

To Exercise or Not During Pregnancy

Linda E May^{1*}, Erin M Smith² and Hssan Zare-Maivan²

¹Department of Foundational Sciences and Research, East Carolina University, Greenville, NC, USA

²Department of Anatomy, Kansas City University of Medicine and Biosciences, Kansas City, Missouri, USA

*Corresponding author: Linda E May, M.S., Ph.D. 1851 MacGregor Downs Rd, Greenville, NC, USA, 27834, Tel: 252-737-7072; Fax: 252-737-7049, E-mail: mayl@ecu.edu

Received: July 21, 2014; Accepted: August 23, 2014; Published: September 03, 2014

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Abstract

There is growing evidence that activity during pregnancy is beneficial for mother and baby; however, less than half of pregnant women meet guidelines for exercise during pregnancy.

Objective: In order to improve the health of women and children, we need a better understanding of the barriers to women participating in activities during pregnancy. Therefore, our aim was to determine women's perceived barriers to physical activity during gestation. We hypothesize that most women either do not know exercise is safe during pregnancy or women do not know what specifically is safe to do during pregnancy.

Methods: A 16-item questionnaire was placed in several Ob/Gyn clinics in the Kansas City area. Respondents were women between 18 and 40 years of age who were pregnant or had recently delivered and had no pregnancy complications.

Results: Respondents varied in age, BMI, marital status, pregnancies, ethnicity, education, healthcare insurance, and annual household income. We were able to analyze data from 201 surveys. Most participants (97%) perceived their health as good to excellent; yet, 50% were overweight or obese. The most common reason given for women choosing not exercise during pregnancy was lack of time, dislike of exercise, unsure why, and not knowing what to do. However, women who did not exercise spent significantly less time than exercisers doing sedentary and daily living activities than women who exercised while pregnant. If women exercised before pregnancy, then they were 4.5 times more likely to continue during pregnancy. If their health care provider talked about exercise during pregnancy, then women were 7.5 times more likely to continue exercise during gestation.

Conclusions: We found that most women are unsure about exercise during pregnancy or do not know what to do during pregnancy. Although most women feel they do not have time to exercise during pregnancy, non-exercisers spent less time doing daily activities compared to exercisers. Most importantly, women were almost 8 times more likely to exercise if this topic was discussed by their obstetric provider. To increase the number of women exercising while pregnant, future studies should aim at efficient ways to discuss and encourage women to follow the recommended guidelines of safe exercises while pregnant.

Keywords: Pregnancy; Physical Activity; Time; Encourage; Instruction; Pre-Conception; Barriers

Introduction

In the United States, pregnant women are twice as likely to be sedentary than the average adult [1]. Furthermore, when pregnant women choose to be active, their exercise regimen is of shorter duration and is completed with reduced intensity [1]. In many instances, pregnant women believe rest and relaxation is more important than maintaining an active lifestyle [2]. These beliefs are derived from magazines, family, and friends instead of their obstetric provider [2]. In the United States, most pregnant women are far below the recommended guidelines for activity during pregnancy [3].

There is growing evidence that exercise during pregnancy benefits mother, improves labor and delivery, and benefits the health of her child [1,2,4-10]. In an effort to give children the best start in life, the option to exercise during pregnancy should be considered [5,8,9].

Women who exercise during their pregnancy typically have fewer complaints of somatic pain, reduced subcutaneous weight gain, and an enhanced sense of well-being and self-esteem when compared to non-active pregnant females [6]. Additional benefits for the mother and fetus include a reduced risk of gestational diabetes mellitus, hypertension [6], preeclampsia [10], edema, and preterm delivery [7]. Physical activity during pregnancy improves heart health for mother and baby [8,9]; however, less than half of pregnant women meet recommended guidelines for exercise during pregnancy [3].

Previous studies have examined daily activities, such as house chores, childcare, [1,10] but did not ask the women why they chose not to exercise during pregnancy. In addition, we examined the reasons pregnant women abstained from exercise. In order to begin to improve the health of women and children, we need a better understanding of the barriers to women participating in activities during pregnancy. Therefore, our aim was to determine women's perceived barriers to physical activity during gestation. We hypothesize that most women either do not know exercise is safe

during pregnancy or women do not know what specifically is safe to do during pregnancy.

Methodology

Subjects

This was a prospective, cross-sectional study designed to determine women’s perceived barriers to physical activity during gestation. Participants were recruited from obstetric practices in the Kansas City metropolitan area. They were asked to complete the survey questionnaire while waiting for their obstetric visit. All participants had to be pregnant or have recently delivered. This study was approved by the Kansas City University of Medicine and Biosciences Institutional Review Board (IRB) and conducted in accord with current ethical practices. Responses to the survey questionnaire contained no links to personal medical information. All participants gave informed consent prior to study participation.

Survey Questionnaire

This study utilized items from the Pregnancy Physical Activity Questionnaire and the Kansas Behavioral Risk Factor Surveillance System Questionnaire [1]. A preliminary version of the questionnaire was pilot-tested with a small cohort of women to insure questions were clear and easy to answer and to insure the questionnaire could be completed in a short period of time.

The final version of the questionnaire contained sixteen items and required approximately ten minutes to complete. Nine items assessed personal descriptive information: age, height, weight, marital status, number or previous pregnancies, education level, healthcare coverage, annual household income, and ethnicity. The remaining seven items assessed respondents’ perceptions of personal health, interactions with their physicians, exercise prior to and during pregnancy, reasons for not exercising, and daily activities.

In order to determine differences between women who exercised during pregnancy and those who did not, we used the American College of Obstetricians and Gynecologists (ACOG) recommendations of previously sedentary women participating in at least 3 days per week of exercise [4]. Based on responds to the question “Do you participate in exercise at least 3 days of the week,” women were classified as Exercisers or Controls.

Data Collection

Questionnaires were placed in the waiting rooms of participating clinics. A cover letter was attached to each survey to explain the purpose of the study, and that every question was optional and participation would not affect their care at the clinic. The cover letter could be kept by participants and contained contact information for the Principal Investigator and Institutional Review Board office. Participants placed completed questionnaires in a locked drop box located in each waiting room.

Data Analysis

Patient demographic data is reported as means + standard deviations (SD) or as percentages, where appropriate. Data are reported as the frequency of occurrence. Differences between self-reported exercisers and control women were examined using t-tests for continuously scaled variables and chi-square tests for categorical

variables. Next, logistic models were used to examine the predictors of participation in activities. In the first model, demographic variables, including gravida, education, insurance, and ethnicity, and provider inquiry were entered as predictors. Gravida was coded as first pregnancy, second pregnancy, or more than two pregnancies. Education was stratified as high school degree or less compared to some college up to graduate degree. Insurance status was stratified as private insurance or Medicaid/no insurance. Ethnicity was dichotomized to be white or non-white. In the second logistic model, we entered whether they exercised prior to pregnancy as predictors. Odds ratios along with their 95% Confidence Intervals (C.I.) were calculated for all independent variables in the models. All analyses, statistical significance was defined as $\alpha=0.05$. Statistical analyses were performed using PASW software (rel. 17, SPSS Inc., Chicago, IL).

Results

We analyzed 201 completed surveys from women between 18 and 40 years of age with healthy, singleton pregnancies (Table 1).

Demographic variable	Percentage of participants
Marital Status	
Married	70.1%
Single	26.8%
Divorced/Separated/Widowed	3.0%
Previous Pregnancies	
0	33.8%
1	21.7%
2	25.8%
3	10.1%
4	3.5%
5	1.5%
>5	3.5%
Ethnicity	
Caucasian	78.9%
African American	8.4%
Hispanic/Latina	7.9%
Asian	2.6%
Native Hawaiian/Pacific Islander	1.1%
American Indian/Alaska Native	0.5%
Other	0.5%
Pre-Pregnancy BMI	
Underweight	5.6%
Obese	22.6%
Overweight	26.7%

Healthy Weight	44.0%
Education	
Some high school	3.6%
High school diploma (or equivalent)	21.9%
Trade school	
Some college	22.4%
College graduate	33.7%
Graduate/Professional school	12.2%
Employment	
Not employed	25.1%
Student (not-employed)	1.0%
<20 hours per week	6.8%
20-40 hours per week	38.7%
>40 hours per week	28.3%
Insurance coverage	
Employer-based	61.6%
Medicare/Medicaid	21.6%
Private Insurance	5.2%
No Insurance	2.1%
Annual Household Income	
< \$15,000	11.2%
\$15,001 - \$25,000	7.4%
\$25,001 - \$35,000	9.0%
\$35,001 - \$50,000	18.6%
\$50,001 - \$75,000	19.7%
\$75,001 - \$100,000	22.9%
>\$100,000	11.2%

Table 1: Participant Demographics

Participant Demographics

The mean age of the entire sample was 28.2 ± 5.6 years. Mean height was 65.0 ± 2.8 inches and mean pre-pregnancy weight is 158.0 ± 39.5 pounds. There was diversity in the sample as far as education (25.5% some high school/diploma, 28.5% trade school/some college, 46.9% college graduate) and household income (27.6% earn < \$35,000, 38.3% earn between \$35,001-75,000, 34.1% earn >\$75,001). The modal respondent was a white, employed, insured, married college graduate in her first pregnancy. Additional demographic variables are presented in Table 1. There are no statistical differences between group demographics; although, some sub-group sizes are small (i.e. ethnicity), this further demonstrates the diversity of the population in both groups. There were no significant differences between exercise and control for demographic variables (Table 2).

	Control	Exercise	P value
Age (years)	28.2 ± 5.6	28.1 ± 6.3	NS
Height (inches)	65.1 ± 2.8	64.5 ± 2.9	NS
Pre-Pregnancy Weight (lbs)	157.4 ± 44.1	155.7 ± 41.2	NS
Pre-Pregnancy BMI	26.0 ± 6.8	26.4 ± 6.5	NS
Gravida	1.6 ± 1.5	1.3 ± 1.4	NS

Table 2: Participant Demographics between Groups. All data presented as means ± SD; NS – Not Significant

Participant Daily Activities

Participants reported the average amount of time daily used for sedentary activities such as using a computer, watching TV, reading, and talking on the phone (Table 3). Women that did not exercise during pregnancy spent less time using the computer (p=0.04) and reading (p=0.05) compared to exercisers (Table 3). Participants also reported the average amount of time per day used for physically active daily activities, such as: walking (not exercise), meal preparation, childcare, playing with kids, house chores, shopping, and gardening (Table 3). Women that did not exercise during pregnancy spent less time preparing meals (p=0.06), doing house chores (p=0.03), and shopping for the family (p=0.01) compared to exercisers (Table 3).

Activity (hours)	Control	Exercise	P value
Sedentary			
Using the computer (not at work)	1.3 0.1	1.7 0.2	0.04
Watching TV	2.1 0.1	2.2 0.2	NS
Reading	1.3 0.1	1.6 0.1	0.05
Talking on the phone	2.1 0.1	2.3 0.2	NS
Physically Active			
Walking (not exercise)	0.8 0.1	0.8 0.1	NS
Preparing meals	1.7 0.1	2.0 0.2	0.06
Caring for children	1.9 0.1	1.7 0.3	NS
Playing with children	2.1 0.1	2.2 0.3	NS
House Chores (i.e. cleaning house)	2.0 0.1	2.5 0.2	0.03
Shopping (i.e. groceries)	1.4 0.1	1.8 0.1	0.01
Gardening	0.1 0.03	0.35 0.2	NS

Table 3: Daily Sedentary and Physical Activities between Exercise and Control. P<0.05 is significant; however, p values that were close to this cut off are reported.

Participant Health Status

Using self-reported height and pre-pregnancy weight, the average pre-pregnancy BMI of participants was 26.2 ± 6.0 (Table 2). Almost all women (96.8%) classified their health as good, very good, or excellent, while the remainder classified their current health as fair or poor. Prior

to pregnancy, 54.7% of women exercised at least three times per week, but this declined to 21.4% during pregnancy.

Participant-reported Exercise Inquiry

More than half (60.7%) of women reported to their obstetric provider discussed with them about exercise during pregnancy. Less than half (40.5%) reported their provider instructing them how to exercise.

Reasons women do not exercise during pregnancy

The most common reason (42.9%) reported for not exercising during pregnancy was lack of time. The next reasons for not exercising were: dislike exercise (16.1%). Not feeling good (tired, sick, pain) 13.1%, don't know how to exercise 13.0%, not sure 9%, Fear of Exercise 4.5%, and lack of transportation or money 4.5%. There was a significant difference between groups in reasons for not exercising with the control group reporting time ($p < 0.001$), dislike ($p = 0.007$), not sure ($p = 0.006$), and don't know how to exercise ($p = 0.02$) significantly more often than the exercise group. Logistic regressions indicated that no demographic variables significantly predicted reported behavior (Table 4). Patients who reported exercising prior to their pregnancy were 4.9 times more likely (OR=4.9, 95% CI=1.85-13.07) to exercise at least three times per week during pregnancy (Table 4). Patients who reported their provider talked to them about exercise during pregnancy were 7.5 times more likely (OR=7.5, 95% CI=2.08-27.0) to exercise at least three times per week during pregnancy (Table 4).

Predictors of Exercise		
	OR	95% CI
Gravida	0.6	0.2-1.3
1st or 2nd pregnancy (referent)		
More than 2 pregnancies		
Level of education	0.4	0.1-1.0
High school or less (referent)		
Some college, trade school or more		
Type of insurance	1.8	0.6-6.4
Private insurance (referent)		
Medicaid/No insurance		
Ethnicity	0.4	0.2-2.0
White (referent)		
Minority		
Exercise prior to pregnancy	4.9	1.9-13.1
Yes (referent)		
No		

Table 4: Logistic regressions to Predict Exercise

Discussion

We hypothesized that women either do not know exercise is safe during pregnancy or do not know what specifically is safe to do during pregnancy. We found for women that did not exercise while pregnant, the reasons are time, dislike of exercise, unsure, and don't know how

to exercise. Although lack of time and dislike of exercise may not be modifiable during pregnancy, the other two reasons can most likely be modified. For example, the two main predictors of women choosing to exercise during pregnancy are 1) provider talking with them about the benefits and risks of exercise during pregnancy and 2) exercise prior to pregnancy. Based on these findings, we can confirm our hypothesis.

The finding that women reported lack of time as a reason for not exercising during pregnancy is similar to other studies when women reported doing less activities [2,7] and believed that rest, relaxation, and diet are more important than maintaining an active lifestyle [2,11]. Interestingly, these women actually spent significantly less time in sedentary and physically active activities compared to exercisers suggesting they may not be good time managers. Nonetheless, fitness instructors and medical professionals can provide advice on how physical activity during pregnancy can attenuate or alleviate this symptom as well as the (13.1%) feelings of tiredness, sickness, and pain. Similar to other research [12], some women reported either being afraid to exercise or they were not sure why they did not exercise during pregnancy. For women who reported feeling too tired, sick or in pain to exercise, providers can explain how exercise during pregnancy is known to provide more energy, decreased musculoskeletal pain, enhancement of mood, and possibly shorter labor and delivery [5], enhanced sense of wellbeing, and improved sleep [4]. Women that lack transportation and finances to go to a gym, or don't like exercise can be helped by instructors showing them safe exercises to do at home, checkout videos from library, or find information and instructions online [4,13]. Depending on a woman's stage within the stages of change model, these factors may not be modifiable, while others can.

This study found that maternal activity prior to pregnancy had a significant impact on maternal activity during pregnancy. This finding is similar to another study in which preconception nutrition modification helped improve pregnancy outcomes relative to during pregnancy behavior modification [14,15]. However, these findings are different based on the study population as well. For example, one study found younger women and women with children were less likely to engage in preconception healthy behaviors [16]. However, women with postgraduate education were more likely to practice preconception care [16]. There should be a focus on educating young preconception women regarding the importance of preconception and during pregnancy exercise [17].

Some women, who do not exercise during pregnancy and report being unsure why they do not exercise or they do not know what to do, may be influenced into a positive behavior change while pregnant. For example, we found provider intervention increased the likelihood of a pregnant patient exercising by almost 8 times. This is similar to other studies related to health care provider intervention as a means to change patient behavior and improve pregnancy outcomes [18-20]. Although a previous study suggests women's beliefs are derived from magazines, family, and friends [2,21]. A recent study found women are more likely to be active during pregnancy when encouraged by their health care provider [22]. Furthermore, women who had other healthy behaviors (i.e. healthy eating), they were three times more likely to exercise during pregnancy [22].

It is important to mention this study has limitations to consider. First, although we had a diverse participant population, our sample only included 3 large clinics in the greater Kansas City area: 2 in Kansas and 1 in Missouri. An inherent limitation involves the bias of self-reported data. However, our questionnaire was validated and the

population data is similar to other studies. Although selection bias is a concern in this type of study design, we tried to minimize this by using a general cover letter not mentioning exercise or activity, but interest in completing a questionnaire for a study; these results may still be generalized. However, in order to verify these results a case control study would be informative.

Conclusion

Overall we found the most common reason for women not exercising while pregnant is lack of time. In addition to reporting a lack of time, many non-exercisers reported a dislike of exercise. Although, lack of time or interest in exercise is not a new finding and is most likely not modifiable during pregnancy, we found other reasons which might be changed during pregnancy. For example, women also report not exercising during pregnancy due to not knowing how to exercise and being unsure why they should exercise. For women with these reasons, it may be possible to help them choose to exercise. We also found, women were almost 8 times more like to exercise during pregnancy if their obstetric provider discussed this topic with them. Based on these findings, future studies should target increasing the education and awareness of pregnancy women on this topic, such as assessing the effectiveness of different methods to encourage and discuss the current guidelines and instructions for exercise during pregnancy.

Acknowledgements

The authors thank Alan Glaros at Kansas City University of Medicine and Biosciences for his support in formatting the questionnaire, allowing us to use the questionnaire scanner, and running statistical analysis. We are especially grateful to the women who participated in this study.

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