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Knowledge, Attitude, Practice and Barriers of Exercise Among Postpartum Women in a Low-Resource Setting

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ABSTRACT

Introduction: Physical inactivity predisposes mothers to untoward physical and mental health outcomes. Acquiring requisite knowledge pertaining to postpartum exercise promotes a good attitude and facilitates participation in exercises in spite of the presence of barriers. This study aimed to determine the knowledge, attitude, practice and barriers to postpartum exercises among women within 6 weeks to 1 year after childbirth.

Methods: This is a quantitative, cross-sectional study involving 146 postpartum women at a tertiary hospital in Accra, Ghana. Respondents completed an adapted survey tool–Knowledge, attitude and practice of postpartum exercise. The Statistical Package for Social Sciences (SPSS) 27 was used to perform all analyses using descriptive and inferential statistics with significance at a *p*-value of 0.05.

Results: Sixty-five percent reported a low general knowledge of postpartum exercise, 63% had an average knowledge of the benefits of exercise whilst 94% had a high knowledge of contraindications of exercise. Eighty-four percent of the respondents revealed a good attitude, although only 36% participated in postpartum exercises. Fifty-two percent of the postpartum women indicated that lack of time was a barrier for them, whilst 42% reported that lack of information was a barrier. Significant associations were discovered between general knowledge of postpartum exercise and practice ($\chi 2 = 14.157$, p-value $= 0.001$) as well as attitude and barriers ($\chi 2 = 9.114$, p-value $= 0.003$).

Conclusion: This study highlights a low knowledge and practice of exercise among postpartum women at a single tertiary centre in Ghana, although they exhibit a good attitude towards exercise amidst major barriers. Findings suggest that health professionals in maternal healthcare should provide information regarding postpartum exercises as an essential aspect of postpartum care plans in low-resource settings to promote health outcomes.

1 | Introduction

Exercise offers a number of health benefits to postpartum women within the first 2 years [1]. Benefits include reduced incidence of diastasis recti and pelvic floor dysfunction, enhanced cardiovascular fitness, increased return to pre-pregnancy weight, a decrease in urinary and faecal incontinence and decreased lactation-induced bone loss [2–4]. Mental health benefits include decreased anxiety and depression levels [5, 6].

Owing to the positive health outcomes of physical activity, the World Health Organisation (WHO) recommends that adults

obtain at least 150 min of moderate-intensity physical activity per week [7]. Furthermore, pelvic floor and abdominal strengthening exercises can be initiated to decrease the incidence of complications during the postpartum period [8]. However, knowledge pertaining to postpartum exercises such as pelvic floor exercises seems inadequate in developing countries such as Ghana [9, 10]. Knowledge is crucial in the behaviour change process hence knowledge and attitude towards exercises may influence the decision to partake in postpartum exercise [11]. Thus, a lack of knowledge plays a major role in the attitude towards exercise participation [12]. A systematic review identified various barriers to exercise among postpartum women in diverse populations including the United States, United Kingdom, Mexico and Sri Lanka [13]. The study reported barriers such as lack of knowledge regarding the benefits of exercise, tiredness, lack of social support and inadequate healthcare provider skills.

In the African setting, maternal knowledge about the benefits and risks of antenatal exercise was low in studies from Nigeria and Ethiopia [14, 15]. In contrast, the only previous study conducted in Ghana found a high knowledge of antenatal exercise with low practice in the early trimester [16]. The postpartum period is arguably an opportune time to adopt healthy behavioural habits [17]. Notwithstanding, there is sparse data on maternal knowledge and attitude regarding exercise and exercise participation. Also, the barriers and facilitators have not been properly profiled in the Ghanaian context. Hence, the aim of the study is to determine the knowledge, attitude and practice of postpartum exercise and barriers which hinder participation among postpartum women within 1 year after childbirth in Ghana. The other objective is to examine the association between variables–knowledge, attitude, practice and barriers to postpartum exercise.

2 | Participants, Ethics and Methods

2.1 | Study Design, Setting and Sampling Strategy

We conducted a quantitative cross-sectional study in a low resource setting–37 Military Hospital in the Greater Accra Region, Ghana–between October 2022 and January 2023. The study was structured using the STROBE checklist [18]. The hospital is a tertiary facility, which provides services to the general public and hence individuals from diverse educational, economic, ethnic and occupational backgrounds patronize this service.

The study included postpartum women who utilized the child welfare clinic (CWC) services. The CWC provides child health services–such as vaccination and monthly weighing–for children under 5 years. Participants comprised women 18 years and above, within 6 weeks to 1 year postpartum, who attended the CWC in the hospital and were not physically and intellectually challenged.

A convenience sampling technique was used to obtain a sample size of 146 participants based on the Cochran formula $n = n^0 / [1 + \{(n^0 - 1)/N\}]$ [19]. The calculation involved a 95% confidence level, a desired level of precision of 0.05, a population of postpartum women per month at CWC was 346, a prevalence of physical activity during the postpartum period was assumed to be 17% ($p < 0.05$) = 0.17 [20] and a consideration for a 10% rate in non-response of participants [21].

2.2 | Data Collection Instrument and Procedure

We designed a self-administered participant information sheet based on previous literature [22–24]. The information sheet was used to collect data on the age of the mother, the age of the baby, ethnicity, marital status, level of education, employment status, profession and parity.

The Knowledge, Attitude and Practice survey tool used was adapted from the pregnancy exercise developed by Janakiraman and colleagues [25]. Face and content validation was conducted for the adapted questionnaire with six experts (physiotherapists) in women's health and physical activity who had clinical experience between 5 and 13 years in Ghana. To determine the reliability of the adapted tool, we piloted it among 16 postpartum women in a different health facility. The Cronbach alpha for the questionnaire was 0.613, which is considered acceptable [26]. The adapted Knowledge, Attitude and Practice survey had six sections, namely general knowledge of postpartum exercises (type of exercise, when to begin and source of information), knowledge of benefits, knowledge of contraindications, attitude regarding postpartum exercise, practice of postpartum exercise and barriers to postpartum exercise.

The general knowledge section had eight items/questions that pertain to knowledge regarding the type of exercise, time to begin exercises and source of exercise with questions such as 'do you know the type of exercise to perform after childbirth?', 'do you know about abdominal exercises to perform after childbirth?' and 'do you know when to begin exercise after childbirth?'. The second section focuses on the knowledge of benefits derived from exercises with six statements such as 'physical activity contributes to your achieving a healthy weight after childbirth', 'pelvic floor exercise improves the condition of pelvic floor muscles after childbirth' and 'exercise after childbirth gives you energy and stamina'. For contraindications to exercise, it comprised four questions including 'do you know that you should temporarily stop exercising when you experience chest pain during exercise?' and 'do you know that you should temporarily stop exercising when you experience headaches during exercise?'. The attitude of respondents was determined with five questions such as 'do you think performing exercise after childbirth is essential?' and 'do you think exercise will help you recover soon after childbirth?'. Practice in exercise was examined with four statements including, 'I perform abdominal exercises weekly' and 'I perform exercises that improve my heart function/aerobics weekly'. The final section which is about the barriers which hinder exercise participation had six statements including 'lack of information', 'lack of family support' and 'fear of injury'. All questions had three responses, 'yes', 'no' and 'I don't know'.

Participants were recruited from the CWC, where all women who visited the facility were informed about the study. Postpartum women who indicated interest and gave their written consent were given the questionnaires to fill in a selected area within the CWC where privacy was ensured. The questionnaires were given out daily until a sample size of 146 was obtained, and

each questionnaire was checked to ensure that all sections were adequately filled.

To reduce bias, the Knowledge, Attitude and Practice tool was pilot-tested in a different location with participants having the inclusion criteria. Additionally, participants involved in the study included various educational, parity, occupational, postpartum months and ages of the mothers to give a general picture of the postpartum women.

2.3 | Data Analysis

Statistical Package for Social Sciences (SPSS) version 27 was used to perform all analyses using descriptive statistics to describe the variables in the study. Chi-square (χ^2) and Fischer's exact tests were used to identify factors associated with–knowledge, attitude, practice and barriers to postpartum exercise. Logistic regression analysis was performed to examine the relationship between general knowledge of exercises and practice as well as knowledge of the benefits and practice of exercise. The level of significance was set at $\alpha = 0.05$.

2.4 | Ethical Consideration

Ethical approvals were obtained from the University of Pretoria (501/2021) and the institutional review board of 37 Military Hospital (37MH-IRB/FP/IPN/541/21). All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. All participants were informed that participation was voluntary, and they provided written informed consent before they became involved in the study. The data collected was anonymized and kept confidential.

3 | Results

3.1 | Sociodemographic Characteristics

One hundred and forty-six participants were involved in the study. More than half of the study participants were 31 years and above (55%) and a majority (91%) of them were married. Over half (52%) of the postpartum women had a spontaneous vaginal delivery and only one participant had an assisted delivery (forceps delivery). A large number of the participants (41%) had one child with only six (6) women having five or more children. Regarding the ages of the youngest children, a majority (32%) were between 6 weeks and 3 months, followed by 29% who were between 7 and 9 months. Fifty-eight participants had a tertiary education, and 115 (78%) were employed with only 13% being health professionals. These results are shown in Table 1.

TABLE 1 | Sociodemographic characteristics of participants.

Characteristics	Frequency/percentage
Age of postpartum woman	
18–20 years	1 (0.7%)
21–30 years	64 (43.8%)
31–40 years	76 (52.1%)
41–50 years	5 (3.4)
Marital status	
Single	13 (8.9%)
Married	133 (91.1%)
Mode of delivery	
Normal vertex delivery	77 (52.7%)
Caesarean section	68 (46.6)
Assisted-forceps delivery	1 (0.7%)
Number of children	
One	61 (41.8%)
Two	45 (30.8%)
Three	30 (20.5%)
Four	6 (4.1%)
Five or above	4 (2.7%)
Age of baby	
6 weeks to 3 months	47 (32.2%)
4–6 months	27 (18.5%)
10–12 months	43 (29.5%)
7–9 months	29 (19.9%)
Level of education	
High school certificate	58 (39.7%)
Diploma	30 (20.5%)
Tertiary	58 (39.7%)
Employment	
Employed	115 (78.8%)
Unemployment	31 (21.2%)
Profession	
Health professional	19 (13.0%)
Non-health professional	96 (65.8%)
Unemployed	31 (21.2%)

3.2 | Knowledge About Postpartum Exercise

About 65% of participants had a low general knowledge (types of exercise and when to begin) about postpartum exercise to be performed. Most participants (63%) had an average knowledge of the benefits of postpartum exercises. On the other hand, the majority (94%) of participants knew about the contraindications of postpartum exercises as illustrated in Table 2.

3.3 | Attitude, Practice and Barriers to Postpartum Exercise

The majority (84%) of respondents had a good attitude towards postpartum exercise. Over one-third (36%) of participants indi-

TABLE 2 | Knowledge about exercises among postpartum women.

	Score			
	High	**Adequate**	**Low**	**Total**
General knowledge about postpartum exercises	22 (15.07%)	29 (19.86%)	95 (65.07%)	146 (100%)
Knowledge about the benefits of postpartum exercises	42 (28.8%)	93 (63.7%)	11 (7.5%)	146 (100%)
Knowledge about contraindications of postpartum exercise	138 (94.5%)	8 (5.5%)	0	146 (100%)

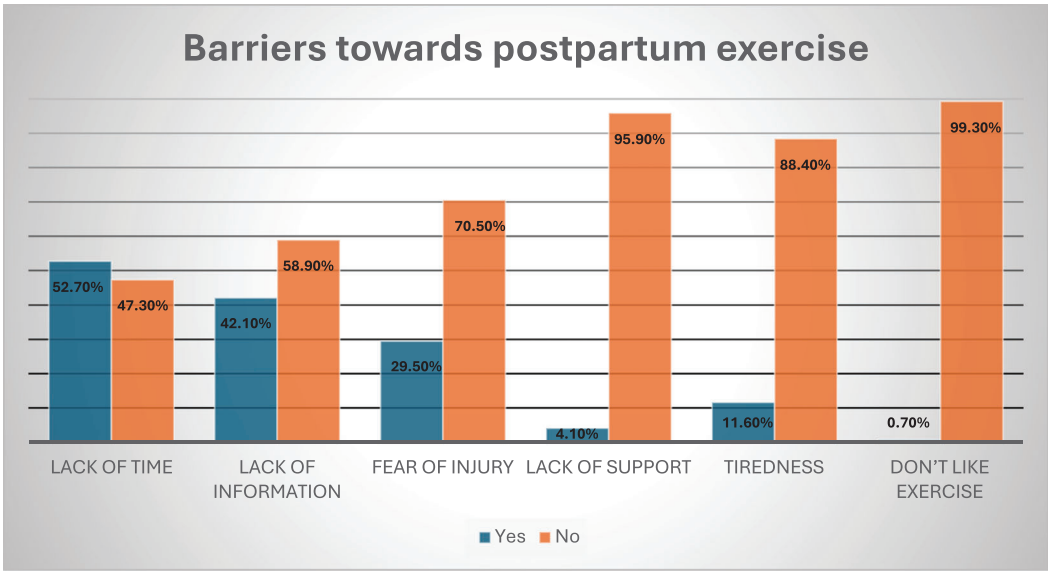

FIGURE 1 | Barriers towards postpartum exercise.

TABLE 3 | Association between attitude towards exercise and barriers to exercise among postpartum women.

	Barriers			
	Absence of barrier	**Presence of barrier**	**Chi-square**	***p*-Value**
Attitude				
Good	38 (30.6%)	86 (69.4%)	9.114	0.003*
Poor	0	22 (100%)		

*Significant at 0.05.

cated participation in exercise. Over half (52%) of the participants identified 'lack of time' as the major barrier whilst 'don't like exercising' was the least (1%) barrier. Nearly half (42%) of the postpartum women cited that 'lack of information' posed a barrier and nearly one-third (29%) pointed to 'fear of injury' as another barrier. 'Tiredness' and 'lack of support' were also stated as barriers with 11% and 4%, respectively. The identified barriers are summarized in Figure 1.

3.4 | Association Between Knowledge, Attitude, Practice and Barriers to Postpartum Exercise

A significant association ($\chi^2 = 9.114$, p-value = 0.003) was found between the presence of barriers and attitude towards postpartum exercise as shown in Table 3. Additionally, a significant association ($\chi^2 = 12.021$, p-value = 0.002) was found between having a general knowledge of exercise and practice of exercise. Another significant association ($\chi^2 = 14.157$, p-value = 0.001) was found between knowledge of benefits and practice of exercise and this is shown in Table 4.

TABLE 4 | Association between knowledge of postpartum exercise and practice of exercise in the postpartum period.

	Practice of exercise			
	Does not engage in exercise	**Engage in exercise**	**Chi-square**	***p*-Value**
General knowledge of exercise				
High	9 (40.9%)	13 (59.1%))	12.021	0.002*
Average	14 (48.3 %)	15 (51.7%)		
Low	70 (73.7%)	25 (26.3%)		
Knowledge of the benefits of exercise				
High	17 (40.5%)	25 (59%)	14.157	0.001*
Average	67 (72%)	26 (28%		
Low	9 (81.8%)	2 (18.2)		

*Significant at 0.05.

Logistic regressions were performed to identify the relationship between the variables. Postpartum women who had high general knowledge were eight times more likely to practice exercises

when compared to those with low knowledge [Odds Ratio (95% Confidence Interval): 8(1.541–10.614), *p*-value = 0.005]. Additionally, respondents with an average general knowledge were six times more likely to practice exercise when compared to those with low knowledge [Odds Ratio (95% Confidence Interval): 6(1.270–7.087), *p*-value = 0.012]. No adjustments were made for potential confounders.

It was also found that respondents who had an average knowledge of exercise benefits were significantly 11 times more likely not to practice postpartum exercise as compared to those with a high knowledge of exercise benefits [Odds Ratio (95% Confidence Interval): 11(1.764–8.141), *p*-value = 0.001]. Furthermore, postpartum women who had a low knowledge of exercise benefits were five times more likely not to practice postpartum exercise as compared to those with a high knowledge of exercise benefits [Odds Ratio (95% Confiedence Interval): 5 (1.268–34.507), *p*-value = 0.025]. No adjustments were made for potential confounders. Although logistic regression was performed for attitude and barriers, results indicate that the validity of the model was uncertain and hence was not reported.

4 | Discussion

The objective of the study was to assess the knowledge, attitudes and practice of exercise among postpartum women between 6 weeks and 1 year in a tertiary hospital in Accra, Ghana. Furthermore, the study sought to identify barriers to participation in postpartum exercise and the associations between variables. Results from the study reveal that although the majority of the participants had a low general knowledge (types of exercise, source and when to begin) regarding postpartum exercise, most postpartum women had an average knowledge about the benefits. Respondents also had a high knowledge of the contraindications of postpartum exercise. Findings indicated that participants had a good attitude towards postpartum exercise although with low participation in them with major barriers such as lack of time and lack of information.

Additionally, the study revealed that postpartum women who had a high general knowledge about postpartum exercises were significantly more likely to practice the exercises as compared to those who had a low knowledge. Respondents who had a low knowledge of exercise benefits were observed to be significantly more likely not to practice the exercises as compared to those with a high knowledge of exercise benefits. Lastly, a significant association was also found between the attitude of participants and the barriers they faced in participating in postpartum exercises.

Findings from previous literature show mixed results pertaining to knowledge of postpartum exercises. For example, this study's findings are similar to previous literature from the United States, Nigeria, Egypt and India, which report a low knowledge of postpartum exercise [10, 27–30]. Furthermore, a study from the United States proposed that health workers offer education on pelvic floor muscle exercises as part of postpartum care. On the other hand, previous studies from Pakistan and other parts of Nigeria and India revealed otherwise, stating postpartum women have a high knowledge of exercises [31–33]. The differences in findings could be a result of varied educational health protocols for postpartum care within health facilities in the same country and other low- and middle-income countries (LMICs). A low knowledge of postpartum exercise could pose reservations and hinder participation in exercises; hence, there is a need for healthcare providers to address this knowledge gap. Additionally, a previous study conducted in Ghana cited a high knowledge about exercises among pregnant women [34], which may suggest that education about exercises may be more targeted towards pregnant women as compared to postpartum women in the country.

Knowledge regarding the benefits of exercise in this study was good and in tandem with other studies from Nigeria, Denmark, the United States, and Saudi Arabia where participants had high knowledge about the benefits of postpartum exercises [31, 35–37]. Postpartum women conceded that the benefits of postpartum exercise included maintaining a healthy weight and mental well-being. However, a study conducted in India reported that postpartum women had low knowledge pertaining to the benefits of exercise which is contrary to the findings of this study [38]. Variations in findings could be due to inadequate exercise information dissemination among the postpartum women. In relation to the knowledge about contraindications of exercise, results are contrary to a study from Nigeria which reported that postpartum women had a low perception of conditions to warrant abstinence from exercise [27]. The study further submitted that the respondent's perception of extreme weight gain and back pain could only be regarded as relative contraindications. The disparity in the findings may be attributed to variations in health education on exercises and may suggest the need to provide accurate information regarding contraindications to promote participation in exercises.

Overall, a good attitude was found among participants in this study, and this is in agreement with studies conducted in both LMICs and high-income countries among pregnant and postpartum women. Studies conducted in India, Nigeria, Saudi Arabia, China and Australia cited a positive attitude towards engagement in exercises [10, 27, 35, 38, 39]. The study from India reported that postpartum women perceived exercises as beneficial and felt guilty when they did not participate in them. Additionally, the majority of postpartum women in Saudi Arabia, China and Australia performed pelvic floor exercises and viewed the exercises as enjoyable and beneficial. In a similar study in Saudi Arabia, postpartum women had a good attitude towards Kegel exercises and indicated that the exercises made recovery from childbirth easy and that priority should be given to exercises [40]. Postpartum women seem to have a favourable attitude towards exercise irrespective of the setting. They should be encouraged to go a step further to engage in the exercise to reap the desired benefits.

For practice in exercise, there were mixed results from previous literature. Studies from South Africa, Australia and Pakistan showed low patronage, which is similar to the findings of this study [9, 41, 42]. However, in contrast to other studies from India and Nigeria [10, 31, 32], more than half of the participants were engaged in exercises although not on a regular basis. The differences seen could be as a result of the provision of regular health education as reported by the majority of the participants that health professionals were the source of information. This

presents an excellent basis for healthcare workers in maternal health to provide regular information about postpartum exercises to enhance participation in them.

The major barriers identified in the study were lack of time and information which are comparable to previous research from South Africa, the United States, Canada and Australia [9, 43, 44]. This suggests that postpartum women are faced with similar challenges to exercise despite their geographical locations. Other barriers such as lack of support, fear of injury and tiredness are reported by other studies in the United States, United Kingdom and Australia [45–47] indicating that postpartum women have varied negative influences that hinder their involvement in exercise during this important period.

Finally, significant associations were found between attitude and barriers as well as between knowledge and practice of postpartum exercises. This finding is concurrent with previous literature from Nepal and Pakistan where associations were found between knowledge and practice of postpartum exercises [33, 48]. This proposes that the acquisition of knowledge regarding exercise may be a prelude to participation in it and this can be observed in similar research from Nigeria and India [31, 38] where respondents who had a high knowledge regarding exercises subsequently had a high practice in it.

This study offers important strengths and clinical implications. Firstly, it makes a significant contribution to sparse literature in the country and LMICs pertaining to knowledge, attitude, practice and barriers to postpartum exercises. The study also highlights the fundamental need for health professionals to provide information on postpartum exercises in the postpartum care plan. Last of all, barriers which deter postpartum women from engaging in exercises ought to be addressed prior to the postpartum period to create awareness and develop culturally relevant solutions for them.

The study had a few limitations. The small sample size used may prevent a generalization of results, and hence future studies should involve a larger sample size to obtain a conclusive picture of postpartum women's knowledge, attitude and practice of exercise. Finally, responses pertaining to the practice of exercises were self-reported and not objectively measured hence results obtained may be biased.

5 | Conclusion

This study revealed that postpartum women have a low general knowledge and practice regarding postpartum exercise at a tertiary health facility in Ghana. Although they had a good attitude towards these exercises, major barriers that may have contributed to participation included a lack of information and time. Findings suggest that postpartum women would benefit from education regarding postpartum exercises, and this could be incorporated into the postpartum healthcare plan. Further research is needed on how to navigate challenges faced during the postpartum period in order to adopt healthy lifestyle behaviours.

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Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data used to support the findings of this study are available from the corresponding author upon request. The data are not publicly available due to it containing information that couldcompromise the privacy of research participants.

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