Research Article

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Perception and Practice of Exercise during Pregnancy by Antenatal Women in Southeastern Nigeria

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ABSTRACT

Background: *Exercise in pregnancy is known to be beneficial to both the mother and the fetus during the course of pregnancy, labour/delivery and in postpartum recovery. There are few instances when exercise is contraindicated but even in most cases, the benefits outweigh the risks. It is important to study the level of awareness, perception and the practice of exercise in pregnancy which will form the reference point for policy formulation to address the identifiable areas of need.*

Aims and Objectives: *To determine the perception and practice of exercise in pregnancy by women during an antenatal care outreach programme in Anambra state south-east Nigeria.*

Methodology: *A cross-sectional, questionnaire-based study of 115 pregnant women who attended antenatal care outreach programme in two locations in Anambra state, south-east Nigeria. The data obtained was analysed using SPSS version 20.0.*

Results: *A little fewer than half of the respondents 52 (45.2%) were of age 26-30 years, while the predominant 79 (58.7%) gestational age group was < 28 weeks and most parity79 (68.7%) was 1-4. Over half of the respondents 68 (59.1%) belonged to the social class 3 and nearly half of the respondents were traders 56 (48.7%). As high as 100 (87%) had heard about exercise in pregnancy while 80 (69.6%) had engaged in exercise while pregnant. Majority of the respondents 73 (63.5%) had engaged in walking as a form of exercise, while 21 (18.3%), 7 (6.1%), 4 (3.5%), 1 (0.9%), 1 (0.9%) had engaged in dancing, jogging, skipping, swimming and jumping respectively. Forty-two (36.5%) had engaged in exercise before 28 weeks of gestation while 18 (15.7%) and 2 (1.7%) did so at 28-36 weeks and 37-42 weeks respectively. The commonest exercise amongst the various social classes was walking, followed at a distance by dancing, jogging, skipping, jumping and swimming respectively. The most perceived benefits of exercise in pregnancy by the participants are as a necessity to life 105 (91.3%) and enhancement of labour/delivery 92 (80%) while 10 (8.7%) had the misconception that pregnant women should not engage in exercise.*

Conclusion: *Although majority of the antenatal women in the population studied engage in exercise, this is oftentimes restricted to "walking". In addition, a number of the respondents had negative perception as to the value of exercise in pregnancy. There is an urgent need to educate the women during the pre-conception and early pregnancy periods to initiate, sustain, modify and expand the range of exercises undertaken while pregnant. This will go a long way to avail the women and their unborn babies the potential benefits associated with attaining the recommended level of exercise in pregnancy.*

Keywords
Pregnancy women, Antenatal care, Nigeria, Fetus.

Introduction

A lot of physical and physiologic changes occur in pregnancy. Traditionally, it was taught that exercising women should restrict their degree of exertion in pregnancy and that non-exercising women should refrain from initiating strenuous exercise programs [1,2]. This was based on the suspicion that exercise could affect early and late pregnancy outcomes by increasing core body temperature during embryogenesis, increasing the risk of congenital anomalies, and shifting oxygenated blood and energy substrates to maternal skeletal muscle away from the developing fetus, leading to disturbances in growth [1-3].

However, the current recommendation is for pregnant women to continue and maintain an active lifestyle during their pregnancies when there are no medical contraindications4. Due to some anatomical and physiological changes associated with pregnancy, modification in exercise routines may be recommended [4]. Regular aerobic exercise during pregnancy is known to maintain or improve physical fitness [5,6]. In comparison to women who remained sedentary, active women have improved aerobic fitness and muscular strength, delivered comparable size infants with significantly fewer caesarean deliveries, and recovered faster postpartum [6]. Exercise in pregnancy may reduce the risk of developing gestational diabetes, preeclampsia and macrosomia [7-9]. Although there is insufficient evidence to infer significant risks or benefits for the average mother or baby [10]. Other benefits of exercise in pregnancy include reduction of back pain, ease of constipation, promotion of healthy weight gain during pregnancy and loss of the baby weight after delivery, improvement of mood and posture, promotion of muscle tone, strength, and endurance, may improve the ability to cope with labor [11,12]. In a randomized controlled trial by Barakat et al, moderate physical activity program that is performed over the first, second, and third trimester of pregnancy was shown to improve the maternal perception of health status [13].

There are categories of exercise that pregnant women can engage in: First is the aerobic exercise which maintains cardiovascular fitness and to help prevent chronic diseases, apart from avoiding excessive weight gain. They involve large muscle groups in activities such as when walking or jogging, using stationary bicycle, treadmill, swimming, water aerobics exercises, aerobic dance, or low-impact aerobics. Also pelvic floor muscle strengthening (Kegel exercise) is also another important category of exercise in pregnancy. This is required to reduce the prevalence of urinary incontinence and prepare the pelvic floor muscles for the labour and delivery process. Breathing and relaxation techniques belong to another category and should be taught for better control of labour and general well-being.

The American College of Obstetricians and Gynecologists (ACOG) in 2002 recommended that healthy pregnant women exercise at moderate intensity for at least 30 min on most and preferably all days of the week [14]. The American College of Sports Medicine (ACSM) as well as the Centers for Disease Control and Prevention (CDC) recommended the same guidelines for the general population based on abundant epidemiologic and experimental evidence, which confirms that aerobic exercise of this frequency and intensity improves cardiovascular fitness and reduces the incidence of disease [15]. Moderate intensity physical activity is defined as activity with an energy requirement of 3-5 metabolic equivalents (METS). For most healthy adults, this is equivalent to brisk walking at 3-4 mph (4.8-6.4 km/hr). The CDC-ACSM statement also recognises that more intense exercise performed in 20-60 minute sessions on three to five days a week will result in higher levels of physical fitness [5]. In simpler terms, an aerobic activity is one in which you move large muscles of the body (like those in the legs and arms) in a rhythmic way, while moderate intensity means moving enough to raise the heart rate and start sweating. One could still talk normally, but cannot sing [11].

Despite the above recommendations and the benefits of exercise in pregnancy, there are conditions according to ACOG that should prevent pregnant women from following the recommendations. The absolute contraindications to aerobic exercise during pregnancy include haemodynamically significant heart disease, restrictive lung disease, incompetent cervix/cerclage, multiple gestation at risk for premature labour, persistent second or third trimester bleeding, placenta praevia after 26 weeks of gestation, premature labour during the current pregnancy, ruptured membranes and pregnancy induced hypertension [14].

The relative contraindications to aerobic exercise during pregnancy include severe anaemia, unevaluated maternal cardiac arrhythmia, chronic bronchitis, poorly controlled type I diabetes, extreme morbid obesity, extreme underweight (body mass index <12), extremely sedentary lifestyle, intrauterine growth restriction in current pregnancy, poorly controlled hypertension/pre-eclampsia, orthopaedic limitations, poorly controlled seizure disorder, poorly controlled thyroid disease and in a heavy smoker [14].

In spite of the foregoing, there are warning signs to terminate exercise while pregnant and they are vaginal bleeding, dyspnoea before exertion, dizziness, headaches, chest pain, muscle weakness, calf pain or swelling (need to rule out thrombophlebitis), preterm labour, decreased fetal movement and amniotic fluid leakage [14].

Many of the physiological and morphological changes of pregnancy persist for four to six weeks postpartum. As for postpartum resumption of activities, it is recommended that rapid resumption has no adverse effects, but gradual return to former activities is advised having undergone detraining during the period of pregnancy [5,16]. The modalities for this resumption should be individualised. Physical activity can thus be resumed as soon as physically and medically safe. Nursing mothers are advised to feed their infants before exercising in order to avoid the discomfort of engorged breasts [17,18]. In addition, nursing before exercise avoids the potential problems associated with increased acidity of

milk secondary to any build-up of lactic acid [5]. Furthermore, it has been shown that return to physical activity after pregnancy is associated with decreased postpartum depression if the exercise is stress relieving and not stresses provoking [19].

The prevalence and characteristics of exercise among pregnant women have been documented in different countries and the level of compliance to the recommended levels of exercise is low [20]. One study reported that only 15.8% of women are engaged in exercise during pregnancy at the recommended level in the United States [21] and 21.5% among a healthy cohort with no contraindications to exercise in Ireland [22].

In Denmark, nulliparous women were found to spend less time with reduced intensity during exercise compared to pre-pregnancy while the proportion of women who took part in competitive sports, and moderate-to-heavy activities dropped over the three trimesters of pregnancy. More so, the proportion of women with sedentary disposition increased from 6 to 29% in pregnancy [23]. Among pregnant women in Britain, 48.8% was engaged in physical activity that was sufficient to cause sweating for 3hours/week or more at 18 weeks of gestation. The prevalence was also the same at 32 weeks [24]. In Brazil only 4.7% of pregnant women were active during the whole pregnancy while 12.9% of women were engaged in some type of physical activity during pregnancy [25]. The level of activity observed among the pregnant women is insufficient to offer the benefits of an active lifestyle and were lower in intensity and duration when compared to that of their fellow non-pregnant adult women [21,25].

A cross-sectional study on knowledge, perception, and attitude of pregnant women towards the role of physical therapy in antenatal care in India revealed that 46% of subjects knew about antenatal exercises but majority were either unsure or unaware of the different types of antenatal exercises available [26]. It found that 60% had a positive attitude to physiotherapy during antenatal care. However, only 30% had adequate knowledge of the benefits of antenatal exercise which was independent of maternal sociodemographic characteristics [26].

In Oshogbo southwestern Nigeria, a study on the perception of pregnant women on the usefulness of prenatal exercise revealed that there were significant differences between perceptions and various usefulness of prenatal exercise. The parameters assessed include faster labour, preparation for labour endurance, reduction in weight gain, relieve of fatigue, swelling, back pain, increased blood circulation, prevention of gestational diabetes, decreased use of labour medication, reduced preterm labour and promotion of sleep [27]. In another related study in Ile-Ife, southwestern Nigeria, Mbada et al. found that relaxation/breathing (59.8%), back care (51.3%), and muscle strengthening (51.3%) exercises were the most commonly known antenatal exercises. Perceived benefits include prevention of risk of back pain (75.9%) and excess weight gain (69.1%), while lower extremities swelling (31.8%) and extreme weight gain or loss (30.7%) were considered as contraindications to antenatal exercise. Up to 15.8% of the respondents had negative attitude towards antenatal exercises resulting from insufficient information on exercise (83.3%) and tiredness (70.0%). They also noted that age significantly influenced knowledge about contraindications antenatal exercise while attitude was influenced by age and occupation, respectively.

Given the overwhelming import of exercise in pregnancy, it will be necessary to assess the level of knowledge as well as perception and practice of exercise in pregnancy amongst antenatal women in our environment. This study has been undertaken amongst pregnant women in South Eastern Nigeria, to determine their perception as well as practice of exercise during pregnancy.

This will enable healthcare providers to address the areas of need and tackle deficiencies to proper utilization of this essential component of health maintenance.

Subjects and Methods

This is a questionnaire-based cross sectional study of 115 randomly selected pregnant women attending antenatal outreach programmes in two locations in Anambra state, south-eastern Nigeria in 2015. Oral consent was obtained from the participants after explanation of the details and the objectives of the study. Only women who gave their consent to participate were recruited into the study. The questionnaire was administered by trained interviewers, consisting of clinical medical students and students of physiotherapy, under the supervision of consultant obstetrician and gynaecologist. The questionnaire elicited information on the respondents' biosocial characteristics like age, marital status, occupation, gestational age, parity and social class; their knowledge of exercise in pregnancy as well as their perception and practice or experience of exercise in pregnancy. The social class of the respondents was derived from Olusanya classification which makes use of educational level of the women and the occupation of their husband [28]. A total of 140 questionnaires were distributed but 115 were found usable after editing. The data generated was computed and analysed using SPSS version 20.0.

Results

The data from 115 participants were analysed out of the 140 respondents recruited. The bio-social distribution of the respondents is as shown in table 1. Fifty-two (45.2%) respondents were within the age bracket of 26-30 years, constituting the modal age range, while only 1 (0.9%) and 2 (1.7%) respondents belong to the age ranges of 41-50 and 15-20 respectively. Majority 112 (97.4%) of the respondents were married while 1 (0.9%) and 2 (1.7%) were single and divorced respectively. Up to 58 (50.4%) of the respondents were traders, while only 3 (2.6%) were professionals, and 12 (10.4%) were unemployed. Fifty-six (48.7%) respondents were at a gestational age of less than 28 weeks; 41 (35.7%) were of gestational age of 29-36 weeks; while only 4 (3.5%) were between the gestational ages of 37 to 42 weeks. Twenty-one (18.3%) respondents were primigravida (para 0); 79 (68.7%) were of parity 1-4; while 15 (13.0%) were of para 5 and above. Majority of the respondents 68 (59.1%) belonged to the social class 3 while only 2 (1.7%) and 4 (3.5%) were of social class 5 and 1 respectively.

Characteristics		Number	Percentage (%)
Age	15-20	2	1.7
	21-25	23	20.0
	26-30	52	45.2
	31-40	37	32.2
	41-50	1	0.9
Marital Status	Single	1	0.9
	Married	112	97.4
	Divorced	2	1.7
Occupation	Professional	3	2.6
	Civil servant	2	1.7
	Teaching	12	10.4
	Trading	58	50.4
	Student	7	6.1
	Unskilled (Employed)	6	5.2
	Unemployed	12	10.4
Gestational Age	<28 weeks	56	48.7
	28-36 weeks	41	35.7
	37-42 weeks	4	3.5
Parity	0	21	18.3
	1-4	79	68.7
	≥ 5	15	13.0
Social Class	1	4	3.5
	2	12	14.8
	3	68	59.1
	4	24	20.9
	5	2	1.7

Table 1: Distribution by bio-social characteristics of the respondents.

Table 2 shows the distribution by knowledge and experience of exercise during pregnancy amongst respondents, types of exercises undertaken, and gestational age at which the exercises were carried out. Most of the respondents 100 (87%) had heard about exercise in pregnancy while 80 (69.6%) had engaged in exercise while pregnant. Majority of the respondents 73 (63.5%) had engaged in walking as a form of exercise, while 21 (18.3%), 7 (6.1%), 4 (3.5%), 1 (0.9%), 1 (0.9%) had engaged in dancing, jogging, skipping, swimming and jumping respectively. Forty-two (36.5%) had engaged in exercise before 28 weeks of gestation while 18 (15.7%) and 2 (1.7%) did so at 28-36 weeks and 37-42 weeks respectively.

Characteristics		Number	Percentage (%)
Ever Heard of Exercise in Pregnancy	Yes	100	87.0
	No	9	7.8
	No Response	6	5.2
Practice of Exercise while Pregnant	Yes	80	69.6
	No	22	19.1
	No Response	13	11.3
GA AT Participation in Exercise	< 28 weeks	42	36.5
	28-36 weeks	18	15.7
	37-42 weeks	2	1.7
Form of Exercise Partaken	Skipping	4	3.5
	Walking	73	63.5
	Swimming	1	0.9
	Jogging	7	6.1
	Jumping	1	0.9
	Dancing	21	18.3

Table 2: Distribution by knowledge and experience of exercise during pregnancy amongst respondents, types of exercise undertaken, and gestation at which the exercises were carried out.

Table 3 shows the distribution by social class of respondents for types of exercises undertaken during pregnancy. The commonest exercise amongst the various social classes was walking. Two (66.7%), 14 (58.3%), 41 (73.2%), 15 (68.2%), 1 (50%) respondents from the social classes 1,2,3,4 and 5 respectively were engaged in walking as a form of exercise in pregnancy. This was followed by dancing in which 1 (33.3%), 6 (25%), 9 (16.1%), 4 (18.2%), 1 (50%) respondents of social classes 1, 2, 3, 4 and 5 respectively were engaged in. Jumping and swimming were the least forms of exercise engaged in by the various social classes as only 1 (16.7%) respondent each from social class 3 was engaged in jumping while only 1 (4.5%) was engaged in swimming.

Social class	Walking	Dancing	Swimming	Skipping	Jumping	Jogging	Total
1	2 (66.7%)	1 (33.3%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (100%)
2	14 (58.3%)	6 (25%)	0 (0%)	0 (0%)	0 (0%)	4 (16.7%)	24 (100%)
3	41 (73.2%)	9 (16.1%)	0 (0%)	3 (5.4%)	1 (1.8%)	2 (3.6%)	56 (100%)
4	15 (68.2%)	4 (18.2%)	1 (4.5%)	1 (4.5%)	0 (0%)	1 (4.5%)	22 (100%)
5	1 (50%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (100%)
Total	73	21	1	4	1	7	107

Table 3: Distribution by social class of respondents for types of exercises undertaken during pregnancy.

Figure 1 shows the distribution of the respondents by their perception on exercise in pregnancy. Most of the respondents 105 (91.3%) believed exercise was a necessity to life, while 4 (3.5%) felt otherwise. Eighteen (15.6%) respondents perceived exercise could cause miscarriage, as 10 (8.7%) thought it could cause other adverse effects on the fetus. Most respondents 92 (80%) agreed that exercise in pregnancy could aid labour/delivery while 26 (22.6%) and 5 (4.3%) felt it could worsen muscle/nervous disorder or result in excessive maternal weight gain respectively.

Figure 2 shows Distribution by Respondents' Recommendations on Exercise in Pregnancy. Ten (8.7%) were of the opinion that pregnant women should not engage in exercise at all, 7 (6.1%) agreed it should be exclusively reserved for early pregnancy, while 46 (40%) believed it should be undertaken only in late pregnancy.

Fourteen (12.2%) of the respondents were of the opinion that exercise should only be necessary to shed fetal weight when the fetus appears big, and 59 (51.3%) believed it is only important to enhance the labour/delivery process. Sixty-two (53.9%) felt that exercise should be recommended for the treatment of muscular or nervous disorders.

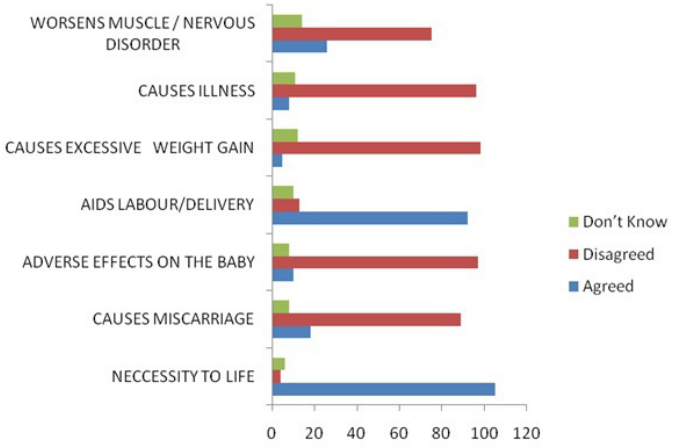

Figure 1: Distribution of the respondents by their perception on exercise in pregnancy

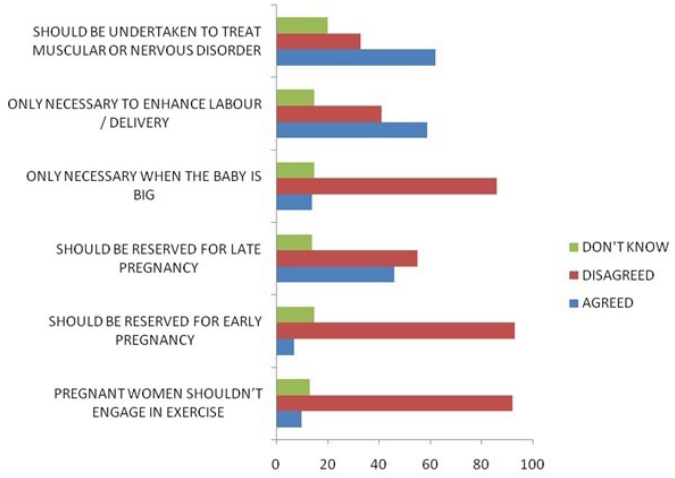

Figure 2: Distribution by Respondents' Recommendations on Exercise in Pregnancy

Discussion

Physical inactivity poses a lot of health challenges including risk for certain cardiovascular health conditions. In pregnancy and puerperium, it is particularly important for women to be encouraged to maintain fitness because physical and physiological changes associated with these periods may constitute a barrier to optimum health. An individualized approach to the exercise prescription may be needed, as a lot of pregnant women have different perceived barriers to exercising.

This study shows that the level of knowledge on exercise in pregnancy among the group studied was high (87%). This is comparably higher than the findings by Nayak et al. in India which was 46% [26]. The level of engagement in exercise while pregnant was also considerably high at 69.6%. This is comparable to 74.6% found by Makinde et al. in Oshogbo southwestern Nigeria [27]. It was however much higher than the findings by Domingues et al. in Brazil which was 4.7% [25]. Although the level of compliance to the recommended level of exercise was not assessed in this study, it was found to be low in other parts of the world: 15.8% in the USA [21], 21.5% in Ireland [22] and 48.8% in Britain [24]. Walking was the most engaged form of exercise by the respondents (63.5%), while swimming and jumping were the least at 0.9% each. The convenience associated with walking and the fact that it does not require any special facility or equipment may have been responsible for it being the most commonly undertaken exercise modality. Dancing was also common (18.3%) for a similar reason. Swimming, on the other hand requires skills as well as availability of swimming pool/streams which may not be accessible to most respondents, and therefore not a commonly engaged form of exercise.

Worthy of note is the drop in the proportion of women who engaged in exercise as pregnancy advanced. Whereas up to 36.5% of the respondents engaged in exercise before 28 weeks of gestation, only 15.7% and 1.7% did so at 28-36 weeks and 37-42 weeks respectively. This finding is similar to the observation from studies carried out elsewhere. For instance, a Danish study showed that the proportion of women who took part in competitive sports, and moderate-to-heavy activities decreased over the three trimesters of pregnancy, whereas the proportion of women with sedentary activity increased from 6 to 29% [23].This may be due to increasing physical changes, difficulty in mobility and increasing discomfort associated with late pregnancy.

Most respondents (91.3%) believe that exercise was a necessity to life while 3.5% believed otherwise. A good number of respondents (15.8%) erroneously believe that exercise could cause miscarriage while 8.7% believe it could cause other adverse fetal outcome. In addition 4.3%of the respondents in this study erroneously believed that it can result in excessive maternal weight gain. In another study by Mbada et al. in southwestern Nigeria, the percentage of respondents with negative attitude to exercise in pregnancy was as high as 15.8% [29]. The negative attitude may not be unrelated to ignorance and socio-cultural factors. Health education especially during the antenatal classes should be stepped up in order to disabuse the minds of these women of such beliefs.Despite the above; most respondents (80%) had a good knowledge of the usefulness of exercise in enhancing labour/delivery process.

Up to 8.7% of the respondents recommended that pregnant women should not engage in exercise at all because of perceived adverse effects, while 6.1% would recommend it exclusively for early pregnancy. Forty percent believed it should be undertaken only in late pregnancy. This they believe is necessary to shed excessive fetal weight and to enhance the labour/delivery process. A randomized controlled trial by Haakstad et al. involving sedentary, nulliparous pregnant women who were randomized into either an exercise group or a control group did not show any statistically significant difference between groups in mean birth weight, low birth weight, or macrosomia [30].

Conclusion

Despite the physical and physiological changes associated with pregnancy, exercise has been proven to have immense benefits in pregnancy especially in the absence of contraindications. Misconceptions about exercise in pregnancy among the study group notwithstanding, the awareness level of exercise in pregnancy was high in this study. Although the uptake of recommended level of exercise is poor worldwide, the proportion of the respondents who engaged in exercise in pregnancy in this study was remarkable. There is however the need to further determines the proportion of pregnant women who actually meet up with the recommended level of exercise for the pregnant women. This will enable identification of the areas of need which will in turn inform policy formulation and implementation in respect of exercise during pregnancy, in this environment.

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