Do physical activity levels differ by number of children at home in women aged 25–44 in the general population?

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Abstract

Objectives: While physical activity is important for health, many women do not meet recommended levels, particularly mothers. The purpose of this study was to assess whether physical activity levels differ by number of children at home in women aged 25–44 in the general US population.

Methods: This cross-sectional analysis used 2017 Behavioral Risk Factor Surveillance System data for females aged 25–44 (N = 6266) from California, Colorado, New York, Texas, and Utah. Ordered logistic regression analysis assessed the relationship between physical activity levels and number of children at home while controlling for state and demographic, socioeconomic, and health-related factors.

Results: About half of participants reported "inactive" or "insufficiently active" physical activity levels and about two-thirds reported having one or more children at home. The results of adjusted analysis indicated that physical activity level was significantly related to having one child (adjusted odds ratio = 0.75, 95% confidence interval = 0.63, 0.89), two children (adjusted odds ratio = 0.79; 95% confidence interval = 0.67, 0.93), and three or more children (adjusted odds ratio = 0.80, 95% confidence interval = 0.67, 0.94) at home.

Conclusion: Overall, physical activity levels were significantly related to presence of children at home for women aged 25–44, but increasing number of children at home did not impact effect size. For women aged 25–44 in a primary care setting, a moderate prevalence of inactive or insufficiently active physical activity may be expected. Providers should address physical activity with all patients in this target population during well-visits, but particularly for women with children at home; educate patients about the health benefits of regular physical activity; and provide resources that will help them integrate physical activity into their daily lifestyles.

Keywords

children, exercise, mothers, physical activity, women

Introduction

While the health benefits of regular physical activity are numerous and have been clearly demonstrated, relatively few Americans meet recommended guidelines for physical activity.[1–4] Overall, up to 60% of US adults report irregular exercise and up to 25% report no exercise.[4] Only about 25% of US adults meet recommended thresholds for strength training and aerobic exercise, while 45% met neither.[5] Such high levels of inactivity are concerning in light of the detrimental effects of a sedentary lifestyle. Compared with active individuals, inactive individuals are at a higher risk of mortality overall, with predispositions toward chronic conditions such as cardiovascular disease, diabetes mellitus, hypertension, obesity, and several types of

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cancer.[1–4,6] Not only do these conditions diminish quality of life and productivity for individuals, they also create a heavy financial burden at the individual and national levels. In 2017, an estimated US$117 billion in US healthcare costs were incurred by conditions associated with inactivity.[2]

Numerous studies have indicated that inactivity is more prevalent among women than men,[1,4,7,8] and various factors may impact physical activity levels in women. For example, minority status, marital status, single parenthood, and socioeconomic factors, such as lower income and educational levels, have all been related to lower levels of physical activity in women.[1,4,6,9] In addition, health-related factors such as smoking, higher body mass index (BMI), and elevated stress may predict lower levels of physical activity among women.[9] Moreover, physical disability status and poor subjective personal health are related to decreased physical activity.[4,6]

In addition, studies on the association of physical activity and parenthood suggest that having children may be an obstacle to physical activity. Among the general population, physical activity levels have reportedly been lower in parents versus non-parents and lower in mothers versus childless women.[1,6,7,10,11] It is highly plausible that having children could impact physical activity levels in parents, as parenthood involves many familial activities which could lead to increased fatigue, time strain, stress level, and financial constraints, all of which may limit parental motivation and/or ability to be physically active.[10–12] This effect may be pronounced in parents of young children.[4,7] However, there is mixed evidence for the relationship between number of children and level of physical activity in mothers, with some studies failing to detect a significant association between maternal parity and physical activity.[1,9,10,13] Furthermore, most studies of physical activity and parenthood were completed abroad. Therefore, the purpose of this study is to assess whether physical activity levels differ by number of children at home in women aged 25–44 in the general US population.

Methods

Design

This cross-sectional analysis used 2017 data from the Behavioral Risk Factor Surveillance System (BRFSS) conducted by the Centers for Disease Control and Prevention (CDC).[14] BRFSS data are composed of information on health behaviors, chronic disease, and preventive care gathered through telephone surveys of adults 18 years of age and older across all states, US territories, and the District of Columbia. BRFSS data collection is performed annually by state health departments using random-digit dialing methods. The CDC compiles the BRFSS data and makes de-identified data available for secondary data analysis research. This study was given exempt status by the Institutional Review Board of the University of North Texas Health Science Center.

Sample

The sample for this study (N = 6266) included females aged 25–44 from California (N = 1216), Colorado (N = 960), New York (N = 1307), Texas (N = 1247), and Utah (N = 1536) who had data for physical activity and children at home. These states were chosen based on their higher proportions of active females between the ages of 25 and 44 according to the BRFSS 2016 prevalence survey data maps.[15]

Data

All data originated from BRFSS 2017 data.[16] Our outcome of interest was physical activity, which was measured in BRFSS by asking participants a series of questions regarding their weekly physical activities and the amount of time they spent participating in each activity. BRFSS categorized physical activity levels based on the amount of time participants spent engaging in "moderate-intensity" physical activity as "inactive" (less than 11 min/week), "insufficiently active" (11–149 min/week), "active" (150–300 min/week), and "highly active" (greater than 300 min/week). Our factor of interest was number of children at home categorized as "none," "one child," "two children," and "three or more children."

The control variables were age, ethnicity/race, marital status, income level, education level, employment status, weight status, general health status, health conditions, alcohol use, and tobacco use. All variables and categories are shown in Table 1. Health conditions were calculated as the number of participants' "yes" responses to having been diagnosed with any of the following health conditions: high blood pressure, high cholesterol, heart attack, coronary heart disease, stroke, skin cancer, cancer, chronic obstructive pulmonary disease (COPD), arthritis, depression, kidney disease, diabetes, and asthma, and then values were categorized as "0 health conditions," "1 health condition," and "2 or more health conditions." In BRFSS, alcohol use was assessed as "drink occasions per day," and we categorized these responses as "none" (0 drinks per day), "light" (less than 1), "moderate" (1–3 for females, 1–4 for males), and "excessive" (4 or more for females, 5 or more for males).[17]

Analysis

Frequency distributions generated by state were used to identify any issues with the distribution of variables.

Table 1. Participant characteristics (N = 6266).

Variable	N = 6266	
	N	%
Physical activity	6266	100
Inactive	1552	25
Insufficiently active	1488	24
Active	1435	23
Highly active	1791	29
Children at home	6266	100
None	1936	31
1 child	1169	19
2 children	1569	25
3 or more children	1592	25
Age	6266	100
25–34 years	3017	48
35–44 years	3249	52
Ethnicity/race	6172	98
White	3156	51
Hispanic	1600	26
Other/multiracial	1416	23
Marital status	6249	100
Married	3262	52
Never married	1356	22
Other	1631	26
Income level	5644	90
US$50,000 or more	3043	54
Below US$50,000	2601	46
Education level	6251	100
Graduated college	2928	47
Did not graduate college	3323	53
Employment status	6221	99
Employed	4135	66
Not employed	2086	34
Weight status	5516	88
Normal	2423	44
Overweight	1536	28
Obese	1557	28
General health status	6260	100
Good or better	5458	87
Fair or poor	802	13
Health conditions	5439	87
0 condition	2601	48
1 condition	1808	33
2 or more conditions	1030	19
Alcohol use	6020	96
None	3056	51
Light	1059	18
Moderate	1055	18
Excessive	850	14
Tobacco use	6246	100
Never	4632	74
Former	883	14
Current	731	12
State	6266	100
California	1216	19
Colorado	960	15
New York	1307	21
Texas	1247	20
Utah	1536	25

Because of very small numbers of many bivariate assessments of categorical variables when analyzed by state, we chose to combine state data for analysis. For combined state data, we used ordered logistic regression analysis to assess the relationship between physical activity levels and number of children at home for women aged 25–44 after controlling for state and demographic, socioeconomic, and health-related factors. In ordered logistic regression, the proportional odds produced for each factor is interpreted as follows: for a one unit increase in the factor (i.e. comparing the designated group to the referent group), the resulting adjusted odds ratio (AOR) applies to (1) the odds of reporting the highest group of the outcome versus the lower groups of the outcome, (2) the odds of reporting the highest two groups of the outcome versus the lower two groups of the outcome, and (3) the odds of reporting the highest three groups of the outcome versus the lowest group of the outcome, after controlling for all other variables in the model. Any observations with missing data for any variables in the models were excluded from the adjusted analysis. All analyses were conducted in STATA 15 (Copyright 1985–2017 StataCorp LLC).

Results

Participant characteristics

As shown in Table 1, roughly equal proportions of participants reported physical activity levels of "inactive," "insufficiently active," "active," and "highly active," as well as having zero, one, two, or three or more children at home. For demographic factors, about half reported were aged 35–44, White race, and being married. For socioeconomic factors, around half of the participants reported an income greater than US$50,000 and graduating college, and about two-thirds reported employment. For health-related factors, over half reported overweight or obese weight status, most reported good or better general health status, and about half reported no health conditions. For substance use, about half reported no alcohol use in the past month and most reported never smoking.

Adjusted statistics

As shown in Table 2, the results of ordered logistic regression analysis for females aged 25–44 indicated that after controlling for all other variables in the model, physical activity was significantly and inversely related to children living at home. Overall, compared with women without children at home, women with children at home were about 1.3 times less likely to report each successive level of physical activity whether reporting one child (AOR = 0.75, 95% confidence interval (CI) = 0.63, 0.89), two children (AOR = 0.79; 95% CI = 0.67, 0.93), or three or more children (AOR = 0.80, 95% CI = 0.67, 0.94) at home.

Table 2. Adjusted results.

Predicting physical activity (inactive vs insufficiently active vs active vs highly active)	N	%	AOR	95% CI	
				Low	High
Children at home	6266	100			
None	1936	31	ref	–	–
1 child	1169	19	**0.75**	0.63	0.89
2 children	1569	25	**0.79**	0.67	0.93
3 or more children	1592	25	**0.80**	0.67	0.94

AOR: adjusted odds ratio; 95% CI: 95% confidence interval; ref: referent group.
Boldface indicates significance (AORs with 95% CI that do not include 1.00 are significant); the model controlled for state, age, ethnicity/race, marital status, income level, education level, employment status, weight status, general health status, health conditions, alcohol use, and tobacco use.

Discussion

The purpose of this study was to assess the relationship between number of children at home and physical activity levels in women aged 25–44. Across states, about half of the participants reported "inactive" or "insufficiently active" physical activity levels and about one-third reported one or more children at home. The results of adjusted analysis indicated that women with children living at home were about 30% less likely to report each successive level of physical activity, regardless of whether there were one, two, or three or more children at home. These findings corroborate previous research results that associate motherhood with decreased physical activity.[1,6,10] Prior research on the significance of number of children has been equivocal, with several studies supporting a relationship between number of children and maternal physical activity, and multiple other studies finding no relationship.[1] This may be due to the complex interaction of socioeconomic factors and family structure with maternal physical activity.[1] In our study, we controlled for both socioeconomic factors and marital status, offering support to the view that having any children at home, rather than number of children, is the key obstacle to physical activity for women in this demographic.

The findings of this study are concerning as physical activity is important for the health of both parents and children,[1,7] and parental modeling of healthy activity is important for children.[7,8] In this study, physical activity was measured as exercise-specific activities and did not consider everyday activities such as walking or chores. Not all physical activity occurs during designated periods of exercise, so we may not have captured the types of activity in which mothers are most likely to engage. By addressing different types of activity, future studies may provide insight into activities that are well suited for this target population. Such information would be useful for promoting healthy activity in parents and children and giving practitioners a point of reference in regard to making activity suggestions.

Limitations

Use of BRFSS survey data provided our study with an appropriate population-based sample; however, like much of the research on physical activity, BRFSS data used self-report to assess physical activity. Because this type of measure has the potential to introduce estimation error,[1] future studies should consider implementing more objective measures of physical activity, such as electronic health trackers. We were also unable to control social support for physical activities or access to exercise facilities, both of which have been associated with higher physical activity outcomes in this target population.[6] Future research should continue to investigate the association of such social and environmental factors to maternal physical activity and seek out means by which negative environmental effects can be attenuated.

Conclusion

As this was a population-based study, our findings may generalize to women between the ages of 25 and 44 in the primary care setting. For this target population, approximately half may report inactive or insufficient activity levels. Since physical activity is critically important in maintaining good general health,[4,6,18] it should be addressed with all patients in this target population during well-visits. Providers should be mindful, however, that women aged 25–44 with children at home may be at a greater risk for inactivity than their childless counterparts. Patients should be educated about the protective health benefits of incorporating physical activity into their daily routine as well as the risks associated with a sedentary lifestyle. Providers should be prepared to offer practical suggestions for incorporating activity into different lifestyles and provide information about resources that can help them stay active, such as low-cost gym memberships, tips on incorporating physical activity into day-to-day activities (i.e. taking the stairs, walking further), and community resources for family activities such as parks and walking trails.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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