SMU Medical Journal

Indexed in SIS (USA), ASI (Germany), I2OR & i-Scholar (India), SJIF (Morocco) and Cosmos Foundation (Germany) databases. Impact Factor: 3.835 (SJIF)

ISSN : 2349 – 1604 (Volume – 4, No. 2, July 2017) Research Article

Knowledge and Practices of Postnatal Exercises: A Comparative Survey Among Urban and Rural Postpartum Mothers in Enugu, Nigeria

Ojukwu Chidiebele Petronilla*[1], Ugwu Anthony Mmaduabuchi[1], Anekwu Emelie Moris[2], Davidson John Okwudili[2], Ikele Chioma Nneka[1]

1. Department of Medical Rehabilitation, Faculty of Health Sciences, College of Medicine, University of Nigeria Enugu Campus, Nigeria.
2. Department of Physiotherapy, Federal Teaching Hospital, Abakaliki, Ebonyi State.

*Corresponding author

Manuscript received : 31.03.2017
Manuscript accepted: 07.05.2017

Abstract

Studies on maternal postnatal exercise profiles have been focused in urban areas resulting in scarcity of literature on postnatal exercise practices in rural areas. This study compared knowledge and practice of postnatal exercises between rural and urban Nigerian postpartum mothers. A cross-sectional study of 351 mothers (200 urban and 151 rural women) recruited from eight selected hospitals (four urban and four rural) from South-East Nigeria was carried out. A three-section questionnaire that assessed socio-demographics, maternal characteristics, knowledge and practice of postnatal exercises was employed. Descriptive and inferential

knowledge of postnatal exercises (urban-90.5%, rural-98.0%), with preponderance in the rural women, although not statistically significant (p=0.462). Prevalence of non-practice of postnatal exercises was more among the rural women (79.5%) as compared to urban women (54.5%) with a significant difference (p<0.001) between the groups. Insufficient information on postnatal exercises (urban = 85.3%; rural = 94.2%) was the major barrier to postnatal exercise practice. Most of the women (urban-87.0%; rural–94.7%) exercised for about 1-4days per week, mainly based on self-prescription (urban-53.8%, rural-54.8%). Majority of Nigerian postpartum mothers demonstrated poor knowledge and practice of postnatal exercises, with preponderance among rural women.

***Keywords*:** postnatal exercise, practice, postpartum mothers, Nigeria, urban, rural

Introduction

Pregnancy is associated with a wide range of anatomical and physiological changes which usually result to musculoskeletal, cardiovascular, and respiratory challenges [1]. Regular practice of physical exercises has been recommended as means of alleviating and managing some of the pregnancy and postpartum-related health conditions [2,3]. Postpartum exercises are designed to minimize impairment and help the woman maintain or regain function while caring for the infant [4,5]. Several authors [1,5-9] have emphasized the importance of regular exercise during the postpartum period, most of which include decreased incidence of postpartum depression, anxiety and sleep disorders, rapid postnatal recovery, preservation and promotion of aerobic and musculoskeletal fitness levels, increase in endurance and stamina, prevention and treatment of urinary incontinence, less likelihood to retain weight gained during pregnancy, improvement in posture, coordination and balance, and prevention of diastasis recti abdominis.

Empirical evidences show that despite the documented benefits of exercise, women are not adhering to the postpartum exercise recommendations [10,11]. Non-participation in postpartum exercises is dependent on several factors, including skepticism about the safety of exercise for the mother and child. Maternal exercise practices are influenced by cultural factors. Mbada et al.[12] postulated that the African culture seems to play a prohibiting role in physical

exercises during pregnancy and immediate postpartum by mandating confinement periods that varies across different tribes. In Nigeria, there are contradictory evidences of maternal engagement in postpartum exercises. Adeniyi et al.[13] reported 47.8% of postpartum women in Ibadan, Nigeria did not engage in postpartum exercises whereas Mbada et al.[12] showed 81.9% prevalence for engagement in postpartum exercises.

Maternal education and campaigns on the promotion of exercises during pregnancy and postpartum periods are becoming essential aspects of antenatal and postnatal care in some Nigeria health facilities. However anecdotal observations show that these maternal education and campaign programmes are preponderant in the urban cities as most health professionals have preferences for practicing in developing or developed settings. Additionally, paucity of data on geographical areas with higher prevalence and inappropriate practice of postpartum exercises is one of the possible factors, influencing the demographic focus of maternal health programmes.

There is need to evaluate maternal exercise practice characteristics relative to geographical settings for appropriate implementation of health interventions. To that effect, this study was designed to compare knowledge, practice and patterns of postnatal exercises among women in urban and rural areas of Enugu, Nigeria.

Materials and Methods

A total of 351 postpartum mothers (200 urban dwellers and 151 rural dwellers), who were conveniently selected from the post-natal and paediatric clinics of four rural and four urban hospitals in Enugu, south-eastern Nigeria participated in this cross-sectional study. Respondents who were not literate in either English or Igbo were excluded from the study. Igbo is the local language spoken in Enugu, the area where the study was conducted. Women with medical conditions requiring non-participation in physical exercises, as directed by their physicians were also excluded from the study. Ethical approval was obtained from the University Of Nigeria health research ethics committee and all the respondents gave written informed consent prior to participation.

A self-administered structured Knowledge, Attitude and Practice (KAP) questionnaire containing pre-coded and open questions was adapted from previous studies [14,12] for data collection in this study. This questionnaire sought information on socio-demographic, maternal infant characteristics and practice of antenatal and postnatal exercise. For the purpose of this study, the questionnaire was modified, excluding specific questions on antenatal exercises. The modified version of the questionnaire was translated to Igbo Language. In a pilot study, the Igbo version of the questionnaire was tested for reliability, using a test-retest method. Copies of the questionnaire were first administered to 10 postpartum mothers and were re-administered after 7 days. The test-retest reliability yielded a correlation coefficients of $r = 0.950$ ($p = 0.001$).

Statistical evaluation

Data were analyzed with SPSS (version 20). Descriptive statistics of mean, standard deviation, frequency count and percentages was used to summarize data. Overall score of maternal knowledge of recommended postnatal exercises was rated on a scale of 0-9, with ≥ 6 points denoting good knowledge, 5 points – average knowledge and ≤ 4 points for poor knowledge. Additionally, overall score of maternal knowledge of benefits of postnatal exercises was rated on a scale of 0-13, with ≥ 8 points denoting good knowledge, 7 points – average knowledge and ≤ 6 points for poor knowledge.

Inferential statistics of Mann-Whitney U test was used to determine the statistical differences between variables with alpha level set at $p < 0.05$.

Results

The socio-demographic and maternal characteristics of the participants are presented in table 1. Majority of the women were between 25-39 years (75.5%), business women (33.9%), had first degree certificates (50.1%). A greater percentage of the women were multiparous (63.2%) and commenced postnatal care less than one month after delivery (41.3%).

Table 1: Socio-demographic and maternal characteristics of the participants (n=351)

Variables	Frequency	Percentage (%)
Age (years)		
18-24	79	22.5
25-39	265	75.5
>40	7	2.0
Occupation		
Home maker	41	11.7
Trader	26	7.4
Business woman	119	33.9
Civil servant	84	23.9
Student	79	22.5
Others	2	0.6
Educational Qualification		
None	1	0.3
Primary education	13	3.7
Secondary education	151	43.0
First degree	176	50.1
Post graduate	10	2.8
Place of Residence		
Urban	200	56.9
Rural	151	43.0
Parity		
Primiparous	129	36.8
Multiparous	222	63.2
Commencement of postnatal care (month)		
<1		
1-3	145	41.3
4-6	132	37.6
7-9	46	13.1
	28	8.0

Table 2 shows the knowledge of postnatal exercises among the participants. 55.0% and 46.0% of urban and rural women, respectively, reported positive knowledge of postnatal exercises, with a significant difference ($p < 0.001$) between the responses of the two groups. However, the total knowledge scores showed that both urban (90.5%) and rural (98.0%) women had poor knowledge of postnatal exercises with no significant difference between the two groups ($p = 0.462$). Majority of the urban women (31.5%) identified abdominal exercises as the recommended postnatal exercises while a greater percentage of the rural women (17.2%)

identified aerobics as recommended postnatal exercises. Majority of the women in both groups (urban = 67.2%; rural = 76.1%) reported antenatal and postnatal clinics as their sources of information on postnatal exercises.

Knowledge of the benefits of postnatal exercises is presented in table 3. The total score of benefits of postnatal exercises shows that majority of the participants (urban = 52.0%; rural = 74.8%) had poor knowledge of the benefits of postnatal exercises. Although rural women showed higher prevalence of poor knowledge of postnatal exercise benefits, as compared to the urban women, there was no significant difference ($p = 0.477$) between the two groups. Across both groups, prevention of hypertension (urban = 84.0%; rural = 93.4%) was identified as the most common benefit of postnatal exercises.

Table 4 shows the practice of postnatal exercises among the participants. In both groups of women, greater percentages did not engage in any form of postnatal exercises. The prevalence of non-practice of postnatal exercises was more among the rural women (79.5%) as compared to urban women (54.5%) with a significant difference of $p < 0.001$ between the two groups. The urban women who practiced postnatal exercises reported prevention of excessive weight gain (92.3%), muscle strengthening (85.7%) and rapid postnatal recovery (85.7%) as the most common reasons for engaging in postnatal exercises. Rural women who practiced postnatal exercises identified as prevention of excessive weight gain (100%), improvement of posture and balance (96.8%), muscle strengthening (93.5%) and rapid postnatal recovery (93.5%) as the most common reasons for postnatal exercise practices. Meanwhile among the women who did not practice postnatal exercises in the two groups, insufficient information on postnatal exercises (urban = 85.3%; rural = 94.2%) was reported as the major barrier to postnatal exercise practice.

Majority of the participants practiced abdominal (urban - 63.7%; rural - 54.8%) and aerobic (urban- 35.1%; rural-64.5%) exercises. Regarding the frequency of postnatal exercise practices, majority of the participants (urban - 87.0%; rural – 94.7%) exercised for about 1-4

Table 2: Knowledge of postnatal exercises among the participants

Variables	Urban (n=200) n (%)	Rural (n=151) n (%)	P value
Knowledge of postnatal exercises			
Yes	110 (55.0)	46 (30.5)	0.000*
No	90 (45.0)	105 (69.5)	
Knowledge of recommended exercises			
Aerobics	41 (20.5)	26 (17.2)	
Pelvic floor exercises	42 (21.0)	7 (4.6)	
Swimming	14 (7.0)	2 (1.3)	
Stretching exercises	46 (23.0)	8 (5.3)	
Muscle Strengthening exercises	34 (17.0)	4 (2.6)	
Abdominal exercises	63 (31.5)	21 (13.9)	
Cycling	8 (4)	1 (0.7)	
Back care exercises	32 (16.0)	4 (2.6)	
Relaxation and breathing exercises	42 (21.0)	7 (4.6)	
Total knowledge score			0.462
Poor	181 (90.5)	148 (98.0)	
Average	7 (3.5)	1 (0.7)	
Good	12 (6.0)	2 (1.3)	
Sources of information	**n = 110**	**n = 46**	
Antenatal and postnatal clinic	74 (67.2)	35 (76.1)	
Television	14 (12.7)	2 (4.3)	
Book and magazines	11 (10.0)	3 (6.5)	
Friends	17 (15.5)	12 (26.1)	
Family members	15 (13.6)	10 (21.7)	
Health professional	18 (16.4)	5 (10.9)	
Work place	8 (7.3)	1 (2.2)	
Internet	16 (14.5)	1 (2.2)	
Religious group	3 (2.7)	0 (0)	

Key: * represents significance at P<0.05

Table 3: Knowledge of the benefits of postnatal exercises among participants

Variable	Urban (n = 200) n (%)	Rural (n = 151) n (%)	p-value
Total score of benefits of postnatal exercises			0.477
Poor	104 (52.0)	113 (74.8)	
Average	4 (2.0)	2 (1.3)	
Good	92 (46.0)	36 (23.8)	
Benefits of postnatal exercises			
Prevention of back pain	96 (48.0)	32 (21.2)	
Body weight control	97 (48.5)	39 (25.8)	
Muscle strengthening	83 (41.5)	37 (24.5)	
Prevention of hypertension	168 (84.0)	141 (93.4)	
Increased muscle endurance	87 (43.5)	36 (23.8)	
Increased energy and stamina	85 (42.5)	36 (23.8)	
Improvement of body posture	92 (46)	38 (25.2)	
Enhancement of postnatal recovery	91 (45.5)	38 (25.2)	
Enhancement of abdominal retraction	98 (49.0)	33 (21.9)	
Management of urinary incontinence	66 (33.0)	23 (15.2)	
Management of diastesis recti abdominis	72 (36.0)	33 (21.9)	
Prevention and management of postpartum depression	76 (38.0)	32 (21.2)	
Management of back pain	97 (48.5)	-34 (22.5)	

Table 4: Practice of postnatal exercises among the participants

Variables	Urban n (%)	Rural n (%)	p value
Practice of postnatal exercises			
Yes	91 (45.5)	31 (20.5)	<0.001*
No	109 (54.5)	120 (79.5)	
Total	200 (100.0)	151 (100.0)	
Reasons for exercising	**n = 91**	**n = 31**	
Prevention of back pain	70 (76.9)	27 (87.1)	
Muscle strengthening	78 (85.7)	29 (93.5)	
Prevention of excessive weight gain	84 (92.3)	31 (100.0)	
Prevention of fatigue	68 (74.7)	27 (87.1)	
Management of urinary incontinence	51(56.0)	25 (80.6)	
Enhancement of sex life	51 (56.0)	22 (71.0)	
Control of blood pressure	68 (74.7)	23 (74.2)	
Control of blood sugar level	59 (64.8)	25 (80.6)	
Improvement of posture and balance	79 (86.8)	30 (96.8)	
Maintenance of cardiovascular fitness	75 (82.4)	28 (90.3)	
Rapid postnatal recovery	78 (85.7)	29 (93.5)	
Barriers to postnatal exercise practice	**n = 109**	**n = 120**	
Tiredness	20 (18.3)	18 (15.0)	
Lack of interest	38 (34.9)	31 (25.8)	
Busy daily schedules	36 (5.5)	39 (32.5)	
Other childcare activities	16 (14.7)	33 (27.5)	
Insufficient information on postnatal exercises	93 (85.3)	113 (94.2)	

Key: * represents significance at P<0.05

Table 5 shows the patterns of practice of postnatal exercises among the participants.

days per week (below standard recommendations). Most of the postpartum women who reported positive practice of postnatal exercises exercised on self-prescription (urban- 53.8%, rural- 54.8%).

Table 5: Patterns of postnatal exercises practices among the participants

Variables	Urban (n=91) n (%)	Rural (n= 31) n (%)
Types of exercise performed		
Aerobics	32 (35.1)	20 (64.5)
Abdominal	58 (63.7)	17 (54.8)
Pelvic floor	28 (30.8)	10 (32.3)
Back care	21 (23.1)	6 (19.4)
Swimming	6 (6.6)	6 (19.4)
Cycling	3 (3.3)	6 (19.4)
Stretching	28 (30.8)	7 (22.6)
Relaxation and breathing	19 (20.9)	9 (29.0)
Muscle strengthening	19 (20.9)	7 (22.6)
Others	3 (3.3)	6 (19.4)
Frequency (No of days per week)		
≥ 5	26 (13.0)	8 (5.3)
1-4	174 (87.0)	143 (94.7)
Exercise prescriptor		
Doctor		
Nurse	13 (14.3)	3 (9.7)
Physiotherapist	21 (23.1)	9 (29.0)
Spouse	4 (4.4)	0 (0.0)
Self	17 (18.7)	1 (3.3)
	49 (53.8)	17 (54.8)

Discussion

This study compared knowledge and practice of postnatal exercises among women in urban and rural areas of Enugu, Nigeria. Discussion of the study findings was limited by scarcity of related literature. Few available literatures on knowledge and practice of postnatal exercises in Nigeria were carried out in urban cities. Comparing the self reports of the postpartum mothers, there was a significant difference in the knowledge of postnatal exercises between urban and rural women, showing that urban women had more knowledge than their rural counterparts. To further ascertain an objective knowledge score among these groups of women, knowledge of recommended postnatal exercises were assessed which yielded contradicting responses to self-reports earlier given by the mothers. Generally, majority of the women in both groups had poor knowledge of postnatal exercises although with no statistical significance. Greater percentage of the rural women had poor knowledge scores as compared to the urban women. From their responses, it is evident that most of the postpartum women have poor knowledge of the specific recommended postnatal exercise. This finding is concurrent with that of a previous study [13] in Ibadan, Nigeria which reported that more than half of the postpartum women were not aware that they could engage in health enhancing physical exercise in the postpartum period. Additionally, Mbada et al. [15] also reported poor knowledge of postnatal exercises among nursing mothers in their study. Although these studies were carried out among women in urban cities, they still indicate that Nigerian women, irrespective of their geographical location are not knowledgeable on postnatal exercises. The urban-based women had more knowledge of abdominal and stretching exercises whereas rural women were more aware of aerobics and abdominal exercises as the recommended postnatal exercises. The higher knowledge of abdominal exercises among women in this study may be attributed to the quest for improved aesthetic appearances after pregnancy. Usually, women are interested in achieving a ‘flat tummy’ look once the baby is born. Therefore, they seek various means, including exercises to achieve their aims. Empirical findings [16-19] on the effects of abdominal exercises in improving the structure and function of the abdominal muscles in the postpartum period are available and have also increased its popularity as one of the most commonly recommended postnatal exercises.

Women in both study groups showed least knowledge of swimming and cycling as recommended postnatal exercises. This is in agreement with the findings of Mbada et al. [15] which showed that swimming and cycling were rarely known as postnatal exercises among their respondents. Poor awareness of swimming as a postnatal exercise may be attributed to the fact that swimming as a fitness programme is not a common practice among most Nigerian population. Lack of hydrotherapy pools in most physiotherapy and fitness centres is a possible barrier of awareness and practice of aquanatal exercises during pregnancy and postpartum periods. Swimming pools, which are alternatives, are usually found in luxurious hotels, requiring huge sums of money for registration as members. Considering the economic situation of Nigeria, this may be a deterrent factor for most individuals. Despite the availability of streams in some localities, some traditional beliefs regarding postpartum women as 'unclean' (usually as a result of lochia discharge after childbirth) discourage them from entering the streams and rivers which the entire community utilizes. However, these findings may not be generalized to other geographical areas, particularly those on the islands, as it is possible that women from such areas may have a better knowledge of swimming as a postpartum exercise. Cycling is usually regarded an outdoor exercise as most families in Nigeria may not afford the luxury of purchasing personal bicycle ergometers for indoor use. Meanwhile, knowledge and practice of outdoor exercises during the postpartum period may be discouraged by the traditional confinement period [12,20] which limits women from going out of their homes for several assumed health and spiritual benefits during the postpartum period. Additionally, the poor road networks in some Nigerian cities may be a major factor limiting the promotion of outdoor cycling as a postnatal exercise.

Sources of information on postnatal exercises were predominantly from antenatal and postnatal clinics in the rural and urban areas of Enugu, Nigeria. Although this may sound interesting, the prevalent poor knowledge score of postnatal exercises as demonstrated by the mothers is an indicator of insufficiencies in the health education offered in most rural and urban maternal clinics. It is also worthy to note that more rural women acquired knowledge of postnatal

exercises from antenatal and postnatal clinics, as compared to the urban women. This may suggest that health professionals in the rural areas are more involved in maternal fitness education than those in the urban areas.

Furthermore, this study assessed knowledge of the benefits of postnatal exercises among the postpartum women because of the possibilities that knowledge of the benefits of exercise will influence practice and compliance to guidelines. Across the two groups of women, knowledge of the benefits of postnatal exercises was predominantly poor with preponderance among the rural women. However, this difference in knowledge level was not statistically significant. The most common benefit of postnatal exercises as identified by women in the two groups is prevention of hypertension. Studies [21-23] have associated pregnancy and postpartum periods with risks of hypertensive disorders. Across various populations, exercises have been reported as efficacious means of preventing and managing hypertension [24-26]. As a result, health education on the roles of exercises in the prevention and management of pregnancy-related hypertension is gradually becoming widely practiced in most maternal clinics. This may be an explanation of the increased awareness of postnatal exercise as a tool for preventing hypertension. This study showed that in both groups, minority were aware of the other mentioned benefits of postnatal exercises. The preponderance of poor knowledge of the benefits of postnatal exercises among the rural women concurs with their poor knowledge of postnatal exercises, as earlier discussed.

Majority of the women in both groups reported non-engagement in any form of postnatal exercise. Women in the urban areas reported more practice of postnatal exercises than the rural women with a significant difference between both groups. There are contradictory reports on the practice of postnatal exercises in urban women. Adeniyi [14] reported poor practice of postnatal exercises among women in Ibadan, Nigeria while Mbada et al.[12] showed that there was a high **p**revalence for engagement in postnatal exercises among women in Osun State, Nigeria. The poor postnatal exercise practice of the rural women in the present study may be attributed to the increased knowledge of postnatal exercises among this group of women. Lack of exercise

facilities in the rural areas may also attribute to the poor practice of postnatal exercises among the rural women. Oluwaseyi [27] submitted that women residing in rural areas are less likely to utilize postnatal care services than their urban counterparts. This submission was attributed to the fact that urban women have many advantages, including higher levels of knowledge, access to services and health care promotion programs through mass and social media, over their rural counterparts. These advantages may influence their utilization of postnatal care services.

Majority of the postpartum women (predominantly rural women) who engaged in postnatal exercises reported prevention of excessive weight gain as the most common reason for practicing postnatal exercises. Engagement in physical exercises has been reported as an effective means of preventing and reducing excessive weight gain in the postpartum period. Anecdotal observations have shown that women desire to return to their pre-pregnant body size after childbirth. Surprisingly, despite the fact that urban women showed better knowledge and practice of postnatal exercises, indicating better access to postnatal care services, rural women predominantly reported more health reasons as factors influencing their postnatal exercise practices. Reasons for this contradiction between knowledge levels and reasons for practice of postnatal exercises remains unclear to the authors. However, it is possible that the close-ended question design of the study questionnaire may not have exhausted all the possible reasons responsible for the women's exercise practices, thereby restricting their responses. Majority of the women (particularly the rural women) who did not engage in postnatal exercises identified insufficient information on postnatal exercises as the most common barrier to practice of postnatal exercises. This finding re-emphasizes the insufficiencies in maternal health promotion programmes in the urban and rural areas.

Assessment of the types of postnatal exercises practiced by practiced by the women showed varying preferences in the types of exercises practiced by women in both groups. Predominantly, women in both groups practiced more of abdominal and aerobic exercises. Other studies have shown high preferences for aerobic exercises among postpartum women in Nigeria

[12,15]. It is obvious that the high knowledge level of abdominal exercises as recommended postnatal exercises influenced the choices of exercises practiced by women in the present study. Meanwhile engagement in other forms of exercises was poor across both groups although with varying levels of participation. Benefits of various forms of postnatal exercises have been reported in several studies [6,8,28,29] and yet there seems to be poor awareness and compliance among the postpartum women. There is need for increased health promotion on the benefits of these other less-practiced postnatal exercises in the rural and urban areas.

This study showed that women in both groups, preponderantly the rural dwellers, exercised below standard recommendations [30, 31], which suggest that an accumulation of 30 minutes or more of moderate exercise a day should occur on most, if not all, days of the week. This finding corroborates the findings of Mbada et al. [12] and Adeniyi et al. [13] which showed that most women exercised for less than five days in a week. This inappropriateness in the exercise profile of the women in the two groups may probably be an outcome of their poor level of knowledge of postnatal exercises. Additionally, the issue of self prescription of postnatal exercises among women in both groups (especially the rural women) may be a possible reason for the inappropriate exercise practices. This study showed that only few percentages of women had their exercises prescribed and supervised by health professionals. Exercises were predominantly based on self-prescriptions. Concurrently, Mbada et al. [12] reported that most of the women in their study engaged in physical exercise based on self-prescription. They stated that self-prescription of exercise in pregnancy and postpartum may be associated with the availability of wide range of information emanating from family, friends, print materials, internet and the social media, of which most of this information are confusing, unscientific and lack specificity. Physiotherapists, the key professionals in charge of promotion, prescription and supervision of physical exercises in the clinical setting were responsible for the least participation as prescriptors of exercises practiced by women in this study. This finding, which is in agreement with Mbada et al. [12] indicates that there is a deficiency of physiotherapists in

women's health practices in the urban and rural areas. Mobilization of physiotherapists to rural areas and increased involvement of women's health physiotherapists in maternal health promotion programmes across Nigeria is highly recommended.

Conclusion

It is concluded that most of the Nigerian postpartum women who participated in this study had poor knowledge and practice of postnatal exercises. Women in the urban areas showed better knowledge and practice of postnatal exercises, as compared to the women in the rural areas. Abdominal and aerobic exercises were the most commonly practiced exercises. Most of the women, especially the rural women, did not meet up with the standard recommended duration of physical exercises and exercises were predominantly based on self-prescription.

References

[1] Koltyn KF and Schultes SS. (1997) Psychological effects of an aerobic exercise session and a rest session following pregnancy. J Sports Med Phys Fitness. 37, 287–9.

[2] ACOG Committee Obstetric Practice. ACOG Committee opinion. Number 267, January 2002:exercise during pregnancy and the postpartum period. (2002) Obstet Gynecol. 99(1), 171-3.

[3] Ribeiro CP and Milanez, H. (2011) Knowledge, attitude and practice of women in Campinas, S˜ao Paulo, Brazil with respect to physical exercise in pregnancy: a descriptive study. Reproductive Health. 8, 31.

[4] Stephenson R and O'Connor L. (2000) Obstetric and Gynaecologic Care in Physical Therapy, Charles B. Slack, Thorofare, NJ, USA, 2nd edition.

[5] Mørkved S, Bø K, Schei B and Salvesen KA. (2003) Pelvic floor muscle training during pregnancy to prevent urinary incontinence: a single-blind randomized controlled trial. Obstetrics and Gynecology. 101(2), 313–319.

[6] Larson-Meyer DE. (2002) Effect of postpartum exercise on mothers and their offspring: a review of the literature. Obesity Research. 10(8), 841–853.

[7] Artal R and O'Toole M. (2003) Guidelines of the American College of Obstetricians and Gynecologists for exercise during pregnancy and the postpartum period. British Journal of Sports Medicine. 37(1), 6–12.

[8] Scott S. (2006) Exercise in the postpartum period. ACSM's Health and Fitness Journal. 10 (4), 40–41.

[9] Shelby S. (2006) Medical report: Exercise in the postpartum period. ACSM'S Health Fitness J. 10(4), 40-1.

[10] van Raaij JM, Schonk CM, Vermaat-Miedema SH, Peek ME and Hautvast JG. (1990) Energy cost of physical activity throughout pregnancy and the first year postpartum in Dutch women with sedentary lifestyles. Am J Clin Nutr. 52(2), 234-9.

[11] Pivarni JM, Chambliss HO, Clapp JF, Dugan SA, Hatch MC, Lovelady CA, Mottola MF and Williams MA. (2006) Impact of physical activity during pregnancy and postpartum on chronic disease risk. Medicine and Science in Sports and Exercise. 38(5), 989–1006.

[12] Mbada CE, Olubukayomi EA, Taofeek OA, Funmilola AF, Monisola OO, Abiola OO and Anne AE. (2015) Practice and pattern of antenatal and postnatal exercise among nigerian women.International Journal of Women's Health and Reproduction Sciences. 3(2), 93–98.

[13] Adeniyi AF, Ogwumike OO and Bamikefa TR. (2013) Postpartum exercise among Nigerian women: issues relating to exercise performance and self-efficacy. Obstetrics and gynecology. 12(6), 567-78.

[14] Walsh JM, McGowan C, Byrne J and McAuliffe F MO. (2011) Prevalence of physical activity among healthy pregnant women in Ireland. Int J Gynaecol Obstet. 114(2), 154-5.

[15] Mbada CE, Olubukayomi EA, Adebanjo BA, Kikelomo EA, Olabisi AA and Ibidun A. (2016) Knowledge and Attitude of Nigerian Nursing Mothers towards Postnatal Exercise. SMU Medical Journal. 3(1), 2349-1604.

[16] Sharma G, Lobo T and Keller L. (2014) Postnatal exercise can reverse diastasis recti. Obstetrics & Gynecology. 1,123-171.

[17] Pascoal AG, Dionisio S, Cordeiro F and Mota P. (2014) Inter-rectus distance in postpartum women can be reduced by isometric contraction of the abdominal muscles: a preliminary case–

control study. Physiotherapy. 31(4), 344-8.

[18] Sancho MF, Pascoal AG, Mota P and Bø K. (2015) Abdominal exercises affect inter-rectus distance in postpartum women: a two-dimensional ultrasound study. Physiotherapy. 30(3), 286-91.

[19] Gürşen C, İnanoğlu D, Kaya S, Akbayrak, T and Baltacı G. (2016) Effects of exercise and Kinesio taping on abdominal recovery in women with cesarean section: a pilot randomized controlled trial. Archives of gynecology and obstetrics. 293(3), 557-65.

[20] Logan C. (1985) Traditional beliefs and practices of pregnancy and childbirth. Botsw Natl Health Bull. 1(1), 64-75.

[21] Okonofua FE, Balogun JA, Amiengheme NA and O'Brien SP. (1992) Blood pressure changes during pregnancy in Nigerian women. International journal of cardiology. 1, 37(3), 373-379.

[22] Pollock W, Rose L and Dennis CL. (2010) Pregnant and postpartum admissions to the intensive care unit: a systematic review. Intensive care medicine. 1, 36(9),1465-74.

[23] Sibai BM. (2012) Etiology and management of postpartum hypertension-preeclampsia. American journal of obstetrics and gynecology. 1, 206(6), 470-475.

[24] Hagberg JM, Park JJ and Brown MD. (2000) The role of exercise training in the treatment of hypertension. Sports Medicine. 1,30(3), 93-206.

[25] Whelton SP, Chin A, Xin X and He J. (2002) Effect of aerobic exercise on blood pressure: a meta-analysis of randomized, controlled trials. Annals of internal medicine. 2, 136(7), 493-503.

[26] Wallace JP. (2003) Exercise in hypertension. Sports Medicine.1, 33(8), 585-98.

[27] Oluwaseyi SD. (2014) Determinants of postnatal care non-utilization among women in Nigeria. Doctoral dissertation.

[28] Sampselle CM, Seng J, Yeo S, Killion C and Oakley D. (1999) Physical activity and postpartum well-being. Journal of Obstetric, Gynecologic, & Neonatal Nursing.1, 28(1), 41-9.

[29] Pritchett RV. (2016) The treatment of postnatal depression with exercise: a randomised controlled trial, qualitative study and systematic review. Doctoral dissertation, University of Birmingham.

[30] American College of Sports Medicine (ACSM). (2000) ACSM's Guidelines for Exercise Testing and Prescription, Lippincott Williams &Wilkins, Philadelphia, Pa, USA, 6th edition.

Authors Column

Ojukwu Chidiebele Petronilla, MSc (Physiotherapy) is a lecturer in the Department of Medical Rehabilitation, University of Nigeria, Enugu, Nigeria. She is a specialist in women's health physiotherapy. She is currently running a Ph.D. programme in women's health physiotherapy. Her research interests are in women's health issues as it relates maternal physical health and ergonomics during child-care activities.

SMU Medical Journal, Volume – 4, No. – 2, July, 2017, PP. 179 - 197.