

Project MOMs: Mothers, mOvement, and Maternal Health Care Providers Study

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Abstract

Objective. To examine maternal health care providers (MHCP) physical activity (PA) habits compared to PA prescription habits. To determine barriers, perspectives, and knowledge about PA prescription. *Methods.* The study contained 104 participants spread across a variety of locations, OBGYN professions, and racial backgrounds. Participants consisted of 87% females, 71% married, 53% with children, and 90% current full-time employees. Each participant was recruited to complete a survey consisting of questions from The International Physical Activity Questionnaire¹⁵, Barriers to Prescribing Physical Activity Questionnaire¹⁶, and Demographics Questionnaire. *Results.* The relationship between PA habits and PA prescription practices was calculated using Pearson Correlation Chi-Square analysis. A statistically significant relationship was found between vigorous activity and PA prescription. In addition, 45% of participants listed lack of time as “very much” a barrier. Most MHCP consider their knowledge of PA prescription poor or average, do not have formal training, and do not inquire about PA at every visit.

Discussion. The purpose of analyzing the relationship between MHCP PA levels and PA prescription habits was to determine if provider personal PA habits has an impact on their PA prescription habits. The results concluded that there is a statistically significant relationship between MHCP vigorous activity and PA prescription levels. This supports the hypothesis that MHCP who are more often vigorously physically active also prescribe PA a higher percent of the time. Additionally, most providers face barriers to PA prescription including lack of time and perceived patient disinterest.

Chapter I – Introduction

In the US, detrimental maternal health outcomes are increasing at exponential rates compared to other developed nations^{1,2,3}. One behavior that positively impacts maternal health outcomes is physical activity (PA)⁴. Despite evidence that PA is beneficial to mother and baby, many maternal health care providers (MHCP) do not regularly prescribe PA to pregnant women. Research has demonstrated that provider-prescribed PA increases PA among patients; and more active providers are more likely to provide PA prescriptions⁵. For maternal patients especially, behavior change is more likely with the adoption and cessation of prescriber recommendations⁶. Educating prescribers on the potential benefits of prescribing PA, increased likelihood of maternal PA if it is prescribed, and encouraging the adoption of programs similar to PARmed-X for Pregnancy could have long term positive impacts on widespread maternal and fetal health^{7,6,8,9}.

Purpose Statement

The purposes of this study are to assess MHCP personal PA levels, evaluate knowledge of PA benefits, examine barriers to PA counseling, and determine whether a relationship exists between providers' PA levels and barriers to PA counseling. Findings may be used to conduct further research and establish provider educational programs.

Research Question

Research Question #1: Is there a correlation between OB/GYN MHCP PA levels and the prescription of PA in their maternal patients?

Hypothesis #1: MHCPs that are more physically active will prescribe PA to their maternal patients more often than inactive MHCPs.

Research Question #2: What barriers are MHCP faced with when prescribing PA to patients?

Hypothesis #2: MHCPs that face less barriers to PA prescription more readily and more often prescribe PA to their maternal patients than MHCPs who face more barriers.

Significance of the Study

Although there is extensive research detailing the impact of PA during pregnancy on maternal and fetal outcomes, limited research exists examining PA counseling practices in MHCP. Therefore, it is important to understand the barriers MHCP face in prescribing PA and their personal PA practices. Findings may be used to develop MHCP specific PA promotion strategies to improve health for mothers and babies.

Chapter II – Review of Literature

I – Introduction

When analyzing existing literature regarding PA, health, and pregnancy, there are a few themes that are both alarming and consilient. We know that patients are more likely to follow an exercise routine or become physically active more often if they are prescribed or counseled by their physician¹⁰. We also know that PA benefits physical and mental health in maternal patients and their infant or fetus⁴.

Although we know these facts to be statistically and research proven, barriers to PA prescription continue to exist. These barriers include time, knowledge, routine, and perspective on safety and value for patients. Recognizing these barriers, there is room for provider and health care system growth. This growth could be in the form of PA as a vital sign, mobile activity tracking, or future educational programming. Though much research already exists, there are gaps in the literature regarding provider PA habits in relation to PA prescription habits.

II – Physical Activity and Maternal Health

a. Benefits for Mom

One of the most important reasons for women to remain or become active during their pregnancy is to maintain or improve their personal health. Although behavior change is typically a challenge when providers recommend the addition of PA, women during pregnancy are unique in their perspectives on change. During pregnancy, women are proven to be more open to behavior and lifestyle changes, making pregnancy often referred to as “the teachable moment”⁶.

The “teachable moment” is an opportunity for providers to engage in life changing mentorship and guidance leading their maternal patients towards a healthier and more active lifestyle.

Beyond the teachable moment, PA has been found to result in better maternal health outcomes throughout pregnancy. A 2019 study found that women who were physically active and received PA prescription were at a lower risk for postpartum depression and some even experienced improvement in their depressive symptoms⁴. In addition, they found a 28% lower risk of preeclampsia for each 1 hour/day increment in activity, compared to women with no documented activity⁴.

b. Benefits for Baby

In addition to providing maternal benefits, PA during pregnancy also provides fetal benefits. A 2010 study found that maternal PA is a protective factor against preterm birth. Walking as a form of exercise showed a protective effect against preterm birth, with a 50% or greater reduction in risk for women who walked less than 20 minutes per day⁹. This protective effect increased to nearly two-thirds reduction for women who walked 20 minutes or more per day⁹. Similarly, another study found that steps per day were inversely associated with preterm birth¹¹.

III – Barriers to Exercise Prescription

a. Knowledge

Although most physicians agree that there is a place for PA in routine practices, most also argue there is a lack of time to include PA prescription conversations¹². For most physicians, assessment of PA was not routine, neither was signposting to PA supports¹². In addition to these barriers, a 2010 study found that approximately 66% of physicians' offices give advice to

patients about pregnancy and exercise, but this percentage decreased to <50% in younger physicians (<30 years of age), most of whom were residents⁸. This gap in knowledge between younger and older physicians is an important point to make and an even more important topic for programming and education. In addition, identifying these barriers of time and knowledge provides a tangible focus for growth and positive change.

b. Growth Opportunity

Exercise prescription is a future direction for growth within the medical information and medical provider community. Exercise vital signs consist of a self-evaluation of the days per week the patient engages in moderate to vigorous PA and the hours or minutes per day¹³. Past studies have found that incorporating exercise into vital sign intake is both effective and possible¹³. In addition, embedding exercise vital signs into electronic medical records would increase traceability and follow through for PA prescription and ongoing PA conversations between patients and providers¹⁴.

Chapter III – Methods

I – Participants

The participants of this study were male and female healthcare professionals working in the OB/GYN specialty. The healthcare professions were limited to nurses, nurse practitioners, physician's assistants, and physicians including both doctors of osteopathy and medical doctors. Each participant had to be over the age of 18 and have worked in the OB/GYN specialty for at least one year. Participants were from a variety of locations with a wide range of university affiliations.

II – Recruitment

To recruit participants for this study, several different methods were done. Initially, following IRB approval, emails were sent to OB/GYN professional societies throughout North Carolina and nationwide. Individual emails were sent to personal connections and flyers were posted on social media sites. These recruitment methods were not effective, so recruitment efforts were expanded to be more social media based by reaching out to Facebook groups and LinkedIn profiles. During this phase of recruitment, the survey was compromised with spam responses resulting in closing the survey and recreating a survey with a different recruitment approach. The next phase of recruitment involved researching and obtaining a professional email address for the chair of each OB/GYN department at every Medical Doctorate and Doctor of Osteopathy school in the country and sending recruitment materials to be distributed to their respective faculty, staff, and colleagues.

III – Questionnaires

The survey was developed based on The International Physical Activity Questionnaire¹⁵, Barriers to Prescribing Physical Activity Questionnaire¹⁶, and Demographics Questionnaire. The International Physical Activity Questionnaire was developed in 2003 and provides a structured format for inquiring about participants PA habits on a daily and weekly measurement¹⁵. Combining these surveys allowed data to be collected about demographic characteristics, perspectives on barriers to prescribing PA, and personal PA levels. The survey was done using Qualtrics to allow for ease of access, response tracking, and ultimately statistical analysis. Data analysis included frequency distributions and Pearson Correlation Chi-Square analysis. Frequency distributions were done for demographic characteristics. Results for the Barriers to Prescribing Physical Activity Questionnaire¹⁶ were analyzed through calculating mean and standard deviation. Results for The International Physical Activity Questionnaire¹⁵ were analyzed by Chi-Square analysis with Barriers to Prescribing Physical Activity Questionnaire¹⁶ question #5: What percentage of patients do you provide physical activity recommendations to when it is appropriate to do so? (0% = none, 100% = all). Each level of PA in The International Physical Activity Questionnaire¹⁵ (walking, moderate, and vigorous) was run as a separate Chi-Square analysis.

Chapter IV – Results

Participants

A total of 104 participants were used for this study. Each of these participants were over the age of 18 and worked in the OBGYN specialty for at least 1 year. Participants were medical doctors (n=78), nurse practitioners (n=8), physicians assistants (n=4), and other (n=14) prescribing professions. The participants were male (n=14) and female (n=90) and come from a variety of racial identities including Asian (n=13), Black/African American (n=11), American Indian/Alaskan Native (n=1), White (n=69), and others (n=10). Sixty-six percent of the participants ages fell within the 20-39 years old range with a mean age of 38.05 ± 10.68 years old. Regarding work environment, 60% work in a hospital setting, 14% in a clinical setting, 9% in a doctor's office, and 17% in other locations or a combination of locations. Twenty-nine percent of participants are not currently married and 53% do not have children. Of all the participants, 78% have a household income greater than \$100,000. One important note is that 37% of participants reported not being asked about their PA habits when they go to the doctor. Similarly, 29% reported that their work facility does not ask about patient PA habits.

PA Prescription Knowledge and Training

Based on the questions regarding training level and perceived knowledgeability, the findings suggest that providers lack formal training and consider their personal knowledge between poor and average. The average participant answered that they were “a little bit” aware of the 2018 Physical Activity and Public Health guideline with a mean answer of 2.09 ± 1.09 . The average participant also only inquires about PA at some or most visits with their patients,

not every visit with a mean answer of 2.76 ± 0.81 . Each of these mean findings with their standard deviations and specific answer scales can be found in Table 1.

Perceived Barriers and Benefits

Results from the Barriers to Prescribing Physical Activity Questionnaire¹⁶ are listed in Table 2 and Table 3. Each of the questions had the following answer choices: 0=not at all, 1=A little bit, 2=Somewhat, 3=Quite a bit, and 4=Very much. Of all the responses, the average response for each of the questions regarding benefits of PA was between “quite a bit” and “very much.” This is important to note because the average participants recognize the positive impact PA has on their patient’s long-term health like disease reduction, physical decline, coping with stress, and overall health. This data can be found in Table 3. In contrast, the participant responses for the questions regarding barriers varied much more. The only stand out response was the barrier of lack of time with the average answer being “quite a bit” and 45% of participants answering that lack of time is “very much” a barrier. Another barrier, patient disinterest, had responses of “somewhat” at 30% and “quite a bit” at 27%. This data can be found in Table 2.

The Relationship Between Provider PA and PA Prescription

The relationship between PA levels (i.e. vigorous, moderate, walking in days per week and hours/minutes per day) and PA prescription (i.e. percent of patient visits) were assessed using Pearson Correlation Chi Square analysis. Although moderate and walking activity levels relationship to PA prescription were found to be weak and insignificant. This correlation of vigorous PA and PA prescription was found to be $p=0.032$ making it a significant correlation at the $p<0.05$ level. These values can be found in Table 4.

Table 1: Knowledge and Training		
2018 Physical Activity and Public Health Guidelines	2.09 ± 1.09	1= Not at all 2= A little bit 3= Somewhat 4= Definitely Yes
PAP Formal Training	1.15 ± 0.36	1= No 2= Yes
PAP Knowledge	2.38 ± 0.97	1= Very Poor 2= Poor 3= Average 4= Good
PA Inquiry	2.76 ± 0.81	1= On every visit 2= On most visits 3= On some visits 4= Rarely

Table 2: How much do the following factors make it difficult for you to recommend physical activity to your patients?	
Lack of Time	3.02 ± 1.22
Unsure What To Recommend	1.65 ± 1.29
Unsure PA is Safe (General)	0.88 ± 1.24
Not Sure PA Can Help	0.75 ± 1.07
Patients Not Interested	2.40 ± 1.16
PAP not Reimbursed	1.18 ± 1.44
Unsure Who to Refer Patient To	1.97 ± 1.35

Table 3: How beneficial do you feel physical activity is for patients?	
Maintaining Overall Health	3.86 ± 0.47
Reducing Risk of Diseases	3.75 ± 0.54
Improving Mental Health	3.73 ± 0.58
Attenuating Physical Declines	3.66 ± 0.60
Improving Ability for Daily Tasks	3.57 ± 0.73
Helping Cope with Stressors	3.62 ± 0.67
Reducing Risk of Reoccurring Illness	3.55 ± 0.74

Table 4: The Relationship Between Provider PA and PA Prescription	
	Pearson Chi-Square Asymptotic Significance (two-sided)
Vigorous Activity and PA Prescription	0.032
Moderate Activity and PA Prescription	0.902
Walking Activity and PA Prescription	0.505

Figure 1: Vigorous Physical Activity Habits and PA Prescription

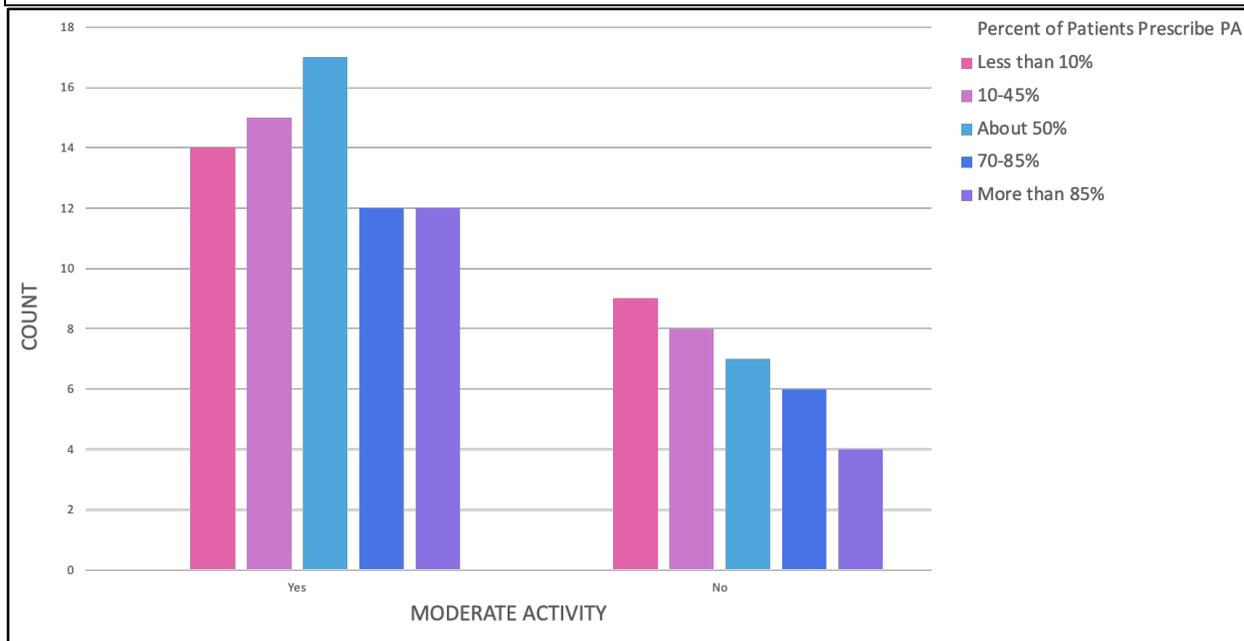


Figure 2: Moderate Physical Activity Habits and PA Prescription

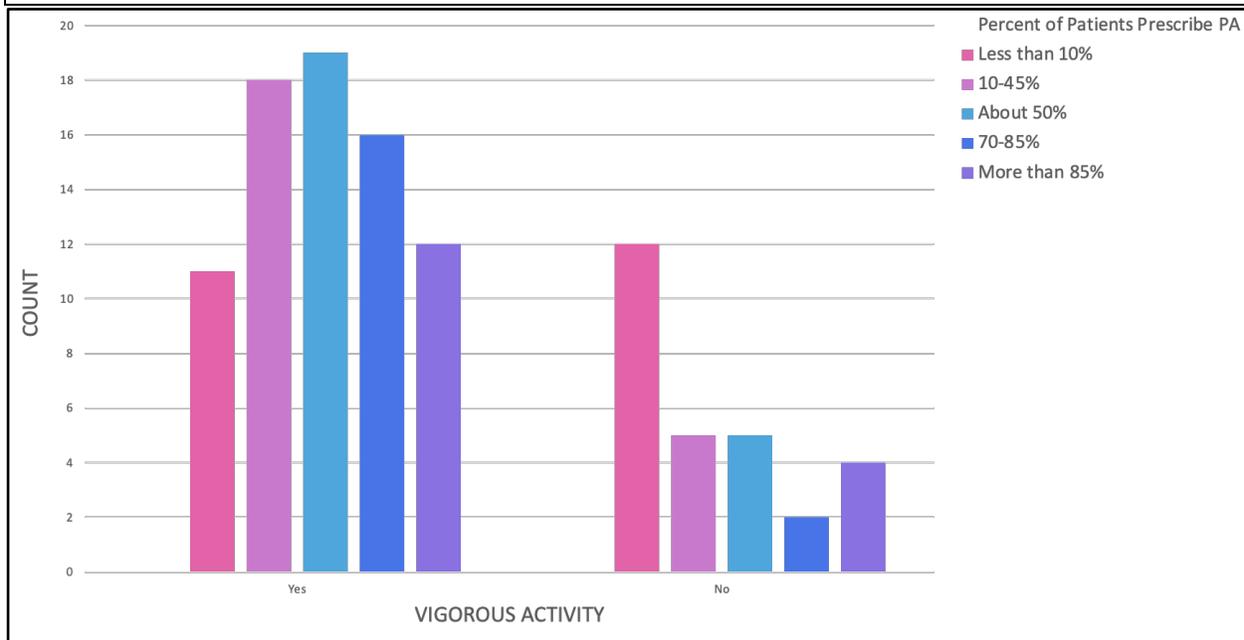
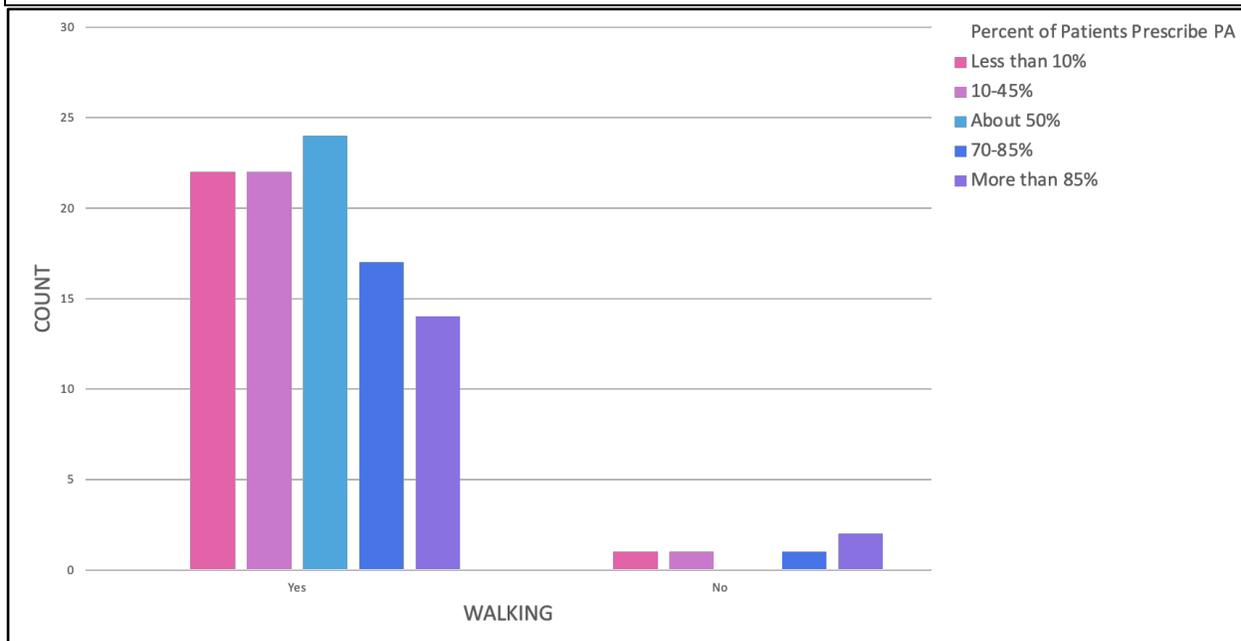


Figure 3: Walking Habits and PA Prescription



Chapter V – Discussion

Findings

Existing literature has produced findings suggesting the importance of PA during pregnancy. Studies have shown there are benefits for both mother and baby if women are physically active during pregnancy but barriers to prescription remain. In addition, there is a gap in literature relating MHCP PA levels and their PA prescription habits with their patients. This study was conducted to provide data regarding a relationship between PA levels and PA prescription in the OBGYN MHCP community. This was done through the distribution of a survey based on The International Physical Activity Questionnaire¹⁵, Barriers to Prescribing Physical Activity Questionnaire¹⁶, and Demographics Questionnaire.

The data collected was analyzed and compared to determine the presence of any significant relationships. Frequency table findings for perceived benefits and barriers suggest that the most faced barrier with MHCP participants is lack of time followed by patient disinterest. Most participants do not have formal PA prescription training, are a little bit aware of the 2018 Physical Activity and Public Health Guidelines, and do not inquire about PA at every visit. Based on data analysis and Pearson Correlation, a significant relationship does exist between PA levels and vigorous activity levels in MHCP participants at the $p < 0.05$ level. This finding suggests that MHCP that participate in vigorous PA more often also prescribe PA to their patients more often.

Future Directions

Based on the findings of this study along with past literature, there are a few avenues for future research and programming development. The three main future directions are prescriber

activity tracking, educational program development, and meta-analysis of educational opportunities. Prescriber activity tracking would provide concrete data for activity levels that could be compared with documented prescriber practices. The findings from this study support the necessity for educational programming with medical students, residents, and attending physicians. Findings from a meta-analysis of educational opportunities could be used to develop a series of educational programs regarding the importance of PA prescription, actionable ways to increase PAP practices during routine visits, and strategies to increase personal PA levels.

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