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Research Article

The Physical Activity Prevalence and Contributing Factors among Women Receiving Antenatal Care in Low-Income Communities in Lusaka, Zambia

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Abstract

If there are no medical or obstetrical complications, pregnant women should continue and maintain moderate intensity exercise during pregnancy under the supervision of their healthcare provider. In this study, we considered the prevalence and participants' perception of factors affecting physical activity among pregnant women receiving antenatal care in low-income communities in Lusaka, Zambia. We used a mixed method design to collect both quantitative and qualitative data elements. The study population (N=250) comprised of all pregnant women aged 15-49 years who were receiving prenatal care at study sites regardless of their gestational age. For quantitative data, descriptive statistics were analyzed using Stata version 20-0 for Windows while, in qualitative data, a textual analysis was conducted to establish verifiable themes and categories. The participant's physical activity prevalence was 82% and the level of exercise classification was moderate. Factors that influenced physical activity during pregnancy include physical body changes and symptoms of discomfort, influence of family and friends, housing's physical and social surroundings and absence of nurturing environment. These findings may be of use to public health practitioners, policy-makers and health professionals as they may help inform context-specific interventions that focus on increasing antenatal physical activity at the health facilities. These findings are important because health care providers should encourage increased physical activity during pregnancy, but treatment should be tailored to the unique needs of each patient.

Keywords

Physical Activity, Factors, Pregnancy, Antenatal Care, Low-Income, Communities

1. Introduction

With regular exercise becoming an important part of a healthy lifestyle, it has become an important part of women's lives and an essential part of antenatal health care. [1]. Physical activity is the physical movement resulting from skeletal muscle contraction at all stages of life, while exercise is systematic, planned, repetitive movement that works muscles and requires the body to burn calories. [2]. In the absence of medical or obstetric complications, pregnant

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women are encouraged to continue and maintain moderate-intensity exercise, during pregnancy under the guidance of their healthcare providers [3, 4]. The American College of Obstetricians and Gynecologists (ACOG) recommends a low-to-moderate-impact exercise regimen for pregnant women, performed for at least 20 to 30 minutes most days of the week and gradually progressed over time [3]. This improves the overall fitness of pregnant women and exercises can include: Swimming, running, walking, aerobics, dancing, core stability, back exercises, pelvic floor, breathing, and posture and leg exercises [5].

Pregnancy is a period in a woman's life characterized by intense physiological, physical and psychological changes, during which maternal systems adapt to meet the increasing demands of fetal growth and development [6, 7]. These adaptive changes can lead to several pregnancy-related health problems, such as back pain, gestational diabetes mellitus (GDM), hypertension, pre-eclampsia, fetal growth restriction, urinary incontinence, mental illness, and maternal obesity [4]. Pregnant women who meet the prescribed physical activity requirements during pregnancy have a reduced risk of the above-mentioned health problems [7]. Some studies have shown other health benefits of physical activity during pregnancy, including psychological well-being, reduced preterm birth, lower caesarean section rates, improved cardiovascular function, improved physical fitness, and reduced symptoms of depression. [5-7]. However, anecdotally, many women decrease their physical activity rather than maintain or increase it during pregnancy.

Pregnant women in low-income regions in general, and Africa in particular, are expected to be more physically active because of the very high physical demands associated with common household chores [8]. However, some studies have shown that physical activity among pregnant women is, in some cases, not performed adequately and does not meet the recommendations for adequate physical activity [8, 9]. Anecdotally, low levels of physical activity are common among pregnant women as they adjust to the important physiological and psychological changes of pregnancy. In developing countries, cultural acknowledgment, ethnic practices, beliefs, maternal age, unwanted pregnancy, level of education of the women, health care access, availability of trained health professionals, health-seeking behavior of women, family support, and social economic status are aspects that have been linked with knowledge and practice of physical exercise among pregnant women [9]. This study considered the prevalence and participants' perception of factors affecting physical activity among pregnant women receiving antenatal care in low-income communities in Lusaka, Zambia. The results are expected to be useful to policy makers when planning and implementing intervention strategies related to physical activity in antenatal care.

2. Methodology

Study design, population and sample size

In order to gain a better understanding of the physical activities of the participants and their perception of the factors of physical activity among pregnant women in low-income communities, we designed the study using a mixed method design, where we collected both qualitative and quantitative data elements. The study population was composed of all pregnant women between 15 and 49 years of age who were receiving antenatal care at the study sites regardless of gestational age. Approximately 450 to 700 women visit the facilities each month for antenatal care [10]. Using stratified random sampling (95% CI: 0.53–0.44, Proportion: 0.49–0.52, SE: 0.002). For the quantitative component, we had 250 pregnant women and each facility enrolled approximately 63 participants. In the qualitative component, we used the number of focus group discussions (FGDs) and the lower limit of 6 to estimate the sample size, which was approximately 24. The FGDs participants were purposefully and conveniently chosen from among the 250 participants.

Study site and ethical considerations

The study was conducted in four public health facilities located in the city of Lusaka, Zambia. These facilities provide a variety of health services to the local community, including but not limited to: inpatient and outpatient care, antenatal and postnatal care, maternity care, general medical consultation, immunizations, emergency care, family planning services, laboratory testing and health education programs [10]. These facilities were selected as study sites as a large proportion of the local population visits them. Prior to the commencement of the study, ethical clearance and approval was obtained from: the University of Zambia Bio-medical Research Ethics Committee (UNZABREC), the Lusaka District Health Office (LDHO) and participating health centers. Written informed consent and permission to record the interviews were also obtained from the participants beforehand.

Data collection methods

First, we collected quantitative data using a self-administered data capture sheet and the Pregnancy Physical Activity Questionnaire (PPAQ) were we measured antenatal physical activity levels, type, and intensity. The PPAQ is the most commonly used and validated tool for prenatal physical activity measurement [11]. It consists of 32 physical activities which include: household and care-giving activities (13 activities), occupational activities (5 activities), sports and exercise activities (8 activities), transportation activities (3 activities), and inactivity activities (3 activities). To have insight and understanding of individual experiences of physical activities and influencing factors we then conducted a total of three focus group discussions (FGDs) with the aid of a discussion guide, that had semi-structured questions. The principal investigator (PI) conducted the interviews and an open communication approach was used to ensure that participants communicated their physical activity experiences during pregnancy with ease.

The interviews were recorded using an electronic audio recorder and transcribed verbatim. During the interviews, notes were taken on dynamic emotional aspects and strong feelings attached to certain opinions or vocabulary used during the FGD and data validation was done by asking participants for additional details and having them affirm to a summary of their answers.

Data analysis

Coding of the quantitative data was carried out and the data was fed into STATA Version 20.0, for descriptive analysis, and presented using frequency and percentages. For qualitative data analysis, transcripts were cross-referenced line-by-line to capture emergent themes. The principal investigator (PI) cross-checked the transcriptions with the audio recordings to verify their accuracy. After which MMM and LAN independently analysed the FGD 1 transcript, cross-checked the codes and developed a code book. Analysis included: familiarization; highlighting of significant quotes; expansion of the code book; coding of the remaining data; formation of clusters of meaning; sorting categories and links to create themes and sub-themes [12]. All authors verified the themes and categories of the study after consensus. Dependency and knowledge were created based on the participant's real data-based perspectives and consistency was improved when similar themes emerged in data of subsequent focus group discussion transcripts.

3. Results

3.1. Participant's Social Demographic Description

Study outcomes show that 250 participants completed this study. Table 1 below shows that the most frequent age group (40%) is between 20 and 25 years old. Further, 48% of participants had completed secondary level education, 70% were employed (both formal and informal), 85.2% indicated being married and 65% reported parity (1-2).

Table 1. *Participant's social demographic characteristics (n=250).*

Demographic characteristics		N (%)
Age in years	15-19	38 (15)
	20-25	100 (40)
	26-30	75 (30)
	31-40	38 (15)
Educational background	Primary	75 (30)
	Secondary	120 (48)
	Tertiary	55 (22)
Occupational background	Unemployed	75 (30)
	Employed	175 (70)
	Student	13 (5)
Marital status	Married	213 (85.2)
	Unmarried	26 (10.4)
	Divorced/widowed	11 (4.4)
Parity	1-2	163 (65)
	3-4	75 (30)
	5-6	13 (5)

3.2. Participants' Antenatal History and Prevalence of Physical Activity Based on the PPAQ

Table 2 below shows that 88% of the current pregnancy participants received regular antenatal care, prevalence of physical exercise was 82%. Most participants 81.6% had moderate physical activity intensity and general exercises (49.2%), followed by household chores (40%) were the most common types of exercise performed. Physical activity level classification was moderate activity for 66%.

Table 2. *Participants' antenatal history and prevalence of physical activity based on the PPAQ (n=250).*

Participant's prevalence of physical activity based on the PPAQ		N (%)
Attends antenatal regularly in the current pregnancy	Yes	220 (88)
	No	30 (12)
Attended antenatal regularly in previous pregnancies	Yes	204 (81.6)
	No	28 (11.2)
	No response	18 (7.2)
Practised physical exercises	Yes	205 (82)
	No	35 (14)
	No response	10 (4)

Participant's prevalence of physical activity based on the PPAQ		N (%)
Physical activity intensity	Mild	28 (11.2)
	Moderate	204 (81.6)
	Vigorous	18 (7.2)
Type of exercise activity	General exercise	123 (49.2)
	Sports	27 (10.8)
	Household chores	100 (40)
Physical activity level classification	Light activity	37 (14.8)
	Moderate activity	163 (66)
	Excessive activity	50 (20)

3.3. Participants' Perceptions of Factors Influencing Physical Activity in Pregnancy: Interview Results

The average duration of the recorded interviews was 60 min. Table 3 shows three themes and nine sub-themes emerging from the FGDs, including personal, social and environment. These themes are 'context-specific' as they are specific to our study environments and are based on the experiences and incidents reported by participants. Verbatim accounts of the participant's statements are provided and key statements used have been illustrated with no identifiers other than "Participant" (P) from which quotes emerged.

Table 3. *Participant's perceptions of factors influencing physical activity in pregnancy (n=24).*

Theme	Sub-theme
Personal factors	Physical body changes and symptoms of discomfort
	Lack of knowledge
	Time constraints
Social factors (social circle values)	Individual participation in physical activity
	Social norms and cultural influence
	Influence of family and friends
Environmental factors	Housing's physical and social surroundings
	Absence of nurturing environment
	Safety concerns

3.3.1. Personal Factors

Pregnant women's personal characteristics and beliefs had an impact on their physical activity practice and levels. As highlighted in table 3 physical body changes, symptoms of discomfort, lack of knowledge, and time constraints are personal factors that influenced participant's engagement in physical activity during pregnancy.

Physical body changes and symptoms of discomfort

Some participants said they even though they knew that exercise was beneficial, they lowered their physical activity levels during pregnancy because they alleged certain activities were too strenuous and dangerous for the mother and the baby. According to other participants, fatigue was common and the physical changes that happen during pregnancy, as the baby grows, affect balance and coordination, so they had to reduce their physical activity.

"I realized that I didn't want to put myself in any kind of danger, so I decided not to exercise. I believe that exercise can be beneficial for my health, but I'm trying to minimize the risks to my body and the baby" (P1).

"I'm feeling more tired than usual, and now that the baby is moving around more, I'm finding it difficult to exercise" (P4).

"I'm having trouble breathing, which is making it hard for me to exercise. I used to be able to walk and run down the street and back, but now that I'm pregnant I can't do that because I'm so exhausted" (P 10).

"When my body started to hurt after running, hey, I knew this isn't working for me. So I started doing less activity" (P16).

Lack of knowledge and time constraints

According to participants, pregnancy changed many aspects of their daily lives, making it hard to find time for physical activity. They reported feeling overwhelmed with work, getting ready for the baby's arrival, and other duties. Some expectant mothers were hesitant to exercise during pregnancy because they didn't know what safe and suitable exercise was.

"I am finding it difficult to maintain a regular exercise routine due to my busy schedule of going to school and taking care of my family. I already have two children who are taking up a lot of my time and energy, and being pregnant is making it even harder for me to exercise" (P8).

"I believe that being pregnant has caused me to have less time for exercise due to the amount of errands and housework I have to do each day" (P12).

"I don't do a lot of exercise because I don't know much about it. Nobody has told me what exercise to do and how to do it. People say that I should walk and move around for my baby to be healthy" (18).

"The doctors don't tell you what to do. They just say, "Don't move too much or that you can't do sudden movements that your body can't handle. But it's not specific" (P2).

3.3.2. Social Factors

Social factors make pregnant women more likely to participate in physical activities. Social factors refer to how a pregnant woman is influenced by her family, friends and peers. In this study, individual participation in physical activities, Social norms and cultural influence and Influence of Family and Friends played a significant role in the pregnant women's physical activity participation and motivation.

Individual participation in physical activity

Women's pre-pregnancy exercise habits appeared to have an influence on their exercise activities during pregnancy. Participants who engaged in exercise activity prior to pregnancy reported that it was easier for them to keep up with their exercise routine during pregnancy. Some participants said they engaged in physical activity because it improved their overall health and well-being by reducing pregnancy discomfort and helped them prepare for labour.

"I've always been an active person and I've stayed that way because I feel good, I'm not going to spend all my time resting, I want to get on with my day-to-day life. I really don't feel much different, I just have to be a little more cautious myself" (P11).

"I work too hard to be active and I'm as active as I can be because it's good for my health and getting ready for labour" (P7).

Social norms and cultural influence

According to our participants, the cultural influence were pregnancy is seen as a special situation makes pregnant woman not to do strenuous activities. Lack of exercise habits and the lack of affordable, safe places to exercise also reduce the likelihood of pregnant women engaging in physical exercise activity.

"Pregnancy is still seen as an exception culturally. Many people just don't think its okay to do a lot of exercise or much of anything. They expect you to take it easy most of time" (P5).

"Due to the social custom of pregnancy being seen as an illness, people are hesitant to engage in physical activity or even lift anything. People around you are also constantly telling you that you can't do this or that makes it challenging for one to exercise" (P9).

Influence of family and friends

Participants in our study institute that family and friends encouraging pregnant women to exercise increased their levels of physical activity. A few participants mentioned that family members and friends did, however, contribute to their reduced exercise activities.

"My mother always calls me to see if I'm awake. She says if I don't exercise, the baby will be lazy. So that encourages me to be active even when I don't feel like exercising" (P20).

"Since there are a couple of pregnant women in our neighborhood, we habitually go to the market together. At the clinic we have been told that exercise helps with labour so we use this opportunity to exercise" (P17).

"My husband doesn't allow me to do anything strenuous. I've cut back on my exercise. I don't do much" (P6).

"Everyone at home seems to think I need to slow down, but I know what I'm capable of, so I keep up with my exercises" (P5).

3.3.3. Environmental Factors

In our study, "environmental factors" refer to the physical and social environment in which an individual lives that influences their physical activity. Environmental factors can include Housing's physical and social surroundings, absence of a nurturing environment, and safety concerns. These factors can enhance or discourage people from exercising.

Housing's physical and social surroundings

Our study participants echoed that drawing water at home, walking in the neighborhood, and long distances to social places like markets and bus stops are all reasons for being active during pregnancy.

"I don't need to go to a gym or have a particular exercise

program. For me, just walking to the market or bus stop is enough exercise because of the distance I cover" (P13).

"We have a community tap in our community where I draw water every day because my other kids are still very young. It is part of my exercise" (P19).

Absence of a nurturing environment

In this study, participants reported a lack of guidance and lack of information from health care professionals on the type, intensity, and dosage of exercise.

"I'm just doing what I think I can. The nurses say we must exercise, but they don't tell you what kind of exercise you need to do when you are pregnant or how much you need to do" (P21).

"I don't know anything about the exercises during pregnancy. No one told me anything about exercising, not even the nurses" (P19).

Safety concerns

According to some participants, their communities were unsafe for physical activity and exercise due to the presence of a large number of street gangs who assault people and steal things like phones.

"My neighborhood is unsafe for anyone to exercise especially in the evening you can be attacked on the street" (P2).

"Since there are lots of bushes in my area, I can't go alone to walk unless someone wants to go with me, so I'll go with them" (23).

4. Discussion

Physical activity is safe and supportive of maternal health and birth outcomes for the vast majority of pregnant women [13]. However, exercise-related behaviours among pregnant women are complicated and affected to varying degrees by a variety of factors, making it challenging for them to participate in physical activity [14]. Therefore, it is important to understand the main determinants of physical activity behaviour. In this paper, we present findings on the prevalence of physical activity and participants' perceptions of factors influencing physical activity in pregnant women receiving antenatal care in low income communities in Lusaka, Zambia. Our study outcomes highlight that prevalence of physical activity was high (82%) and majority of the participants were classified as moderately active in the PPAQ in table 2. The activities they engaged in included general exercise as well as household chores. Our participants also stated that they frequently drew water at home and walked long distances to social facilities such as markets and bus stops. All this may have contributed to their increased physical activity levels and better exercise profiles. Except for lower prevalence of physical activity and light levels on classification of exercise most of the parameters obtained in this study are similar to outcomes obtained in Dubai [15]. We believe maternal age and education could have contributed to our participants' high prevalence and moderate levels of physical activity during pregnancy. As seen in table 1 most of our participants had attained secondary level of education and the common age group was 20-25 years old. Majority of the participants were employed and had parity (1-2). These findings are in line with outcomes obtained in Malawi [16] and Dubai [15], where women with a similar age group, educational level, employment status and parity had better exercise profiles and were more aware of the benefits of physical activity during pregnancy. Other studies [17–20], have also shown that women with secondary or tertiary education were more active in in exercise during pregnancy and this was alluded to the fact that women with higher educational attainment had more access to information about exercise during pregnancy, resulting in higher exercise profiles [21].

In this study, personal, social and environmental factors had an influence on participants' physical activity and perception during pregnancy. Physical changes in the body, symptoms of pain, lack of information, and time constraints were personal factors that negatively impacted participant's physical activity during pregnancy. Some participants reported that despite being aware of the benefits of exercise, they reduced their physical activity during pregnancy due to claims that certain activities were "too strenuous" and "dangerous" for both the mother and baby. Others reported that fatigue was common, and that physical changes that occur during pregnancy, such as the baby's growth, affected balance and coordination. Further, absence of a nurturing environment from health care professionals on the type, intensity, and dosage of exercise contributed negatively. As a result, pregnant women in this study decreased their physical activity. Similar to Australia, Brazil and Ethiopia [20, 22], pregnancy-related barriers were cited as the top reasons for not exercising, with the most common being nausea, back pain, fatigue, time constraints, fatigue, and discomfort.

Pregnant women are more likely to engage in physical activities due to social factors. Social factors are the ways in which pregnant women are influenced by their family, friends, and peers. In this study, physical activity participation, social norms, cultural influence, and influence of family and friends were all significant factors in the physical activity engagement and motivation of pregnant women. Participants in our study reported that their family and friends encouraged them to exercise, resulting in an increase in their physical activity levels. However, there were a few participants who reported that family members or friends did contribute to their decreased exercise activities. Moreover, in our participants' opinion, the cultural impact of pregnancy being seen as a unique circumstance made pregnant women less likely to engage in strenuous physical activity. This result was also seen in another study in the USA [22] in which family members such as husbands, colleagues and friends told women to rest and lie down until the baby was born. The women's exercise habits before pregnancy also seemed to influence their exercise during

pregnancy. Participants who exercised before pregnancy reported that it was easier for them to keep up their exercise routine during pregnancy. They also reported that exercise improved their general health and well-being, reduced pregnancy discomforts, and helped them prepare for childbirth. Similar findings were seen in another study in the UK [23]. Participants reported that physical activity led to shorter labour times, reduced the risk of pregnancy, and improved the outcome of pregnancy, although these reports were rare. However, in this study, the lack of exercise programmes and affordable, safe environments for some participants was said to have resulted in a decrease in physical activity. Similarly, in South Africa, the results of Okafor and Goon [24] showed that the lack of physical activity facilities, including recreational facilities, and the fear of being mugged by some criminals on the street had a negative impact on the physical activity of pregnant women.

During pregnancy, it is important to encourage women to adopt and sustain healthy behaviors throughout their lives [25]. Health practitioners involved in antenatal care have an important part to play in helping women decide whether to begin or continue exercising during pregnancy. Therefore, it is essential that pregnant women are provided with adequate information at the appropriate time to fulfill their needs. Providing adequate and relevant information is the initial and most essential step in helping pregnant women to make informed decisions [26], which helps to boost their level of confidence. This study was based on self-reported responses by participants. Therefore, response biases should be taken into account. Additionally, although the results may be somewhat comparable, they cannot be generalised to other settings as this study was conducted among self-reported participants in public health facility settings with a unique low-income environment and operational context.

5. Conclusion

There was a high prevalence of physical activity in the participants and a moderate level of exercise classification. Factors that influenced physical activity during pregnancy include physical body changes, symptoms of discomfort, influence of family and friends, housing's physical and social surroundings and absence of nurturing environment. This knowledge provides guidance for creating a helpful guide for physical activity during pregnancy that aligns with individual capacity throughout pregnancy. Women have demonstrated that they engage in physical activity during pregnancy, so health care providers need to promote increased antenatal physical activity, but care should be personalized to meet the individual needs of each individual. In addition, women should be reassured about safety risks; and provide options to help them incorporate recommended activity levels into their activities of daily living (ADLs). It's important that support provided to pregnant women should encourage ADLs as a particular form of physical activity during pregnancy as this may improve the level of antenatal physical activity in health care settings.

Abbreviations

ACOG: American College of Obstetricians and Gynecologists
ADLs: Activities of Daily Living
CI: Confidence Interval
FGDs: Focus Group Discussions
GDM: Gestational Diabetes Mellitus
LDHO: Lusaka District Health Office
P: Participant
PI: Principal Investigator
PPAQ: Pregnancy Physical Activity Questionnaire
SE: Standard Error
UNZA: University of Zambia
UNZABREC: University of Zambia Bio-medical Research Ethics Committee

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Conflicts of Interests

The authors declare no conflicts of interest.

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