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Original Research Article

Postpartum health related quality of life: relationship to antenatal exercise practice in a Nigerian population

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ABSTRACT

Background: Antenatal exercise (ANE) has been reported to improve postpartum health outcomes in women. However, postpartum health related outcomes of ANE have been inconsistent in previous studies and have not been studied in a Nigerian population. This study assessed the influence of ANE on postpartum health-related quality of life (HRQOL) of Nigerian women.
Methods: 350 purposively selected women participated in this cohort study. During the last two pregnancy trimesters, participants completed a questionnaire assessing ANE practice/pattern while the Short Form (SF-36) questionnaire was used to assess HRQOL during postpartum. Data were analyzed using descriptive and inferential statistics with alpha level set at 0.05.
Results: Majority (82.9%) of the women practiced ANE. Women who did not exercise showed significantly ($p = 0.001$) higher general health scores than those who did not. Women who exercised for <30 mins also showed significantly ($p = 0.040$) higher general health scores, as compared to those who exercised for ≥30 mins. HRQOL was negatively correlated with each of practice and duration of ANE.
Conclusions: It was concluded that ANE practice and patterns did not improve postpartum HRQOL. Improved education and supervision of ANE is recommended for improved postpartum health outcomes.

Keywords: Antenatal exercise, Duration, Frequency, Health related quality of life, Nigeria, Postpartum

INTRODUCTION

Exercise has undoubtedly become a vital aspect of women's lives and an important part of antenatal and postnatal care in most settings.[1]

Practice of antenatal exercise (ANE) has been widely recommended and is recognized a safe practice for both mother and foetus, provided the intensity, duration and frequency of exercise are tailored to the requirements of each woman.[1-5] Several benefits have been associated with positive ANE practices during the childbearing years and beyond. Such benefits include improvement of physical fitness and cardiovascular endurance, prevention of excessive gestational weight gain and glucose intolerance, decrease in occurrence of common pregnancy problems and improvement in psychological adjustments to changes in pregnancy, reduction of postpartum recovery period, among others.[6-8] Reduction of pregnancy-related complications in response to ANE practices has also been shown to affect postpartum health status in women.[1,9,10]

Pregnancy and postpartum periods have been associated with physical changes, mental health problems, including stress, anxiety, depression and psychosis as well as changes in women's quality of life (QOL).[11-13] Some

pregnancy complications last into the postpartum period while others specifically commence during postpartum. Exercise prior to, during and after pregnancy has been associated with improved health status in women within the respective periods and beyond.[3,13-16] Campaigns on ANE practices have emphasized its benefits on postpartum recovery and health status although only few empirical evidences are available to support the impact of ANE on postpartum health status. However, the results of the available studies are controversial. In some studies, ANE was related to improved postpartum QOL, wellbeing and reduction of postpartum depression, while in others there were no associations between ANE and postpartum health status.[17-24] In developing countries like Nigeria, empirical evidences are scarce on the impact of practice and/or patterns of ANE on postpartum health status of nursing mothers. There is need to evaluate the practice and patterns of ANE in mothers as well as how these antenatal health behaviours relate with postnatal health status. This information may stimulate modifications in the provision of effective interventions to enhance women's antenatal and postpartum health related QOL. This study was therefore designed to determine the influence of ANE on postpartum health-related QOL.

METHODS

Three hundred and fifty (350) consenting women who were purposively recruited from the antenatal clinics of eight hospitals in Enugu, Nigeria participated in this longitudinal cohort study. The hospitals were randomly selected from urban and rural areas to provide socioeconomic and geographical diversity and included four public and four private hospitals. Women were eligible to participate in the study if they:

1) registered for and received prenatal care at one of the selected hospitals and planned to give birth at one of these hospitals
2) were within the age range of 18-35 years
3) spoke and understood English or Igbo
4) were in their second gestational trimester at the time of recruitment
5) could be contacted by telephone, and
6) had no known mental health issues that could affect their memory capabilities.

Each participant gave a written informed consent prior to participation in the study. On recruitment during the respective women's second gestational trimesters, they were asked to complete either an English or Igbo version of a modified questionnaire adapted from a previous study.[25] This instrument sought information on sociodemographic, maternal and obstetric characteristics as well as practice and pattern of antenatal exercises (ANE). A follow-up survey, using the same questionnaire was conducted in the third trimesters, respectively (Figure 1).

Six weeks post-partum, participants who were eligible to complete the study (Figure 1) completed the SF-36 questionnaire comprising eight score domains, including, vitality, physical functioning, bodily pain, general health perceptions, and physical role functioning, emotional role functioning, social role functioning and mental health.[26-28]

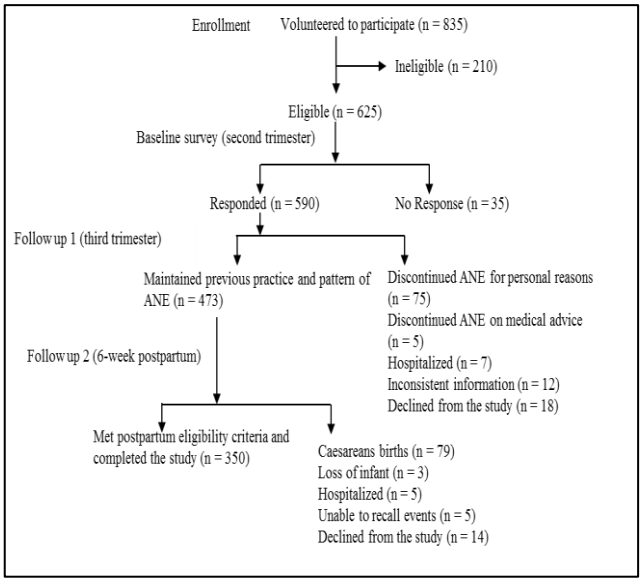

Figure 1: Sampling flow chart.

Data Analysis

Descriptive statistics of mean, standard deviation, frequencies and percentages were used to summarize data. Inferential statistics of Independent T-test was used to test for statistical differences between variables while Spearman rank correlation order were used to test the correlations between exercise practice and each of the QOL domains. Alpha level was set at 0.05. Data was analyzed using SPSS version 21.

RESULTS

Table 1 shows the socio-demographic characteristics of the participants. Majority of the women were above 25 years (75.1%), Christians (97.7%), self-employed (43.1%), married (94.3%) and urban dwellers (61.7%).

A greater percentage of the women had monogamous family settings (88.3%), university degree(s) (52.7%) and earned <N18,000.00 (approximately 28 – 56 US dollars) monthly.

Participants' maternal and obstetrics characteristics are presented on Table 2. Majority of the women were multigravida (70.3%), multiparous (68.3%), had more than one child (66.6%) and commenced antenatal care in their second gestational trimester (68.6%). Antenatal exercise (ANE) practices of the participants are presented on Table 3.

Table 1: Socio-demographic characteristics of the participants (N = 350).

Variables	Frequencies	Percentage
Age (years)		
<25	87	24.9
>25	263	75.1
Religion		
Christianity	342	97.8
Islam	4	1.1
Traditional	4	1.1
Occupation		
Unemployed	114	32.6
Self-employed	151	43.1
Public servant	85	24.3
Education		
None	10	2.9
Basic education	25	7.1
O'level degree	127	36.3
University degree(s)	188	53.7
Monthly Income (Naira)		
<18,000	263	75.1
>18,000	87	24.9
Family Setting		
Polygamy	36	10.3
Monogamy	309	88.3
Single parenting	7	2.0
Unspecified	2	0.6
Marital Status		
Single	15	4.3
Married	330	94.3
Divorced	2	0.6
Widowed	3	0.9
Residence		
Urban	216	61.7
Rural	134	38.3

Table 2: Maternal and obstetric characteristics of participants (N = 350).

Variables	Frequencies	Percentage
Gravidity		
Primigravida	104	29.7
Multigravida	246	70.3
Parity		
Primiparous	111	31.7
Multiparous	239	68.3
Number of children		
1	117	33.4
>1	233	66.6
Commencement of antenatal care (trimester)		
First	110	31.4
Second	240	68.6

Table 3: Practice and patterns of antenatal exercise among the participants.

Variables	Frequency	Percentage
Practice of antenatal exercise (n = 350)		
Yes	290	82.9
No	60	17.1
Patterns of antenatal exercise (n = 290)		
Type of exercises practiced		
Aerobics	221	76.2
Abdominals	19	6.6
Pelvic floor	17	5.9
Back care	14	4.8
Swimming	1	0.3
Cycling	2	0.7
Stretching	7	2.4
Relaxation	4	1.4
Muscle strengthening	5	1.7
Duration (minutes per day)		
< 30	106	36.6
≥ 30	184	63.4
Frequency (days per week)		
< 5	203	70.0
≥ 5	87	30.0
Prescribers of antenatal exercise		
Doctor	14	4.8
Nurse/midwife	76	26.2
Physiotherapist	8	2.8
Self	113	39.0
Non-clinical personnel	79	27.2

Most (82.9%) of the participants practiced ANE, particularly aerobic exercises (76.2%). Majority exercised for less than five days weekly (70.0%) and ≥ 30 minutes daily (63.4%). A greater percentage (39.0%) of the participants exercised based on self-prescription.

The independent t-test results showing differences in the participants' Health-Related Quality of Life based on practice and patterns of ANE are presented on table 4. In relation to practice of ANE, there was a significant ($p = 0.001$) difference in the general health (GH) of women who exercised and those who did not.

There was also a significant ($p = 0.040$) difference in the general health (GH) of women who exercised for <30 mins daily and those who exercised for ≥30 minutes daily.

Table 5 shows the correlations between participants' health-related quality of life and each of practice of and patterns of ANE.

Participants' general health (GH) correlated with practice of ANE ($p = 0.003$) as well as with duration of ANE exercise ($p = 0.015$). However, frequency of ANE showed no significant correlation with any of the HRQOL domains.

Table 4: Independent t-test results showing differences in the participants' health-related quality of life based on practice and patterns of antenatal exercises.

Categorical distribution based on practice and pattern of ANE	Health-related quality of life							
	PF	**RLPH**	**RLEP**	**EF**	**EWP**	**SF**	**PAIN**	**GH**
Practice of ANE								
Yes (n=290)	96.18 ±55.81	84.79 ±33.15	89.27 ±29.71	76.59 ±17.97	86.48 ±12.33	89.77 ±19.54	84.20 ±23.58	83.99 ±12.83
No (n=60)	95.80 ±13.61	88.33 ±30.58	88.34 ±30.58	81.33 ±17.97	83.80 ±14.34	91.96 ±17.12	86.50 ±23.26	89.17 ±9.87
t-value	-0.052	0.768	-0.220	1.861	-1.489	0.805	0.690	3.494
p-value	0.958	0.443	0.826	0.064	0.134	0.421	0.491	0.001*
Duration of ANE (minutes)								
<30 (n=106)	93.81 ±18.03	84.92 ±2.14	85.16 ±2.80	79.70 ±19.63	87.39 ±1.64	90.60 ±5.92	84.96 ±2.72	86.96 ±2.79
≥30 (n=184)	94.27 ±4.49	84.23 ±3.83	89.97 ±9.17	75.59 ±7.36	86.23 ±2.52	89.58 ±2.52	84.32 ±3.42	83.16 ±2.89
t-value	0.579	0.143	-1.116	1.605	0.655	0.362	0.190	2.061
p-value	0.565	0.887	0.265	0.110	0.513	0.718	0.849	0.040*
Frequency of ANE (days per week)								
<5 (n=203)	96.96 ±0.16	81.84 ±5.97	88.49 ±9.24	75.93 ±7.53	86.42 ±2.33	88.87 ±1.25	83.92 ±3.03	83.91 ±2.77
≥5 (n=87)	95.24 ±4.27	89.33 ±7.68	89.65 ±1.39	77.33 ±8.72	86.40 ±2.61	91.31 ±6.39	86.14 ±3.06	84.05 ±3.11
t-value	0.248	-1.965	-0.314	-0.634	0.015	-1.013	-0.783	-0.086
p-value	0.805	0.500	0.754	0.526	0.988	0.312	0.434	0.931

*indicates significance at p<0.05; values are presented as mean±standard deviation; ANE- antenatal exercise; PF- physical functioning; RLPH- role limitation due to physical activity; RLEP- role limitation due to emotional problem; EF- energy and fatigue; EWB- emotional wellbeing; SF- social functioning; PAIN- pain; GH- general health

Table 5: Spearman rank correlation order showing correlations between participants' health-related quality of life and each of practice and patterns of antenatal exercises.

	PF	**RLPH**	**RLEP**	**EF**	**EWB**	**SF**	**PAIN**	**GH**
Practice of ANE								
R-value	-0.080	-0.043	0.003	-0.102	0.067	-0.067	-0.054	-0.161
p-value	0.137	0.419	0.949	0.058	0.208	0.212	0.318	0.003*
Duration of ANE								
R-value	0.084	0.003	0.076	-0.101	-0.032	-0.056	-0.024	-0.145
p-value	0.160	0.956	0.202	0.090	0.595	0.351	0.688	0.015*
Frequency of ANE								
R-value	0.108	0.090	0.022	0.036	0.003	0.076	0.077	0.013
p-value	0.070	0.128	0.716	0.551	0.959	0.202	0.196	0.832

*represents p<0.05; PF- physical functioning; RLPH- role limitation due to physical activity; RLEP- role limitation due to emotional problem; EF- energy and fatigue; EWB- emotional wellbeing; SF- social functioning; PAIN- pain; GH- general health; ANE- antenatal exercise

DISCUSSION

This study assessed the influence of antenatal exercise (ANE) on postpartum health-related quality of life (HRQOL) of women in Enugu, Nigeria. The study found a high prevalence of engagement in ANE among the women. This finding corroborates previous studies which reported high prevalence of ANE among pregnant women in western Nigeria. [8,25] However other studies had reported low physical activity levels among pregnant women in Nigeria and other African countries.[29,30]

The high rate of ANE practice among pregnant women in the present study and others is an indicator of ongoing maternal health promotion and education interventions as well as suggestive of acceptance of modern antenatal care practices by women in Nigeria. The present study showed that pregnant women predominantly engaged in aerobic

exercises. Mbada et al also reported same trend among pregnant women in western Nigeria.[25]

It is common practice for midwives/ nurses to engage pregnant women in mild aerobic exercises before commencing daily antenatal care in most Nigerian clinical settings. As a result, women who are interested in ANE usually imbibe the practice of aerobic exercises which they have been carrying out in the clinics. Relative to ANE frequency, the present study revealed that majority of the participants exercised for less than five days weekly which is below the standard recommendations of ANE practices.[2] However, majority of the women exercised in line with standard recommendations of ≥ 30 mins daily. Despite the high prevalence of ANE practice among these women, there is need for further education on the other available types of beneficial exercise regimes as well as the recommended frequency and duration of practices, provided there are no medical constraints.

Comparisons between the postpartum HRQOL of participants, relative to their practice and patterns of ANE showed that there was a significant difference in the general health domain of women who exercised and those who did not, with non-exercisers showing better scores in this domain. It was also observed that women who exercised for <30 mins daily also showed a significantly higher HRQOL scores in the general health domain, as compared to those who exercised for ≥ 30 mins daily. Additionally, there were significant negative correlations between the general health of the participants and each of practice and duration of ANE. These results were contrary to the authors' expectations in that it was expected that practice and suitability of ANE would result to improved HRQOL.

Despite the fact that studies had shown positive correlations between ANE and antenatal HRQOL, there are only few empirical evidences to support the effects of ANE practice on postpartum health outcome.[12,31] Previous studies reported improved postpartum quality of life in women who exercised during pregnancy.[13,21] The results of the present study are suggestive of unsuitable ANE practices among these women. This may be evident from the prescribers of ANE, as reported by these women. The limited role of physiotherapists who are professionally endowed in human body biomechanics, kinesiology and exercise therapy is inadequate for effective ANE practices and health-related outcomes. There is need for appropriate maternal education on ANE choices and practices. Despite the fact that this study was purposely intended to naturally observe the women's ANE practices without the researchers' manipulations, this study design may have contributed to the results which contradicted the authors' expectations. As such, participants' subjective self-reports were the only variables considered. It is therefore recommended that future research should investigate whether the observed differences and relationships between ANE practices and HRQOL are causal or rather involve experimental designs.

CONCLUSION

The authors therefore concluded that prevalence of antenatal exercise practice among women in this study was high although the patterns of practice were relatively inadequate. Suitable practice, frequency and duration of ANE did not affect women's postpartum quality of life.

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