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Research Article

The Effect of Yoga with Motivational Interviewing During Pregnancy on Physical Activity

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Abstract

Aims: Physical activity is crucial for a healthy pregnancy, promoting physical and mental health. Pregnant women can reduce weight gain, low back pain, and high-risk pregnancies. Yoga is a structured exercise for increased physical activity. Motivational Interviewing (MI) can encourage safe physical activity behavior in pregnant women. Knowing the effect of Yoga with Motivational Interviewing on physical activity in pregnant women.
Methods: This study used a quasi-experiment design, dividing 52 pregnant women into two groups: 26 intervention and 26 control groups. The intervention involved yoga and weekly physical activity, with data collected using the PPAQ.
Results: The effect of providing Structured Exercise Training and Motivational Interviewing interventions on physical activity in pregnant women Wilcoxon Test with a p-value of 0.003 (significant <0.05) and the Mann-Whitney Test p-value 0.001 (significant <0.05) which means that the hypothesis is accepted. ANCOVA results in p-value 0.000.
Conclusions: Research in obstetric clinics and community settings reveals the impact of yoga and MI on pregnant women. Structured exercise training and motivational interviewing can increase physical activity in pregnant women. The study suggests improving education and facilities for yoga in obstetric clinics and communities.

Keywords:
Motivational Interviewing, Physical Activity, Pregnancy, Woman, Yoga

INTRODUCTION

Pregnancy is a process that produces changes psychological, hormonal, and physical changes and can adapt to the lifestyle and the process of pregnancy (1). The Changes in pregnant women can cause various impacts on health problems such as experiencing pregnancy-related symptoms, including lumbopelvic pain, psychological problems, such as anxiety and depression, gestational weight gain, and pre-eclampsia. It will occur during pregnancy in each trimester (2). Among the changes that pregnant women go through in the first trimester is morning sickness, which lasts for about five or six weeks and causes the mother to suffer from headaches, nausea, vomiting, lethargy, sensitivity, and mood swings. The second trimester is characterized by a continued 1.5-2 kg gain in body weight, frequent vertigo due to constricted blood vessels preventing adequate blood flow and oxygen to the brain, varicose veins in the legs, constipation, cramps, and numbness (3). During the third trimester of pregnancy, moms-to-be may encounter a range of

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symptoms. These include lower back pain, which worsens with gestational age and weight gain, swelling and cramps in the legs as a result of the enlarged uterus compressing the pelvic area, trouble sleeping and exhaustion from waking up multiple times during the night to relieve pain and the need to pee, difficulty breathing as a result of the uterus swelling and pressing on the diaphragm, and overall feelings of anxiety related to the impending birth (4,5). All these changes make pregnant women become less physically active.

Inadequate attention to the physical and mental health changes that pregnant women undergo during their pregnancies might lead to "a sedentary life or less Physical Activity during pregnancy" (6). Hormonal changes during pregnancy can make a woman feel physically sluggish and fatigued more rapidly, which in turn might make her feel lazy and unmotivated to engage in physical activity. According to (7), a person is considered inactive if they do not engage in physical activity for at least 30 to 60 minutes daily and have a low caloric output, specifically less than 1.5 METs. This could include activities such as sitting, reading, watching TV, studying, playing games, or using the computer for an hour. It is not known what percentage of pregnant women in Indonesia engage in physical exercise. An increase of 26.1% to 33.5% was noted in physical activity (8). In order to meet an increased caloric demand or to burn more calories than the body uses while at rest, physical activity encompasses any and all movement of the body that involves tensing muscles (9). The capacity to engage in regular physical activity is a prerequisite to doing so at the recommended age. Exercise at a moderate intensity for the purpose of improving health and fitness (10). Patients with risk factors for degenerative diseases are advised to engage in all forms of physical activity by their healthcare providers (11). Several factors are mentioned in the literature as potential roadblocks to physical activity during pregnancy. These include worries about exercising too much, a lack of desire to lead an active lifestyle, fluctuations in energy levels, and insufficient time to exercise. Physical activity has positive effects on health, mood, and quality of life across the lifespan (12). The general health of the population is shown in the low rates of pregnancy-related complications such as obesity, diabetes, hypertension, preterm birth, and cesarean sections (7). Physically active pregnant women are less likely to suffer from depression and anxiety, and they also report better mental health and better adaptation to the changes that pregnancy brings (13).

The American College of Obstetricians and Gynecologists recommends that all pregnant women who do not have any contraindications may engage in physical activity while they are carrying their child. It is recommended that pregnant women engage in physical exercise for a minimum of 150 minutes per week. Alternatively, this can be accomplished by engaging in activities of moderate intensity for 30-60 minutes on three to five days per week. Some examples of such activities include walking, yoga, and Pilates (14). Moderate-intensity activities can be carried out by pregnant women When the gestational age is 12 weeks until delivery, pregnant women with a gestational age of less than 12 weeks can carry out activities with light intensity, namely cooking, standing then sitting, walking, and shopping, playing with children, playing with Animals, painting, washing clothes done for 1 hour (15). In doing Physical Activity there are 3 things that must be considered, these 3 things are intensity, duration, and frequency. Therefore efforts are made to maintain Physical Activity in Pregnant women, namely by doing Structured Exercise Training is part of a planned, structured, and repetitive physical activity and has the ultimate goal of increasing or maintaining physical fitness, for example, taking into account exercise interventions that have been adapted to be useful for pregnant

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women with specific goals, and facilitating pregnant women's adherence to Physical Activity with strengthening exercise interventions (9). The Structured exercise training that can be done is Yoga. Yoga exercises are most comfortable to do when the gestational age enters the second trimester, and are done at least once a week. Beginning yoga at the age of 28 weeks of pregnancy, when the duration of the labor and delivery process is getting closer, is the best time to do so. Women who are pregnant should begin practicing yoga at the beginning of the second trimester of their pregnancy or at the beginning of the 14th week of their pregnancy. Despite the fact that there are some yoga exercises that are safe and gentle to perform during the first trimester of pregnancy, it is recommended that pregnant women, particularly those who have never tried yoga before, wait until the second trimester to begin practicing yoga (16,17)

Research reveals that pregnant women tend to be sedentary for several reasons and the main factors are a lack of desire or motivation to be active (18), ignorance about physical activity how much exercise is needed, how safe is exercise. Meanwhile, pregnant women should be encouraged to continue Physical Activity then it will be done Motivational Interviewing. The Motivational Interviewing (MI) technique is also an interview technique that is carried out by focusing on individuals and exploration is carried out to provide motivation or encouragement so that it can generate intrinsic motivation in clients who have been hampered during Physical Activity via structured exercise training. The goal is to be able to identify and optimize motivation regarding the desired changes for better changes (19)

In previous studies, researchers compared the two interventions between Yoga with Motivational Interviewing, showing the results of the Yoga effect, but has limitations on intervention of Motivational Counselling because researchers cannot control the interaction of respondents. In the research conducted by Setiani (14), they discussed the effects of marital therapy, yoga, and motivational interviewing on the anxiety of pregnant women during a pandemic. The results of the research show that the third intervention influences the anxiety of pregnant women during a pandemic. So far, in previous studies, the interventions given to Physical Activity pregnant women are carried out separately or only focus on one of them, such as focusing on pregnancy exercise and classes for pregnant women or only focusing on motivation. As for research that uses both interventions but is given to reduce the anxiety of pregnant women (19). Pregnant women in Indonesia are still seeing a decrease in physical activity. Hence, in light of the advantages of physical exercise for expectant mothers, this study will employ a dual approach consisting of Structured Yoga and Motivational Interviewing to promote physical activity among pregnant women. In light of the background and issues outlined by the researchers, a blend of therapies involving Structured Yoga and Motivational Interviewing will be implemented to promote physical activity among pregnant women.

METHODS

This study employed a quantitative experimental approach, utilizing a group pretest-posttest design. The investigation took place at Midwife's clinics in Bandung, West Java from March to June 2023. The Yoga with Motivational Interviewing was manipulated as the independent variable, while physical activity was measured as the dependent variable. The samples were selected using G Power Software 3.1.9.4, which utilized t-tests, ANCOVA (Fixed Effect), and analyzed main effects and interactions. The effect size is 0.5, the error probability (α) is 0.05, the power (1-β) is 0.9, there are 2 groups, and there is 1 covariate. The outcome yielded 45 samples, with an additional attrition rate of 20%. Therefore, the total number of respondents

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was 52, obtained through the utilization of the purposive sampling technique. A total of 26 participants were assigned to the intervention group, while another 26 participants were assigned to the control group. The eligibility criteria encompassed pregnant women in the second or third trimester, with uncomplicated pregnancies, who provided informed consent to willingly participate in this study. Prior to administering the intervention, a preliminary assessment was completed, and following the intervention, a subsequent assessment was performed for both groups.

The instruments in this study were two, namely the questionnaire consisting of characteristic respondents and the PPAQ (Pregnancy Physical Activity Questionnaire) to measure physical activity (20). This instrument is to know and measure physical activity during pregnancy. PPAQ can measure the type, duration, and frequency of physical activity in the last 7 days in various conditions, namely physical activity carried out during sports, household, work, and transportation activities. The number of questions is 36 questions. The content measured includes such as when not working; when traveling; on vacation or sports; and at work.

The four categories of physical activity are sedentary (1.5 MET), lightweight (1.5-3.0 MET), moderate (3.0-6.0 MET), and vigorous (>6.0 MET). The MET (Metabolic Equivalent) measurements were derived by multiplying the self-reported duration of each activity by its intensity, resulting in an estimate of the average weekly energy expenditure (METs). The PPAQ validity test yielded satisfactory content validity for assessing physical activity during pregnancy, as indicated by a p-value of 0.329. Reliability results The reliability parameters of the questionnaire developed for the pregnant population were assessed through studies on the English, Turkish, and Vietnamese versions of PPAQ. The results indicate that the sedentary activities have a reliability value (R-value) of 0.961, light activities have an R-value of 0.934, moderate activities have an R-value of 0.957, and heavy activities have an R-value of 0.981 (20). These reliability values are considered adequate (20).

The intervention group was given yoga with motivational interviewing at least 3-5 times/week for 30-60 minutes/day. Yoga consists of three phases or steps. First, Mindful warm-up activity is very important before practicing yoga in pregnancy. Warming up with breath awareness will make the body relaxed and active so that the body will be ready to do Yoga movements. Second, Yoga's prenatal core movements in pregnancy. Third, Mindfulness relaxation closing movements Yoga gymnastics in pregnancy. During yoga, motivation is provided When pregnant women complain of cape and soreness in between yoga such as "Come on, mom, cheer up, mom has been doing yoga for a long time, it means that you are great and can take classes to the end." "Even though it hurts, this is for the good of the mother and baby, if it is done regularly, the mother will get used to it and the pain will be reduced. So, let's show your enthusiasm" "Yoga has benefits for the health of mothers and babies, mothers must continue to increase their enthusiasm in doing yoga in order to reduce difficulties during childbirth".

The data was collected during 2 weeks after getting an ethical clearance letter from Health's Research Ethic Committee of STIKep PPNI Jawa Barat No. III/018/KEPK-SLE/STIKEP/PPNI/JABAR/V/2023. The data analysis was univariate analysis using descriptive statistics and bivariate analysis using Wilcoxon matched pair and Mann Whitney, as well as the ANCOVA test.

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RESULTS

1. Univariate Analysis

a. Characteristic's Respondents

Respondent characteristics include age, education, occupation, BMI, gestational age, and parity with the distribution of respondent characteristics as follows:

Table 1. Characteristics of control group respondents and interventions

Variable		Control (N=26)	Interventions (N=26)	*p-value*
Age	Mean ± SD	1.58 ± 0.643	1.69 ± 0.121	0.512
17-25		10(38.5%)	13(48.1%)	
26-35		14(53.9%)	11(40.7%)	
36-45		2(7.7%)	2(7.4%)	
Education				
< 12 Years		3(11.5%)	3(11.5%)	
> 12 Years		23(88.5%)	23(88.5%)	1.000
Work				
Work		10(38.5%)	7(25.9%)	0.529
Not Working		16(61.5%)	19(70.4%)	
Trimester				
Trimester 2		8(30.8%)	6(22.2%)	0.393
Trimester 3		18(69.2%)	20(74.1%)	
Paritas				
Primigravida		14(53.8%)	19(73.1%)	0.117
Multigravida		12(46.2%)	7(26.9%)	
IMT				
< 17		0	1(3.7%)	
17-18.4		2(7.7%)	4(14.8%)	
18.5-25		6(23.1%)	8(29.6%)	0.422
25.1-27		6(23.1%)	5(18.5%)	
>27		12(46.2%)	8(29.6%)	

In the data on the characteristics of the respondents based on chi-square analysis and independent t-test, there was no difference between the two groups.

b. Physical activity *frequency distribution*

Table 2.
Frequency distribution table of the mother's physical activity category

CATEGORY	PRE-TEST INTERVENTIONS	POST-TEST INTERVENTIONS	PRE-TEST CONTROL	POST-TEST CONTROL
Settled	2	0	1	1
Light	4	2	8	8
Moderate	14	11	13	14
Heavy	6	13	4	3

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Based on the table above, it is known that the intervention group before the intervention had a light level of physical activity, after the intervention was given there was a change in the level of physical activity. However, in the control group, the level of physical activity did not change much.

2. Bivariate analysis

a. Data Normality Test

The initial step in determining the results of data analysis is to conduct a normality test. The purpose of the normality test is to determine whether the data is normal. The SPSS 26 program, using Saphiro-Wilk, can be used to conduct the normality test in this study, as the sample size is less than 50. The Shapiro-Wilk test is employed in this study to ascertain the distribution of data in the variables used in the study, as the sample size is less than 50. Based on the pre-test p-value of 0.461 and the post-test p-value of 0.057 in the intervention group, the data is normally distributed, as indicated by the data normality test results. The data normality test results in the control group with a p-value pre-test result of 0.917 and a p-value post-test result of 0.980 can be considered to be normally distributed.

b. Wilcoxon Test

1) Differences in physical activity levels in pregnant women before and after the intervention were given in the intervention group and the control group

Table 3.
Results of the test of different levels of physical activity of the intervention group and the control group Before and after the intervention

Group	Mean ± SD		p-value
	Pre-test	Post-test	
Intervention group	2.92±0.845	3.42±0.643	0.003
Control group	2.77±0.765	2.73±0.723	0.705

The Wilcoxon test was employed to compare the level of physical activity in the intervention and control groups before and after the structured exercise training and motivational interviewing, as the data in the study were categorical. The p-value was 0.003 (α <0.05) based on the results of the Wilcoxon test in the intervention group before and after receiving structured exercise training and motivational interviewing intervention through yoga. The control group's results were obtained with a p-value of 0.705 (α < 0.05). Consequently, it can be inferred that the intervention group has a difference, which implies that Ha is accepted as H0 and rejected as H 1. In contrast, the control group did not exhibit any distinction between the pre-test and the post-test, indicating that H0 was accepted and H a was rejected.

c. Mann Whitney Test

1) Differences in *physical activity* levels in pregnant women in the intervention group and control group

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Table 4. The results of the test differed between the intervention group and the control group

GROUP	MEDIAN		With		*P-VALUE*	
	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
Intervention group Control group	**4.6811**	**5.3038**	**-0.384**	**-3.299**	**0.782**	**0.001**

Using the Mann-Whitney statistical test, the purpose of this study is to establish whether or not Yoga and motivational interviewing interventions are effective in promoting physical activity.On the basis of the table, the value of Z was found to be 3,299, which is greater than -1.96. Interventions such as structured exercise training and motivational interviewing have the potential to improve the amount of physical activity that pregnant women engage in, according to the value of Z. The results of the statistical test in the pre-test of the intervention and control groups were obtained with a p-value of 0.785, which led to the rejection of the hypothesis (Ha). However, in the post-test of the intervention and control groups, a p-value of 0.001 (a < 0.05) was obtained, which led to the acceptance of the hypothesis (Ha). This indicates that there was a change in the intervention of structured exercise training and motivational interviewing on physical activity in pregnant women.

d. Ancona Test

1) Pengaruh *Structured Exercise Training and Motivational Interviewing* terhadap *physical activity pada ibu hamil*

Table 5.
ANCOVA test results for the intervention group and control group

Tests of Between-Subjects Effects

Dependent Variable: total_post

Source	Type III Sum of Squares	df	Mean Square	F	Say.
Corrected Model	282.039a	2	141.019	111.162	.000
Intercept	7.213	1	7.213	5.685	.021
total_pre	179.382	1	179.382	141.402	.000
group2	50.390	1	50.390	39.721	.000
Error	62.161	49	1.269		
Total	1873.731	52			
Corrected Total	344.200	51			

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With a p-value of 0.000 (p < a 0.005), the physical activity score that obtained Yoga and MI was compared to the control group that did not get Yoga and MI. This comparison was based on the table that utilized the ANCOVA test. The p-value indicated that the hypothesis test bacillus was accepted, while the H0 hypothesis was rejected. One might therefore draw the conclusion that there is a strong connection between Yoga and MI on the amount of physical activity that one engages in.

DISCUSSION

1) Differences in *physical activity* levels in pregnant women before and after the intervention were given in the intervention group and the control group

The Wilcoxon test was used to analyze the impact of the structured exercise training and motivational interviewing intervention on the intervention group. The results showed a significant change in the level of physical activity between the pre-test and post-test, with a p-value of 0.003 (α <0.05). In contrast, the control group did not show a significant change in physical activity, with a p-value of 0.705 (α > 0.05). Therefore, it can be concluded that the intervention had a positive effect on the physical activity level in the intervention group, while no significant change was observed in the control group. The findings are corroborated by systematic reviews and meta-analyses, which indicate that pregnant women who participate in consistent and organized physical exercise exhibit higher levels of activity compared to women who lead sedentary lifestyles or engage in no physical activity. MI has been utilized in previous research to target health behaviors among pregnant women, specifically focusing on lifestyle factors such as exercise to promote increased physical activity (21).

When viewed from the change in the post-test scores of the intervention group and the control group, it can be concluded that the intervention group with structured exercise training and motivational interviewing interventions is more effective as an intervention that can be applied to improve physical activity in pregnant women, supported by a review of findings that show that the intervention is effective in increasing the level of physical activity of pregnant women. In a previous study conducted by Nopiyanto (22), it was said that exercise was a solution to the problem of lack of physical activity, therefore the group given the intervention would be more active than the control group.

2) Differences in physical activity levels in pregnant women in the intervention group and control group

The Mann-Whitney test obtained a Z-value of -3.299 (α > -1.96). Z's findings indicated that the implementation of structured exercise instruction and motivational interviewing had a discernible impact on physical activity in pregnant women, resulting in notable distinctions between the control group and the intervention group. The statistical test yielded a p-value of 0.001 (α <0.05) for both the intervention and control groups. As a result, Ha was accepted, indicating that the structured exercise training and motivational interviewing intervention had a significant impact on physical activity in pregnant women. The findings of Gebregziabher (11) align with previous research, indicating that a structured and regular physical exercise intervention can effectively increase physical activity levels in pregnant women. By motivating pregnant women to engage in physical activity, this intervention provides a means for them to remain physically active throughout pregnancy (23). According to ACOG 2020, doing exercise in a structured and

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regular manner can increase or maintain physical activity during pregnancy compared to pregnant women who do not exercise.

3) The Effect of Structured Exercise Training and Motivational Interviewing on physical activity among pregnant women

The ANCOVA test obtained a p-value of 0.000 ($p < \alpha$ 0.005) for the physical activity score, indicating a significant influence of Yoga and MI on pregnant women. The intervention group received two types of interventions: Yoga and Motivational Interview (MI). Yoga is a form of physical activity that was administered for a duration of 30 to 60 minutes in a single session. The MI intervention focused on discussing and providing information about Yoga. Outlined the advantages of practicing yoga, emphasizing its ability to promote relaxation, maintain physical health, and enhance flexibility and activity levels for moms. Yoga can also minimize complaints that are often experienced by pregnant women. Physical activities that are carried out in a structured and regular manner are carried out to improve the physical fitness component. Supported by previous research said that exercise is related to increasing human productivity, which means that exercise can increase and maintain physical activity in humans to be more physically active (24). According to Roland 2022, Structured Exercise Training or exercise that is carried out in a structured and regular manner has been proven to increase physical activity in pregnant women and has been proven to be beneficial for most pregnant women in the participation of pregnant women in sports. But pregnant women still have several obstacles such as lack of motivation, therefore in this study, Motivational Interviewing was carried out so that researchers encourage pregnant women to increase their motivation of pregnant women to be physically active, supported by research that has shown that MI is a practical approach to make behavior changes has the potential to increase self-efficacy in influencing exercise behavior in pregnant women to do structured exercise (25). therefore, this MI mechanism seems to be useful for targeting physical activity levels. MI has been used to address health behaviors in pregnant women's populations, applying MI by targeting lifestyle behaviors such as increased structure and regular exercise (26).

The study found that the combination of structured exercise training and motivational interviewing is highly successful in promoting physical activity among pregnant women. Specifically, the use of yoga and motivational interviewing techniques resulted in increased levels of physical activity over the research period.

CONCLUSION

Yoga and meditation have been shown to have a positive impact on pregnant women, according to the findings of research that was conducted at obstetric facilities and the community milieu that surrounds them. Because of this, it is possible to draw the conclusion that one of the strategies that may be utilized to improve the amount of physical activity that pregnant women engage in is the intervention of structured exercise training and motivational interviewing training. Research on Suggestions for the Land Division It is believed that obstetrics clinics and the community environment can improve education and facilities to conduct yoga in order to increase the amount of physical activity that pregnant women engage in. This is based on the findings of the research. And for the subsequent researcher. It is anticipated that the findings of this study will serve as a reference for data sources that will be utilized in the development of this research further.

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