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Knowledge of Antenatal Exercise among Pregnant Women in Nsukka Local Government Area of Enugu State, Nigeria

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Abstract
This study determined the level of knowledge of antenatal exercise among pregnant women in Nsukka LGA, Enugu state. Four specific objectives with four corresponding research questions and one null hypothesis guided the study. A cross sectional survey research design was adopted for the study. The study population comprised 2,008 pregnant women registered at the 16 health facilities that offer antenatal care services in Nsukka LGA at the time of the study. Multistage sampling procedure was employed to draw 204 pregnant women for the study. Researchers' designed questionnaire termed Knowledge of Antenatal Exercise Questionnaire (KAEQ) was used to collect data. Frequency and percentage were used to answer research questions while chi-square statistic was used to test the null hypothesis at .05 level of significance. The results of the study indicated that pregnant women possessed low knowledge of types of antenatal exercise (38.9%), very high knowledge of benefits of antenatal exercise (80.6%) and average knowledge of contra-indications to antenatal exercise. All pregnant women irrespective of parity had average knowledge of antenatal exercise. There was no significant difference in the knowledge of antenatal exercise based on parity (χ^2=4.985, p= .283 > .05). The researchers recommended that health and physical educators and other health care workers should educate women in general and pregnant women in particular on the need for antenatal exercise.
Key words: Knowledge, Antenatal exercise, Pregnant women.

Introduction

Pregnancy and childbirth are normal physiological processes in the lives of females that each woman aims to achieve without much stress. Antenatal exercise is an integral part of antenatal care services (ANCs) aimed at promoting the health of both the pregnant woman and her baby. Motolla and McLaughlin (2011) noted that lack of exercise may pose a great risk to pregnant women. Khatri, Sirohi, Dexit, Rai and Pandey (2014) reported higher percentage of caesarean birth (62%) in non-exercising pregnant women than exercising pregnant women (26%). Several studies in Nigeria and other parts of the globe equally suggested that women who exercised during pregnancy had better pregnancy outcomes than those who did not exercise (Wadsworth, 2007; Barakat, Palez, Montejo, Lauces & Zakyunthinaki, 2011; Jayasudya, 2013). Antenatal exercise is therefore necessary for healthier pregnancy outcomes.

Antenatal exercise is any physical activity during pregnancy for the promotion of health and well being of the pregnant woman. Several exercises have been recommended during pregnancy. According to Nkhata, Nkandu, Schula and Mweshi (2016), some of the exercise recommendation in pregnancy include – Kegels' (pelvic floor) exercise, swimming, brisk walking, indoor stationary bicycling and low impact aerobics. Other studies suggested different forms of exercises such as muscle strengthening, back care, stretching and abdominal exercises provided the mother consults with her health care provider before commencement of the exercise (Breed, 2011; Leifermen, Gutilla, Paulson & Pivarnik, 2012; Sujindra, Bupathy, Suganya & Praveena, 2015). Equally, the American Congress of Obstetricians and Gynecologists (ACOG) and Committee on Obstetrics Practice, (2002) recommended that pregnant women can exercise moderately for 30 minutes on most days of the week. Exercise for sedentary women and those with medical or obstetric complications are also promoted in the ACOG's recommendation but only after medical evaluation. These exercises help to relieve the common ailments during pregnancy.

Pelvic floor exercise helps to strengthen the pelvic floor muscles that become weakened due to strain of pregnancy on the muscle. Bennett and Brown (1996) described pelvic floor exercise thus; sit, stand or lie with legs

slightly apart, close and draw up around the back passage as if though preventing a bowel action then repeat around the front two passages as though preventing a flow of urine, hold for as long as is comfortable breathing normally, then relax and repeat four times. The authors further stated that all women should practice this exercise very regularly antenatally, particularly after emptying the bladder. This exercise prevents incontinence of urine, hemorrhoids and better outcome of labor. An added advantage of this exercise is increased sexual satisfaction in the women. LaHaye and LaHaye (1998) reported that in addition to strengthening the pelvic floor muscles to control voiding of urine and better outcome of child birth, many women reported experiencing orgasm for the first time in their lives after practicing pelvic floor exercise for some weeks.

Abdominal exercise strengthens abdominal muscles and prevents back pain while aerobics such as brisk walking, cycling and swimming has been shown to improve cardiovascular fitness and endurance (Ribeiro & Milanez, 2011). Breathing exercise improves venous return and aid the oxygen supply to both the pregnant woman and her baby and also relaxation exercise relieves tension in the body thus improving emotional health of the woman (Benett & Brown, 1996). More importantly, exercise has been shown to reduce some of the major complications of pregnancy and delivery. Dignon and Reddington (2013) asserted that conditions like pre-eclampsia, gestational diabetes, birth weight and type of delivery have been shown to improve when exercise is undertaken. Khatri et al. reported lower rate of caesarean delivery, back pain and urinary incontinence in exercising women when compared to non-exercising women.

Common ailments during pregnancy can include low back pain, sciatica, sacroiliac joint pain, pelvic floor weakness and incontinence (Khatri et al., 2014). These problems may be due to the anatomical and physiological changes that occur in pregnancy. Khatri et al. stated that these problems may be due to hormone of pregnancy, increased weight gain and change in posture as a result of forward shift in the centre of gravity of the body. Engaging in regular physical activity in pregnancy has been associated with increased fitness, prevention of excessive weight gain, low back pain, lower anxiety and depressive symptomatology (Leiferman et al., 2012).

However, there are contra-indications to some of the exercises in pregnancy. Breed (2011) gave such contraindications as cardiac disease, lung disease, incompetent cervix, persistent vaginal bleeding, severe anemia, history of premature labor and rupture of membrane. Therefore Sujindra et al., (2015) recommended that pregnant mothers with health challenges should consult their health care practitioner before engaging in any form of antenatal exercises. This notwithstanding, exercise is recommended in most women without any obstetric complication. Pregnant women might not be aware of the types of exercise during pregnancy as well as the inherent benefits. This may be attributed to lack of knowledge of different types of exercise during pregnancy.

Knowledge of antenatal exercise by pregnant women is very necessary. World Health Organization-WHO (2006) stated that knowledge is a pre-requisite to any practice. The report further indicated that many of the prevailing ailments in the society are to a large extent caused by anti-health practice because people are uninformed. Knowledge in this study refers to level of awareness of antenatal exercises possessed by pregnant women attending health facilities in Nsukka LGA, Enugu State. Knowledge of antenatal exercise by pregnant women will influence their practice thereby promoting their overall health and fitness and that of their babies. Also more favourable pregnancy outcome is anticipated in exercising pregnant woman. Poor knowledge of antenatal exercise will invariably lead to poor or non practice of this health promoting behavior thereby predisposing women to many preventable pregnancy related problems. However, several factors might influence knowledge of antenatal exercises among pregnant women.

Factors that can influence knowledge of antenatal exercise include: level of knowledge, level of education, safety concerns, ethnicity, previous involvement in regular exercises and phobia among pregnant mothers (Mbada, Adebayo, Adeyemi, Arije, Dada & Akinwade, 2014). Others could be parity, occupation, culture and religion.

Despite the myriads of benefits associated with engagement in physical exercise during pregnancy, pregnant women unfortunately are afraid to exercise during pregnancy for fear of complications that may arise from such (Mbada et al., 2014; Nkhata et al., 2015). Even those that were exercising prior to pregnancy tend to stop the exercise due to lack of information on the safety of such exercises (Dignon & Reddington, 2013). Several studies (Ribeiro & Milanez 2011; Mbada et al., 2014; Sujindra et al., 2015; Nkhata et al., 2015) in Nigeria and other parts of the world indicated that there is inadequate knowledge of antenatal exercise by pregnant women. None of such studies to the best knowledge of the researchers have been conducted in Nsukka LGA, Enugu State. In view of the above, the need arose to determine if pregnant women in Nsukka LGA have adequate knowledge of exercise during pregnancy which will aid them to engage in these exercises in order to ameliorate the common ailments during pregnancy and anticipate favourable pregnancy outcome. Findings of the study will be useful to health educators, health care practitioners, curriculum planners, pregnant women and all those involved in the care of pregnant women.

Purpose of the Study

The purpose of the study was to determine the level of knowledge of antenatal exercise among pregnant women in Nsukka LGA, Enugu State. Specifically, the study sought to determine the level of knowledge of;

1. types of antenatal exercises among pregnant women in Nsukka LGA;
2. benefits of antenatal exercises among pregnant women in Nsukka LGA;
3. contraindications to antenatal exercise among pregnant women in Nsukka LGA; and
4. antenatal exercise among pregnant women in Nsukka LGA based on parity.

Research Questions

1 What is the level of knowledge of different types of antenatal exercise among pregnant women in Nsukka LGA?
2 What is the level of knowledge of benefits of antenatal exercise among pregnant women in Nsukka LGA?
3 What is the level of knowledge of contraindications to antenatal exercise among pregnant women in Nsukka LGA?
4 What is the level of knowledge of antenatal exercise among pregnant women in Nsukka LGA based on parity?

Hypotheses

1. There is no significant difference in level of knowledge of antenatal exercise possessed by pregnant women in Nsukka LGA based on parity.

Methods

The study adopted cross sectional survey research design. Population for the study consisted of all 2,008 pregnant mothers registered and attending antenatal clinic in the 16 health facilities that that offer antenatal care services in Nsukka LGA from January to August 2016 (office of the monitoring and evaluation unit, Health Department Nsukka LGA). There are 50 health care facilities in the three development centers in Nsukka LGA out of which 16 offer antenatal care services. A sample size of 204 respondents was chosen, representing approximately 10 per cent of the population. Multistage sampling procedure was used to arrive at the sample. First stage involved drawing six health facilities (two from each development centre) from the existing 16 health facilities that offer antenatal care services using simple random sampling of balloting without replacement while second stage involved the use of purposive sampling technique on antenatal clinic days to select 34 pregnant women each from the sampled six health facilities. This procedure produced 204 pregnant mothers for the study.

A researchers' designed questionnaire on knowledge of antenatal exercise among pregnant women referred to as Knowledge of Antenatal Exercise Questionnaire (KAEQ) was used for data collection. The instrument comprised two sections. Section A solicited information on personal data of the respondents while section B sought information on knowledge of antenatal exercise. Dimensions of knowledge investigated in relation to exercise during pregnancy were types of exercise, benefits and contraindications of antenatal exercise. Face validity of the instrument was established by three experts in Health Education, University of Nigeria Nsukka. The KAEQ was administered to 20 women that attended antenatal care clinic in District Hospital Enugu Ezike after which split half was used to determine reliability of the instrument. Spearman Brown correlation coefficient was utilized to determine reliability coefficient which yielded .71. Data was collected by the researchers and research assistants during antenatal clinic days at the sampled health facilities. Informed consent was obtained verbally from the respondents prior to administration of the instrument. Completed copies of the instruments were collected on the spot after completion to ensure maximum return rate. Out of 204 copies distributed and retrieved, 194 were used for data analysis. The data were coded and analyzed using IBM Statistical Package for the Social Sciences (SPSS) version 21. Frequency and percentage were used to answer research questions. In determining the level of knowledge of antenatal exercise, Ashur's (1977) modified version by Okafor (1997) criteria for determining knowledge was used. By this criteria, scores below 20 per cent was considered very low level of knowledge (VLK), 20-39 per cent was considered low level of knowledge (LK), 40-59 per cent was considered average level of knowledge (AK), 60-80 per cent was considered high level of knowledge (HK) while a score above 80 per cent was considered very high level of knowledge (VHK). Chi-square statistic was used to test the null hypotheses at .05 level of significance and appropriate degree of freedom.

Results

Table 1
Level of knowledge of Different Types of Antenatal Exercise by Pregnant Women (n=194)

Types of Antenatal Exercise	Correct Response		Incorrect Response		
	f	%	f	%	Decision
Pelvic floor exercise	49	25.3	145	74.7	LK
Muscle strengthening exercise	83	42.8	111	57.2	AK
Relaxation and breathing exercise	126	64.9	68	35.1	HK
Back care exercise	38	19.6	156	80.4	VLK
Swimming	33	17.0	161	83.0	VLK
Cycling	40	20.6	154	79.4	LK
Walking	139	71.6	55	28.4	HK
Stretching	96	49.5	98	50.5	AK
Overall percentage		**38.9**		**61.1**	**LK**

Key: HK- high knowledge, AK- average knowledge, LK- low knowledge, VLK- very low knowledge

Data in Table 1 show that the overall level of knowledge of different types of antenatal exercise was low (38.9%).

Table 2
Level of Knowledge of Benefits of Antenatal Exercise by Pregnant Women (n=194)

Benefits of Antenatal Exercise	Correct Response		Incorrect Response		
	f	%	f	%	Decision
Reduces back pain during pregnancy	164	84.5	30	15.5	VHK
Increases muscular and cardiovascular fitness	142	73.2	52	26.8	HK
Strengthens pelvic floor muscles during pregnancy	152	78.4	42	21.6	HK
Relieves some discomforts during pregnancy	150	77.3	44	22.7	HK
Prevents excessive weight gain during pregnancy	170	87.5	24	12.5	VHK
Better ability to cope with labour and delivery	162	83.5	32	16.5	VHK
Increases energy and stamina during pregnancy	154	79.4	40	20.6	HK
Leads to more rapid postnatal recovery	158	81.4	36	18.6	VHK
Overall percentage		**80.6**		**19.4**	**VHK**

Key: VHK- very high knowledge, HK- high knowledge.

Data in Table 2 above show that there is very high level of knowledge of benefits of antenatal exercise (80.6%) among pregnant women attending health facilities in Nsukka LGA.

Table 3
Level of Knowledge of Contraindications to Antenatal Exercise by Pregnant Women (n=194)

Contraindications to Antenatal Exercise	Correct Response		Incorrect Response		
	f	%	f	%	Decision
Vaginal bleeding during pregnancy	74	38.1	120	61.1	LK
Uterine contraction during pregnancy	78	40.2	116	59.8	AK
Abdominal pain during pregnancy	86	44.3	108	55.7	AK
Difficulty in breathing during pregnancy	86	44.3	108	55.7	AK
Dizziness during pregnancy	74	38.1	120	61.9	LK
Chest pain during pregnancy	66	34	128	66	LK
High blood pressure during pregnancy	96	49.5	94	40.5	AK
Muscle weakness during pregnancy	118	60.8	76	39.2	HK
Average percentage		**43.7**		**56.3**	**AK**

Key: HK- high knowledge, AK- average knowledge, LK- low knowledge.

Data in Table 3 show that there is average level of knowledge of contraindication to antenatal exercise (43.7%).

Table 4
Level of Knowledge of Antenatal Exercise by Pregnant Women Based on Parity (n=194)

Item	parity								
	One child (n=50)			2-4 children(n=114)			5 children &above(n=30)		
	f	%	Decision	f	%	Decision	f	%	Decision
Knowledge of types	20	40	AK	41	36	LK	14	46.7	AK
Knowledge of benefits	39	78	HK	91	79.8	HK	27	90	VHK
Knowledge of contraindications	24	48	AK	45	39.5	LK	11	36.7	LK
Overall %		**55.3**	**AK**		**51.8**	**AK**		**57.8**	**AK**

Key: LK-low knowledge, AK- average knowledge, HK- high knowledge, VHK- very high knowledge.

Data in Table 4 indicate that women with five and above children have slightly higher knowledge (57.8%) than those with one child (55.3%) while those with two to four childre have the least knowledge of antenatal exercise (51.8%). The table further indicates that all pregnant women irrespective of parity have average level of knowledge of antenatal exercise.

Table 5
Summary of Chi-square Analysis of no Significant Difference in the Level of Knowledge of Antenatal Exercise possessed by Pregnant Women Based on Parity (n=194).

Item	parity									
	One child(n=50)		2-4 children(n=114)		≥5 children(n=30)		χ^2-cal	df	p-value	decision
	Correct O(E)	Incorrect O(E)	Correct O(E)	Incorrect O(E)	Correct O(E)	Incorrect O(E)				
Types	20 (19.5)	30(30.5)	41(44.4)	73(69.6)	14(18.3)	16(11.7)	5.431	2	.246	accept
Benefits	39(40.4)	11(9.6)	91(91.9)	23(22.1)	27(24.7)	3(5.3)	6.200	2	.160	accept
Contraindications	24(20.4)	26(29.6)	45(46.6)	69(67.4)	11(12.3)	19(17.7)	3.323	2	.443	accept
Overall χ^2							**4.985**	**2**	**.283**	**accept**

Table 5 shows the calculated χ^2 value with their corresponding p-values for types (χ^2=5.431, p= .246 > .05); benefits (χ^2=6.200, p= .160 > .05); contraindications (χ^2= 3.323, p= .443 > .05). Since the overall p- value is greater than .05 (χ^2=4.985, p= .283 > .05), the null hypotheses of no significant difference was accepted. This implies that knowledge of antenatal exercise possessed by pregnant women did not differ with parity.

Discussion

The finding of the study in Table 1 showed that the overall level of knowledge of different types of antenatal exercise possessed by pregnant women was low (38.9%). This finding is not plausible. It is expected that pregnant women that attend antenatal care clinics should receive adequate information on health promoting practices in pregnancy including antenatal exercise. This finding supports the findings of Sujindra et al. (2015) and Nkhata et al. (2016), who reported less than average level of knowledge of antenatal exercise among pregnant mothers in India and Zambia respectively. Similarly, Mbada et al. (2014) reported inadequate knowledge of antenatal exercise among pregnant women in south west, Nigeria. The reason for low knowledge could be attributed to lack of valid information on physical activities to pregnant mothers by health care providers at the health facilities. In this regard, Lieferman, Gutila, Paulson and Pivarnik (2012) reported low level of antenatal physical activity counseling among health care providers. This has implication for the education and practice of health care providers.

In this study, pregnant women had high knowledge of walking exercise (71.6%). The level of knowledge of muscle strengthening exercise was average (42.8%) while the knowledge of other types of exercise was low. This situation is worrisome bearing in mind the benefits of antenatal exercise to pregnant women. Pregnant women in this study were aware of only breathing and walking exercise. Women in our study lacked knowledge of pelvic floor exercise which is of immense benefit even during the post natal period and afterwards. The low level of knowledge of swimming could be attributed to prevalent hydrophobia and cultural myths that makes swimming among pregnant women a taboo (Mbada et al., 2014). Also few people have skills in swimming. However, those that have swimming skills should be encouraged to continue swimming while pregnant. This is because the American Pregnancy Association (2008) ranked exercise in pregnancy in order as Kegel (pelvic floor), swimming, walking, bicycling, aerobics and dance. There is therefore an urgent need to update the knowledge and skills of

health care providers on the importance and current guidelines regarding antenatal exercise so that they can appropriately inform and educate pregnant women on exercise during pregnancy as they visit the health facilities for antenatal care services.

Findings in Table 2 show that there is very high knowledge of benefits of exercise among pregnant women. This finding is tenable bearing in mind the benefits of exercise to health and well being of everybody including pregnant women. This finding is consistent with previous findings (Downs & Hausenblas, 2004; Pennick & Young, 2007; Mbada et al., 2014; Sujindra et al., 2015). Most women in this study had high knowledge of all the benefits of exercise outlined. This consistency with previous findings could be attributed to universality of the knowledge of effects of exercise in health promotion.

Findings of the study in table 3 show that there is average level of knowledge of contraindications to antenatal exercise (43.7%). It is expected that women should gain high knowledge of contraindication to antenatal exercise as they visit health facilities. The finding is consistent with the findings of Mbada et, al., (2014) who reported that pregnant women in their study mostly implicated swelling of lower extremities, extreme weight gain or loss, and presence of back pain during pregnancy as contraindications to exercise during pregnancy. The authors described that these conditions are at best relative contraindications which should not rule out engagement in exercise during pregnancy except there are underlying medical or obstetric complications. This finding could lead to unfounded fear about exercise in pregnancy. Dignon and Reddington, (2013) reported that pregnant women who were exercising prior to pregnancy tend to stop during pregnancy for fear of complications. This equally has implications for health education. Health care workers and health educators should properly educate women in general and pregnant women in particular about contraindications to antenatal exercise. Despite these contraindications, women should be encouraged to exercise but under medical supervision or after consultation with their health care providers. Exercise like pelvic floor exercise has no contraindication and should be encouraged despite any condition.

Findings in Table 4 revealed that pregnant women across all parity had average knowledge of antenatal exercise. However, pregnant women with five or more children had slightly higher knowledge (57.8%) than women with one child (55.3%) while women with two to four children had the least level of knowledge (51.8%). The null hypothesis of no significant difference in the knowledge of antenatal exercise based on parity was accepted (χ^2=4.985, p= .283>.05). This implied that knowledge did not differ significantly with parity. It is expected that pregnant women with higher parity should possess higher knowledge of antenatal exercise as they have been visiting health facilities in previous pregnancies and are supposed to have gained knowledge. This could be explained by the fact that health care workers might not be giving adequate information on antenatal exercise to pregnant women predisposing them to not having enough knowledge even with high parity. Therefore there is need to educate pregnant mothers in this study area on the need for antenatal exercise.

Conclusion

Based on the findings and discussion, the following conclusion were reached; Pregnant women in Nsukka LGA had low level of knowledge of different types of antenatal exercises, very high level of knowledge of benefits of antenatal exercises and average level of knowledge of contraindication to antenatal exercise. In general pregnant women across the parity had average level of knowledge of antenatal exercise. However, there was no significant difference in knowledge of antenatal exercise based on parity. This implies that women do not gain much knowledge of antenatal exercise as they visit health facilities for antenatal care services. Therefore there is need to inform, educate and communicate types and contraindications of antenatal exercise to pregnant women by healthcare workers and caregivers.

Recommendations

Based on the findings and conclusion of the study, the following recommendations are proffered;

1. Health and physical educators and other health care workers should educate women in general and pregnant women in particular on the types and contraindications of antenatal exercise during pregnancy.
2. Seminars and workshops should be organized for health care workers in antenatal care facilities on different types of exercise as well as their benefits and contraindications to improve their knowledge and inculcate same to their clients
3. Physiotherapists should get actively involved in antenatal care services where they can inform and educate pregnant women on the importance of carrying out recommended exercises during pregnancy.

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