. Jakarta: Salemba Medika
- Facco, F. L., & Kramer, J. (2010). Sleep Disturbances in Pregnancy : Obstetrics & Gynecology, 115(1), 13–15. Retrieved from https://journals.lww.com/greenjournal/Fulltext/2010/01000/Sleep_Disturbances_in_Pregnancy.14.aspx
- Fadlun, dan Achmad Feryanto. (2012). *Asuhan Kebidanan Patologis*. Jakarta: Salemba Medika
- Rezaei, E., Moghadam, Z., & Saraylu, K. (2013). Quality of life in pregnant women with sleep disorder. *Journal of Family and Reproductive Health*, 7(2), 87–93. <https://doi.org/10.4181/RNC.2013.21.821.6p>
- Imelda, Rina. (2010). *Panduan Kebamilan dan Perawatan Bayi dari A-Z*. Surabaya: Victory Inti Cipta
- Indiarti, M.T. (2015). *Panduan Terbaik A-Z Kebamilan, Persalinan, dan Perawatan Bayi Update dan Terlengkap*. Yogyakarta: Indoliterasi
- Kemenkes RI. (2014). *Data dan Informasi Kesehatan Provinsi Aceh*. Di ambil dari <http://www.depkes.go.id/> (29 Desember 2016)
- Kurnia, A.D., dkk. (2009). *Aromaterapi Bunga Lavender Memperbaiki Kualitas Tidur Pada Lansia*, Vol. XXV. No. 2 (7 April 2017)
- Kusumawati. (2008). *Panduan Lengkap Kebamilan Dan Persalinan*. Jakarta Selatan: Tugu Publisher
- Malini, dkk. (2015). *Latihan Senam Aerobik Meningkatkan Kualitas Tidur Pada Mahasisni Program Studi Fisioterapi Fakultas Kedokteran Universitas Udayana*. (7 April 2017)
- Nilifda, Hanafi, Nadjmir dan Hadisman. (2016). *Hubungan Kualitas Tidur dengan Prestasi Akademik Mahasiswa Program Studi Pendidikan Dokter Angkatan 2010 FK Universitas Andalas*. Di ambil dari <http://jurnal.fk.unand.ac.id> (23 Februari 2017)
- Notoatmodjo, Seokidjo. (2010). *Metodologi Penelitian Kesehatan*. Jakarta: Rineka Cipta
- Romauli, Suryati. (2011). *Buku Ajar Askeb I: Konsep Dasar Asuhan Kebamilan*. Yogyakarta: Nuha Medika
- Syaifuddin. (2009). *Anatomi Tubuh Manusia Untuk Mahasiswa Keperawatan Edisi 2*. Jakarta: Salemba Medika
- Taskiran, N. (2011). Pregnancy and sleep quality. *Journal of Turkish of Obstetrics and Gynecology*, 8(3), 181–187. <https://doi.org/10.5505/tjod.2011.14880>
- Uliyah, Musrifatul dan A. Aziz Alimul Hidayat. (2015). *Keterampilan Dasar Praktik Klinik Untuk Kebidanan Edisi 3*. Jakarta: Salemba Medika
- Wahyuni, dan Layinatun Ni'mah. (2013). *Manfaat Senam Hamil Untuk Meningkatkan Durasi Tidur Ibu Hamil*, KEMAS 8 (2), 145-152
- Wijanarko, Bambang, Slamet Riyadi dkk. (2010). *Masase Terapi Cedera Olabraga*. Surakarta: Yuma Pressindo.