Validity and Reliability Test of the Menstrual Cycle Questionnaire for Adolescent Girls

Alifia Candra Puriastuti*, **Surya Adi Saputra, Zumroh Hasanah, Dessy Amelia**
Faculty of Medicine, Universitas Negeri Malang, Malang, Indonesia

Corresponding author: alifia.candra.fk@um.ac.id

ARTICLE INFO

ABSTRACT

Reproductive health is defined as complete physical, mental, and social well-being in all aspects of the reproductive system, functions, and processes, not just a condition free from disease or disability. So far, there has been no standard instrument to collect data on adolescent menstrual cycle conditions. This study aims to test the validity and reliability of the questionnaire used to collect data on the menstrual cycle of female adolescents. The design of this study is cross-sectional; the questionnaire was developed through a comprehensive literature review. The questionnaire was tested for construct validity through a statistical analysis. The population in this study was adolescent girls, aged 12-15 years, who had experienced menarche. The number of respondents in this study is 40. The results of the construction validity test in this study showed that the r table value (0.358-0.540) was greater than the r count (0.3044), indicating validity. Meanwhile, the reliability test in this study was determined using Cronbach's Alpha, which was 0.706. The validity and reliability tests of the menstrual cycle questionnaire for adolescent girls yielded strong results, indicating that the questionnaire can be used as a reliable data-collection tool.

INTRODUCTION

Reproductive health, as defined by the ICPD, encompasses complete physical, mental, and social well-being in all aspects of the reproductive system, influenced primarily by physical, mental, and social factors (Puriastuti et al., 2024). Menarche and regular menstruation serve as key indicators of women's fertility and overall health (Marques et al., 2022). The menstrual cycle consists of the follicular phase, ovulation, and the luteal phase, each producing distinct physiological changes, with menstrual irregularities and primary dysmenorrhea being among the most common complaints in women (Fritz & Speroff, 2019; Marques et al., 2022). Menarche marks the culmination of puberty and typically occurs two to three years after initial signs such as breast development, driven by the thickening of the uterine lining under the influence of rising estrogen and progesterone levels; in the absence of fertilization, this lining is shed. Generally, the menstrual cycle occurs every 21-35 days and lasts 2-7 days (Fritz & Speroff, 2019; Puriastuti et al., 2024).

A range of studies conducted globally has reported substantial rates of menstrual irregularities among adolescents. Supporting evidence includes findings from the 2010 RISKESDAS (Indonesian Health Research and Development Agency), which indicated that, at the national level, approximately 15.8% of adolescents at the junior high school level and 15.7% at the high school level experienced irregular menstrual cycles (Ministry of Health Republic Indonesia, 2013; Hikma et al., 2021).

Menstrual cycles in early adolescence are often irregular and cause various physical complaints. This is due to the adolescent's body adapting and transitioning from childhood to adulthood (Varghese et al., 2022). The length of menstrual cycles in the early years after

menarche may be shorter, as short as 20 days, or longer than 45 days, while a normal cycle ranges from 21 to 34 days (Marques et al., 2022). However, this condition is often overlooked by adolescents and the adults around them. This can impact adolescents' quality of life (Puriastuti et al., 2025).

Therefore, valid and reliable tools are needed to collect data on adolescent girls' menstrual cycles. The existing questionnaires address adolescents' knowledge and attitudes regarding menarche, menstruation, or premenstrual syndrome. Therefore, no questionnaire has been used to explore the incidence of menstrual cycle irregularities in adolescents. Menstrual cycle questionnaires have been primarily aimed at women of childbearing age. The questionnaire developed by researchers is intended for adolescent girls and aims to determine the regularity of their menstrual cycles.

METHOD

This research design used a cross-sectional approach to collect data from the target population. he population of this study was 60 adolescent girls (aged 12 to 15) who were members of the volleyball extracurricular activities at Junior High School (JHS) 1 and Junior High School (JHS) 2 Singosari, Malang Regency. he sampling method used was purposive sampling, with inclusion criteria being able to complete a fitness test and had experienced menstruation. he resulting in a sample size of 4̶0̶ 55 respondents. The study was conducted from February to March 2024. This research obtained ethical approval from the Research Ethics Committee of the Research and Community Service Department, Universitas Negeri Malang, with clearance number 20.06.4/UN32.14.2.8/LT/2024.

The questionnaire questions were developed by the researcher using the following steps: first, a comprehensive literature review to ensure all important aspects of the menstrual cycle were covered in the instrument being developed. Therefore, validity and reliability tests were conducted to assess the questionnaire's quality. Validity refers to the extent to which results reflect reality, while reliability is a measure of the stability or consistency of test scores. All these statistical tests use readily available applications.

After the questionnaire items were collected, the questionnaire underwent two stages of validity testing: content validity and construct validity. Validity was assessed through expert testing. Construct validity was evaluated using Pearson's item-total analysis, comparing r values. Construct validity in this study was tested by comparing the table r values and the calculated r values. In this study, the table-r value was 0.3044. Questionnaire items with a calculated r-value greater than the table r-value were considered valid. Meanwhile, reliability was determined using Cronbach's alpha; each item was considered reliable if its alpha value met the standard (≥ 0.7).

RESULTS

The number of respondents from JHS 1 Singosari was 25, and from JHS 2 Singosari was 15. The other characteristics of the respondents in this study are presented in Table 1: the respondents were, on average, 13.50 years old, reached menarche at 11.86 years old, and reached regular menstruation at 12.40 years old.

Table 1. Respondents' characteristics

Characteristics	Mean	Min - Max	Std. Deviation
Age	13.50	12.00 – 15.00	0.817
Reached menarche	11.86	9.00 – 14.00	1.024
Reached regular menstrual cycle	12.40	10.00 – 15.00	0.967

Validity test result

The researchers' menstrual cycle questionnaire contained eight questions. Each item used a Likert scale with "yes" and "no" options. The questionnaire items in this study are presented in Table 2.

Table 2. Menstrual cycle questionnaire items and validity test results

No	Items	Response frequency		Total	r-value	Conclusion
		Yes	No			
1	Have you had your regular period (every month)?	40	15	55	0.540	Valid
2	Period interval:					
	28 days (several days earlier (4-7 days) than the previous month)	22				
	30 days (almost always on the same date, only 1-2 days earlier/later)	30		55	0.390	Valid
	32 days (several days later (4-7 days) than the previous month)	3				
3	In the past 3 months, have you had two periods in the same month, only 2 weeks apart?	16	39	55	0.390	Valid
4	In the past 3 months, have you had a period in 2 of those months?	14	41	55	0.372	Valid
5	Did your period last 3-7 days in a cycle, or did you have one period with a large pad and very heavy bleeding, requiring you to change your pad >= 6 times a day?	9	46	55	0.410	Valid
6	Did your period last >7 days in a cycle, or did you have one period with a large pad and very heavy bleeding, requiring you to change your pad >= 6 times a day?	4	51	55	0.358	Valid
7	Did your period last <3 days in a cycle, or did you have one period with half the amount of blood used in a pad (a little) or very light bleeding?	34	21	55	0.372	Valid
8	Do you experience menstrual pain accompanied by cramps in the lower abdomen during menstruation, making it difficult to carry out normal activities?	40	15	55	0.410	Valid

The analysis yielded calculated r values ranging from 0.358 to 0.540. This indicates that the calculated r values for all items are greater than the table r value (0.3044), thus concluding that all items are valid (Table 2).

Reliability test results

The reliability test in this study was determined using Cronbach's Alpha value. The analysis yielded a Cronbach's Alpha value of 0.706. This value indicates that the questionnaire items have high reliability.

DISCUSSION

Question item 1: Menarche and regular menstrual cycle

The first questionnaire item assesses respondents' experience of having a regular menstrual cycle that occurs every month. Based on the results, the majority of respondents (40 out of 55; 72,7%) reported regular menstruation, while 15 respondents (27,3%) reported irregular cycles. The item demonstrated adequate construct validity (r-value = 0,540), confirming its suitability for assessing menstrual regularity among adolescents.

These findings suggest that most respondents have achieved relative maturation of the hypothalamic–pituitary–ovarian (HPO) axis, which is essential for the establishment of regular ovulatory cycles. adolescence, defined as the age range of 10–19 years (Anthon et al., 2024) or extended to 10–24 years in more recent frameworks (Puriastuti, Hasanah, et al., 2024), represents a critical transitional period marked by intense biological and psychosocial changes. National data from Indonesia indicate that the onset of puberty in girls typically occurs around age 10, with menarche commonly appearing between ages 8 and 13 (Ministry of Health Republic of Indonesia & Ministry of Education and Culture Republic Indonesia, 2022).

Menarche, which usually occurs between the ages of 10 and 16 with an average of 12.4 years (Lacroix et al., 2025), reflects the functional maturation of the HPO axis. However, menstrual regularity may not be established immediately following menarche. Several studies report that irregular cycles are common during the first two to three years post-menarche due to an ovulatory cycles (Anthon et al., 2024; Varghese et al., 2022). The proportion of irregular menstruation observed in this study aligns with national findings, indicating that approximately 15–16% of Indonesian adolescent girls experience menstrual irregularities (Hikma et al., 2021; Ministry of Health, Republic of Indonesia, 2013).

Question item 2: Menstrual cycle length assessment

The second item assesses menstrual cycle length. The data show that 22 respondents (40.0%) reported a 28-day cycle, 30 respondents (54.5%) reported cycles of approximately 30 days, and only 3 respondents (5.5%) reported cycles lasting around 32 days. The item demonstrated acceptable validity (r-value = 0.390).

These findings indicate that most respondents fall within the normal range of menstrual cycle length as defined by both national and international standards. The Indonesian Ministry of Health identifies a normal cycle as averaging 28 days with a permissible range of 21–35 days (Ministry of Health, Republic of Indonesia & Ministry of Education and Culture, Republic of Indonesia, 2022). Similarly, FIGO defines a normal menstrual interval as 24–38 days (Thiyagarajan et al., 2025). The predominance of cycle lengths near 28–30 days in this study suggests a generally healthy reproductive profile among respondents.

Comparable findings were reported by Sappe et al. (2024), who found that more than 70% of adolescent girls had cycle lengths within the normal range. This consistency underscores the relevance of menstrual cycle length as a reliable indicator of reproductive health status in adolescents.

Question item 3: The possibility of polymenorrhea assessment

The third question explores the occurrence of polymenorrhea, characterized by menstrual intervals of less than 21 days. In this study, 16 respondents (29.1%) reported experiencing two menstrual periods in one month with approximately 2-week intervals, while 39 respondents (70.9%) did not report such occurrences. The item demonstrated adequate validity (r-value = 0.390).

The proportion of respondents reporting possible polymenorrhea is higher than figures reported in previous studies. Talekar et al. (2021) documented a prevalence of approximately 12.6% among adolescents, while Fatmawati and Hartati (2023) reported that polymenorrhea affects roughly 1 in 20 women. The higher prevalence observed in this study may reflect contextual factors such as stress, nutritional status, or lifestyle behaviors, which are known to influence menstrual regularity during adolescence.

Question item 4: The possibility of oligomenorrhea assessment

The fourth item assesses the possibility of oligomenorrhea. The results show that 14 respondents (25.5%) experienced menstrual cycles lasting 2 months, while 41 respondents (74.5%) reported normal cycle frequency. The validity coefficient for this item was 0.372, indicating acceptable measurement quality.

These findings are consistent with national data indicating that menstrual cycle disorders affect approximately 31.6% of Indonesian women aged 10–29 years, with oligomenorrhea accounting for nearly half of these cases (Sappe et al., 2024). Ligomenorrhea during adolescence is often associated with immature ovulatory function, endocrine imbalance, excessive physical activity, or nutritional deficiencies and warrants attention due to its potential impact on long-term reproductive health.

Question items 5 and 6: The possibility of hypermenorrhea or menorrhagia

Items five and six evaluate excessive menstrual bleeding and prolonged duration. Only 9 respondents (16.4%) reported menstruation lasting 3–7 days with heavy bleeding requiring frequent pad changes, and 4 respondents (7.3%) reported menstruation lasting longer than 7 days. Both items demonstrated acceptable validity (r-values of 0.410 and 0.358, respectively).

These results indicate a relatively low prevalence of hypermenorrhea or menorrhagia among respondents, which aligns with previous findings that estimate the incidence in adolescents at around 5% (Anthon et al., 2024; Sappe et al., 2024). Although menstrual irregularities are common during the early post-menarche period, hypermenorrhea is considered clinically significant due to its association with anemia and reduced quality of life (Anthon et al., 2024). Therefore, early identification remains crucial.

Question item 7: The possibility of hypomenorrhea

The seventh item identifies hypomenorrhea. In this study, 34 respondents (61.8%) reported short-duration or light menstrual bleeding, while 21 respondents (38.2%) did not. The item showed adequate validity (r-value = 0.372).

Although hypomenorrhea is less frequently reported in adolescents compared to other menstrual disorders, its presence may be linked to hormonal imbalance, stress, or low body fat percentage. Previous studies suggest that hypomenorrhea occurs less commonly than oligomenorrhea or dysmenorrhea in adolescent populations (Wijayanti et al., 2022), consistent with the findings of this study.

Question Item 8: The possibility of dysmenorrhea that interferes with activities assessment

The final item examines dysmenorrhea severe enough to interfere with daily activities. The results indicate that 40 respondents (72.7%) experienced dysmenorrhea accompanied by lower abdominal cramps, while 15 respondents (27.3%) did not. The item demonstrated good validity (r-value = 0.410).

This high prevalence aligns with existing literature identifying dysmenorrhea as one of the most common gynecological complaints among adolescents, particularly within the first two years following menarche (Varghese et al., 2022). Primary dysmenorrhea, which occurs in the absence of identifiable pathology, is the most common type in this age group, whereas secondary dysmenorrhea is usually associated with underlying reproductive disorders (Anthon et al., 2024). The substantial proportion of respondents experiencing activity-limiting pain highlights the need for targeted reproductive health education and early intervention strategies.

CONCLUSION

Health workers and researchers can use this instrument to identify menstrual problems in adolescents in schools and health services. This study's limitations include a small sample size and a limited research population. Therefore, in future research, the number of samples used can be expanded further.

AUTHOR'S DECLARATION

Authors' contributions and responsibilities
ACP: is the main author of this research, developed the idea and topic, and is also the corresponding author; **SAS:** developed the methodological design of this research; **A, ZH:** were the technical team.

Funding
This research can be carried out with internal funding from the Faculty of Sport Science in 2024.

Availability of data and materials
All data are available from the authors.

Competing interests
The authors declare no competing interests.

ACKNOWLEDGEMENT

REFERENCES

Anthon, C., Steinmann, M., Vidal, A., & Dhakal, C. (2024). Menstrual Disorders in Adolescence: Diagnostic and Therapeutic Challenges. *Journal of Clinical Medicine* (Vol. 13, Issue 24). Multidisciplinary Digital Publishing Institute (MDPI). https://doi.org/10.3390/jcm13247668

Fatmawati, & Hartati, D. (2023). *The Effectiveness of Soy Milk in Overcoming Polymenorea in Premenopausal Women In The Teluk Bayur Health Center Work Area, Media Bina Ilmiah, 17*(7), 1715-1728. https://binapatria.id/index.php/MBI

Hikma, N., Faizah, Z., & Amalia, R. B. (2021). Literature Review Irregular Menstrual Cycle Based on BMI and Body Fat Percentage. *Indonesian Midwifery and Health Sciences Journal*, *5*(3), 242–250. https://doi.org/10.20473/imhsj.v5i3.2021.242-250

Lacroix, A. E., Gondal, H., Shumway, K. R., & Langaker, M. D. (2025). *Physiology, menarche*. Treasure Island (FL): StatPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK470216/

Fritz, M. A., & Speroff, L. (Eds.). (2019). *Clinical Gynecologic Endocrinology and Infertility*. Lippincott Williams & Wilkins.

Marques, P., Madeira, T., & Gama, A. (2022). Menstrual cycle among adolescents: girls' awareness and influence of age at menarche and overweight. *Revista Paulista de Pediatria*, *40*. https://doi.org/10.1590/1984-0462/2022/40/2020494

Ministry of Health of the Republic Indonesia. (2013). *Basic Health Research 2013*. Jakarta: Ministry of Health Republic Indonesia.

Ministry of Health of the Republic of Indonesia, & Ministry of Education and Culture of the Republic of Indonesia. (2022). *Adolescent Reproductive Health Education Module for High School and Equivalent Level (for teachers)*. Ministry of Health Republic of Indonesia.

Puriastuti, A. C., Hasanah, W. K., Novembriani, R. P., & Suprobo, N. R. (2024). *Handbook of Reproductive Health Education for Vocational High School Teachers* (1st ed.). Malang: Kramantara JS.

Puriastuti, A. C., Novembriani, R. P., Hasanah, W. K., & Suprobo, N. R. (2024). *Text Book Sexuality & Women's Reproductive Health*. Malang: Kramantara JS.

Sappe, A. R. K., Oktavia, A. T., Chairunnisa, A., & Undaryati, Y. M. (2024). Menstrual Cycle Disorders in Adolescents. *Jurnal Multidisiplin Indonesia*, *3*(12), 4593–4598. https://doi.org/10.58344/jmi.v3i12.2077

Talekar, V. C., Singh, M., & Kamble, K. (2021). Impact of Menstrual Disorders on Health of Adolescent Girls: A Systematic Review. *Uttar Pradesh Journal of Zoology*, *42*(13). https://hal.science/hal-05204100/

Thiyagarajan, D. K., Basit, H., & Jeanmonod, R. (2025). *Physiology, Menstrual Cycle*. Stat Pearls Publishing.

Varghese, L., Saji, A., & Bose, P. (2022). Menstrual irregularities and related risk factors among adolescent girls. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, *11*(8), 2158. https://doi.org/10.18203/2320-1770.ijrcog20221929

Wijayanti, R., Ns Siti Latipah, Mk., Zuhrotunnida, M. (2022). Aktivitas Fisik Dan Kecemasan Dengan Gangguan Menstruasi Pada Mahasiswi. *Jurnal JKFT: Universitas Muhamadiyah Tangerang, 7*(2), 1-5.