

Research Article

Knowledge, Self-Reported Practices and Factors Associated with Pregnancy-Related Physical Activities among Primigravid Women: A Hospital Based Cross- Sectional Study in Galle, Sri Lanka

Aluthdunne, K.^{1*} & Alwis, G.²

¹Department of Nursing, Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka

²Department of Anatomy, Faculty of Medicine, University of Ruhuna, Sri Lanka

Abstract

Introduction: Engaging in physical activities (PA) during pregnancy provides significant health benefits. Identifying the knowledge and self-reported practices of primigravid women regarding PA is essential for improving maternal outcomes. This study aimed to assess knowledge and self-reported practices on day-to-day PA during pregnancy and factors associated with PA among primigravid women.

Methods: A cross-sectional study was conducted among 271 primigravid women attending antenatal clinics at the German-Sri Lanka Friendship Hospital for Women, Galle. Participants were recruited using a non-probability convenience sampling method. Data were collected via a pre-tested, interviewer-administered questionnaire. Based on total possible scores, knowledge was categorized into three equal ranges: poor (0–8), average (9–16), and good (17–25) and practices were categorized into two equal ranges: poor (1–59) and good (60–120). Pearson's chi-square tests and Fisher's Exact tests were used to determine associations.

Results: The mean age ($\pm$ SD) of participants was 25 ($\pm$ 4.8) years. Regarding knowledge of PA, 9.2% had poor knowledge, 49.8% had average knowledge, and 41% had good knowledge. Significant associations were found between knowledge levels and intention of pregnancy, age, level of education, and monthly income ($p = 0.001$ for all). Knowing the importance of PA during the pregnancy was 100%. Of the sample, 95.2% of participants reported poor self-reported practices of PA. While demographic factors were not significantly associated with practice, fear was identified as a significant factor ($p = 0.031$), with 94.9% of participants avoiding PA due to fear of threatening to the pregnancy.

Conclusion: A substantial gap exists between knowledge and self-reported practices among primigravid women. While most demonstrated average-to-good knowledge, actual practices were overwhelmingly poor. This highlights the necessity for targeted awareness programs that address psychological barriers and cultural misconceptions to translate high knowledge into active health behaviours.

Keywords: Associated Factors, Knowledge, Physical Activities, Primigravid Women, Self-reported Practices

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Correspondence: Aluthdunne K., Department of Nursing, Faculty of Allied Health Sciences, University of Ruhuna, Sri Lanka, Email: kaveesha199734@gmail.com  <https://orcid.org/0009-0008-2458-7447>

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Introduction

The period during which a foetus develops within a woman's uterus is known as pregnancy (National Institute of Child Health and Human Development., 2024), a critical life stage that necessitates specialized attention towards both physical and mental well-being. To optimize health outcomes during this time, maintaining a healthy lifestyle is essential. A key component of such a lifestyle is physical activities (PA), which is defined as any bodily movement produced by skeletal muscles that results in energy expenditure. This broad definition encompasses not only structured exercise and sports but also domestic chores, occupational tasks, and other day-to-day activities. (Caspersen et al., 1985).

Globally, PA during pregnancy is recognized as a frontline therapy for reducing the risk of common gestational complications. Engaging in appropriate levels of PA is strongly associated with significant health benefits, including the prevention of gestational diabetes mellitus (GDM) and pregnancy-induced hypertension (PIH), as well as the improvement of labour progress (De Silva & Mathota, 2024; DiPietro et al., 2019; Taliento et al., 2024). Despite these well-documented advantages, a significant portion of pregnant women, particularly primigravid women (those pregnant for the first time), tend to remain inactive or exhibit sedentary tendencies.

In the South Asian context, and specifically within Sri Lanka, PA levels are heavily influenced by deep-seated cultural beliefs and social norms. Unlike many Western perspectives, pregnancy in Sri Lankan

culture is often not viewed as a "natural incident" but rather as a delicate state requiring excessive rest (Jayasekara et al., 2019). Consequently, many women intentionally seek to be relaxed and avoid work-related or even routine day-to-day activities. One of the primary causes of this behaviour is the pervasive fear that physical exertion could harm the developing foetus or negatively impact the pregnancy, a belief that often persists despite modern health education (Wijesiriwardana & Gunawardena, 2016).

While previous literature has explored knowledge and attitudes toward PA, a significant research gap remains regarding the specific factors that lead to the discrepancy between high knowledge scores and poor practice among Sri Lankan women (Wijesiriwardana & Gunawardena, 2016). Many existing studies in the region have focused narrowly on structured "antenatal exercises" (Ribeiro & Milanez, 2011) rather than the broader spectrum of day-to-day activities, including household chores and occupational movements. Furthermore, there is limited recent evidence specifically targeting primigravid women in the Galle district, who may face perceived barriers such as fear, myths, and lack of motivation.

To address these gaps, adequate knowledge regarding the safety and necessity of PA are crucial. Understanding the local context is vital for developing targeted interventions that move beyond mere information delivery to addressing cultural myths and emotional barriers like fear. Therefore, the present study aims to identify the levels of knowledge regarding PAs, the self-reported practices

followed by primigravid women, and the specific socio-demographic and other factors associated with maintaining day-to-day PA throughout their pregnancy.

Methods

Study design, participants, and setting

A descriptive cross-sectional study was conducted among 271 primigravid women who attended the antenatal clinics of the German-Sri Lanka Friendship Hospital for Women, Galle, in June 2024. A non-probability convenience sampling technique was employed due to the specific accessibility of the clinic population and the time-intensive nature of recruiting first-time mothers.

The sample size was determined using the Lwanga and Lemeshow equation; $n = Z^2 \times P(1-P)/d^2$ (Lwanga et al., 1991) where, n = required sample size, z = z value corresponding to the significance level (1.96), P = the expected proportion (P) was taken as 20.1%, based on the prevalence of pregnant women who reported practicing exercise during some period of pregnancy (Nascimento et al., 2015), and d = margin of error was considered as 0.05.

The calculated sample size was 247. To account for potential practical challenges during data collection, an additional 10% was added, resulting in a minimum required sample size of 271 participants. Accordingly, 271 primigravid women attending the antenatal clinics at the German–Sri Lanka Friendship Hospital for Women, Galle, were recruited for the study. Primigravid women who were physically well enough to engage in PA and who were able to understand and

respond to the questionnaire were included into the study while primigravid women who had been medically advised to refrain PA were excluded from the study.

Data collection tool

Data were collected using a self-developed, pre-tested, interviewer-administered questionnaire. The questionnaire was developed after referring to the Pregnancy PA Questionnaire (PPAQ) (Chasan-Taber et al., 2004). The tool comprised four sections: sociodemographic factors, including intention of pregnancy, knowledge of PA, how the knowledge was gained (sources of information), associated factors such as socio-demographic factors, perceived barriers (prevention factors), fear, lack of motivation, false beliefs or myths etc, and self-reported practices.

Knowledge was assessed using five structured questions, with five points each giving a total possible score of 25. Practices were assessed using 24 items related to the frequency of daily activities, with responses rated on a 5-point Likert scale ranging from one (Never) to five (2–3 hours/day). The maximum possible practice score was 120.

The questionnaire was validated by pre-testing and thorough examining of three subject experts followed by pre-testing. Pre testing was done in a Local Hospital, by recruiting 10 primigravid women. It proved that certain terminologies were difficult to understand due to education levels. The questionnaire was changed accordingly, before initiating the primary data collection.

Statistical analysis

Data were analyzed by using descriptive statistics, including mean and SD. Descriptive data were presented as numbers and percentages in tables. Chi-square tests and Fisher's Exact tests were performed to identify any statistically significant association of knowledge and self-reported practices of PA with intention of pregnancy, age, monthly income and educational level and associated factors. The data was analyzed by using SPSS, version 26.0. Statistical significance was set at a p-value of <0.05 .

Ethical considerations

Ethical clearance was granted by the Ethics Review Committee, Faculty of Allied Health Sciences, University of Ruhuna (Reference No: 2023.11.331). All participants provided informed written consent. Data collection was conducted in clinic waiting areas to minimize disruption. All methods were carried out under relevant ethical guidelines.

Results

Socio-demographic information of the participants

The sample consisted of 271 primigravid women, ages ranged from 16 years and above. The majority were Sinhalese (94.8%) and married (97.8%). Regarding the intention of pregnancy, 69.4% were planned and 30.6% were unplanned. Only 15.5% were educated up to a diploma or degree level. Regarding monthly income, 63.1% of participants had a monthly income between 25001-75000 LKR (Table 1).

Knowledge on PA during pregnancy

The percentage of knowing the importance of PA during the pregnancy period was 100%.

The identified benefits of engaging in PA during pregnancy were, preventing pregnancy complications like GDM and PIH (82.3%), keeping the mother fit (92.3%), and easing labour progress (86%).

All (100%) study participants said that it was good to be engaged in normal household activities during the pregnancy period. The majority (>94%) agreed that walking and doing antenatal exercises during the pregnancy was good. The majority of the respondents (>70%) said that dancing and swimming were not good to be engaged in during the pregnancy. The majority (>87%) reported that standing for too long, activities that require bending all the time, and contact sports like netball, volleyball, and basketball should be avoided during the pregnancy period (Table 2).

Regarding the sources of information, 94.5% of the participants received awareness of PAs via family and friends and 80.4% of mothers gained knowledge from antenatal clinics. Around 30% had read magazines and books to get knowledge regarding PA during the pregnancy period.

Nearly half of the primigravid women demonstrated an average level of knowledge regarding PA during pregnancy (49.8%, $n=135$). Good knowledge was observed in 41% ($n=111$) of the participants, while only 9.2% ($n=25$) had poor knowledge.

Practices on self-reported PA

As reported by women, the majority (93%) did not walk quickly when they went to different places. Only 0.7% were engaged in swimming. Altogether 83.8% prepared meals during the pregnancy, while 16.2% did not.

Table 1: Socio-demographic characteristics of the participants (n=271)

Variables	Category	Frequency	Percentage (%)
Mother's age group in years	Under 19	30	11.1
	20- 25	110	40.6
	26- 30	92	33.9
	31- 35	31	11.4
	≥ 36	8	3.0
Race	Sinhalese	257	94.8
	Tamil	11	4.1
	Muslim	3	1.1
Religion	Buddhism	243	89.7
	Hindu	11	4.1
	Islam	3	1.1
	Catholic	14	5.2
Marital status	Married	265	97.8
	Unmarried	6	2.2
Educational status	Less than grade 5	6	2.2
	Up to O/L	128	47.2
	Up to A/L	95	35.1
	Diploma/Degree	42	15.5
Occupational status	Occupied	69	25.5
	Non-occupied	202	74.5
Monthly income (LKR)	Less than 15000	14	5.2
	15000-25000	61	22.5
	25001-75000	171	63.1
	More than 75000	25	9.2
Intention of pregnancy	Planned	188	69.4
	Unplanned	83	30.0

LKR Sri Lankan Rupee

Even though 94.5% of the participants agreed doing prenatal exercises were good, 91.8% did not practice them (Table 3).

Around 88% of mothers had engaged in PA because of self- motivation. Only 69% of mothers had engaged in PA due to the education received. Majority of mothers

(77%) said that they did not continue PA when there was any disease condition, 53.5% mothers were sometimes lacked motivation to engage in any PA and 10% believed myths and 47.3% mothers feared engaging in PA during the pregnancy period.

The majority of participants demonstrated

Table 2: Safe and unsafe PA during pregnancy as perceived by primigravid women (n=271)

Type of PA	Number of mothers who perceived as safe to be engaged in PA Frequency (%)	Number of mothers who perceived as unsafe to be engaged in PA Frequency (%)
Walking	265 (97.8%)	6 (2.2%)
Dancing	76 (28.0%)	195 (72.0%)
Swimming	81 (29.9%)	190 (70.1%)
Prenatal exercises	265 (94.5%)	15 (5.5%)
Occupation	239 (88.2%)	32 (11.8%)
Normal household activities	271 (100%)	0
Standing for too long	18 (6.6%)	253 (93.4%)
Activities that require bending all the time	33 (12.2%)	238 (87.8%)
Contact sports like netball, volleyball, basketball	12 (4.4%)	259 (95.6%)

PA Physical activities

poor practices related to PA during pregnancy, accounting for 95.2% (n=258) of the sample. In contrast, only 4.8% (n=13) of the participants reported good practice levels.

Factors associated with level of knowledge on PA during the pregnancy

Level of knowledge on PA during pregnancy was significantly associated with intention of pregnancy, age, level of education, and monthly income ($p=0.001$ for all) (Table 4). The study found that there were no statistically significant associations between self-reported practices and socio-demographic factors. But there was a significant association between fear and self-reported practices ($p=0.031$). Even the primigravid women who were not affected by a disease condition showed a higher percentage of poor practice (91.9%) (Table 5).

Discussion

The present study aimed to assess the knowledge, self-reported practices, and factors associated with PA during the pregnancy period among primigravid women attending the antenatal clinics of a leading maternity hospital in Galle, Sri Lanka.

Findings of the study revealed that the majority of study participants had good or average knowledge of PAs during pregnancy. Even though they reported good knowledge levels, their self-reported practices were poor, and few participants actually practiced PA. Furthermore, the majority reported poor practice regardless of age group, intention of pregnancy, education level, and monthly income.

Knowledge on PA

The study identified a high level of good or

Table 3: Practices of self-reported PA during the pregnancy period (n= 271)

Category	Activity type under each category	Didn't do Frequency (%)	Did less than 60 mins per day Frequency (%)	Did more than 60 mins per day Frequency (%)
Household chores	Preparing meals	44 (16.2%)	120 (44.3%)	107 (39.5%)
	Light cleaning	5 (1.9%)	244 (90%)	22 (8.1%)
	Heavier cleaning	199 (73.4%)	70 (25.9%)	2 (0.7%)
Occupational activities	Standing at work	24 (8.9%)	238 (87.8%)	9 (3.3%)
	Slowly walking at work without carrying anything;	24 (9%)	240 (88.5%)	7 (2.5%)
	Walking quickly at work without carrying things	271 (100%)	-	-
Transportation	Walking slowly to places	6 (2.2%)	256 (94.5%)	9 (3.3%)
	Walking quickly to places	252 (93%)	19 (7%)	-
	Driving or riding a car or bus or scooter	14 (5.2%)	241 (88.9%)	16 (5.9%)
Sports and structured exercise	Walking slowly for exercise	236 (87.1%)	35 (12.9%)	-
	Walking quickly for exercise	271 (100%)	-	-
	Prenatal exercise	249 (91.8%)	22 (8.2%)	-
	Swimming	269 (99.3%)	2 (0.7%)	-
	Dancing	258 (95.2%)	12 (4.4%)	1 (0.4%)
Sedentary Activities	Sitting and using a computer or writing	120 (44.3%)	121 (44.6%)	30 (11.1%)
	Watching TV or listening to radio	116 (42.8%)	100 (36.9%)	55 (20.3%)

Table 4: Factors associated with level of knowledge (n=271)

Characteristic / factor	Category	Knowledge: poor Frequency (%)	Knowledge: average Frequency (%)	Knowledge: good Frequency (%)	p value
Intention of pregnancy	Planned	13 (6.9%)	85 (45.2%)	90 (47.9%)	0.001
	Unplanned	12 (14.5%)	50 (60.2%)	21 (25.3%)	
Age	≤ 25 years	20 (14.3%)	83 (59.3%)	37 (26.4%)	0.001
	> 25years	5 (3.8%)	52 (39.7%)	74 (56.5%)	
Education Level	Ordinary Level or less	19 (14.2%)	77 (57.5%)	38 (28.4%)	0.001
	Beyond Ordinary Level	6 (4.4%)	58 (42.3%)	73 (53.3%)	
Monthly Income	≤ 26,000 LKR	14 (18.7%)	44 (58.7%)	17 (22.7%)	0.001
	> 26,000 LKR	11 (5.6%)	91 (46.4%)	94 (48%)	

LKR Sri Lankan Rupee

Table 5: Factors associated with self-reported practices of PA (n=271)

Characteristic/ factor	Category	Practice: poor Frequency (%)	Practice: good Frequency (%)	p value
Intention of pregnancy	Planned	178 (94.7%)	10 (5.3%)	0.545
	Unplanned	80 (96.3%)	3 (3.6%)	
Age	≤ 25 years	135 (96.4%)	5 (3.6%)	0.329
	> 25 years	123 (93.9%)	8 (6.1%)	
Education Level	Ordinary Level or less	129 (96.3%)	5 (3.7%)	0.126
	Beyond Ordinary Level	129 (94.2%)	8 (5.8%)	
Monthly Income	≤ 26,000 LKR	73 (97.3%)	2 (2.6%)	0.543
	> 26,000 LKR	185 (95.9%)	11 (0.6%)	
Fear	Feared	93 (94.9%)	5 (5.1%)	0.031
	Not feared	165 (95.4%)	8 (4.6%)	
Lack of motivation	Lacking	142 (97.9%)	3 (2.1%)	5.082
	Not lacking	116 (92.1%)	10 (7.9%)	

Table 5: Factors associated with self-reported practices of PA (n=271) (Cont.)

Disease condition	Affected	201 (96.2%)	8 (3.8%)	1.879
	Not affected	57 (91.9%)	5 (8.1%)	
Myths	Believed	27 (100%)	0 (0%)	1.511
	Not believed	231 (94.7%)	13 (5.3%)	

LKR Sri Lankan Rupee

average knowledge among primigravid women in Galle, with 100% of participants recognizing the importance of PA for health during pregnancy. Participants were able to identify specific benefits, such as keeping the mother fit, preventing complications like GDM and PIH, and easing the progress of labour. Their ability to identify such benefits, proved how good their knowledge levels were. This represents a notable deviation from previous findings. Earlier research in Colombo (Wijesiriwardana & Gunawardena, 2016) and in Brazil (Ribeiro & Milanez, 2011) reported generally poor knowledge levels among pregnant populations.

The current study identified factors such as intention of pregnancy (planned/unplanned), age group, level of education and monthly income were the factors associated to the reported high level of good or average knowledge in the study participants. This was one of the important findings of the current study which emphasized the associated factors, and this was a deviation from existed literature. The present study found that primigravid women with education beyond Ordinary Level examination had significantly better knowledge of PA, consistent with findings reported in the study done in Brazil (Ribeiro & Milanez, 2011). Additionally, the current study showed that mothers with planned pregnancies demonstrated better knowledge than those

with unplanned pregnancies.

Most mothers reported receiving information from family and friends. Comparatively fewer participants obtained information from healthcare professionals in antenatal clinics, which was similar to the study done in the De Soyza Maternity Hospital, Colombo (Wijesiriwardana & Gunawardena, 2016). This may partly explain why knowledge did not consistently translate into practice. Reliance on informal networks often leads to misconceptions. Current study showed that even the highly educated participants relied more on informal networks. For example, while 100% of mothers correctly identified household chores as safe, over 70% incorrectly believed that swimming and dancing should be avoided.

Practices regarding self-reported PA

Although higher knowledge levels might be expected to promote greater engagement in PA, the present study found persistently low practice levels, suggesting that factors other than knowledge influence behaviours. This gap appeared to be a persistent cross-cultural challenge, as the poor practice rate in Galle was identical to results reported in study from Brazil (Ribeiro & Milanez, 2011). Despite high levels of self-motivation, practices of self-reported PA were low among the mothers in the present study. Despite the current study participants correctly

identifying walking as a better exercise, they showed a very low practice of walking as an exercise. This confirmed that possessing a good knowledge, did not always contributed to having a good practice.

Similarly, practices of prenatal exercises were lower in the present study compared with findings from the De Soyza Maternity Hospital study in Colombo (Wijesiriwardana & Gunawardena, 2016). Furthermore, many mothers believed that activities such as swimming and dancing should be avoided during pregnancy, which contrasts with evidence from Brazil where water-based exercises were among the commonly practiced activities (Nascimento et al., 2015). These findings suggest that misconceptions regarding safe forms of exercise may contribute to the low level of PA observed during pregnancy.

A critical finding of this research is that, unlike knowledge, practices of self-reported PA were not influenced by education, income, or age. Instead, practice was affected by deep-seated psychological and cultural barriers. Fear emerged as the single most significant factor associated with level of practice. The majority of women who expressed fear of harming the pregnancy demonstrated poor practice. This fear is rooted in the Sri Lankan cultural context, where pregnancy is frequently viewed as a "delicate state" requiring excessive rest.

Implications

Emphasizing the importance of engaging in PA during the pregnancy period is crucial in order to prevent pregnancy complications and it helps to a successful labour. The

findings of this study should be disseminated in the antenatal clinics in hospitals, community clinics, and private institutions where pregnant mothers attend. Also, these findings should be taught to young females who will become pregnant in their respective ages because they can be knowledgeable and get ready for a healthy pregnancy without complications.

Strengths and limitations

This study was among the first in the region to evaluate a broad spectrum of "day-to-day household and occupational activities" rather than exclusively focusing on structured exercise. The use of a pre-tested, interviewer-administered questionnaire ensured a comprehensive and consistent assessment of self-reported behaviours.

The use of non-probability convenience sampling might limit the generalizability of the findings to the national population. Since the study sample was limited to a single site of data collection and having selected a specific group also limited the generalizability of the findings into a wider community. Maintaining participant privacy in crowded clinic environments was a logistical challenge.

Conclusions

This research identified a significant knowledge-practices gap among primigravid women, where a high level of cognitive awareness regarding the health benefits of PA failed to translate into active behaviour. The findings clarified that maternal knowledge and actual practice were governed by distinct domains: while understanding was tied to sociodemographic advantages like

education and income, these factors did not influence the level of physical engagement.

The study underscored that the primary obstacles to a healthy, active pregnancy were psychological and cultural rather than informational. Specifically, a pervasive fear of threatening the developing foetus emerged as a dominant barrier that effectively neutralized maternal motivation towards practices of PA. By broadening the research scope to include routine domestic and occupational tasks alongside structured exercise, this study provided a more comprehensive view of sedentary behaviour than previous literature.

Based on the findings, it is recommended to arrange a place in the antenatal clinic to practice prenatal exercises and appoint trained personnel to evaluate their practice. Also, pregnant mothers should be encouraged to engage in normal day-to-day PA and it can be evaluated by the community midwifery nursing officers or midwives. It is recommended to replicate this study in other antenatal clinics around Sri Lanka to generalize the findings

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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