ORIGINAL RESEARCH ARTICLE

Knowledge of the effects of regular pelvic floor exercises on maternal health among women in a comprehensive health centre in Ado-Ekiti, Nigeria

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Abstract

Regular pelvic floor exercise is essential for maternal health among women because it is a proven conservative treatment and prevention for pelvic organ prolapse. This study aimed at investigating the knowledge of women on the effects of regular pelvic floor exercise on the maternal health among women attending a primary health centre in Ado – Ekiti. It also assessed the women's attitude towards and the practice of pelvic floor exercises. The study was predicated on reasoned action theory, while a descriptive cross-sectional design was adopted using total enumerative sampling technique. Data was collected from 248 respondents using researcher-administered questionnaires. Data were analyzed using descriptive and inferential statistics. Findings from the study showed that the majority (72.20%) of the respondents had a low level of awareness of pelvic floor exercises, 74.2% perceived pelvic floor exercises as very necessary to maternal health, 75.4% showed a negative attitude to pelvic floor exercises, less than half (48.7) claimed to be practicing pelvic floor exercises. No significant association was found between women's attitude and the practice of pelvic floor exercises ($P > 0.05$). More education should be given to women seeking primary health care on the benefits of pelvic floor exercises. *(Afr J Reprod Health 2023; 27[6s]: 108-115).*

Keywords: Knowledge, effects, pelvic floor, exercises

Résumé

L'exercice régulier du plancher pelvien est essentiel pour la santé maternelle chez les femmes, car il s'agit d'un traitement conservateur et d'une prévention éprouvés pour le prolapsus des organes pelviens. Cette étude visait à étudier les connaissances des femmes sur les effets de l'exercice régulier du plancher pelvien sur la santé maternelle chez les femmes fréquentant un centre de santé primaire à Ado - Ekiti. Il a également évalué l'attitude des femmes envers et la pratique des exercices du plancher pelvien. L'étude était fondée sur la théorie de l'action raisonnée, tandis qu'une conception transversale descriptive a été adoptée en utilisant la technique d'échantillonnage énumératif total. Les données ont été recueillies auprès de 248 répondants à l'aide de questionnaires administrés par des chercheurs. Les données ont été analysées à l'aide de statistiques descriptives et inférentielles. Les résultats de l'étude ont montré que la majorité (72,20 %) des répondants avaient un faible niveau de sensibilisation aux exercices du plancher pelvien, 74,2 % percevaient les exercices du plancher pelvien comme très nécessaires à la santé maternelle, 75,4 % avaient une attitude négative envers les exercices du plancher pelvien, moins de la moitié (48,7) ont déclaré pratiquer des exercices du plancher pelvien. Aucune association significative n'a été trouvée entre l'attitude des femmes et la pratique des exercices du plancher pelvien ($P > 0,05$). Plus d'éducation devrait être donnée aux femmes recherchant des soins de santé primaires sur les avantages des exercices du plancher pelvien. *(Afr J Reprod Health 2023; 27[6s]: 108-115).*

Mots-clés: Connaissances, effets, plancher pelvien, exercices

Introduction

Maternal health is becoming a global concern because the lives of millions of women in reproductive age can be saved through maternal health care services. Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth and 99% of all maternal deaths occur in developing countries[1,2]. According to the WHO[3], maternal health refers to the health of

women before and during pregnancy, at childbirth and during the postpartum period. Furthermore, it is well known that before pregnancy, the overall health and lifestyle choices of couples can affect fertility, maternal health and their infants' probability of developing chronic conditions later in life. In the postpartum period, it is critical to monitor maternal and newborn health as the risk of death is higher for both during the first week of the postpartum period. Prevention, timely detection, and management of symptoms reduce the risk of complications and eventual mortality[3].

Pelvic floor is the set of muscles that supports pelvic organs, such as the bladder, uterus and bowel. These muscles aid urinary control, continence, and sexual function. Both men and women can experience pelvic floor weakness over time. As with other muscles, people can perform exercises to strengthen the pelvic floor, enhancing bowel and bladder control. Pelvic floor exercises offer benefits to women of reproductive age by ensuring a lower risk of vaginal prolapse, better bowel and bladder control, and improved recovery after childbirth.

An easy way to identify the action of the pelvic floor muscles is by trying to stop mid-flow when urinating. For women, during the mid-flow hold, they could feel the muscles in the vagina, bladder, and anus tighten and move up. The muscles that tighten and move in the process are the pelvic floor muscles., by the nature of their fibers, they are capable of both resting tone and squeeze pressure. It is, therefore, possible that women can maintain some level of pelvic floor strength by some activities of daily living[4], Globally, antenatal care has constituted a major component of health promotion activities. Sessions of mild to moderate exercises are major parts of antenatal education taught to pregnant women[5]. Exercise has been scientifically known to be beneficial to both mothers and their fetuses[4]. Research[6] has shown that the best amount and type of exercise for pregnant women is dependent on overall health, the risk level of the pregnancy, the level of her fitness and her activity level before becoming pregnant.

Pelvic floor exercises (PFE) have been evaluated to be good for treating vaginal prolapse, urinary incontinence and preventing uterine prolapse in women thus, should be taught to all antenatal mothers during antenatal visit/ classes or before they are discharged following delivery[6].

The most popular pelvic floor muscle exercise is the Kegels exercise and its variants[4]. This involves repeated contraction and relaxation of the pelvic floor muscles, which is aimed at strengthening the pelvic floor muscles[4]. Available evidence shows that women who do intensive supervised pelvic floor exercises during pregnancy have reduced risk of postpartum urinary incontinence[7]. Despite the benefits, women have been noted not to comply to pelvic floor exercise regimen taught to them[4]. Available evidence also attributed the non- compliance to the level of knowledge of the effect of pelvic floor exercises on the overall maternal health[4]. This study assessed the knowledge of the effect of pelvic floor exercise on maternal health among women at a primary level of care in Ado, Ekiti State. Specifically, the study focused on assessing the level of awareness, the perceived effect of PFE on maternal health, the attitude of the women towards PFE, the practice of PFE and the association between the attitude towards and the practice of PFE.

Methods

This study employed descriptive quantitative cross sectional survey design to assess the knowledge of the effect of regular pelvic floor exercises on maternal health among women of reproductive age attending antenatal clinic in a Comprehensive Health Centre, Ado-Ekiti, Ekiti State. The study was conducted at the antenatal clinic of Okesha, Comprehensive Health Centre (CHC), Ado-Ekiti, Ekiti State dominated largely by the Yoruba ethnic group. It is a community health institution which focuses primarily on the reduction of maternal and child morbidity and mortality. It comprises various units including antenatal clinic, labour ward, postnatal ward, laboratory, pharmacy and medical records. The services rendered at the health centre include antenatal care services, delivery, post-natal services, health education, family planning, child welfare services and treatment of minor ailments. The target population for the study included all women of reproductive age (15-50 years) attending antenatal clinic in the health centre. Sample size was determined using Taro Yamane's formula[8].

$$n = \frac{N}{(1 + Ne^2)}$$

Where: n is the sample size of the population under study.
N is the population of the study
e is the margin error (it could be 0.10, 0.05 or 0.01), in this study we use 0.05 marginal error
The population of the study is 514 women of reproductive age.
To determine the sample size of 514 population study;

N=514, e=0.05 $n = \frac{514}{(1+514\ X\ 0.05^2)}$

$$n = \frac{514}{1 + 514(0.0025)}$$

$$n = \frac{514}{1 + 1.285}$$

$$n = 224.9$$

n= 225 approximately

Hence, sample size of 225 women of reproductive age with 10% attrition rate gave approximately 248 sample size.
Attrition rate: 10% of 225 participants = 22.5% which leaves approximately 248 sample size

A total enumerative sampling technique was adopted and a semi-structured questionnaire was used to conduct this study. The questionnaire was divided into five sections according to the objectives set to be achieved. Section A contained questions relating to the socio-demographic, socio-cultural and socio-economic data of the respondents. Section B sought to evaluate the level of awareness of the respondents about pelvic floor exercise. Section C sought to elicit information on perceptions relating to the positive and side effects of pelvic floor on maternal health. Section D contained questions on attitudes of the women towards pelvic floor exercise, while Section E sought to determine their practice of pelvic floor exercise. The questionnaire was designed to measure the necessary variables. Consequently, to ensure its validity, the questionnaire was reviewed by experts before being administered to the participants. The reliability of the research instrument was ascertained by checking internal consistency across items and the correlation was determined. The closeness of all items on the scale was considered in groups, as the average inter-item correlation increased, Cronbach's alpha increased as well. A Cronbach's Alpha coefficient value of 0.75 was achieved and considered as reliable.

Data was collected over a period of four weeks using self-administered questionnaire. Respondents were personally approached and detailed information regarding the purpose of the study as well as the rights of the participants to voluntary participation or to disincline were provided. All the respondents could read and write Interviewer -administered method was also used where necessary and participants selected their responses.

Data analysis

Completed questionnaires were retrieved complete bringing the response rate to 100%. Descriptive and inferential statistical methods were adopted for data analysis with the aid of IBMSPSS version 23. Data were presented in tables, frequency and percentages. Hypothesis was tested using Pearson's Chi square statistical method.

Ethical considerations

The questionnaire was distributed having obtained the respondents' informed consent. During the collection of data, participants were assured privacy, safety and avoidance of confidentiality intrusion.

This study was conducted according to the ethical guidelines set out; proposal was submitted to Ethical Review Committee of Afe Babalola University and also from the Matron in charge of Okesha, Comprehensive Health Centre (CHC), Ado-Ekiti, Ekiti State for necessary rectification and approval. Prior to the commencement of data collection, informed consent was obtained from each participant. Data collected was used only for research purposes and was kept confidential while anonymity was also maintained. The right to full disclosure was also maintained. Participants were assured safe identity during the survey and privacy intrusion was avoided during the course of the study.

Results

Socio-demographic characteristics

Table 1 shows the socio-demographic characteristics of the respondents, majority of whom were within the age bracket of 30 and 39 years (54.8%), and were married (77.8%). 70.6% of the respondents were Christians and mostly had secondary level of education (57.3%) with majority being traders (52.0%). The greatest number of children by the respondents was 2 (38.3%).

Table 1: Respondents' socio-demographic characteristics (n=248)

Item	Frequency (N)	Percentage (%)
Age		
20 – 29	78	31.5
30 – 39	136	54.8
40 – 49	32	12.9
50 and above	2	0.8
Marital status		
Single	41	16.5
Married	193	77.8
Divorced	10	4.0
Widowed	4	1.6
Religion		
Christianity	175	70.6
Islam	70	28.2
Traditional	3	1.2
Educational Level		
Primary	10	4.0
Secondary	142	57.3
Tertiary	96	38.7
Employment status		
Civil Servant	58	23.4
Trader	129	52.0
Self Employed	18	7.3
Full Housewife	43	17.3
Number of Children		
1	52	21.0
2	95	38.3
3	67	27.0
4 and above	34	13.7

Level of awareness on effect of pelvic floor exercises on maternal health

Table 2 presents the level of awareness of women on the effects of pelvic floor exercise on maternal health. Just about 25.4% have previously heard about pelvic floor exercise, out of which 23.8% had been taught the exercise. About 11.7% were taught pillow squeeze between the thighs, while 7.3% were taught the Kegel exercise, and 4.8% the bridging exercise. The table further shows that 27.0% of the respondents had previously undergone pelvic floor exercises. The majority claimed the exercise is not harmful to maternal health (85.5%) also does not weaken the pelvic muscles (82.3%). However, 54.0% claimed that pelvic floor exercise does not prevent urine leak. By contrast, 56.0% opined that it prevents fecal leak. Over 60.0% of the respondents claimed that pelvic floor exercise reduces the risk of uterine prolapse.

The level of awareness on pelvic floor exercise on maternal health was assessed by scoring all the correct answers '1', and all the wrong answers as well as I don't know '0'. All scores above 50% were rated as high level of awareness on pelvic floor exercise 69 (27.8%) while all scores below 50% were rated as low level of awareness on pelvic floor exercise 179(72.2%), this implied that the women had low level of awareness of PFE

Perceived effects of pelvic floor exercise on maternal health

Table 3 shows perceived effects of pelvic floor exercise on maternal health. Aging (27.0%) was chosen as the most contributing factor to weakening of the pelvic floor, followed by childbirth (21.8%). The table shows that women with weak pelvic floor are more likely to have incontinence and uncontrollable passing of wind according to 69.8% of the respondents. The majority 64.1% and 74.2% respectively claimed that the exercise is necessary for maternal health and has positive effect on maternal health of women.

Attitudes of women towards pelvic floor exercises

On the attitudes of the respondents towards pelvic floor exercise, 38.7% agreed that they have positive attitude towards pelvic floor exercise; 43.1% strongly agreed that they do not show interest in pelvic floor exercise; while 39.1% strongly agreed that the exercise is not something they would do. Over 50.0% reported that they do encourage people

Table 2: Showing level of awareness of women on pelvic floor exercise on maternal health

	Yes n (%)	No n (%)
Have you heard about pelvic floor exercise before	63(25.4)	185(74.6)
Have you been taught	59(23.8)	189(76.2)
If yes, which exercise were you taught		
Kegel exercise	18(7.3)	-
Pillow squeeze between the thighs	29(11.7)	-
Bridging exercise	12(4.8)	-
Have you ever undergone pelvic floor exercise before	67(27.0)	181(73.0)
Is pelvic floor exercise harmful to maternal health	36(14.5)	212(85.5)
Does it require a lot of energy and time to perform	93(37.5)	155(62.5)
Pelvic floor exercise prevents urine leak	114(46.0)	134(54.0)
Pelvic floor exercise prevents fecal leak	139(56.0)	109(43. 9)
Pelvic floor exercise enhances sexual function	148(59.7)	100(40.3)
Pelvic floor exercise weakens the pelvic muscles	44(17.7)	204(82.3)
Pelvic floor exercise reduces the risk of prolapse	149(60.1)	99(40.0)

to do pelvic floor exercise. The attitude towards pelvic floor exercise was assessed by scoring on the Likert's scale, 4 points to the most correct answer and 0 to the least correct answer. All scores above 50 percentiles were judged positive attitude towards pelvic floor exercise 66 (26.6%) and all scores below were given negative attitude towards pelvic floor exercise 182 (75.4%). This indicates negative attitude towards pelvic floor exercises.

Women's practice of regular pelvic floor exercises

With regard to the practice of pelvic floor exercise among the respondents, 57.3% has never practiced the exercise, 30.6% often practice it, while 2.1% of the respondents reported that they often practice the exercise. The most practiced pelvic floor exercise was the bridge among 19.4% of the respondents followed by split tabletop in about 9.3%.

Association between women's attitude and practice of pelvic floor exercises

The cross-tabulation table above reveals a chi-square value of 10.20, df of 2 and p-value of 0.025. The p-value obtained was greater than the conventional level of significance; therefore, there is significant relationship between the respondents' attitude and their level of practice pelvic floor exercise. This implied that the null hypothesis was rejected and the alternate hypothesis accepted.

Discussion

The results of the study showed that most of the pregnant women used in the study were between age 30 years and 39 years, who were basically married. Most adhered to the Christian religion which is the dominant religion of ethnic groups in Southern Nigeria. The study revealed that most of the participating pregnant women were literates and work as traders, shown to have mostly 2 children. The findings showed that there was low level of awareness of pelvic floor exercise among the pregnant women, although, there seemed to be an average level of knowledge. This may be as a result of the absence of the majority of the pregnant women at the routine antenatal care where they are taught about the importance of the exercise. They did not know the importance of the exercise as many revealed that it prevents urine leak and fecal leak. The findings were consistent with a previous study in Thailand[7] where it was found out that a majority of women who visited a gynecologic clinic have limited understanding and half of the women in that study were unaware of pelvic floor muscles exercise efficacy and interestingly most of the health care professionals were reported not to know how to instruct women to perform the exercises. Evidence revealed that almost 80% of the pregnant women acquire knowledge of the pelvic floor muscle exercise primarily from books and that one-third require additional instruction from the healthcare providers[9].

Majority of the pregnant women perceived that pelvic floor exercises are very necessary for maternal health and has great impact on their health as well. The conditioning exercise was shown to include pelvic floor exercise (Kegel or super Kegel exercise) which aim at maintaining the tone of the muscles especially the pelvic muscles, improve circulation, and provide a good support for the uterus and other organs[4]. This finding agrees with the finding from a previous study[10] where the

Hypothesis one: There is no significant association between women's attitude and practice of regular pelvic floor exercises

	Level of Attitude		Total	Chi Square	DF	P value	Remark
	High n(%)	Low n(%)					
Practice Level				10.20	2	0.025	Significant
Very often	17(6.9)	13(5.2)	30(12.1)				
Often	32(12.9)	44(17.7)	76(30.6)				
Never	17(6.9)	125(50.4)	142(57.3)				
Total	66 (26.6%)	182 (75.4%)	248(100)				

women perceived Kegels as valuable in improving pelvic floor health. The finding however, disagreed with a study in Brazil where the majority of the women did not have accurate perception regarding pelvic floor exercises[11].

This study showed that the women showed a negative attitude towards pelvic floor exercise. This finding is in contrast to the findings from previous studies[12,13] that reported a positive attitude of women towards PFE. However, in a study conducted in Saudi Arabia[14], which reported that despite the majority's favouring attitude towards PFE, a sizeable proportion did not believe the benefits to maternal health which supports the finding of the negative attitude found in this present study. Additionally, the negative attitude towards PFE found in this study is in contrast to the finding of a study in Nigeria where the majority of the respondents showed a positive attitude towards antenatal exercises[15]. This implied that much efforts needs to be made by the health care providers in order to enlighten the women regarding the nature and benefits of PFE. This may increase their understanding and thus facilitate their change of attitude towards PFE.

The results of this study also showed that majority of the women have never practiced pelvic floor exercises while others claimed that they often practice the exercises. This finding found support from previous studies in Nigeria and Thailand where the authors reported low practice of PFE among the pregnant women[16,17]. The finding of low level of practice of PFE among the women in this present study is also consistent with a study conducted in Malaysia where only 10% of the respondent recorded good practice score while the others claimed that they often practice PFE[18]. Also, there seems to be a significant correlation between the respondents' attitude and their level of practice pelvic floor exercise, their negative attitude towards the exercise could be likely responsible for the average level of practice among the pregnant[4,9].

Strengths of the study

The study highlighted the status of the women regarding pelvic floor exercises which primarily could be related to low or lack of exposure to health information/ education on PFE. These findings would help healthcare practitioners and policy makers to understand the need of women of reproductive age group and provide a way forward with regular pelvic floor exercises.

Secondly, the respondents of this study were all literates. Despite the educational status, the literacy level does not seem to have any influence on the women's awareness on this valuable health related issue.

Lastly, it is hoped that the study the study has provided researchers with insight to further their research findings and this research study would contribute to the body of knowledge by adding to the already existing findings on effect of regular pelvic floor exercises on maternal health among women of reproductive age.

Limitations

This present study was conducted in one health facility in Ado-Ekiti, though the largest

Comprehensive health centre with heavy patient attendance, the findings may not be generalizable to other facilities in the community.

Secondly the study only focused on three variables including awareness, attitude and practice of pelvic floor exercises. It did not include other confounding variables that may influence women's practice of pelvic floor exercises. It is therefore suggested that future researches be undertaken on other factors related to women's adoption pelvic floor exercises.

Conclusion

This study illustrated a low level of awareness and a negative attitude towards pelvic floor exercise among the pregnant women and also there is a low level of practice. Hypothetically, there was a significant correlation between the respondents' attitude and their level of practice pelvic floor exercise. The low level of awareness and the negative attitude towards pelvic floor exercise could have accounted for the low practice level found in this study.

However, patients should be made to be aware of the importance of pelvic exercises in preparation for childbirth as one of the factors that helps reduce maternal mortality rate**.** Benefit of the regular hospital visits (ANC) should be elaborated and explained to patients so as to make sure they are followed up for routine checkup.

Authors' contribution

RIF conceived the topic and designed the study, RIF and MM collected and analysed the data, RIF and FTO prepared the manuscript, OAO and OVA proofread the manuscript. All the authors mentioned in the article approved the manuscript.

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