

EXERCISE PARTICIPATION AMONG PREGNANT MOTHERS IN NSUKKA LOCAL GOVERNMENT AREA, ENUGU STATE

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Abstract

The study investigated exercise participation among pregnant mothers in Nsukka Local Government Area, Enugu State. Using a cross-sectional research design, a sample of 399 pregnant mothers was drawn from a population of 2,641 through convenience sampling technique. Data were collected using a researcher designed instrument titled “Exercise Participation among Pregnant Mothers Questionnaire (EPPMQ)”. The instrument was validated by three experts from the department of Human Kinetics and Health Education, University of Nigeria Nsukka. Frequency, percentage and chi-square statistics were used for analysis. The study found that a high proportion of pregnant mothers participate in exercise (83.3%). However, significant differences were observed based on parity, education level, and gestational age, ($p < .05$) while no significant differences were found concerning age, employment status, or pregnancy-related medical conditions ($p > .05$). Pregnant Mothers with no pregnancy related medical conditions comprised (84.2%) compared to those with pregnancy related medical conditions (82.6%). The researcher recommends that hospital management should consider integrating exercise education to antenatal classes rather than focusing much on nutrition and rest.

Keywords: Exercise, Pregnant mothers, Sociodemographic factors, Obstetric factors

Introduction

Exercise participation among pregnant mothers is widely recognized for its numerous health benefits. Globally, studies indicate that in high-income countries, about 40–60 per cent of pregnant mothers engage in some form of exercise, but only a small percentage meet the recommended guidelines of at least 150 minutes of moderate-intensity exercise per week (Okafor & Goon, 2020). Exercise participation among pregnant women in many African countries remains significantly low, with studies reporting that a majority of women do not engage in regular physical activity during pregnancy (Mbada et al., 2014; Negash & Alelgn, 2023). The data available suggests that, compared to the Western countries, pregnant mothers in Africa do not adhere to the recommendations for exercise during pregnancy (Okafor & Goon, 2020). Studies in Nigeria indicate that exercise participation is very low among pregnant mothers (Mbada et al., 2022). Though some studies have examined exercise participation among pregnant mothers in Nsukka LGA, gaps remain in practical uptake, safety knowledge, and implementation of structured antenatal exercise programs.

Exercise is one of the fundamental foundations of a healthy life. According to Ribeiro et al. (2021), exercise is a purposeful physical activity that enhances strength, endurance, flexibility, and overall health. Mileva and Zaidell (2022) defined exercise as a subset of physical activity that is planned, structured, and repetitive, with the objective of improving or maintaining physical fitness. Similarly, the American College of Sports Medicine (ACSM, 2021) defined exercise as a form of physical activity that is structured, repetitive, and aimed at improving or maintaining one or more components of physical

fitness. Exercise plays a crucial role in health promotion, disease prevention, and overall well-being, making it an essential aspect of daily life and public health interventions. In this study, exercise is defined as any structured physical activity undertaken to improve or maintain physical fitness and overall health of pregnant mothers. It is therefore necessary for pregnant mothers to participate in exercise.

Exercise participation is a crucial health behaviour that contributes to overall well-being, disease prevention, and improved quality of life. According to Barnes et al. (2023), exercise is behaviour that involves human movement, resulting in physiological attributes including increased energy expenditure and improved physical fitness. Additionally, Franklin et al. (2022) emphasize that understanding exercise participation requires considering factors such as the intent behind the exercise, the volume of exercise (hours per week), and the level of competition. Exercise participation is not merely about engaging in physical activity but also involves the purpose, frequency, and intensity of such activities. Contextually, exercise participation refers to pregnant mothers' engagement in physical activities aimed at enhancing or maintaining health and fitness. Regular exercise participation has been associated with numerous health benefits for pregnant mothers. These benefits include reduced risks of gestational diabetes, hypertension, and pre-eclampsia. Despite these advantages, participation rates often decline during pregnancy.

A pregnant mother is one who has a viable foetus in her uterus, confirmed by clinical or ultra-sonographic evidence, and is expected to give birth after a period of time (Liji, 2024). Pregnancy is a state of having implanted products of conception located either in the uterus or elsewhere in the body (Pascual & Langaker, 2023). During pregnancy, the mother's body goes through immense changes involving all organ systems to sustain the growing foetus. Regular exercise during pregnancy has been shown to improve maternal health, reduce pregnancy complications, and support foetal development. Berghella and Saccone (2017) emphasized that specific forms of exercise, such as walking, stationary cycling, aerobic exercises, dancing, resistance training, stretching, and water aerobics, are particularly beneficial for pregnant mothers. Additionally, the American College of Obstetricians and Gynaecologists (ACOG, 2020) recognized other safe and effective exercises, including swimming, jogging, running, yoga, and Pilates. It is therefore pertinent that pregnant mothers stick to the recommended exercises to ensure their safety. Exercise participation during pregnancy maybe influenced by a variety of socio-demographic factors, including age, parity, gravidity, history of miscarriage, marital status, availability of social support, educational level, gestational age, and others. However, the factors of interest in this study are grouped into socio-demographic factors (age, education level, and employment status) and obstetric factors (parity, gestational age, and pregnancy-related health conditions).

This study will be conducted in Nsukka Local Government Area (LGA), Enugu State. Nsukka LGA is one of the LGAs in Enugu State, Nigeria, known for its educational, agricultural, and commercial activities. The LGA has a mix of urban and rural settlements, with residents engaged in diverse occupations, including academics, farming, and small-scale businesses. Healthcare services in Nsukka LGA include primary health centres, private hospitals, and a university teaching hospital, providing antenatal care and maternal health services to pregnant women. Conducting this study in Nsukka LGA is justified because it provides a unique population with varying education levels, employment statuses, and access to healthcare, making it ideal for assessing exercise participation among pregnant mothers. Furthermore, with the increasing emphasis on maternal health

and safe pregnancy practices in Nigeria, understanding the exercise patterns of pregnant women in Nsukka LGA can inform targeted health education interventions to improve maternal and foetal health outcomes.

Statement of the Problem

Ideally, all pregnant mothers should engage in regular, safe, and structured physical activity throughout pregnancy to promote maternal and foetal well-being. Exercise during pregnancy has been widely recommended by health organizations such as the World Health Organization (WHO) and the American College of Obstetricians and Gynaecologists (ACOG) due to its benefits. Pregnant mothers should receive adequate guidance from healthcare providers, antenatal programs, and community health initiatives to ensure they participate in exercises appropriate for each stage of pregnancy. However, exercise participation among pregnant mothers varies significantly due to multiple influencing factors such as cultural beliefs, misconceptions, level of education, employment status, and individual health conditions. While some pregnant mothers actively engage in exercise, others may not participate regularly or adequately due to fears of harming the baby, lack of awareness, or physical discomfort. Additionally, while antenatal care services provide information on the benefits of exercise, not all pregnant women adhere to these recommendations due to personal circumstances, workload, or existing health challenges. Despite the recognized importance of exercise during pregnancy, there is limited empirical data on the actual level of exercise participation among pregnant mothers in Nsukka Local Government Area, as well as the factors influencing their engagement in physical activity. Therefore, this study examined the proportion of pregnant mothers that participate in exercise in Nsukka LGA; proportion of pregnant mothers that participate in exercise in Nsukka LGA based on socio-demographic factors (age, education level, and employment status) and obstetric factors (parity, gestational age, and presence of pregnancy related medical conditions).

Research Questions

The following research questions guided the study:

1. What is the proportion of pregnant mothers that participate in exercise in Nsukka LGA?
2. What is the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on socio-demographic factors (age, education level, and employment status)?
3. What is the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on obstetric factors (parity, gestational age, and presence of pregnancy related medical conditions)?

Hypotheses

The following null hypotheses were postulated to guide this study and were tested at .05 level of significance:

1. There is no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on socio-demographic factors (age, education level, and employment status).
2. There is no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on obstetric factors (parity, gestational age, and presence of pregnancy related medical conditions).

Methods

In order to accomplish the purpose of this study, a cross-sectional survey research design was employed. The study was conducted in Nsukka Local Government Area, Enugu State. The population for the study consisted of 2,641 pregnant mothers attending antenatal clinic in Nsukka LGA, Enugu State. The sample size was 400 pregnant mothers based on the guideline of Cohen et al. (2018), that when a population size is 2,500 and above at 95% confidence level (5% interval), the sample size should be 333 and above. The sample was drawn using simple random sampling technique of balloting without replacement and convenience sampling procedure which depended upon voluntary willingness of pregnant mothers to participate in the study. The instrument for data collection titled “Exercise Participation among Pregnant Mothers Questionnaire (EPPMQ)” was divided into sections A, B, and C. Section A contained with three items seeking information on the socio-demographic characteristics (age, education level, and employment status) while Section B contained three items on obstetric factors (parity, gestation age, and pregnancy-related medical conditions) of the respondents. Section C contained 20 items seeking information on exercise participation with dichotomous response options of yes or no. The instrument was face validated by five experts in the Department of Human Kinetics and Health Education, University of Nigeria, Nsukka. The internal consistency of EPPMQ was determined using Spearman Brown reliability coefficient with index of .863 and was adjudged reliable for the study. The Statistical Package for Social Sciences (SPSS version 26) was used for data analysis. Research questions were answered using frequency and percentages. The null hypotheses were tested using Chi-Square at .05 level of significance.

Results

The results of the study are presented according to the research questions and hypotheses that guided the study.

Table 1: Proportion of Pregnant Mothers that Participate in Exercise in Nsukka LGA (n=396)

S/N	Items	YES f(%)	NO f(%)
1.	Since becoming pregnant, do you currently engage in any form of exercise?	332(83.8)	64(16.2)
2.	What types of exercise do you engage in? (Check all that apply)		
	• Walking	348(87.9)	48(12.1)
	• Running	192 (48.5)	204(51.5)
	• Dancing	178(44.9)	218(55.1)
	• Swimming	100(25.3)	296(74.7)
	• Cycling	42(10.6)	354(89.4)
	• Stretching exercises	180(45.5)	216(54.5)
	• Elliptical or Treadmill Use	118(29.8)	278(70.2)
	• Bodyweight Exercises e.g. Squats, lunges, and modified push-ups	194(49.0)	202(51.0)
	• Dumbbell Exercises	120(30.3)	276(69.7)
	• Kegel Exercises	86(21.7)	310(78.3)
	• Sports (e.g. football, tennis, table tennis, basketball, etc.)	116(29.3)	280(70.7)
3.	How often do you exercise per week?		
	• Less than once a week	210(53.0)	186(47.0)
	• 1-2 times a week	166(41.9)	230(58.1)

	• 3-4 times	178(44.9)	218(55.1)
	• 5 or more times	88(22.2)	308(77.8)
4.	What is the average duration of your exercise session?		
	• Less than 15 mins	224(56.6)	172(43.4)
	• 15-30 mins	196(49.5)	200(50.5)
	• 31-45 minutes	148(37.4)	248(62.6)
	• More than 45 mins	146(36.9)	250(63.1)
	Cluster %	83.8	16.2

Key: 0-39.9% =Low proportion, 40-69.9% = Moderate proportion, 70% & above = High proportion

Results in Table 1 show that overall, a high proportion (83.8%) of pregnant mothers participate in exercise. The table also show that a high proportion engage in walking (87.9%) exercise less than once a week (53.0) and exercise for less than 15 mins(56.6%).

Table 2: Chi-Square Analysis of No Significant Difference in the Proportion of Pregnant Mothers that Participate in Exercise Based on Socio-demographic factors (n=396)

Socio-demographic Factors	N	Exercise Participation		χ^2	df	p-value
		Yes %	No %			
Age						
15-24 years	116	86.2	13.8	4.019	2	.133
25-34years	154	79.2	20.8			
35years and above	126	87.3	12.7			
Education Level						
No formal education	65	83.1	16.9	25.199	3	.000
Primary education	98	69.4	30.6			
Secondary education	132	93.9	6.1			
Tertiary education	101	85.1	14.9			
Employment Status						
Employed	104	84.6	15.4	4.594	2	.101
Unemployed	138	88.4	11.6			
Self employed	154	79.2	20.8			

Results in Table 2 show that overall, pregnant mothers aged 35 years and above (87.3%) participated in exercises more than those aged 15 – 24 years (86.2%) and 25 – 34 years (79.2%). Also, pregnant mothers who attained secondary education (93.9%) participate in exercise more that those who attained tertiary education (85.5%), no formal education (83.1%) and primary education (69.4%). Furthermore, a higher proportion of exercise participation occur among pregnant mothers who are unemployed (88.4%) than those who are employed (84.6%) and self-employed (79.2%). Additionally, the Table show a significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on education level ($\chi^2 = 25.199$, $df = 3$, $p=.000 < .05$). However, no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on age ($\chi^2 = 4.019$, $df = 2$, $p=.133 > .05$) and employment status ($x^2= 4.594$, $df = 2$, $p= .101 > .05$).

Table 3: Chi-Square Analysis of No Significant Difference in the Proportion of Pregnant Mothers that Participate in Exercise Based on Obstetric factors (n=396)

Obstetric Factors	N	Exercise participation		χ^2	df	p-value
		Yes %	No %			
Parity						
Primiparous	148	89.2	10.8	14.429	2	.000
Multiparous	218	78.0	22.0			
Grand Multiparous	30	100.0	0.0			
Gestational Age						
First Trimester	168	90.5	9.5	14.429	2	.012
Second Trimester	150	78.7	21.3			
Third Trimester	78	79.5	20.5			
Presence of Pregnancy Related Medical Condition						
Yes	92	82.6	17.4	.134	1	.721
No	304	84.2	15.8			

Results in Table 3 show that grand multiparous pregnant mothers (100.0%) participate in exercise more than primiparous (89.2%) and multiparous (78.0%) pregnant mothers. Pregnant mothers in the first trimester (90.5%) participate in exercise more than those in third trimester (79.5%) and second trimester (78.7%). More so, pregnant mothers who had no pregnancy-related medical conditions (84.2%) than those who had pregnancy-related medical conditions (82.6%). However, the Table show a significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on parity ($\chi^2 = 14.429$, $df = 2$, $p = .000 < .05$) and gestational age ($\chi^2 = 14.199$, $df = 3$, $p = .000 < .05$). However, no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on presence of pregnancy-related medical condition ($\chi^2 = .134$, $df = 1$, $p = .721 > .05$).

Discussions

Findings in Table 1 show that overall, a high proportion of pregnant mothers participate in exercise. The Table also show that a high proportion engaged in walking, exercised less than once a week, and exercised for less than 15 mins. This result is expected and not surprising because while pregnant, mothers acquire different knowledge of health practices that would promote healthier pregnancies from their healthcare providers during antenatal visits; of which exercise is one of them. Also, their access to information on the internet has equally helped in making them understand the benefit of healthy pregnancy practices like exercise. This findings align with the findings of by Petronilla et al. (2018) which showed that a high percentage of mothers practiced antenatal exercise. However, this finding contradicts with the findings of Obi- Nicholas et al. (2023) which indicated that less proportion of pregnant mothers engaged in exercise in Agege Local Government Area of Lagos State. One possible explanation for the relatively high participation observed in Nsukka LGA could be the influence of antenatal education, where healthcare providers encourage healthy behaviours, including physical activity. Additionally, pregnant mothers may be accessing more health-related information via digital platforms, which could increase awareness of the benefits of exercise. However, the predominance of walking and the low frequency and duration of exercise suggest that while awareness is

high, structured and sustained physical activity remains limited. The implication for health education is the need to not only promote exercise participation but also emphasize the importance of regularity, duration, and diversity in physical activity to maximize health benefits for both mother and baby.

Findings in Table 2 show that overall, pregnant mothers aged 35 years and above participated in exercises more than those aged 15 – 24 years and 25 – 34 years. However, there was no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on age. The findings are somewhat surprising because, despite observable differences in exercise participation among age groups, the statistical test indicates that these differences are not significant. This suggests that while older pregnant mothers (35+) appear to exercise more, the variation across age groups is not strong enough to rule out chance, highlighting that age alone may not be a decisive factor in exercise participation. This result aligns with the finding of Haakstad et al. (2020) which showed that pregnant mothers aged 35 years and above had high level of exercise participation. This finding is in contrary to the findings obtained by Obi- Nicholas et al. (2023) which showed that pregnant mothers between the ages of 21-25 years exercised more than pregnant mothers in other age groups. This variation in findings may be due to differences in study populations, cultural perceptions, and levels of health awareness across different regions. Older pregnant mothers (35+) may be more likely to engage in exercise because of increased exposure to health education over time, previous pregnancy experiences, or greater awareness of the benefits of physical activity during pregnancy. Conversely, younger mothers may face barriers such as lack of information, misconceptions about exercise safety, or lower prioritization of structured physical activity. The implication of this finding for health education is that interventions promoting exercise during pregnancy can be targeted at all age groups, ensuring that younger pregnant women receive adequate guidance and motivation to engage in physical activity.

Additionally, the findings in Table 2 show that pregnant mothers who attained secondary education participate in exercise more than those who attained tertiary education, no formal education, and primary education. The Table further show a significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on education level. This is not surprising as pregnant mothers can get information on exercise participation during pregnancy from different sources including antenatal classes. The findings align with Al-Youbi and Elsaid (2020) who found that high level of awareness and practice of physical activity were noticed in pregnant women who had high education level. However, the findings disagree with the findings of Janakiraman et al. (2021) which showed that uneducated mothers have equal level of exercise participation compared to all other groups. The higher exercise participation among pregnant mothers with secondary education may be due to their increased exposure to health information through formal education while still being more receptive to antenatal health teachings compared to those with tertiary education, who may have busier schedules or different lifestyle priorities. Additionally, lower participation among those with primary or no formal education may be linked to limited access to structured health information or misconceptions about exercise during pregnancy. The implication for health education is the need for tailored interventions that address exercise misconceptions across all educational levels, ensuring that highly educated mothers balance their knowledge with practical engagement and that less educated mothers receive accessible, clear guidance on safe exercise practices during pregnancy.

More so, findings in Table 2 show that a higher proportion of exercise participation occur among pregnant mothers who are unemployed than those who are employed and self-employed. However, the Table showed no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on employment status. This was expected because pregnant mothers who are unemployed will have more time to participate in exercise compared to those who are employed or self-employed. The findings aligns with the findings of Miranda et al. (2022) which indicated that unemployed pregnant mothers are significantly more likely to exercise than those employed. However, the findings are in contrast with Mok et al. (2025) who found that the proportion of employed pregnant women meeting the moderate-intensity activity threshold was higher than those who were not employed. The findings may have resulted from the fact that unemployed pregnant mothers have more flexible schedules, allowing them to engage in exercise at their convenience, while employed and self-employed mothers may struggle to balance work responsibilities with physical activity. However, the lack of a significant difference suggests that despite variations in employment status, most pregnant women recognize the importance of exercise and find ways to incorporate it into their routine. The implication for health education is the need for workplace and community-based interventions that promote exercise-friendly environments for working mothers, ensuring that all pregnant women, regardless of employment status, receive practical guidance on integrating safe physical activity into their daily lives.

Furthermore, findings in Table 3 show that grand multiparous pregnant mothers participate in exercise more than primiparous and multiparous pregnant mothers. Likewise, there was a significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on parity. This result is expected because the grand multiparous mothers and multiparous mothers have a lot of pregnancy experiences and understands better the effect of exercise on pregnancy compared to the primiparous mothers who at this point might just be concerned with the physical changes that come with pregnancy. This is in agreement with Mok et al. (2025) who reported that multiparous mothers with two or more children were more likely to meet moderate-intensity physical activity guidelines compared to nulliparous mothers. This finding is however contrary to the finding of Wang et al. (2022) that exercise among multiparous mothers was observed to be less common than among primiparous mothers. The higher exercise participation among grand multiparous mothers may be due to their previous pregnancy experiences, which likely made them more confident in engaging in physical activity and aware of its benefits. The implication for health education is the need for targeted interventions that encourage primiparous mothers to adopt safe exercise habits early in pregnancy by addressing their concerns and equipping them with accurate information on the benefits of physical activity for both maternal and foetal health.

Also, findings in Table 3 show that pregnant mothers in the first trimester participate in exercise more than those in third trimester and second trimester. Similarly, there was a significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on gestational age. This is surprising as pregnant mothers in their first and third trimester might find exercise difficult due to the level of imbalance associated with the above mentioned trimesters. The finding is in agreement with Cooper and Yang (2023) who opined that many pregnant women maintain high levels of exercise during the first trimester, largely due to continued pre-pregnancy activity and minimal early pregnancy discomfort. However, the findings of Beetham et al. (2019) indicate that women in their third trimester do not effectively exercise due to the weight of their babies.

This disparity might be because the study was conducted only among pregnant mothers in their third trimesters. The higher exercise participation in the first trimester may be due to the fact that many women continue their pre-pregnancy activity levels before experiencing significant physical discomfort, while the decline in later trimesters could be attributed to increasing physical strain and fatigue. The implication for health education is the need for continuous encouragement and adaptation of exercise routines throughout pregnancy, ensuring that pregnant mothers receive guidance on modifying physical activity safely as pregnancy progresses to maintain consistency and reap its health benefits.

In addition, Table 3 show that pregnant mothers who had no pregnancy-related medical conditions than those who had pregnancy-related medical conditions. Nevertheless, the Table showed no significant difference in the proportion of pregnant mothers that participate in exercise in Nsukka LGA based on presence of pregnancy-related medical condition. This is expected as pregnant mothers without any medical conditions are more likely to participate in exercise compared to those with pregnancy related medical conditions. This is in alignment with the study conducted by Meah et al (2020) which shows that pregnant mothers without any underlying medical conditions are more likely to engage in regular exercise than those experiencing pregnancy-related complications. However, findings by Hailemariam et al. (2020) and Gascoigne et al. (2023) disagreed with this finding by stating that contrary to the assumption that pregnant mothers without underlying medical conditions exercise more regularly than those with complications, their data indicate no statistically significant difference in exercise participation between these groups. The finding may have resulted from the fact that while pregnant mothers with medical conditions may be cautious about exercise, some may still engage in safe, modified physical activities based on medical advice, leading to no significant difference between the groups. The implication for health education is the need to provide personalized exercise guidance for pregnant women with medical conditions, ensuring they receive appropriate recommendations that encourage safe physical activity while addressing any health concerns.

Conclusion

Based on the findings of this study, it is concluded that there is a high exercise participation among pregnant mothers in Nsukka Local Government Area. Exercise participation was notably high across different age groups, parity levels, educational backgrounds, gestational ages, and employment statuses. However, significant differences were observed based on parity, education level, and gestational age, while no significant differences were found concerning age, employment status, or pregnancy-related medical conditions. Despite slight variations, the findings suggest that pregnancy does not significantly hinder exercise participation among women in Nsukka LGA.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. Healthcare providers and community health workers should intensify awareness campaigns on the benefits of exercise during pregnancy, ensuring that pregnant mothers receive proper guidance on safe and appropriate physical activities.
2. Targeted interventions such as health talks and community-based fitness programs should be implemented to increase awareness and participation among this group.
3. Hospitals, maternity centres, and antenatal clinics should incorporate structured exercise programs tailored for pregnant women, including supervised sessions led by trained professionals to promote safe engagement in physical activities.

4. Antenatal care providers should educate pregnant women on modifying exercise routines as pregnancy progresses to maintain safe and sustainable participation.
5. Policies should support flexible and accessible exercise programs for all pregnant women, ensuring that personal circumstances do not hinder physical activity engagement.

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