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Knowledge Related to Ovulation among Female Undergraduate Students of a Selected Private University in Sri Lanka

Diyanath Rasiq[1], Muditha Muthucumarana[1] , Chathuri Samarasinghe[1] , Shenaya Katukurunda[1], Kavindya Sathsarani[1], Hiranga Wijedasa[1]

[1]*Faculty of Humanities and Sciences, Sri Lanka Institute of Information Technology, Malabe, 10115, Sri Lanka.*

Corresponding author*: muditha.m@sliit.lk

Abstract

The understanding of the menstrual cycle and the awareness of the fertile window enable individuals to make informed reproductive decisions. It helps promote reproductive health and prevent unintended pregnancies. However, the level of knowledge and awareness about ovulation and fertile window among young adults, particularly among university undergraduates in Sri Lankan context, was not clearly explicit. Hence, this study aimed to assess the knowledge of ovulation among female undergraduates at a non-state higher education institution in Sri Lanka. A descriptive cross-sectional study was done from December 2024 to March 2025. The study targeted female undergraduates across all faculties, excluding students of the Nursing program. A convenient sample of 111 participants was selected, and a self-administered, anonymized Google forms distributed via the official email account of the participants for the data collection. This study revealed a basic level of knowledge on ovulation among female undergraduates. The majority of participants (85.6%) correctly identified ovulation, however, only one-third of participants (33.3%) knew that ovulation timing can vary from person to person. The most common misunderstanding was the idea that ovulation always occurs exactly on the 14th day of the menstrual cycle, held by 44.1% of respondents, while 12.6% admitted they were not sure. Only 25.2% correctly identified "increased basal body temperature" as a common sign of ovulation, while 36% of participants were not aware of any ovulation indicators. Significant associations were found between awareness levels and both menstrual tracking behaviour and formal education received on reproductive health. This study highlighted that while female undergraduates possess a basic understanding of ovulation, significant misunderstandings and gaps in recognizing ovulation symptoms remain. These uncertainties stress the need for comprehensive reproductive health education and future research focused on school-based interventions, digital applications, and cross-cultural perspectives.

Keywords: Fertility awareness; Ovulation; Fertile window; Female; Undergraduates

Introduction

According to the World Health Organization (WHO, 2023), fertility is defined as a woman's ability to conceive. Fertility awareness refers to the understanding of one's reproductive cycle, enabling individuals to determine when they are most and least fertile. This awareness aids in identifying the fertile and infertile stages of a woman's menstrual cycle, influencing reproductive choices and outcomes.

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Fertility awareness involves tracking natural signs of ovulation, a process where a mature egg is released from the ovary and becomes available for fertilization. Ovulation typically occurs around the middle of the menstrual cycle, precisely 14 days before the beginning of the next menstrual period in a 28-day cycle (Scutt & Manning, 1996). The fertile window is the period in a woman's menstrual cycle when pregnancy is most likely to happen. This includes the five days leading up to ovulation, the day of ovulation, and the day after ovulation. This window is determined based on the lifespan of sperm (up to five days) and the egg (12–24 hours) after ovulation (Wilcox, Dunson, & Baird, 2000). A woman's fertile window can be tracked using physiological signs such as cervical mucus consistency, basal body temperature, and menstrual cycle length and pattern (Yu et al., 2022). The primary purposes of fertility awareness are to enhance fertility among couples and prevent unintended pregnancies, thereby reducing the incidence of unsafe and illegal abortions (Vigil et al., 2012). According to Sedgh et al. (2016), unsafe abortions, which often result from unintended pregnancies, pose significant health risks, including severe complications and mortality. Further unplanned pregnancies often lead to adverse socioeconomic and educational consequences (Finer & Zolna, 2016).

Undergraduates are often at a stage in life where they make crucial decisions about their sexual and reproductive health. However, many lack comprehensive sexual education, leading to misconceptions and misbeliefs regarding conception and fertility (Lindberg, Maddow-Zimet, & Boonstra, 2016). Additionally, the high-stress environment and lifestyle associated with university life can impact students' sexual health behaviours and outcomes.

There is a notable lack of research and literature on fertility awareness among university students in Sri Lanka. Understanding female undergraduates' fertility knowledge can provide valuable insights into their reproductive health needs and contribute to the development of educational programs addressing knowledge gaps. The primary objective of this study was to assess fertility awareness related to ovulation among female undergraduates at a selected private university in Sri Lanka. Specifically, the study aimed to measure the level of knowledge regarding ovulation among female undergraduates, identify gaps in fertility awareness and misconceptions related to reproductive health, assess the impact of digital health resources on fertility knowledge among students, and provide recommendations for educational interventions to enhance fertility awareness.

Private universities in Sri Lanka exhibit unique educational and demographic characteristics that set them apart from state universities. Students from more affluent backgrounds are often drawn to private institutions, leading to disparities in risk-taking behaviours, fertility education, and general health literacy. These factors provide novel insights into the ways that educational settings and socioeconomic status influence students' fertility perceptions (Wang, Zhang, & Huang, 2024). The selected private university is recognized for its multidisciplinary academic offerings and emphasis on innovation. The diversity of academic divisions within this institution provided a representative cross-section of undergraduate students from various academic backgrounds, including Information Technology, Engineering, Business studies, Humanities and Sciences.

Materials and Methods

This cross-sectional descriptive study was carried out at a private university in Sri Lanka, from December 2024 to March 2025. A sample of 111 female undergraduate students participated in the study, recruited through the convenience sampling method. Students following any healthcare-related programs were excluded, assuming that they already possess proper knowledge related to this topic.

Data collection

Data was collected using a self-administered questionnaire developed by the researchers based on previous literature findings (Saranti et al., 2025; Wilcox et al., 2000; Vigil et al., P 2012; Hong et al., 2024). The questionnaire was pilot tested among 20 female undergraduates from different private universities to ensure clarity, reliability, and validity before data collection. It was then distributed as an anonymized

Google Form via the official email of all participants. Participants' email addresses were obtained from the university's Student Affairs Department; reminders were sent through the WhatsApp groups managed by student societies at the university.

The questionnaire contained two sections: Section 1 for demographic information and Section 2 for knowledge on basic concepts related to fertility, the menstrual cycle, signs of ovulation, and the fertile window. Each correct answer in Section 2 was awarded one mark, and the total score was summed up at the end. The total score out of 16 indicated the participant's fertility awareness as a quantitative measure, interpreted as follows: 12-16 – "Highly aware" – indicates a strong grasp on key concepts of ovulation and fertility, 6-11 – "Moderately aware" – indicates partial understanding of key concepts of ovulation and fertility with notable gaps, 0-5 – "Slightly aware" – indicates limited knowledge and/or significant misconceptions of ovulation and fertility.

Ethical Considerations

Ethical clearance for the study was attained from the Ethics Review Committee of the SLIIT Faculty of Humanities and Sciences (Ref. No. 2024-11-10).

Data analysis

The collected data were statistically analysed using the Statistical Package for the Social Sciences (SPSS), Version 29. Data were analysed using descriptive statistics and chi-squared tests were conducted to determine if there was a statistically significant association between the selected categorical variables and fertility awareness categories.

Results

Giving off numerous valuable findings about the study sample, this study revealed a basic level of knowledge on ovulation among female undergraduates, with scores ranging from 3 to 16 (M = 9.05, SD = 3.01) and a slight positive skewness (0.095), indicating that most participants scored near the average or higher (see Table 1).

Table 1: *Descriptive Statistics for the section 2 total score*

	N	Min	Max	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
Score	111	3	16	9.05	3.007	0.095	0.229

As illustrated in Figure 1a, the majority of participants (85.6%) correctly identified ovulation as the release of an egg from the ovary, indicating a strong foundational understanding of this key reproductive process. However, a notable minority demonstrated misinterpretations: 9% were unsure, 3.6% believed ovulation marked the beginning of menstruation, and 1.8% confused it with the shedding of the uterine lining. These findings suggest that while general awareness is high, there remains some confusion regarding the various stages of the menstrual cycle.

As shown in Figure 1b, only one-third of participants (33.3%) knew correctly that ovulation timing can vary from person to person. The most common misunderstanding was that ovulation always occurs on day 14 of the menstrual cycle, held by 44.1% of respondents. A few others chose less likely time frames - 6.3% thought it was between days 20–28, and 3.6% believed it occurs right at the start of the cycle (days 1–5). Notably, 12.6% admitted they weren't sure at all, pointing to a clear gap in awareness when it comes to understanding the menstrual cycle.

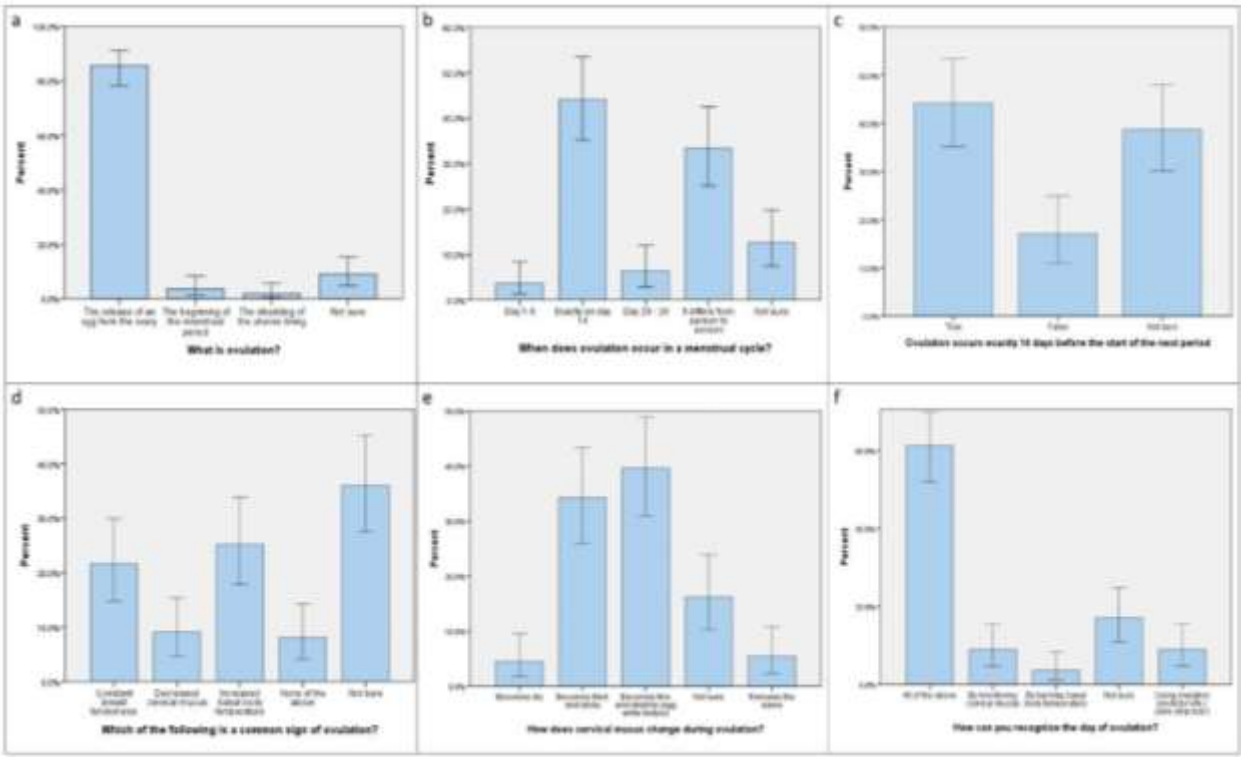

Figure 1: *Percentage distribution of responses to four multiple-choice questions assessing knowledge on ovulation among female undergraduate participants. (a) What is ovulation? (b) When does ovulation occur in the menstrual cycle? (c) Does ovulation occur exactly 14 days before the start of the next period? (d) Which of the responses given is a common sign of ovulation? (e) How does cervical mucus change during ovulation? (f) How can you recognize the day of ovulation?*

The error bars in the figure represent 95% confidence intervals, providing an estimate of the precision of the observed proportions and reinforcing the reliability of the dominant response.

Figure 1c presents participants' responses to the statement "Ovulation happens exactly 14 days before menstruation." Less than half of the sample (44.1%) correctly identified the statement as true, while 38.7% believed it to be false. Additionally, 17% of respondents reported uncertainty. This distribution reflects a common misinterpretation about the timing of ovulation and suggests that many participants may lack accurate knowledge of menstrual cycle dynamics which affects their reproductive choices.

Figure 1d illustrates participants' understanding of ovulation signs. Only 25.2% correctly identified "increased basal body temperature" as a common indicator of ovulation. The most frequently selected response was "none of the above" (36%), indicating a significant level of uncertainty or lack of awareness. Furthermore, 21.6% incorrectly chose "decreased cervical mucus," and 8.1% selected "constant breast tenderness," both of which are not reliable signs of ovulation. These findings highlight gaps in knowledge regarding physiological indicators of fertility.

Figure 1e estimates participants' awareness of cervical mucus changes during ovulation, which is a key indicator in fertility awareness methods. Of the 111 respondents, only 39.6% correctly identified fertile-quality cervical mucus as "thin and stretchy like egg white," indicating limited understanding of this natural fertility indicator. The high number of incorrect responses, particularly the 34.2% chose "thick and sticky," indicates confusion, as this type of mucus is common during non-fertile phases.

Figure 1f demonstrates awareness of different methods used to detect ovulation. A majority (60%) correctly selected "All of the above," indicating recognition that ovulation can be tracked through multiple methods. However, 15% were unsure, while smaller proportions selected only one method; 10% chose cervical

mucus monitoring, 10% chose ovulation predictor kits, and 5% chose basal body temperature, indicating partial knowledge.

A cross-tabulation was done to examine the relationship between awareness level and the use of menstrual tracking tools or apps. The Pearson chi-square test revealed a significant association, $\chi^2(2, N = 111) = 22.92,\ p < 0.001$, indicating that tracking behavior varied by awareness level. All expected cell counts met the assumptions for the test. To further explore the ordinal relationship, Kendall's tau-b was calculated and showed a moderate negative correlation, $\tau = -0.42, p < 0.001$, suggesting that higher awareness was associated with increased use of tracking tools.

A similar analysis examined the relationship between awareness level and having received education on ovulation and the fertile window. The chi-square test indicated a significant association, $\chi^2(2, N = 111) = 24.39,\ p < .001$. Kendall's tau-b revealed a moderate negative correlation, $\tau = -.44$, $p < .001$, indicating that higher awareness was linked to having received formal education on the subject.

Discussion and Conclusion

Knowledge regarding ovulation

Most students accurately understood what ovulation is; however, a considerable number of students were unfamiliar with the concept of ovulation. This could be due to the lack of reproductive health education provided to them at school, since many schools provide vague sex education, as it is still considered a topic of taboo.

Similarly, the belief that ovulation always occurs on day 14 is a widespread myth among students. This idea is based on a textbook 28-day menstrual cycle, where ovulation typically occurs around the midpoint. However, according to the study conducted by Motwani & Krishna in 2023, menstrual cycles vary significantly from individual to individual, and even month to month, depending on factors like stress, illness, weight changes, and hormonal balance.

Therefore, improving awareness through comprehensive reproductive health education and debunking common myths and misunderstandings, such as the fixed Day 14 ovulation belief, are important steps toward empowering students with accurate knowledge about their bodies and reproductive health.

Ovulation recognition

The uncertainty among the female undergraduates in identifying ovulation symptoms is likely due to several key factors. As evidenced by a multilevel analysis conducted among a group of women of reproductive age in 29 African countries. Many have limited exposure to comprehensive reproductive health education, which often overlooks ovulation signs like basal body temperature and cervical mucus changes. (Zegeye et al., 2022).

The wide range of responses to the question regarding ovulation predictors points to varying student awareness of ovulation recognition. The respondents who chose "All of the above" had a more thorough understanding, perhaps because of familiarity with cycle tracking apps. Students who chose individual approaches, such as ovulation kits or cervical mucus, might be able to identify one trustworthy indicator but not all the others. Uncertainty or gaps in reproductive health education are reflected in the considerable number of students who chose "Not sure."

Tracking tools and formal education

The significant associations found between awareness levels and both menstrual tracking behaviour and ovulation education underscore the role of knowledge in shaping reproductive health practices. The moderate negative correlations suggest that participants with higher awareness are more likely to engage in proactive tracking and have received formal education on fertility indicators. A study conducted

regarding the use of period tracking app showed that it is becoming a trend among Gen Z with a significant count of 62.3% reported having used various apps. However, the remaining 37.7% reported not using any tracking apps (Hong et al., 2024). These findings highlight the significance of targeted educational interventions to enhance awareness and promote informed decision-making regarding fertility and menstrual health.

Limitations of the study

The questionnaire was developed by the research team and had not undergone formal validation, which may have affected the reliability of the findings. Additionally, since this study was conducted with female undergraduates of a single higher educational institute in the country, it lacks the generalizability of the findings. Therefore authors recommend that the same study be repeated with more participants, with a good representation from number of state and nonstate educational institutes, to generalize the results.

This study highlights that while many students possess a basic understanding of ovulation, significant misconceptions and gaps in recognizing ovulation symptoms remain. The persistence of myths such as the "Day 14 rule" and uncertainty in identifying physiological signs underscores the need for comprehensive reproductive health education. Encouraging accurate knowledge through formal curricula and the integration of digital tracking tools may enhance awareness and self-efficacy. Future research should explore the effectiveness of school-based interventions, the role of digital applications, and cross-cultural perspectives in improving ovulation literacy and reproductive health practices among young women.

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