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Overcoming Barriers to Exercise Participation during Pregnancy: Implications for Health Education and Practice

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Abstract

Pregnancy is a transformative period marked by various physical, emotional, and psychological changes, making exercise an essential factor for maternal and foetal health. Historically, pregnant women were advised to limit physical activity due to concerns about complications. However, contemporary research highlights the benefits of regular, moderate exercise during pregnancy, including improved cardiovascular health, reduced risk of gestational diabetes, and enhanced mental well-being. This paper examines the benefits of exercise during pregnancy, including its role in preventing pregnancy-related disorders, alleviating common discomforts, and promoting quicker postpartum recovery. Despite these benefits, barriers to exercise include physical fatigue, psychological concerns, social and cultural factors, environmental limitations, and inadequate healthcare provider guidance. Effective health education is crucial in overcoming these barriers by providing accurate information, addressing misconceptions, and creating supportive environments for physical activity. Strategies such as educational interventions, community-based programs, and healthcare system changes are recommended to promote exercise participation. Tailoring exercise routines to accommodate the physiological changes of each trimester is also essential. By integrating exercise education into prenatal care and advocating for supportive policies, health educators and healthcare providers can enhance maternal and foetal health and encourage consistent exercise throughout pregnancy.

Keywords: Barriers, Exercise, Pregnancy, Health Education

Introduction

The journey of pregnancy is a transformative period marked by different physical, emotional, and psychological changes. Among the various lifestyle factors that significantly impact maternal and foetal health, exercise participation stands out as an important factor. Exercise participation among pregnant women remains low, with research indicating that only 15-20 per cent of pregnant women meet the recommended guidelines for physical activity (Silva-Jose et al., 2022). Historically, pregnant women were often advised to limit physical activity especially in the first trimester, for the fear of miscarriage and other forms of complications but contemporary research has demonstrated that regular, moderate exercise is beneficial for most pregnant women. This shift underscores the need for comprehensive health education to promote safe exercise practices during pregnancy, ensuring that both pregnant mothers and their healthcare providers are well-informed about the benefits, guidelines, and precautions associated with pregnancy related exercises.

Exercise participation during pregnancy encompasses a range of physical activities tailored to maintain and enhance physical fitness, mental well-being, and overall health. According to Santos-Rocha et al. (2022), exercise participation during pregnancy refers to the active engagement of pregnant women in physical activities and exercise routines. This participation aims to maintain or improve physical fitness, support overall health, and prepare the body for childbirth (Santos-Rocha et al., 2022). Asante et al. (2022) stated that exercise participation involves regular, planned, and structured physical activities that are deemed safe and beneficial for both the mother and the developing baby. These exercises include activities such as walking, swimming, Kegel exercise, prenatal yoga, low-impact aerobics, and light strength training. These exercises are designed to accommodate the physiological changes that occur during pregnancy while minimizing risks to the mother and the developing foetus (Asante et al., 2022). The American College of Obstetricians and Gynaecologists (ACOG, 2020) recommends moderate-intensity physical activity for women experiencing a healthy pregnancy for at least 150 minutes per week. Other recommendations state that physical activity should be light to moderate and undertaken for approximately 120 to 150 minutes per week unless contraindicated (Gascoigne, 2023). The overarching goal is to support a healthy pregnancy, facilitate a smoother labour and delivery, and promote quicker postpartum recovery.

Benefits of Exercise Participation during Pregnancy

One of the most compelling reasons to promote exercise during pregnancy is the extensive array of benefits it offers. According to Ribeiro et al. (2021), exercise can help in preventing relevant pregnancy-related disorders, such as gestational diabetes, excessive gestational weight gain, hypertensive disorders, urinary incontinence, foetal macrosomia, lumbopelvic pain, anxiety and prenatal depression. Furthermore, Cooper and Yang (2023) stated that exercise during pregnancy is important to maintain optimal maternal and neonatal health, and regular exercise can help mitigate common discomforts associated with pregnancy, such as back pain, constipation, bloating, and swelling, and can also improve sleep quality, boost energy levels, and enhance mood by releasing endorphins, which act as natural stress relievers.

The physiological benefits of exercise in pregnancy can further be emphasised. The ACOG (2021) stated that exercise improves cardiovascular health, which is particularly crucial during pregnancy when the heart is working harder to pump increased blood volume. Regular physical activity strengthens the heart and lungs, enabling the body to more efficiently transport oxygen and nutrients to the growing foetus (ACOG, 2021). This increased cardiovascular efficiency also helps alleviate symptoms of pregnancy-related fatigue and shortness of breath. In addition, exercise during pregnancy has a positive impact on musculoskeletal health. Regular exercise helps maintain flexibility, strength, and posture, reducing the risk of back pain and other musculoskeletal issues common during pregnancy (Mottola et al., 2019). King et al. (2018) asserted that women who exercise regularly during pregnancy often experience shorter labour, fewer complications, and a reduced need for medical interventions such as epidurals and caesarean sections. Postpartum recovery is also generally quicker for active women, as their bodies are better equipped to handle the physical demands of childbirth and the recovery process (King et al., 2018).

Furthermore, exercise during pregnancy provides psychological and emotional benefits to pregnant women. Pregnant women who exercise have improved psychological conditions such as decreased sadness, hopelessness, anxiety and the incidence of antenatal depression (Chan et al., 2019). According to Kowalska (2023), pregnancy can be a stressful time, fraught with

anxiety and mood swings due to hormonal changes and the anticipation of childbirth. Regular physical activity can help alleviate these feelings by providing a healthy outlet for stress and anxiety. Additionally, de Castro et al. (2022) opined that engaging in group exercise classes, such as prenatal yoga or water aerobics, can provide a sense of community and social support. These classes offer opportunities for pregnant women to connect with others who are experiencing similar challenges and joys, fostering a supportive environment that can significantly enhance emotional well-being (de Castro et al., 2022). Despite the clear benefits, several barriers can hinder exercise participation during pregnancy.

Barriers to Exercise Participation during Pregnancy

Barriers to exercise participation during pregnancy refer to the various obstacles and challenges that prevent pregnant women from engaging in regular exercise, including physical activities. Pregnant women fail to meet and adhere to physical activity recommendations owing to several barriers that, unless addressed, may never be overcome (Sparks et al., 2022). These barriers can be multifaceted, encompassing physical, psychological, social, environmental, and healthcare provider-related factors that collectively hinder a woman's ability to maintain an active lifestyle during pregnancy.

Physical barriers to exercise participation during pregnancy could be as a result of various circumstances. According to Okafor and Goon (2022a), one of the primary physical barriers to exercise during pregnancy is the overwhelming fatigue that many pregnant women experience, especially in the first and third trimesters. Fatigue has physical and mental effects on an individual. Mental fatigue involves exhaustion of cognitive processes, such as attention and memory, while physical fatigue is related to the depletion of physical energy and muscle strength (Okafor & Goon (2022a). The body's increased energy demands, coupled with hormonal changes, can lead to persistent tiredness, making the prospect of exercise daunting. Additionally, pregnancy brings a host of physical discomforts, including back pain, pelvic pressure, and joint pain, which can make movement painful and challenging (Sparks et al., 2022). The added weight and shifting centre of gravity further exacerbate these issues, leading to a natural inclination to avoid physical activity. Moreover, certain pregnancy-related complications, such as preeclampsia or gestational diabetes, may require women to limit their physical activity to ensure the safety of both the mother and the baby (Koleilat et al., 2021).

Psychological barriers also play a significant role in limiting exercise during pregnancy. According to Koleilat et al. (2021), limited understanding of and confidence in participating in regular physical exercise among pregnant women are identified as significant psychological. Many women fear that physical activity could harm their baby or lead to complications like preterm labour or miscarriage. These fears are often fuelled by a lack of clear, consistent information from healthcare providers and conflicting advice from various sources (Koleilat et al., 2021). Kowalska (2023) opined that anxiety and stress, which are common during pregnancy, can further diminish the motivation to exercise. Pregnant women may also struggle with body image concerns and lack confidence in their ability to engage in physical activity, especially if they were not active before pregnancy. Depression and other mental health issues can severely impact a woman's energy levels and interest in exercise, creating a formidable barrier to staying active (Kowalska, 2023).

Social factors, such as lack of support from spouse, family, and friends, can also pose as a barrier to pregnant women participating in exercise. Spouses, family and friends who do not

understand the importance of exercise during pregnancy, or who hold traditional beliefs that emphasize rest and relaxation, can further undermine a pregnant woman's motivation (Okafor & Goon, 2021a). Okafor and Goon (2021a) further stated that cultural norms and societal expectations play a role, as some cultures discourage physical exertion during pregnancy, favouring rest instead. Time constraints is another social factor that can be particularly challenging for working pregnant women or those with other children. These social barriers can lead to feelings of isolation and reduce a woman's likelihood of engaging in exercise (Okafor & Goon, 2021a).

Environmental barriers, such as limited access to safe and suitable exercise facilities, also pose significant challenges. According to Blankenship et al. (2020), women living in rural or underserved areas may have few options for prenatal exercise programs or classes. Financial constraints can limit access to gyms or fitness classes that cater specifically to pregnant women. Sparks et al. (2022) also stated that safety concerns, including the risk of falls and injuries, can deter women from exercising, particularly if public exercise spaces are not designed with their needs in mind. The lack of tailored prenatal exercise programs and classes further compounds the issue, leaving many women without the guidance and support they need to exercise safely and effectively (Sparks et al., 2022).

Healthcare provider-related barriers can significantly impact exercise participation during pregnancy. One major issue is the lack of clear guidance or recommendations from healthcare providers. Okafor and Goon (2022a) pointed out that the major barriers to physical activity and exercise cited by some women were inadequate information from healthcare providers. Some providers may not have adequate training or knowledge about exercise during pregnancy, leading to inconsistent or inaccurate advice. This can result in confusion and uncertainty for pregnant individuals, causing them to avoid exercise altogether. Additionally, some healthcare providers may be overly cautious and advise against exercise due to misconceptions about the risks associated with physical activity during pregnancy (Okafor & Goon, 2021b). Gonçalves et al. (2024) stated that misconceptions about the benefits of physical activity in pregnancy by professionals involved in antenatal care is a serious barrier to exercise participation in pregnancy. Providers may also focus too much on rest and avoidance of physical activity, rather than encouraging safe exercise practices (Gonçalves et al., 2024). Furthermore, healthcare providers' personal beliefs or cultural background can influence their recommendations, potentially limiting exercise participation (Okafor & Goon, 2021a). For instance, some providers may believe that exercise during pregnancy is too risky or may cause complications, even though research suggests otherwise. Time constraints can also be a significant barrier to healthcare providers. Healthcare providers may have limited time to discuss exercise and physical activity with pregnant individuals especially during Antenatal care services leading to inadequate guidance (Okafor & Goon, 2022b). This can result in pregnant individuals not receiving the support and encouragement they need to maintain a healthy exercise routine.

Implications for Health Education

Health education is a critical aspect of public health that involves the systematic provision of information, skills, and motivation necessary to make informed decisions and adopt behaviours conducive to health and well-being. According to the World Health Organization (WHO, 2024), health education is defined any combination of learning experiences designed to help individuals and communities improve their health by increasing their knowledge or

influencing their attitudes. This process empowers people to take control of their health, prevent diseases, and improve their quality of life through informed choices and actions.

The role of health educators is crucial in addressing the barriers to exercise participation during pregnancy, as they serve as primary sources of accurate information and support for pregnant women. According to Okafor and Goon (2022b), health educators can significantly impact exercise participation by educating women about the benefits and safety of physical activity during pregnancy. For instance, health educators can provide evidence-based guidelines that clarify which types of exercises are safe, how often they should be performed, and the health benefits they offer, such as reducing the risk of gestational diabetes and improving mood and sleep (Okafor & Goon, 2022b). Chan et al. (2019) also opined that by addressing misconceptions and fears, such as the incorrect belief that exercise could harm the foetus, health educators empower pregnant women to make informed decisions about their physical activity levels. The fear of harming the foetus, followed by muscle and joint pain, morning sickness, feeling tired after exercising are reasons why most women do not participate in physical activities (Okafor & Goon, 2022a). This makes it imperative for health educators and other healthcare providers working with pregnant mothers to stay knowledgeable and help these women debunk such fears as harming the baby and take up the practice of exercise for their own benefits and that of their babies. This educational intervention can reduce anxiety and encourage more women to engage in regular exercise, ultimately promoting healthier pregnancies (Chan et al., 2019).

In addition to education, health educators play a pivotal role in developing supportive programs that create a conducive environment for pregnant women to engage in exercise. According to Santos-Rocha et al. (2022), this includes designing accessible, pregnancy-friendly exercise programs that cater to the specific needs and limitations of pregnant women. Such programs can offer low-impact exercises like prenatal yoga, swimming, or walking, which are safe and beneficial during pregnancy (Santos-Rocha et al., 2022). Furthermore, health educators can encourage family and community involvement in promoting exercise by fostering supportive networks that motivate pregnant women to stay active. For example, community-based initiatives that involve family members can create a sense of collective responsibility, ensuring that pregnant women have the encouragement and practical support they need to maintain an active lifestyle.

Policy implications are another critical aspect of health education in overcoming barriers to exercise participation during pregnancy. Health educators can advocate for policies that support safe and accessible exercise options for pregnant women, such as ensuring that public health guidelines include recommendations for physical activity during pregnancy and that healthcare providers are trained to counsel pregnant women on exercise (Okafor & Goon, 2021b). Additionally, promoting the integration of exercise education into prenatal care is essential for normalizing physical activity as a routine part of pregnancy care. This integration can be achieved by including exercise as a regular topic in prenatal visits, offering exercise-related resources, and ensuring that healthcare professionals are equipped to address any concerns or questions pregnant women may have about physical activity (Santos-Rocha et al., 2022). By influencing policy and integrating exercise education into standard prenatal care, health educators can create a supportive environment that reduces barriers and promotes the well-being of both mothers and their babies.

Strategies to Overcome Barriers to Exercise Participation during Pregnancy

Addressing barriers to exercise participation during pregnancy is essential for fostering a healthy lifestyle among expectant mothers. Several strategies can be employed to effectively overcome these barriers, ensuring that pregnant women receive the support and encouragement they need to engage in regular exercise. These strategies could be educational interventions, community-based interventions, and healthcare system interventions.

Educational interventions.

Educational interventions are an essential strategy for overcoming barriers to exercise participation during pregnancy, as they provide pregnant women with the knowledge, skills, and confidence necessary to engage in safe physical activity. One of the most common barriers is the lack of understanding of the benefits and safety of exercise during pregnancy. Many women are unsure about which exercises are appropriate and how much activity is safe, leading to fear and avoidance of physical activity altogether. Educational interventions can directly address these concerns by delivering evidence-based information on the positive outcomes of exercise, such as reduced risk of gestational diabetes, improved cardiovascular health, and enhanced mental well-being (Ribeiro et al., 2021). By providing clear guidelines and recommendations, these interventions can empower women to incorporate exercise into their daily routines with confidence.

Furthermore, educational interventions can be tailored to the specific needs and circumstances of pregnant women, making them more effective in overcoming barriers. For example, individualized counselling sessions with healthcare providers can offer personalized advice and address specific concerns, such as how to modify exercises for comfort or manage common pregnancy-related symptoms like fatigue or back pain (Cooper & Yang, 2023). Group-based educational programs can also be beneficial, as they provide a supportive environment where pregnant women can share experiences, ask questions, and learn from one another. Such programs can incorporate practical demonstrations, instructional videos, and hands-on workshops that teach safe exercise techniques, making the information more accessible and easier to apply (Cooper & Yang, 2023). By addressing both knowledge gaps and practical concerns, educational interventions can significantly reduce the psychological and physical barriers that prevent pregnant women from engaging in regular physical activity.

Moreover, educational interventions can extend beyond direct instruction to include the use of digital tools and resources, which can further enhance their reach and effectiveness. Mobile apps, online courses, and telehealth services can provide pregnant women with ongoing access to exercise guidance, support, and motivation, regardless of their location or schedule. These digital platforms can offer tailored exercise plans, track progress, and send reminders, helping women stay consistent with their physical activity goals (Pouriayevali et al., 2022). Additionally, the integration of educational content into antenatal care through digital means ensures that all pregnant women, regardless of socioeconomic status or geographical location, have access to essential exercise-related information. This approach not only addresses the barrier of limited access to in-person resources but also promotes a more inclusive and comprehensive strategy for supporting exercises during pregnancy.

Community-based interventions.

Community-based interventions are an effective strategy for overcoming barriers to exercise participation during pregnancy by fostering a supportive environment that encourages and facilitates physical activity. These interventions involve the collective efforts of community members, healthcare providers, and local organizations to promote exercise and address the

unique challenges faced by pregnant women. One of the primary benefits of community-based interventions is their ability to create a sense of social support, which is crucial for maintaining motivation and adherence to exercise routines during pregnancy. Research has shown that pregnant women who receive encouragement and support from their peers, family, and community are more likely to engage in regular physical activity (Okafor & Goon, 2021a). Community-based programs can include group exercise classes tailored to pregnant women, where participants can share experiences, offer mutual support, and build a sense of camaraderie. This social interaction not only enhances motivation but also helps to alleviate feelings of isolation that some women may experience during pregnancy.

Moreover, community-based interventions can be designed to be culturally sensitive and accessible, addressing specific barriers that may arise from cultural beliefs, socioeconomic status, or geographical location. For example, in communities where cultural norms discourage physical activity during pregnancy, community leaders and healthcare providers can collaborate to educate women and their families about the benefits of exercise, dispelling myths and misconceptions (Okafor & Goon, 2021a). These programs can also be made accessible to women of different income levels by offering free or low-cost classes and providing resources such as transportation or childcare services, which can remove practical barriers to participation (Asante et al., 2022). By tailoring interventions to meet the needs of diverse populations, community-based approaches ensure that more pregnant women can access and benefit from exercise programs.

In addition to direct support for physical activity, community-based interventions can also play a role in advocating for environmental and policy changes that promote exercise during pregnancy. For example, community organizations can work with local governments to improve the availability and safety of public spaces for physical activity, such as parks, walking trails, and recreational facilities (Gascoigne et al., 2023). They can also advocate for policies that integrate exercise education and opportunities into routine prenatal care, ensuring that all pregnant women receive consistent messages about the importance of staying active (Gascoigne et al., 2023). These efforts help create a broader, more supportive environment that encourages physical activity as a norm during pregnancy, rather than an exception.

Healthcare system interventions.

Healthcare system interventions are a critical strategy for overcoming barriers to exercise participation during pregnancy, as they ensure that physical activity is integrated into routine prenatal care and supported by healthcare professionals. One barrier to exercise during pregnancy is the lack of consistent guidance from healthcare providers, which can leave pregnant women uncertain about the safety and benefits of physical activity. By incorporating standardized exercise recommendations into prenatal care protocols, healthcare systems can provide clear and consistent messaging to all pregnant women, helping to reduce confusion and anxiety about exercising while pregnant (Okafor, & Goon, 2021b). For instance, guidelines from organizations such as the ACOG (2020) recommend that pregnant women engage in at least 150 minutes of moderate-intensity aerobic activity each week divided in as many sessions as they can handle, emphasizing the safety and benefits of exercise throughout pregnancy. When healthcare providers consistently communicate these guidelines during prenatal visits, they empower women with the knowledge and confidence to stay active.

Furthermore, healthcare system interventions can include training and support for healthcare providers to deliver effective exercise counselling and support to pregnant women.

Many healthcare providers may not feel adequately equipped to counsel patients on exercise during pregnancy due to a lack of training or familiarity with the latest guidelines (Okafor & Goon, 2021b). By providing targeted training programs and resources, healthcare systems can ensure that providers are knowledgeable and confident in discussing exercise with their patients. This training can include information on the physiological changes during pregnancy, how these changes affect physical activity, and how to modify exercises for different stages of pregnancy. Additionally, integrating exercise counselling into electronic health records (EHRs) as a routine component of prenatal care can help providers consistently address physical activity during every visit, ensuring that it becomes a standard part of pregnancy care (Okafor & Goon, 2021b).

Healthcare systems can also implement structural changes to make exercise more accessible and integrated into prenatal care. For example, healthcare facilities can offer on-site exercise classes specifically designed for pregnant women, led by trained instructors who understand the unique needs of this population. These classes can be scheduled in conjunction with prenatal appointments, making it easier for women to participate without requiring additional travel or time commitments (Chan et al., 2019). Additionally, healthcare systems can partner with local fitness centres or community organizations to provide pregnant women with access to safe and affordable exercise options. These interventions reduce the logistical and financial barriers that often prevent women from staying active during pregnancy.

Overall, healthcare system interventions are essential for creating a consistent, supportive framework that encourages and facilitates exercise participation during pregnancy. By standardizing exercise recommendations, training healthcare providers, and integrating exercise opportunities into prenatal care, healthcare systems can play a pivotal role in promoting the health and well-being of both mothers and their babies.

Modifying Exercise Routines to Accommodate Physical Changes during Pregnancy

Providing education on how to modify exercises and switch modalities can help women find ways to continue exercise in each of the stages of pregnancy they find themselves. Overexertion and strenuous aerobic exercise are not recommended and could compromise the well-being of the foetus due to the diversion of blood flow to the vital maternal organs away from the foetal-placental unit (Cooper & Yang, 2023). Pregnancy brings about significant physical changes that necessitate modifications in exercise routines to ensure safety and comfort for both the mother and the developing baby. Overall, each trimester of pregnancy brings different changes and challenges, so exercise routines need to be adjusted accordingly. Understanding and accommodating these changes is crucial for maintaining an active lifestyle throughout the trimesters of pregnancy.

In the first trimester, women often feel very tired, nauseous, and may have sore breasts due to hormonal changes. Even though these symptoms can make exercise tough, staying active can actually help improve energy levels and mood. According to Cooper and Yang (2023), most women can keep doing the exercises they were doing before pregnancy but should make some adjustments for comfort. Low-impact activities like walking, swimming, or prenatal yoga are great choices because they are easy on the body but still good for heart health and muscle tone. Light strength training can also be helpful to build endurance for later stages of pregnancy (Cooper & Yang, 2023). It is important to listen to the body, take breaks when needed, and drink plenty of water to stay hydrated.

The second trimester is often when women feel their best since nausea and fatigue usually decrease. However, the baby bump is growing, and balance can start to be an issue. This

is a good time to focus on exercises that strengthen the core and improve stability, such as modified Pilates or prenatal strength training. According to Bull et al. (2020), swimming or using a stationary bike are still excellent choices for cardiovascular health without putting too much strain on the joints. Lying flat on the back should be avoided, as it can cause dizziness by pressing on major blood vessels. Exercises should be done in seated or standing positions instead (Bull et al., 2020).

By the third trimester, the baby is much bigger, and women might experience back pain, swelling, and trouble breathing. Exercise routines need to be even more gentle and focused on staying comfortable and mobile. Walking, prenatal yoga, and water aerobics are particularly good, as they help keep the joints moving and reduce the feeling of heaviness (Mottola et al., 2018). Breathing exercises and relaxation techniques are also important to prepare for labour and reduce stress. Strengthening the pelvic floor and core muscles becomes very important, as these muscles will be used during labour and recovery. Women should always listen to their bodies, avoid any movements that cause pain, and check with their healthcare provider to make sure their exercises are safe (Mottola et al., 2018).

Conclusion

In conclusion, despite the numerous benefits of exercise during pregnancy, including improved cardiovascular health, reduced risk of gestational diabetes, and enhanced psychological well-being, many barriers continue to hinder pregnant women from participating in regular physical activity. These barriers range from physical and psychological obstacles to social, environmental, and healthcare provider-related challenges. Addressing these barriers is critical to fostering healthier pregnancies and improving maternal and neonatal outcomes. Health education plays a pivotal role in overcoming these challenges by empowering pregnant women with the knowledge and confidence to engage in safe exercise practices. Through a combination of educational interventions, community-based support, and healthcare system improvements, pregnant women can be encouraged to adopt a more active lifestyle, contributing to their overall health and that of their babies.

Recommendations

Based on the expositions of the paper, the following recommendations were made:

1. Healthcare providers should be trained and equipped to offer consistent, evidence-based exercise guidance during prenatal visits, addressing any misconceptions or fears regarding exercise during pregnancy.
2. Health educators should design accessible and culturally sensitive exercise programs that cater to the specific needs of pregnant women, including offering low-cost or free prenatal exercise classes.
3. Family members and friends should be educated on the importance of exercise during pregnancy and encouraged to support and motivate pregnant women in their exercise routines, helping to overcome social and cultural barriers to physical activity.
4. Community-based initiatives should involve family and social support networks to encourage pregnant women to engage in physical activities, fostering an environment that values exercise during pregnancy.
5. Policymakers should advocate for improved access to safe public spaces for physical activity, particularly in underserved areas, and promote the integration of exercise education into routine antenatal care.

6. Digital tools, such as mobile apps and online courses, should be developed by computer technicians under the guidance of appropriate personnel to provide pregnant women with ongoing exercise guidance and support, helping them maintain consistent physical activity regardless of location or time constraints.

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