

Original Research Article

The effectiveness of yogic breathing to comfort level of first trimester pregnant mothers at community health center of Kragilan district working area, Serang, Banten, Indonesia

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ABSTRACT

Background: Pregnancy is a natural and physiological process. During the process, women will get some physiological, psychological, and social changes which cause discomfort. Techniques of yogic breathing are able to control respiration and mind. The mechanism of physical change is started by conscious relaxation which happens systematically in the body, which then leads into a deeper relaxation. The study intends to examine the effectiveness of yogic breathing to comfort level of pregnant mothers in first trimester.

Methods: The study is a quantitative research with quasi experimental design. It employs pre-test and post-test without control group. The samples are 42 pregnant mothers who were selected by purposive sampling technique which is a type of non-probability sampling. The instrument for measuring comfort level was adopted from GCQ (General Comfort Questionnaire). For the analysis of statistical data, McNemar Test is used.

Results: The univariate analysis shows proportional data of respondents' comfort level frequency before the intervention of yogic breathing was given. Most of the respondents (64.3%) were in discomfort category level of their first trimester pregnancy. Meanwhile, the comfort level after getting yogic breathing intervention is increased. Most of the respondents (66.7%) are in comfort level toward their first trimester pregnancy. From bivariate analysis, the researchers obtained difference in the comfort level proportion of first trimester pregnant mothers before and after getting yogic breathing intervention, with p value 0.007.

Conclusions: The study suggests that yogic breathing should be continued as an applied intervention in nursing service especially for pregnant mothers who get discomfort within first trimester.

Keywords: Comfort, First trimester, Pregnant mothers, Yogic breathing

INTRODUCTION

Pregnancy is a sustainable physiological process, a unity of conception, implantation, and mother's adaptation to it, the care, and hormonal change as preparation in welcoming the baby delivery.¹ During pregnancy process, a woman will get some physiological, psychological, and social changes. Physiological change occurs not only in reproduction organs but also in cardiovascular, respiration, kidneys, integument, musculoskeletal,

neurological, digestive, and endocrinal system. Meanwhile, psychological change is an emotional response as the result of body alteration and increased responsibility relating to pregnancy. Moreover, social change is resulted by the automatic alteration of mother's role in which she previously has no child in her life.^{2,3}

Due to the changes during pregnancy, women are required to adapt with them. Generally, the changes are able to cause discomfort and anxiety for most of pregnant

mothers. Percentage of discomfort in first trimester (2-8 weeks) of pregnancy occurs to 50-75% of pregnant mothers due to nausea and vomit which often cause a shock.⁴ States in her research journal that the discomfort felt by pregnant mothers is less acceptable by their physical condition. The discomfort caused by physical and physiological condition of pregnant mothers is a problem existed during pregnancy.⁵ A previous study which involves 49 respondents as the samples identifies that the discomfort often happens within first trimester. It is signed by nausea and vomit until 85.71%.

The discomfort felt during pregnancy process basically is a physiological condition of pregnant mother. However, argues that although it is a natural physiological condition, it needs prevention and treatment.⁶ Nausea and vomit are the most frequent discomfort during first trimester. If the symptoms become more awful, pregnant mother may have a pregnancy disorder which is called hiperemesis gravidarum. Discomfort during pregnancy is a substance of physiological condition in which women suffer from physiological changes which happen not only within reproduction system and breasts but also within other organs, including digestive system, respiratory system, tractus urinarius, blood system and blood circulation.²

Some women are very happy and proud of their pregnancy, while some of them are worried and depressed.⁷ A previous study supports the argument, finding that 57.3% of women who have their first time of pregnancy only know a little bit about what happens in their body either physically or psychologically.⁸ It may cause discomfort for women during pregnancy. Therefore, nurses, especially maternity nurses, play a role in solving the discomfort by assimilating their knowledge to develop nursing techniques, fulfilling basic needs of patients, and collaborating in a team to give pharmacological and non-pharmacological therapies.⁹ As with what has been stated by that Nurses who are able to integrate their theoretical knowledge and evaluate the nursing care process provided, will be able to identify potential problems or potential errors especially of patients in lowering the level of anxiety and discomfort.¹⁰

Mind, body and spiritual therapies include relaxation, meditation, hypnosis, and yoga. They are a group of Complementary and Alternative Therapies (CATs) which can be given by nurses to improve, maintain, keep patient's health and prosperity, prevent them from diseases and release any symptoms, such as discomfort caused by anxiety, headache, and sleeping disorder.¹¹

Yogic breathing technique can control respiration and mind. The mechanism of physical change through yogic breathing is initialed by creating relaxing situation on conscious mind, which systematically leads body to a deeper relaxation.¹² The condition will make body relaxed, breath slower, and give positive effect on whole circulation system and heart, that is good for taking a rest

and rejuvenation process. Sympathetic nervous system which is always ready for receiving messages is safe to do relaxation; meanwhile, parasympathetic nervous system will respond to do it. Besides sympathetic nerves, messages for doing relaxation is also received by endocrinal gland which is responsible in almost whole emotional and physical condition.^{12,13}

Breathing exercise that can be done is yogic breathing exercise (Pranayama). Worby explains that Pranayama is a technique of breathing slowly and deeply, using diaphragm muscles, so abdomen is able to be lifted slowly and chest blows fully. The relaxed situation created will erase sounds in mind; thus, body is able to release muscles tension.¹⁴ The study focuses on the effect of the intervention to the comfort level of first trimester pregnant mothers, in which mothers in some areas including Kragilan District never applied one of yoga techniques. Moreover, not all nurses and midwives working in the District knew that yogic breathing is existed since the technique needs specific skills. Therefore, the researchers are interested to examine the effects of yogic breathing to comfort level of first trimester pregnant mothers.

METHODS

Design

The study is a quantitative research with quasi experimental design. It uses pre-test and post-test without control group.

Sample

The research samples are first trimester pregnant mothers who actively visited Community Health Center of Kragilan District working center. The sampling technique used is nonprobability sampling, specifically purposive sampling technique. The respondents are 42 first trimester pregnant mothers who were selected after calculating a formula of sample size and based on the purpose of research data analysis.

Data collection

The data collection was conducted from May to June 2017 at Community Health Center of Kragilan District working area, Serang, Banten. In collecting the data, the researchers were helped by 2 facilitators who were previously taught about yogic breathing. In first day, the researchers selected and gathered respondents based on inclusion criteria. Then, they explained the research objectives, benefits, time schedule, respondent rights, time contract of research process, and asked for respondents' consent. In the same day, the researchers conducted pre-test by giving questionnaire for examining comfort level of first trimester pregnant mothers and calculated the result directly before applying the intervention. After that, still in Day-1, yogic breathing

intervention was started by giving information about what it is through leaflet and teaching about the technique and how to do yogic breathing I. In day-3, according to the agreement contract, the respondents were invited and taught about the techniques and how to do yogic breathing II. The researchers and the respondents made contract and agreement to do yogic breathing exercise twice a day. To control the consistency of the intervention, the researchers made the schedule of yogic breathing exercise which is suited to the agreement. The researchers also created a whatsapp group to monitor and remind the respondents to do yogic breathing exercise routinely. 3 weeks after applying the intervention, the researchers invited the pregnant mothers to fill the questionnaire of comfort level during pregnancy as post-test.

Instruments

General Comfort Questionnaire (GCQ)

The questionnaire used in this study is General Comfort Questionnaire (GCQ) developed from theory of Kolcaba (Comfort Theory) which has been modified. The questionnaire consists of 48 questions and the answers are optional in form of Likert scale scored among 1 to 4. 4 means very agree, 3 means agree, 2 is for not agree, and 1 is very not agree. The respondents answered based on what they feel on each question item. Formerly, the questionnaire was ever utilized in Spain by involving 600 nurses who worked in 8 hospitals in Valencia and Murcia.¹⁵ The researchers tested the questionnaire validity and reliability and used cronbach alpha to analyze the statistical data and got score 0.90.

Validity and reliability test

After conducting validity test in Community Health Center of Kragilan District working area, Serang, Banten by involving 25 respondents, the researchers determined the score of *r* table is 0.396. Among 27 questions, 24 questions show calculated *r* is higher than *r* table. Thus, the 24 questions are valid. Nevertheless, 3 questions are not valid since their calculated *r* is lower than *r* table. They are question number 6, 8, and 23. Therefore, the total numbers of questions used in this research are 24 in which the cronbach's alpha value is 0.911.

Data analysis

The analysis of research data was done to prove the hypothesis and answer the research question "Does yogic breathing give effects on comfort level of first trimester pregnant mothers.

The dependent variable namely comfort level is nominal/binary response by using cross tabulation 2x2. The research was designed as one group pre-test and post-test, in which the samples were tested twice to prove whether there are some changes after getting the

intervention. The statistical data were analyzed by McNemar test formula with α significance of 5%.

RESULTS

Univariate analysis

The univariate analysis administered was intended to examine the frequency distribution of each research variable, namely comfort level before and after yogic breathing intervention and demographic data including age, parity status, education, occupation, and ethnic origin.

Table 1: Comfort level of respondents before and after yogic breathing intervention.

Comfort level	Before intervention		After intervention	
	F	%	F	%
Uncomfortable	27	64.3	14	33.3
Comfortable	15	35.7	28	66.7

Table 1 shows that the frequency data proportion of respondents' comfort level before getting yogic breathing intervention is 64.3%. It means that most of respondents felt uncomfortable with their pregnancy in first trimester. Meanwhile, the comfort level after getting the intervention is increased. 66.7% of respondents felt comfortable with their first trimester pregnancy.

Table 2: Demographic data of respondents including age, parity status, education, occupation, and ethnic origin at community health center of Kragilan district working area, Serang, Banten.

Demographic data	Frequency (n)	(%)
Age		
≤ 20 years	7	16.7
> 20 years	35	83.3
Parity status		
Primipara	22	52.4
Multipara	20	47.6
Education		
Low (SD-SMP)	25	59.5
High (sma-pt)	17	40.5
Occupation		
Unemployed	26	61.9
Employed	16	38.1
Ethnic origin		
Javanese	32	76.2
Sundanese	10	23.8

Table 2 shows the proportion of respondents' demographic data. Most of respondents (35 people/83.3%) are more than 20 years old. Based on parity status, most of them (52.4%) are in the category of primipara. The respondents were identified mostly to have a low educational background (59.5%) including

elementary school and junior high school. Based on occupation, most of respondents are unemployed (26 people/59.3%). In addition, almost respondents (76.2%) are Javanese.

Bivariate analysis

The bivariate analysis of pre-test and post-test in this study uses statistical method through non-parametric statistical approach, namely McNemar Test.

Table 3 shows the proportion data of comfort level difference of first trimester pregnant mothers before and

after getting yogic breathing intervention. The researchers identified some changes in 17 respondents (40.5%) who previously felt uncomfortable with their first trimester pregnancy but then felt comfortable after getting yogic breathing intervention.

The result of statistical test by using McNemar Test shows p value is 0.007 at $\alpha = 0.05$ ($p < \alpha$), which statistically means that the proportion difference of comfort level is existed before and after giving yogic breathing intervention to first trimester pregnant mothers at Community Health Center of Kragilan District, Serang, Banten.

Table 3: Proportion difference of comfort level of first trimester pregnant mothers before and after getting yogic breathing intervention.

Comfort level before intervention	Comfort level after intervention		Total (%)	P value
	Uncomfortable (%)	Comfortable (%)		
Discomfort	10 (23.8)	17 (40.5)	27 (64.3)	0.007
Comfort	4 (9.5)	11 (26.)	15 (35.)	
Total	14 (33.3)	28 (66.7)	42 (100.0)	

Statistided Analysis with McNemar Test

DISCUSSION

Depiction of comfort level of first trimester pregnant mothers before and after getting yogic breathing intervention

The research result shows that most of respondents (64.3%) felt uncomfortable with their first trimester pregnancy before getting yogic breathing intervention.⁵ In other hand, the comfort level is increased after they received the intervention (66.7% respondents). The results parallel previous study which involves 49 respondents as samples and identifies that discomfort is a frequent problem which mothers suffer from in their first trimester pregnancy. The discomfort is signed by nausea and vomit up to 85.71%.

The researchers explained in detail that the uncomfortable feeling which occurs to the respondents was measured through several symptoms including: frequently feeling nauseous and vomiting, unsmooth defecation, feeling anxious about what will happen during her pregnancy, loss of appetite, and easily feeling tired when doing activities. Moreover, pregnant mothers feel tired and dizzy more than usual due to hormones in their body actively adapt to pregnancy, causing physical and emotional alteration.

Pregnant mothers need to do urination more often because of two causes: their womb is growing, which pushes bladder and due to hormonal factor.¹⁶ Nausea and vomiting are known as the results of chaos in normal body activity due to the effect of chorionic gonadotropin hormone. Nausea and vomit (emesis gravidarum) are

natural symptoms and often occur in first trimester. Nausea usually happens in morning, but it also can occur every time and in night. The symptoms usually occur in the 6th weeks after last day period and happen around 10 weeks. Nausea and vomit occur to 60-80% of primigravida and 40-60% of multigravida. In addition, one of one thousand pregnancies have heavier symptoms.¹⁷

The research results and previous studies support what has been explained by Ummah that during pregnancy a woman will experience some changes in which they are required to be able to adapt.⁵ The alteration often experienced by women during their pregnancy is discomfort.

Effects of yogic breathing to comfort level of first trimester pregnant mothers

The research results show some changes to 17 respondents or 40.5% of the total samples. Previously they were uncomfortable with their pregnancy in first trimester but then able to feel comfort with it after getting yogic breathing intervention. According to the data, the researchers identified different proportion in comfort level of first trimester pregnant mothers before and after giving yogic breathing intervention.

The statistical result of McNemar Test shows p value is 0.007 at $\alpha = 0.05$ ($p < \alpha$). It means that there is proportion difference in comfort level of first trimester pregnant mothers before and after giving yogic breathing intervention at Community Health Center of Kragilan District working area, Serang, Banten.

The research result parallels the findings of Mediarti's study which uses quasi experimental research design with one group pre-test and post-test.¹⁸ The study obtains p value 0.005 which means there is a significant difference in pregnant mothers' complaints before and after antenatal yoga exercise at Merdeka Community Health Center. Another study conducted by Beddoe and colleagues proves that yoga and meditation are able to release psychological stress and physical injury during the process of pregnancy and labor, to increase comfort, and to decrease anxiety and pain.¹⁹

Other similar findings can be read in several studies including, the researchers stated that yoga gives some benefits for pregnant mothers, women in labor process and after giving childbirth, including alleviating edema and cramp which often occur in last months of pregnancy, facilitating baby position and movement, increasing digestive system and appetite, increasing energy, slowing metabolism, recovering calmness and focus, releasing nausea, morning sickness and negative feeling, reducing tension around cervix and birth canal by focusing on opening pelvis to ease labor process, facilitating post-partum treatment by recovering uterus, abdomen, and pelvic floor, reducing discomfort and depression during pregnancy.²⁰⁻²³

Basically, uncomfortable feeling during pregnancy is a physiological condition which happens to pregnant mothers. However, prevention and treatment are required. Nausea and vomiting often occur during first trimester. If the symptoms become heavier, pregnancy disorder called hyperemesis gravidarum may occur.⁶ Excessive nausea and vomiting may cause body solution of first trimester pregnant mothers diminished, impacting on blood coagulation (hemoconcentration) and reduced blood circulation to body tissues. Oxygen and nutrition deficiency in body tissues will make damage in it, impacting on the health decrease of mother and her fetus, which require a serious treatment.²⁴

The discomfort which occurs to pregnant mothers as respondents can be minimized by applying yoga technique. Yoga is a technique which connects human physic, mental, and spiritual for achieving comprehensive health.²² Yoga technique applied for first trimester pregnant mothers is a mild technique, such as relaxation and yogic breathing, and able to help the respondents take a rest. An example of yogic breathing technique is *dhirga swasam* which can optimize lungs capacity of taking more oxygen to be absorbed by body. Another technique is *anuloma viloma* which is useful to balance mind activities, to eliminate anxiety, to calm the mind, and to improve concentration and balance of body and mind. The next techniques are *sitali* and *sitakri*. They are useful to provide coolness on the body, to calm the mind, to alleviate heartburn, to overcome heatiness, and to reduce nausea during pregnancy. The last technique is *Brahmari* which is useful to eliminate anxiety, to calm the mind, and to overcome insomnia.

Yogic breathing is a breathing exercise by inhaling and exhaling alternately and slowly with one nostril and diaphragm muscles, enabling abdomen lifted slowly and chest blooming fully; it also includes spirituality elements in the end of exercise.^{25,14} Yogic breathing techniques can control respiration and mind. The mechanism of physical change is started by the creation of relaxation atmosphere in consciousness, systematically leading body to a deep relaxing condition.¹² The creation of relaxation atmosphere will erase sounds in mind; thus, body will be able to release muscles tension. Relaxing atmosphere will make body relaxed, breath slower, and give positive influence on whole circulation system and heart for resting and rejuvenation. Sympathetic nervous system which is always ready to receive messages is safe to do relaxation; meanwhile, parasympathetic nervous system will respond to relaxation. Besides sympathetic nerves, a message for relaxation is also received by endocrinal gland which is responsible for almost all emotional and physical condition.^{12,13}

The limitation of the research is unavailability of control group when implementing yogic breathing intervention. Moreover, the effectiveness of the intervention cannot be identified due to the very limited scope of research location. Another limitation is the condition in which not every pregnant mother as respondent used smartphone and social media application. It made the researchers cannot control and observe directly each respondent daily. Therefore, they cooperated with several cadres to do controlling and observation to the respondents in doing yogic breathing intervention.

CONCLUSION

The analysis result shows that comfort level of first trimester pregnant mothers before getting yogic breathing intervention is low. 64.3% of respondents are in discomfort category. In other hand, their comfort level is increased after getting the intervention. 66.7% of the respondents felt comfortable with their first trimester pregnancy. The result of bivariate analysis shows a different proportion of comfort level of first trimester pregnant mothers before and after getting yogic breathing intervention, in which p value is 0.007 at $\alpha = 0.05$ ($p < \alpha$).

Recommendations

Based on the research results, the researchers suggest nurses and other health workers who have responsibility in providing health service to be educated about yogic breathing and the benefits for decreasing women's discomfort in their first trimester either formally or non-formally, such as joining trainings and seminars which can upgrade their knowledge and improve their skills on the issue. Yogic breathing is the intervention studied in the research to examine the effects on comfort level of first trimester pregnant mothers. For further studies, the subject can be selected as one of interventions to be

implemented in nursing service for women who feel uncomfortable with their first trimester pregnancy.

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