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Perceived Barriers to Physical Activity during Pregnancy

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Abstract

Background: Pregnant women believe that participating in sufficient physical activity promotes health and wellbeing, but barriers that effect women's ability to exercise requires additional investigation. The aim of this study to identify the barriers of physical activity and to examine the changes in exercise barriers arose throughout pregnancy.

Methods: Modified exercise benefits and barriers scale was used to evaluate barriers to exercise among 200 healthy pregnant women prior to, during and after pregnancy. This investigation was part of a large study conducted at the state of NSW, Australia. Data was analyzed using descriptive statistics; one way repeated measures ANOVA was conducted to evaluate the changes in exercise barriers during pregnancy.

Results: The most important cited barrier was having no one to exercise with pre-pregnancy and where I live not suitable for exercise postpartum. Most women (75.4%) reported that the difficulty of exercise was the most powerful barrier to exercise during pregnancy. There are significant changes in barriers to participation in exercise arise during pregnancy.

Conclusion: Increasing level of participation in physical activity during pregnancy should consider exercise barriers, specifically difficulty of exercise. Studies aiming to examine reasons for the changes in barriers during pregnancy are required.

Keywords: Physical activity; Pregnancy; Barriers

Introduction

The issue of why individuals do not engage in adequate physical activity is complicated and multifaceted, and is influenced by the individual, social relations, environment, and external decision makers. Research that advances our understanding of any of these factors has significant potential to better support physical activity interventions, and hence offers great public health advantages. To date, the long term success of plans to enhance physical activity in women has been inadequate; clearly, a successful health strategy requires additional examination of women's motives and challenges they face in trying to participate in physical activity [1]. Within this study, the perceived barriers to exercise are important mediators of physical activity behavior modification [2]. A minimum of one study investigating factors that affect women's involvement in physical activity has recommended that women who perceived additional advantages from exercise and faced fewer barriers to exercise were in general more active than those who reported high perceived barriers and low perceived benefits [3]. The purpose of this study was to identify the barriers of physical activity among pregnant women using a qualitative approach. The study used a framework incorporating a range of items to investigate the potential factors that pregnant women perceived as barriers.

Despite women having an awareness of the advantages of engaging in exercise as positive health behavior, most pregnant women will not participate in sufficient levels of physical activity. It is well established that an individual's perception of the barriers associated with an activity will significantly influence their ability to adopt a health improving behavior [4-6]. Excessive fatigue, insufficient time and physical limitations due to size have been identified as barriers to physical activity during pregnancy [6-8]. Furthermore, environmental factors such as the lack of appropriate facilities, access to childcare or transport have been reported to influence compliance to physical activity [9-11]. However, higher levels of confidence or self-efficacy to overcome exercise related barriers is associated with increased leisure time physical activity levels [12]. Developing a more comprehensive understanding of the barriers associated with exercise and women level of self-efficacy to physical activity may help in elevating current depressed levels of physical activity in pregnant women [13].

Aim

The purpose of this investigation was to examine barriers associated with participation in physical activity during each trimester of pregnancy.

Hypothesis

No significant changes in barriers to participation in exercise arose throughout pregnancy.

Methods

Participants

A total of 200 healthy pregnant women were recruited from the Royal Hospital for Women at Randwick and Wollongong Hospital, NSW, as part of large study to assess the level of physical activity among pregnant women. Participants were considered eligible for the investigation if they had no medical or exercise contraindications.

Procedures

This investigation was part of a large study conducted at the Royal Hospital for Women, Randwick, Sydney, and Wollongong Hospital, Wollongong, NSW, Australia. The procedures for this study were performed in accordance with the ethical standards approved by the Human Research Ethics Committee of the University of Wollongong, South Eastern Sydney and Illawarra Area Health Service in the state of New South Wales. The survey data was collected by a research midwife. It was ex-

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pected that the use of a midwife to recruit and collect data from females would reduce the possibility of social desirability of women's responses in the study. Respondents were asked to point out which, if any, of 14 potential barriers would keep, or currently kept, them from participating in exercise programs or other physical activity. Because pregnancy is characterized by physical and behavioral changes, and it is likely that barriers experienced early in pregnancy might vary from those experienced later, the study design included five data collection time points: Pre-pregnancy, trimester one, trimester two, trimester three and postpartum.

Barriers scale

Physical activity barriers were measured using a modified exercise benefits and barriers scale [14]. Within the modified scale there were 14 items to assess perceived barriers of physical activity during pregnancy. Items were selected based on factors that most frequently appeared in the available literature as associated with adherence to exercise programs [15]. The barriers scale was a four point option Likert format, which was used to achieve an ordinal measure of agreement with the item statements. Options ranged from strongly agree=4 to strongly disagree=1. Participants were provided with a list of potential barriers of exercise and instructed to indicate all those that applied to themselves. Some of the potential barriers included: Where I live is not suitable for exercise; I am too tired to exercise; and exercise causes too much discomfort.

Data analysis

SPSS v21 was used to conduct the analysis. Barriers data was analyzed using descriptive statistics. Ordinal data on participants responds was analyzed with mean, frequencies and proportions to rate each item. To examine the changes in barriers to participation in exercise during and after pregnancy, one way repeated measures ANOVA (by STAGE) was conducted. Frequency was calculated by counting the number of mentions of each barrier in the participants' responses. To evaluate perceived power, women were asked to indicate level of agreement with each statement of barriers of exercise.

Results

Physical activity during pregnancy was influenced by a range of variables that were obstructing women from performing exercise at different points in their pregnancy; some variables arose only at certain points in their pregnancy. Items that were not answered were scored as a zero and did not contribute to the total score. Total scores as well as scores for barriers scale were computed for each participant.

Perceived barriers

Analysis was conducted using means to determine the top barrier statements. The most frequently reported barriers in pre-pregnancy, during pregnancy and postpartum have chosen by selecting barriers that have scored two and above (≥ 2) mean value. Table 1 shows the sample's mean score levels for each item of the most frequently perceived barriers to exercise in pre-pregnancy, during trimesters and postpartum; this was calculated by computing the means of each response of individual exercise barriers statement. Average scores for selected barriers were between 2.0 and 3.3, which equated to between "disagree" and "strongly disagree" on the scoring scale. Generally, participants agreed with many of the barrier items, reflecting that they believed that quite a few of the statements represented barriers to their regular physical activity (Table 1).

Barriers items		Mean score			
	Pre	T1	T2	T3	Post
Too tired to exercise	2.2	2.9	2.5	2.6	2.2
I'm not motivated to exercise	2.3	2.6	2.4	2.4	2.3
There is not enough time to exercise	2.4	2.4	2.3	2.1	2.4
I have no one to exercise with	2.2	2.3	2.2	2.1	2.2
Exercise is too difficult	-	2.1	2	2.2	-
Exercise cause too much discomfort	-	2.1	2	2.3	-
Body size makes it difficult to exercise	-	-	-	2.3	-
Where I live is not suitable for exercise	-	-	-	-	3.3

Notes: Scores for barriers were upwards, higher scores indicate more agreement with the statement 1=strongly agree 2=agree 3=disagree 4=strongly disagree. Classification was taken from Exercise Benefits and Barriers Scale (Sechrist et al, 1987). There is a total of 14 barrier items on the EBBS. Number of participants in each time point is different at pre (Pre-pregnancy; n=200), T1 (trimester one; n=191), T2 (trimester two; n=156), T3 (trimester three; n=100), post (postpartum; n=74).

Table 1: Mean score of top barriers statements associated with strong agreement on the exercise benefits/barriers scale.

However, for some barrier items, there was obvious disagreement, demonstrating that those statements did not represent barriers (e.g. 'exercise will harm the health of my baby'; 'there is no transport available to get me to suitable exercise classes'). Participants also disagreed with the statements "exercise causes me to have contractions", "exercise costs too much money", "exercise is likely to injure me" and "exercise will harm my health".

Women identified number of barriers that contributed to their staying physically inactive. Table 2 shows the most frequently and the proportion of the main common reported barriers in pre-pregnancy, during pregnancy and postpartum. The most commonly cited, with 92 mentions, was the regular and difficult demands on their time as a result of their duties as women. This barrier had a significant effect on women's time and their capability to participate in regular exercise (Table 2).

	Agree		Disagree	
Study stages and barrier items	**Frequency**	**Proportion**	**Frequency**	**Proportion**
Pre-pregnancy:				
I have no one to exercise with	130	65	70	35
Too tired to exercise	129	64.5	71	35.5
I'm not motivated to exercise	117	58.5	83	41.5
There is not enough time to exercise	104	52	96	48
Trimester one:				
Exercise is too difficult	142	74.4	49	25.6
Exercise cause too much discomfort	142	74.4	49	25.6
I have no one to exercise with	113	59.2	78	40.8
There isn't enough time to exercise	113	59	78	41
Trimester two:				
Exercise is too difficult	126	80.7	30	19.3
Exercise cause too much discomfort	130	83.4	26	16.6
I have no one to exercise with	101	64.5	55	35.5
There isn't enough time to exercise	93	60	63	40
Trimester three:				
There isn't enough time to exercise	74	74	26	26
Exercise is too difficult	71	71	29	29
I have no one to exercise with	68	68	32	32
Exercise cause too much discomfort	66	66	34	34
Body size makes it difficult to exercise	63	63	37	37
Postpartum:				
Where I live not suitable for exercise	88	91.9	6	8.1

I have no one to exercise with	53	71.6	21	28.4
I'm not motivated to exercise	46	62.1	28	37.9
Too tired to exercise	35	47.3	39	45.9
Notes: There is a total of 14 barrier items on the Exercise Benefits and Barriers Scale. Number of participants in each time point is different at Pre-pregnancy; n=200, trimester one; n=191, trimester two; n=156, trimester three; n=100, postpartum; n=74. The total score is based on the reverse-coded scores				

Table 2: Main barrier statements associated with strong agreement on the barriers/benefits scale (proportion (%) and frequency).

Having no one to exercise with was the most frequently mentioned barriers either pre-pregnancy (65%) or postpartum (71.6%). This barrier was reported as the third most frequently mentioned during the first trimesters (59.2%), the second trimester (64.5%) and in the third trimester (68%). One of the most mentioned barriers were being too tired to exercise. This barrier was the second most frequently mentioned in pre-pregnancy (64.5%), and was cited by 29% of participants in trimester one, 53.8% in trimester two, 44% in trimester three and was the third significant frequently cited barrier in postpartum with (47.3%). Although, a high proportion (71%) of participants in trimester one, (46.2%) in trimesters two, (56%) in trimester three and (45.9%) postpartum disagree that being too tired was a significant barrier to exercise. The difficulty of exercise was mentioned as the most powerful barrier to exercise in trimesters one (74.4%) and two (80.7%) and it was the second in the third trimester (71%); however, it was not reported as one of the significant barrier in pre-pregnancy and postpartum. Furthermore, pregnant women cited that exercise cause too much discomfort as the second most frequently mentioned barrier during the first and second trimesters (74.4%, 83.4% respectively) and was one of the most frequently mentioned barrier during the third trimester (66%), but this barrier was not among the most frequently mentioned barriers either in pre-pregnancy or postpartum. Participants cited lack of motivation as one of the most frequently mentioned barrier in pre-pregnancy (58.5%), trimester one (42.4%), trimester two (53.8%), trimester three (49%) and postpartum (62.1%). However, some women during the first and the third trimesters did not believe that lack of motivation (57.6% and 55% respectively). Lack of time for exercise was the most significant barriers in the third trimester (74%) and was cited as one of the most frequently mentioned barriers in pre-pregnancy (52%), during trimesters one and two and postpartum (59%, 60% and 45.9% respectively). Body size makes it difficult to exercise was mentioned as a significant barrier in the third trimester (63%), but this barrier was not cited as one of the significant barrier in pre-pregnancy, first, second trimesters and postpartum. Where I live is not suitable for exercise was perceived as the most frequently mentioned barriers in postpartum (91.9%); however, this barrier was not reported among the most frequently mentioned barriers in pre-pregnancy, the first, second and the third trimesters.

The study hypothesized no significant changes in barriers to participation in exercise arise during and after pregnancy. A repeated measures ANOVA was conducted to examine the changes in barriers to exercise throughout the first, second and third trimesters and postpartum. Table 3 shows the statistical differences (p=0.000) in means among responses about barriers to exercise during each trimester and after birth. Results showed that the p value for most of barriers items was less than <0.05; therefore, the research rejected the null hypothesis that no significant changes in barriers to participation in physical activity arise throughout pregnancy (Table 3).

Stages	**Sum Squares**	**df**	**Mean Square**	**F**	Sig
Trimester one	296.32	8.6	34.45	65.97	0
Trimester two	133.37	9.12	14.62	33.41	0
Trimester three	115.43	8.33	13.86	25.92	0
Postpartum	237.63	9.24	25.72	43.77	0
Notes: Number of participants in each time point is different at T1 (trimester one; n=191), T2 (trimester two; n=156), T3 (trimester three; n=100).					

Table 3: The changes in barrier items during and after pregnancy.

The test statistic for equality of means over time is F_95.4 (df_4,8), which is highly statistically significant at P=0.000. Thus, a highly statistically significant difference exists in the mean percent fractional shortening over time. Results suggest that there was a change in most of the barrier items across pregnancy and after birth. The value of multivariate partial sum squared obtained in this study for both methods respectively are .650, .610, .352 and .571.

Discussion

This study has explored barriers of physical activity prior to, during and after pregnancy among Australian women. The purpose of the study was also to evaluate changes in exercise barriers prior to, during and after childbirth, and to present descriptive data on women's perceptions before, during and after pregnancy about the barriers to and enabling factors for regular physical activity. By examining a combined 14 items of barriers, the study has been able to highlight a range of beliefs that influence women's intentions of being physically active before, during and after pregnancy. These factors and experiences should be taken into consideration when designing interventions to promote increased physical activity during pregnancy.

In relation to the study objective, the sample's general levels of perceived barriers to exercise generally indicated that participants only being neutral or at best approaching agreement with many of the barrier items. This suggested that our sample may perceive higher levels

of benefits from exercise than barriers to exercise. Participants agreed the most with "exercise is too difficult", followed by "Exercise will harm the future health of my baby"; on the other hand, the strongest disagreement was with the barriers "exercise will harm my health" and "my body size makes it difficult to exercise".

Perceived barriers

Barriers to physical activity prior to, during and subsequent to pregnancy were identified by women in all stages of the research. Within the research, factor analysis was carried out to summarize the main barriers to physical activity prior to, during and after pregnancy. It appears that barriers to exercise vary from pre-pregnancy through trimesters to postpartum. It was hypothesized that there were no changes in barriers to participation in physical activity during pregnancy; as the results of chi square and frequency of mention for barriers were not consistent during each time point of data collection. This variation of barriers each trimester indicates that barriers should not be investigated as a whole during pregnancy. Although the changes in type and frequency of barriers within the same group is unexpected, if these changes accrue among different groups they maybe anticipated. However, the results represent both similar and varied responses at each point of data collection; this maybe a results of the study design, which may assist in detecting a wide range of barriers.

Lack of time, work and family responsibilities were identified as one of the most important reasons for not exercising. This finding is in consistent with previous studies [13,16-18] that found lack of time to be the most commonly cited barrier to exercise participation. According to the study outcomes, some women cited having no one to exercise with most often during the three trimesters and postpartum as a reason for not being active. This is maybe because many women want to socialize and be encouraged by friends and family [19]. This result is supported by other studies [6,12], which showed an association between someone's company and participating in exercise. Results indicated a necessity to promote more and well organized time for physical activity. Not being motivated to exercise was reported as a significant barrier for a reduction in level of physical activity during trimesters and postpartum. This barrier was also identified by prior studies [8-10,12,13]. This finding emphasizes the need for health promotion strategies that increase motivation and support to allow women to increase their level of exercise participation. However, women did not report this barrier postpartum. Results showed that participants reported that exercise was too tiring and too difficult as the key perceived barriers to physical activity during the first, second and third trimesters; this finding, too, has support in the literature [6,8,12]. According to the study outcomes, pregnant women frequently reported physical limitations, such as back pain, swelling and joint pain, as barriers to exercise participation during pregnancy. However, most women during trimesters did not associate personal barriers such as "exercise will harm my health", "exercise will harm the health of my baby", "exercise causes me to have contractions", "there is no transportation available to get me to suitable exercise classes", and "where I live isn't suitable for exercise" with significant lack of participation in exercise.

Conclusion

One of the important factors that hindered physical activity during pregnancy was that women had to consider their family and work responsibilities, which may have made it hard them to have enough time and energy to exercise. With regards to barriers that become less frequently mentioned as pregnancy progresses, the findings indicated that work associated barriers were more frequently reported in first trimester compared to the third. The measurement of barriers at different time points prior to and across pregnancy and after childbirth could make an important contribution to the literature beyond only identifying barriers retrospectively or at one time point during pregnancy. Given that pregnancy is characterized by a number of changes, it is important to consider measuring barriers over time as these changes take place. The fact that the study observed changes in the frequency with which different types of barriers were mentioned across pregnancy highlights that researchers and practitioners should be aware that barriers may be dynamic, and skills for navigating barriers may need to be modified over the course of pregnancy.

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