

Original articles

Knowledge, attitudes and practices related to exercise during pregnancy among mothers attending the obstetric unit of the National Hospital, Kandy, Sri Lanka: a cross-sectional studyGunarathna RS¹*, Ranathunga RM¹, Ranawaka WA¹, Rabukwella IW¹, Wijesooriya C¹, Gunarathna CD² Abekoon W¹¹ National Hospital, Kandy, Sri Lanka² University of Kelaniya, Sri Lanka*Corresponding Author: rohitha.g68@gmail.com**Abstract**

Introduction: Regular physical activity in pregnancy improves maternal and foetal outcomes but participation is low in many low and middle income settings and local data are limited.

Objectives: To assess knowledge, attitudes and practices regarding exercise during pregnancy, and to identify perceived barriers among women attending a tertiary obstetric unit in Sri Lanka.

Methods: A descriptive cross-sectional study was conducted among pregnant women attending the antenatal clinic and obstetric ward of the National Hospital, Kandy from January to March 2024. A Delphi-validated structured questionnaire captured socio-demographic and obstetric details, knowledge, attitudes, exercise behaviour, perceived barriers and the adequacy of professional guidance. Data were analysed in SPSS 26.0 using descriptive statistics.

Results: 48 women participated and their mean age 30.96 ± 5.06 years, mean body mass index 26.13 ± 4.46 kg/m², 56.5% obese by Asia-Pacific criteria. Knowledge was average in 61.7% and attitudes average in 53.2%. 48.9% patients reported no weekly exercise, and walking was the commonest activity. The leading barriers were lack of motivation, lack of information, lack of time and physical discomfort. 77.1% patients considered the exercise guidance from healthcare providers insufficient.

Conclusions: Despite moderate knowledge and favourable attitudes, exercise participation in pregnancy was low with inadequate professional guidance a key modifiable barrier. Brief, structured exercise counselling in routine antenatal care may raise activity levels and improve maternal health.

Keywords: Pregnancy, exercise, physical activity, knowledge, attitudes, practices, antenatal care

Introduction

Pregnancy is accompanied by extensive cardiovascular, respiratory, metabolic and musculoskeletal adaptation. The way a woman lives through these months has measurable consequences for both her own health and that of her infant. Many evidence shows that in the absence of obstetric contraindications, regular moderate-intensity physical activity during pregnancy is safe and confers important benefits like better cardiorespiratory fitness, more appropriate gestational weight gain, a lower risk of gestational diabetes mellitus and hypertensive disorders,

reduced lower back and pelvic girdle pain and improved psychological wellbeing. However, not engaging in exercises increase adverse foetal outcomes [1] [4][5].

The American College of Obstetricians and Gynaecologists, the World Health Organization and the 2019 Canadian guideline all recommend that pregnant women without contraindications accumulate at least 150 minutes of moderate-intensity activity each week, spread across most days, together with some muscle strengthening workouts as well [1][2][3]. These recommendations were built on two decades of clinical work

confirming the safety and value of antenatal exercise [6][7][8].

Converting these recommendations into everyday practice is difficult especially in low and middle income countries participation in antenatal exercise is very low. An important observation is the gap between what women know and what they do. Knowledge tends to be modest, attitudes are often cautiously favourable but actual practice lags behind [9][10]. Patients believing that pregnancy is a time for rest, misconceptions that exertion may harm the baby, and limited counselling from health professionals is responsible for this physical inactivity [9][11].

In Sri Lanka, antenatal coverage is high and the field public health midwife is a trusted, universal point of contact. Therefore, pregnancy offers an unusually good opportunity to promote healthy activity. But to according to literature there is little published information on what Sri Lankan women understand or do about exercise in pregnancy, particularly among those attending tertiary obstetric units the group who often carry additional risk in pregnancy. Antenatal counselling cannot be tailored Without proper information. This study was therefore initiated to assess knowledge, attitudes and exercise practices during pregnancy and to identify the barriers they have, among the mothers attending the obstetric unit of the National Hospital, Kandy.

Methods

We conducted a descriptive cross-sectional study at Obstetric Unit One of the National Hospital, Kandy which is a tertiary care referral centre in the Central Province of Sri Lanka which covers both the antenatal clinic and the inpatient obstetric ward (Ward 07). This study is reported in relevant to the STROBE statement for observational studies.

All pregnant women aged between 18-40 years who were in any trimester and attended the antenatal clinic or were admitted to the obstetric ward between January and March 2024 and who provided consent were eligible. Women admitted for non-pregnancy related conditions and those unwilling to take part were excluded. Eligible women presenting during the study period were invited with consecutive

sampling and therefore gave a final sample of 48 participants.

Data were collected using a structured questionnaire administered as a Google Form that was supported by standardised clarifications within the item descriptions, with a member of the research team available during data collection to explain items and resolve queries. This interviewer-supported approach was intended to reduce the misinterpretation and item non-response that can affect purely self-administered online questionnaires. The questionnaire had been developed and content validated using a Delphi process with a panel of relevant experts including Consultant Obstetrician and Gynaecologist and a Consultant in Sports and Exercise Medicine. The study questionnaire included five domains which are socio-demographic characteristics (Ex: age, education, employment), obstetric and clinical details (Ex: gravidity, pre-existing medical conditions, height and weight), knowledge of exercise during pregnancy, covering its benefits, safety and the recommended frequency, attitudes towards physical activity and exercise practices and also including the weekly frequency and type of activity, perceived barriers and the perceived adequacy of guidance received from healthcare providers. The study was designed to assess knowledge, attitudes and practices and did not include a clinical or biochemical assessment such as haemoglobin, blood pressure, resting heart rate or ankle oedema.

Height and weight were used to calculate body mass index (BMI) and the values classified according to the World Health Organization Asia-Pacific criteria appropriate for adults of South Asian origin which is underweight < 18.5, normal 18.5–22.9, overweight 23.0–24.9 and obese ≥ 25.0 kg/m². Responses to the knowledge and attitude items were scored and each participant's total was categorised into a low, average or high level. Type of exercise and perceived barriers were multiple response items therefore a single participant could select more than one option.

Data were analysed using SPSS 26.0. Continuous variables were summarised as mean $\pm$ standard deviation with range and categorical variables as

frequencies and percentages. Because of occasional item non-response, denominators varied slightly between items and percentages were therefore calculated on the valid responses for each variable.

Ethical approval was obtained from the relevant institutional ethics review committee. Participation was voluntary, written informed consent was obtained from every participant and all data were anonymised and held in confidence.

Results

48 pregnant women participated and their characteristics are summarised in Table 1. The mean age was 30.96 ± 5.06 years and most women were in their second pregnancy. Educational level was generally good with 34.0% had passed the Advanced Level examination and 31.9% the Ordinary Level while 29.8% women held a diploma or higher qualification. 42.6% of the women were unemployed. The mean BMI was 26.13 ± 4.46 kg/m² and therefore applying the Asia-Pacific cut-offs, 56.5% of the women were obese and a further 17.4% were overweight, so that almost 75% women carried excess weight. 76.6% participants had no pre-existing medical condition. The conditions recorded among the remainder included gestational, type 2 and chronic diabetes, pregnancy-induced hypertension, bronchial asthma, thalassaemia trait and back pain.

Knowledge of exercise during pregnancy was moderate and shown on Figure 1. 61.7% women had an average level of knowledge, while equal proportions had high and low knowledge with 19.1% each. The clearest gaps were in awareness of the recommended frequency and of the safety of activity. Attitudes followed a similar pattern with 53.2% held an average attitude and 23.4% each held a high or a low attitude. Thus, although outright negative views were uncommon, strongly positive attitudes were equally therefore most women were ambivalent.

Reported physical activity was low and shown on the Table 2. 48.9% of the women took no exercise at all during a typical week and only 10.6% were active on five or more days. Among those who were active, walking was overwhelmingly the preferred activity, reported by 31 women, with a 18 women describing

other forms of unspecified activity. Prenatal yoga, swimming and aerobics were each reported by only three women, and strength training by only one as shown on Figure 2.

The barriers women identified are shown in Figure 3. Lack of motivation and lack of information were the most frequently cited and followed by lack of time and physical discomfort. A similar number reported on other, unspecified obstacles. Because women could select more than one option, these categories overlap.

An important finding was that most women felt unsupported. 77.1% of the participants considered the exercise guidance they had received from healthcare providers to be insufficient, and only 22.9% felt it had been adequate as shown in Table 2.

Discussion

This study set out to describe what women attending a Sri Lankan tertiary obstetric unit and their knowledge, attitudes and practices about exercise in pregnancy. The central finding is a clear disconnect between awareness and behaviour. Knowledge and attitudes were moderate rather than poor for most women but nearly half were doing no exercise at all. This knowledge and practice gap is one of the most important observations in the antenatal exercise literature and has been documented repeatedly in comparable low and middle income settings. In a cross-sectional study of 349 women in Gondar, Ethiopia, only about 40% had adequate knowledge and just over half held a positive attitude but very few exercised in line with recommendations [9] and some similar patterns have been described elsewhere in the same region [10]. Our findings echo these reports and suggest that providing information alone is unlikely to change behaviour.

Several features of this cohort sharpen the clinical importance of that gap. The women were on average, overweight and more than half met the Asia-Pacific definition of obesity. This is a particularly relevant observation given that South Asian women carry a higher cardiometabolic risk at any given BMI and that excess weight compounds the risk of gestational diabetes and hypertensive disease. Physical activity is one of the few modifiable behaviours shown in

meta-analyses to reduce these very complications [4][5] therefore the low activity levels in the current study observed represent a missed opportunity in precisely the group that stands to gain most.

Walking was the commonest activity while structured physical activity forms such as yoga, swimming and aerobics were rare. This is reassuring because walking is accessible, inexpensive, culturally acceptable and easily recommended and it offers an obvious, low-threshold entry point for counselling.

The barriers the women themselves identified reinforce this interpretation. Lack of motivation, lack of information were the leading obstacles and physical discomfort which is a hierarchy that mirrors reviews of perceived barriers to leisure time activity in pregnancy [11]. Both leading barriers are modifiable through good antenatal counselling. The most actionable finding of the study is that more than 75% of women felt the guidance they received from healthcare providers was insufficient. Direct advice from a clinician or midwife is among the strongest determinants of whether a pregnant woman exercises [9] and its apparent absence here identifies a important and a low cost target for improvement. Given the reach of Sri Lanka's antenatal services and the trusted role of the public health midwife, embedding brief, standardised exercise counselling which anchored on walking and tailored to local beliefs into routine clinic visits is both feasible and likely to be effective.

The strengths of this study include the use of a Delphi-validated questionnaire and a focus on a tertiary-care obstetric population that is seldom studied yet clinically important. The findings should nonetheless be interpreted as preliminary, and several limitations temper the strength of the conclusions. The cross-sectional design precludes any inference about causation. The sample was small ($n = 48$) and was recruited by consecutive sampling from a single tertiary centre over a three-month period without a formal sample-size calculation, which limits statistical precision and generalisability and precluded meaningful stratified or subgroup analysis, including comparison by trimester, occupation or home circumstances. As a survey of

knowledge, attitudes and practices, the study did not incorporate clinical or physiological measures such as haemoglobin, blood pressure, resting heart rate or ankle oedema; participants therefore could not be risk-stratified and physical activity could not be related to clinical status. Physical activity was characterised only by weekly frequency and type: intensity and duration were not quantified, and activity was not examined separately across the first, second and third trimesters, during which the amount and type of tolerated exercise are known to change. Although employment status was recorded, the physical demands of occupation and of domestic or household work were not quantified, so total physical activity may have been underestimated and the influence of work and home context could not be assessed. Exercise behaviour and perceived guidance were self-reported and therefore liable to recall and social desirability bias, the latter possibly understating the true activity shortfall. Finally, occasional item non-response meant that denominators varied between variables.

Conclusion

Among pregnant women attending a tertiary obstetric unit in Kandy, knowledge of and attitudes towards exercise were moderate but actual participation was low, and most women were overweight or obese. Insufficient guidance from healthcare providers, together with low motivation and information gaps, appeared the reason to this shortfall and all of these are modifiable. Incorporating brief, structured, culturally appropriate exercise counselling, centred on walking, into routine antenatal care offers a practical mode of elevating activity levels and possibly improve maternal and foetal outcomes. These preliminary, single-centre findings should be regarded as hypothesis-generating rather than definitive. Larger, multicentre and prospective studies are needed to confirm these findings and to evaluate such counselling interventions.

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Conflicts of interest

There are no conflicts of interest.

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Table 1. Socio-demographic and clinical characteristics of participants (n = 48).

Characteristic	Value
Age (years), mean $\pm$ SD (range)	30.96 $\pm$ 5.06 (21–43)
Weight (kg), mean $\pm$ SD (range)	61.42 $\pm$ 11.20 (42.5–82.6)
Height (cm), mean $\pm$ SD (range)	153.22 $\pm$ 5.93 (143–169.5)
Body mass index (kg/m ²), mean $\pm$ SD (range)	26.13 $\pm$ 4.46 (18.36–36.07)
BMI category, n (%)¹	
Underweight (< 18.5)	1 (2.2)
Normal weight (18.5–22.9)	11 (23.9)
Overweight / at-risk (23.0–24.9)	8 (17.4)
Obese ($\geq$ 25.0)	26 (56.5)
Level of education, n (%)	
Less than Ordinary Level	2 (4.3)
Ordinary Level (O/L)	15 (31.9)
Advanced Level (A/L)	16 (34.0)
Diploma	8 (17.0)
College / University	4 (8.5)
Postgraduate	2 (4.3)
Employment status, n (%)	
Employed	20 (42.6)
Unemployed	16 (34.0)
Housewife	10 (21.3)
Other	1 (2.1)
Gravidity, n (%)	
Primigravida (1st)	14 (31.8)
2nd pregnancy	20 (45.5)
3rd pregnancy	9 (20.5)
4th pregnancy	1 (2.3)
Pre-existing medical condition, n (%)	
None	36 (76.6)
Any condition ²	11 (23.4)

SD, standard deviation; BMI, body mass index. Denominators vary because of occasional item non-response (anthropometry, n = 46; education, employment and medical conditions, n = 47; gravidity, n = 44). ¹BMI

categorised according to the WHO Asia-Pacific criteria for adults of South Asian origin. ²Conditions recorded were gestational diabetes (2), type 2 diabetes (2), chronic diabetes (2), pregnancy-induced hypertension (2), bronchial asthma (1), thalassaemia trait (1) and back pain (1).

Table 2. Weekly frequency of physical exercise and adequacy of guidance from healthcare providers.

Variable	n (%)
Weekly frequency of physical exercise	
Never	23 (48.9)
1–2 times per week	10 (21.3)
3–4 times per week	9 (19.1)
5 or more times per week	5 (10.6)
Adequacy of guidance from healthcare providers	
Insufficient	37 (77.1)
Sufficient	11 (22.9)

Frequency of exercise, n = 47; adequacy of guidance, n = 48.

Figure 1 - Distribution of knowledge and attitude levels regarding exercise during pregnancy.

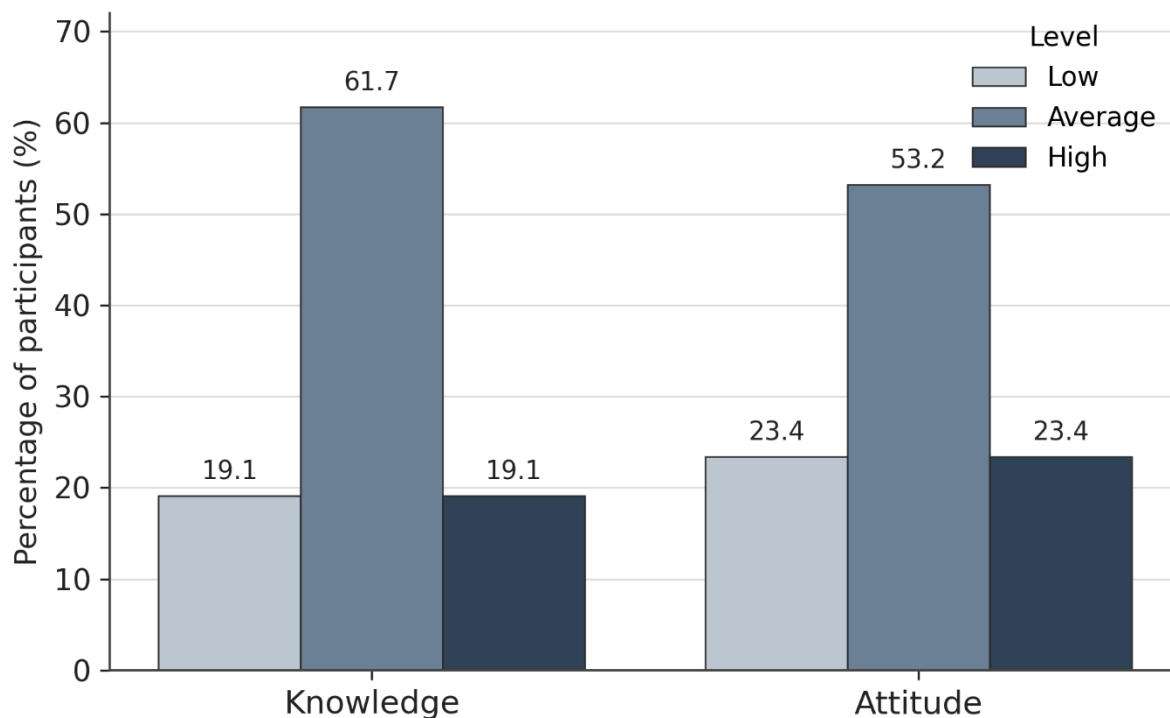


Figure 2 - Types of exercise practised during pregnancy.

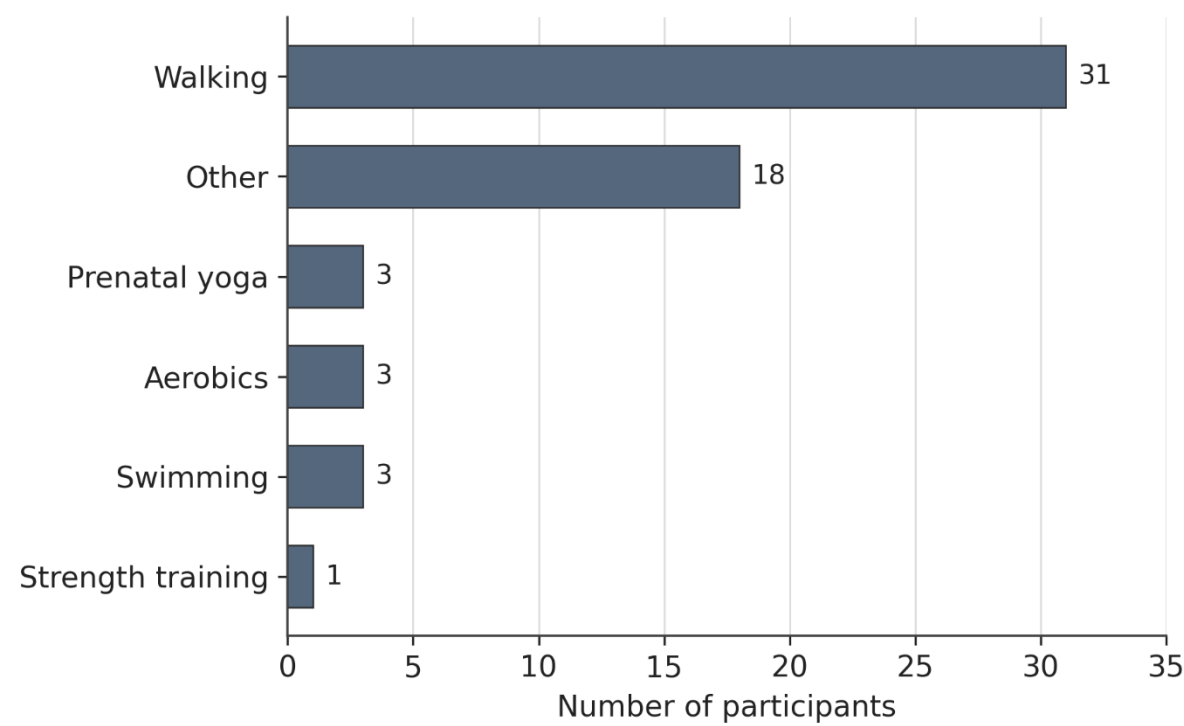


Figure 3 - Perceived barriers to exercise during pregnancy.

